

To locate events in the air/ground transcript, refer to the event timeline in the postmission report (on shelves) for GET (Ground Elapsed Time) of event. Transcript has GET/GMT at top of each page.

TABLE 3-I.- SEQUENCE OF EVENTS

Event	Time, hr:min:sec
Launch Phase	
Range zero (16:00:00 G.m.t.)	
Lift-off	0:00:00.7
Maximum dynamic pressure	0:01:25.5
S-IC inboard engine cutoff	0:02:14.3
S-IC outboard engine cutoff	0:02:42.8
S-IC/S-II separation	0:02:43.5
S-II engine ignition commanded	0:02:44.2
Interstage jettison	0:03:13.5
Launch escape tower jettison	0:03:18.3
S-II engine cutoff	0:08:56.2
S-II/S-IVB separation	0:08:57.2
S-IVB engine ignition	0:09:00.8
S-IVB engine cutoff	0:11:04.7
Orbital Phase	
Orbital insertion	0:11:14.7
Command and service module/S-IVB separation command	2:41:16
Docking	3:01:59.3
Spacecraft ejection from S-IVB	4:08:06
First service propulsion maneuver	5:59:01.1
Second service propulsion maneuver	22:12:04.1
Third service propulsion maneuver	25:17:39.3
Fourth service propulsion maneuver	28:24:41.4
First descent propulsion maneuver	49:41:34.5
Fifth service propulsion maneuver	54:26:12.3
Lunar module hatch open for extravehicular activity	72:53:00
Lunar module hatch closed after extravehicular activity	73:49:00

APOLLO 9

3-5

TABLE 3-I.- SEQUENCE OF EVENTS - Concluded

Event	Time, hr:min:sec
Orbital Phase - concluded	
First undocking	92:39:36
Command and service module/lunar module separation	93:02:54
Descent propulsion phasing maneuver	93:47:35.4
Descent propulsion insertion maneuver	95:39:08.1
Coelliptic sequence initiation maneuver	96:16:06.5
Constant delta height maneuver (first ascent propulsion)	96:58:15
Terminal phase initiation	97:57:59
Docking	99:02:26
Lunar module jettison	101:22:45
Ascent propulsion firing to depletion	101:53:15.4
Sixth service propulsion maneuver	123:25:07
Seventh service propulsion maneuver	169:39:00.4
Eighth service propulsion maneuver (deorbit)	240:31:14.9
Entry Phase	
Command module/service module separation	240:36:03.8
Entry interface (400 000 feet altitude)	240:44:10.2
Begin blackout	240:47:01
End blackout	240:50:43
Drogue deployment	240:55:07.8
Main parachute deployment	240:55:59.0
Landing	241:00:54

PAO This is Apollo/Saturn Launch Control at T-59 minutes and counting, T-59 on the Apollo 9 count. We are go for the mission at this time. Just a matter of some 2 or 3 minutes ago, the Vice-President of the United States, Mr. Agnew, arrived here in the Launch Control Center. The Vice-President, who is of course the chairman of the Space Council, here to observe the final 60 minutes or so of the count for Apollo 9. When the Vice-President arrived, he did meet some of the crews for the upcoming launches, the complete crew for Apollo 10, astronauts Tom Stafford, John Young, and Gene Cernan, and two of the members of the Apollo 11 crew, astronauts Neil Armstrong and Mike Collins. In the meantime, the three astronauts in the Apollo 9 spacecraft, Jim McDivitt, Dave Scott, Rusty Schweickart are continuing to work on their final checks for this flight. McDivitt and Schweickart at this time are performing some final checks of the stabilization and control system. In the meantime, we are starting to bring up radio frequency and telemetry checks with the launch vehicle. All still going well at 58 minutes and counting. Our countdown picked up following a 6-hour built in hold at 2 a.m. Eastern standard time this morning and has run very smoothly since that time. We've now been in progress a little more than 8 hours with the count. The first 5 hours or so of our final phases of the countdown list are devoted to the propellant loading of the three stages of the Saturn V launch vehicle. During this period, we brought in close to 3/4 of a million gallons of liquid oxygen and liquid hydrogen into the stages of the Saturn V. We now have all our propellants aboard, we have a vehicle on the pad that weighs some 6.4 million pounds. The propellants are all aboard at this time, and the flightcrew going through their final checks in the spacecraft. During these 8 hours or so that we've been in the final count, all aspects of the mission have gone very well. We had one questionable item, that was a regulator for helium pressure in the third stage of the Saturn V. We ran several verification tests and were able to determine that a pneumatic control module in the third stage is capable of performing its intended functions and we are able to proceed. This module plays a part in preparations for the second burn, particularly on the S-IVB, the third stage of the Saturn V. Other than that one minor aspect, which was verified by some tests during the count, all other aspects of the mission have gone very well. The flightcrew in Apollo 9 was alerted in their countdown, as planned, at 5:45 a.m. Eastern standard time this morning. They

PAO then went down the hall from their crew quarters at the Kennedy Space Center and had a final physical. They were declared in good physical condition and flight ready by Dr. Charles A. Berry and a team of physicians giving the final examination. Dr. Berry commented that the throats of the astronauts really looked good this morning. Astronaut Rusty Schweickart, the lunar module pilot, did request to take a motion sickness pill and he did take that while he was suiting up a little later in the morning. Following their medical examinations, the astronauts sat down for breakfast in the crew quarters, the usual astronaut menu on launch day of scrambled eggs, steak, toast, orange juice, and coffee. They had some seven guests with them at breakfast. The crew then went to the suit room where they donned their space suits and then were called to the pad some 10 minutes late, as we were a little bit behind on bringing the propellants on board. The crew departed from the crew quarters at 8:05 a.m. Eastern standard time this morning and started to board the spacecraft at 8:29. The first member of the crew across the sill was the commander, astronaut Jim McDivitt. He came across at 8:29 a.m. He was followed by the lunar module pilot, Rusty Schweickart, who sits in the right-hand seat, some 5 minutes later, at 8:34, and the final member, command module Dave Scott, who sits in the center seat, came aboard at 8:40 a.m. Eastern standard time. The backup command module pilot, astronaut Richard Gordon, was in the spacecraft during this period aiding all three astronauts in coming aboard. Our countdown continuing at this time, T-54 minutes 20 seconds. The Vice-President now being briefed here in the Control Center by Dr. Kurt Debus, who is director of the Kennedy Space Center. The Vice-President is accompanied by Dr. Thomas Payne, the administrator, the acting administrator of NASA, Dr. Robert C. Seamans, the Secretary of the Air Force and former deputy administrator of the space agency, and astronaut Frank Borman, who was the commander for the Apollo 8 mission. Those are some of the key people in the Vice-President's party. Our countdown proceeding at this time, all going well. Weather is GO for the mission also. We have a forecast of overcast in the Cape Kennedy, the complex 39 area, but it is acceptable for launch. The hatch was closed on the Apollo 9 spacecraft at about 9:20 a.m. this morning, and our count has proceeded well since that time. We will go on automatic sequence in the countdown at about 3 minutes and 6 seconds, and from that point on down, all phases of the count will be automatic, leading up to ignition of the five engines and the first stage of the Saturn V vehicle at the 8.9

APOLLO 9 MISSION COMMENTARY, 3/3/69, T-59, CST 9:01a 1/3

PAO                    second mark in the count. This will be ignition sequence start, it will take some 8 seconds or so to build up the proper thrust in those five engines to give us our planned 7.7 million pounds of thrust at liftoff. All engines should be running at the 2 second and we should get commit and liftoff at zero in the count. We are now at T-52 minutes 40 seconds in counting, this is Launch Control.

END OF TAPE

PAO                      This is Apollo Saturn Launch Control, T minus 49 minutes and counting. T minus 49; we are proceeding satisfactorily at this time. At this point the Apollo access arm, sling arm number 9 is being removed from the spacecraft, being taken to its stand by position some 8 or 10 feet away; it will remain in this position until we get to the 5 minute mark in the count. In the meantime we are arming the pyro-technic devices aboard the spacecraft at this time, particularly the launch escape tower, which could be used these final moments of the count once the swingarm is taken away. All aspects of the mission still going well at this time and into a planned liftoff time on the hour. T minus 48 minutes, 18 seconds and counting; this is Launch Control.

END OF TAPE

PAO                      This is Apollo/Saturn Launch Control at T-44 minutes and counting, T-44, we are GO with the Apollo 9 mission at this time. Vice-president Agnew now has taken his seat here in the control center and is monitoring the countdown with a crew of some 450 people here in the Launch Control Center, another 50 or so are back in the Spacecraft Operations here at KSC and continue to work the countdown at this time. Standing by in Houston, of course, and participating in the count are the various teams there at the Mission Control Center under the flight director. Our countdown now, some - running a little ahead, especially on the spacecraft portion, and with the launch vehicle they are coming up on one of our final major checks - final checks of the destruct system aboard the three stages of the Saturn V launch vehicle. These are checks with the Air Force Eastern Test Range to assure that the destruct system aboard the vehicle would be operable if it were required in flight. Of course, before taking destruct action, the astronauts would go through an abort sequence with their Apollo spacecraft to separate from the vehicle. Our countdown proceeding satisfactorily, T-42 minutes 50 seconds, and counting. This is Launch Control.

END OF TAPE

PAO                      This is Apollo Saturn launch control T-39 minutes in counting. T-39 all aspects of the mission still GO at this time. A capsule communicator here in the launch control center at firing room 2 - Jack Lousma who is a member of the support crew - the astronaut support crew for the Apollo 9 mission - now in some communication checks from his console with the pilots onboard the spacecraft. Coming up shortly - spacecraft wise, in about 5 minutes or so, will be pressurization of the reaction control system for the service module of the spacecraft. These are those quad thrusters - 100 pound thrusters in four quadrants around the service module that are used for maneuvers in space - orbital maneuvers in the case of this particular flight. On the launch vehicle side we're gearing up for some final checks of the power system aboard the three stages an instrument unit of the Saturn V - a power transfer test where we check the flight batteries that then return to internal power - correction - return to external power in order to conserve those batteries down to the final moments of the count. T-37 minutes 51 seconds in counting - this is launch control.

END OF TAPE

PAO                    This is Apollo Saturn Launch Control, T minus 34 minutes and counting. T minus 34; still proceeding satisfactorily with the count at this time. We now have just completed our pyro-transfer test; this is a test of the flight batteries in the 3 stages of the Saturn V and the instrument unit. Early indications are that the test went well. We will now remain on external power till the 50 second mark of the count when we finally go internal for good in the countdown. The astronauts still preparing for the pressurization of their reaction control system aboard the Apollo 9 spacecraft. We have the access arm, the swing arm that enables entry to the spacecraft located some 12 degrees from the spacecraft in a standby position. For safety purposes, we have 2 high speed elevators locked at the 320 foot level; that swing arm could be brought back in rapid fashion if required. It will remain in this position and not go back to its fully retracted position until the 5 minute mark in the count. We have now passed the 33 minute mark; we are at 32 minutes, 54 seconds and counting. This is Launch Control.

END OF TAPE

PAO                      This is Apollo/Saturn Launch Control  
T-29 minutes and counting, T-29. WE are GO for a planned  
liftoff for Apollo 9 at this time. The Lunar Module, which  
will be tested for the first time with a crew aboard in orbit  
on this flight, now has gone on internal power. It is on  
the power of its own flight batteries at this time and will  
remain in this mode through the remainder of the countdown.  
The crew here in the Control Center is continuing to monitor  
the status of the propellants aboard in the Saturn V. We  
have now close to a million gallons of propellants, the  
vehicle weighing some 6.4 million pounds on the launch pad.  
The astronauts aboard the spacecraft are going through the  
pressurization sequences concerned with their reaction control  
system, those are the thrusters on the service module that  
will be used for maneuvers in orbit. Participating, primarily,  
Jim McDivitt and the Lunar Module pilot, Rusty Schweickart.  
We're still GO and we approach the 28 minute mark. Mark,  
T-28 minues and counting, this is Launch Control.

END OF TAPE

PAO                    This is Apollo Saturn Launch Control at T minus 24 minutes and counting. T minus 24; the crew a little ahead with their work on the spacecraft at the 320 foot level. At this time, Rusty Schweickart, the Lunar Module Pilot, decided he had time to ask on how the Lunar Module was doing, the Lunar Module located beneath them now in the stack. The spacecraft test conductors came on the circuit and reported that the Lunar Module also is GO and on internal power. The astronauts have completed their pressurization and checks of the reaction control system on the spacecraft service module; our countdown proceeding smoothly at this time. 23 minutes, 20 seconds and counting; this is Launch Control.

END OF TAPE

PAO                      This is Apollo/Saturn Launch Control  
T-19 minutes and counting, T-19. We are bringing up our  
water supply now for the launch pad in preparation for the  
ignition, which will come some 18 minutes 47 seconds from  
this time. We have also completed readouts on the C-Band  
tracking beacons which are located in the instrument unit  
and our checkout still continues to go satisfactorily at  
this time. Despite the overcast that we have, the visibility  
is good, the ceiling is acceptable, we are GO as far as  
weather is concerned on our launch attempt for Apollo 9.  
We now have 2 complete follow-on crews also observing the  
launch, the complete crew for Apollo 10 and now Astronaut  
Buzz Aldrin, the Lunar Module pilot for Apollo 11, has joined  
his two fellow pilots, so we have both complete crews here  
along with the Vice-president and the dignitaries accompanying  
him. WE are coming up toward the 18 minute mark, a GO for  
Apollo 9, this is Launch Control.

END OF TAPE

PAO                    This is Apollo Saturn Launch Control T-14 minutes and counting. We are still proceeding - all aspects of the mission GO at this time. The Apollo command module now has gone on a full internal power - this is on the full power of the fuel cells aboard. Actually the command and service module, of course, the complete spacecraft now on the power of its fuel cells. Up to this time it had been sharing the load with an external power source. Also at this time, the crew in the spacecraft giving some readouts on the various power systems - checking some final switch settings and arming those rotational hand controllers that enable them to drive the vehicle in orbit in the space mission itself. All aspects of the mission still GO. Thirteen minutes 15 seconds and counting - this is Launch Control.

END OF TAPE

PAO                    This is Apollo Saturn Launch Control, T minus 9 minutes and counting, T minus 9; we are still GO for our planned liftoff on Apollo 9. In progress at the present time - there have been some final communication checks by some key individuals here at the control center, as well as the flight director, Gene Kranz and the Capsule communicator Astronaut Stu Roosa in Houston. We have made some final checks on what is known as the astro-launch circuit; this is a special circuit which is several key people talk to the flight crew aboard the spacecraft over the final few minutes of the count. The crew switches to astro-launch at the 4 minute mark in the count. Just a handful of people and key people talking to them from that time on for the remainder of the count; it will be the spacecraft conductor, his name is Skip Sheldon, the launch operations manager, Paul Donley, and the Capsule Communicator here in the Control Center, the backup support astronaut, a member of the support team, Astronaut Jack Lousma. The flight director in Houston also has the capability to talk to the astronauts. We are now past the 8 minute mark in the count; spacecraft test conductor Skip Sheldon going through a final status check of all of his systems, the report coming back GO at this time. As we proceed, T minus 7 minutes 45 seconds and counting; this is Launch Control.

END OF TAPE

PAO This is Apollo/Saturn Launch Control T-5 minutes and counting, T-5, and the order has been given for the Apollo Access Arm to come to its fullest retracted position and now swing arm number 9 coming back to its fully retracted position. Just before this order was given, we went through a final status check. This spacecraft is GO, we also got a GO for launch from Mission Director George Hage in Houston, and finally Launch Director Rocco Petrone, here in firing room 2. Our status board shows launch support preparations are complete, and the ready lights are ON for the instrument unit, the spacecraft, and the emergency detection system. We are GO at T-4 minutes, 21 seconds and counting. This is Launch Control.

PAO This is Apollo/Saturn Launch Control coming up on 3 minutes 50 seconds, MARK, T-3 minutes 50 seconds and counting, we are GO for launch. The countdown now turned over to the control of the launch vehicle conductor for the last 4 minutes of the count. We will go on an automatic sequence starting at 3 minutes 7 seconds. Final communications checks now in progress between the spacecraft test conductor and the crew aboard the spacecraft. Some final checks in progress at this time. We have the report that we are clear for firing command, that is the automatic sequencer that should come in in about 15 seconds. From that time on down, all aspects of the mission will be automatically monitored by the computers here at the control center and at the pad. At 3 minutes 10 seconds, we have firing command. Launch sequence started, the computer is in, the sequence is in at this time. Mark, T-3 minutes, T-3 minutes and counting. Our preparations are now complete, our ready lights are on here in the Control Center. During this period the various propellant tanks aboard the three stages of the Saturn V will be pressurizing. Primarily we use helium on the ground to pressurize these tanks. The various vent valves will close, as the countdown proceeds. We are now past 2 minutes 35 seconds, and counting, all still going well. 2 minutes 30 seconds, we should be getting an indication on pressurization of the third stage. We have it, here in the Control Center 2 minutes 20 seconds and counting, the third stage now is pressurized. We will be looking toward those 5 engines in the first stage of the Saturn V, the ignition sequence to start at the 8.9 second mark in the countdown. We are now coming up on the 2 minute mark, MARK T-2, all aspects of the mission still GO at this time, The Apollo 9 crew standing by in the spacecraft. 1 minute 50 seconds and counting. Once the ignition sequence does begin with the 5 engines it will take some 9 seconds or so to build up the proper thrust. The computers will automatically sample those engines and assure ourselves that we have

PAO                    95 percent of the thrust. We will get a commitment at that time, and the 4 hold-on arms will come back. We are now 90 seconds and counting, 90 seconds and counting. Vice-president Agnew now has come up to the window of the Launch Control Center, along with members of the party to view the launch. 1 minute 20 seconds and counting. All indications are we are still GO at this time. Third stage propellant tanks have been pressurized. Final check of several panels by Lunar Module Pilot Rusty Schweickart, second stage tanks now pressurized. Schweickart confirms that he has the proper readings. 1 minute and counting. T-55 seconds and counting.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, T-01, CST 10:00a 12/1

PAO - T-55 seconds and counting. All going well, we are coming up on the power transfer. Mark 50 seconds and counting, we're now on internal power with the three stages and instrument unit of the Saturn V. All propellant tanks in the second stage now pressurized. 35 seconds and counting, the vehicle now completely pressurized, the vents closed, we are GO, 30 seconds and counting. T-25 seconds and counting, all aspects still GO at this time as the computer monitors. Twenty seconds, guidance release, 15, 14, 13, 12, 11, 10, 9, we have ignition sequence start, 6, 5, 4, 3, 2, 1, zero. All engines running. Commit, lift-off. We have liftoff at 11 a.m. Eastern standard time.

PAO Plus 17 seconds, the roll and pitch program are in now to put Apollo 9 on the proper flight azimuth and attitude. Half a mile high, roll is complete.

PAO Apollo 9 a mile and a half high now. Velocity 1,597 feet per second. One minute, cabin release relieving. One mile downrange, 4-1/2 miles high, velocity 2,500 feet per second in the region of maximum dynamic pressure.

PAO Flight Director Gene Kranz taking his status check now. Apollo 9 is GO for staging. Plus 2 minutes 15 seconds and GO. Inboards out.

PAO Outboards out. S-II ignition, thrust is GO on the second stage. Down range 70 miles now, 42 miles high, 9,300 feet per second velocity. Standing by for tower jettison now, the launch escape tower. Tower jet confirmed. Guidance has been initiated on the second stage. Gene Kranz taking another status check with the controllers now.

CAPCOM Apollo 9, you are GO all the way. Everything looks good.

SC Roger.

SC Houston, did you read comment that our SPS helium pressure went to zero, indicated zero at liftoff.

PAO The cabin is stable at 6.1 pounds per square inch.

SC Be advised our SPS helium pressure went to zero at liftoff.

CAPCOM Roger, copy.

SC Okay. You got any --

PAO Jim McDivitt reports the SPS helium pressure on board went to zero at liftoff; however, we are reporting GO here at the Mission Control Center. 225 miles downrange, 75 miles high, 11,700 feet per second.

CAPCOM And Apollo 9, it's 5 minutes and everybody is as happy as clam here. Looking good.

SC So are we.

APOLLO 9 MISSION COMMENTARY, 3/3/69, T-01, CST 10:00a 12/2

PAO Mark S-IVB to orbit capability. If the second stage shuts down prematurely, we do have the capability to put the spacecraft into orbit with the S-IVB. We are estimating cut-off of the S-II stage at 8 minutes 55 seconds. We are at 630 now, still GO, 430 miles downrange, 90-1/2 miles high, and 15,300 feet per second velocity.

SC And the rookie says that looks beautiful.

CAPCOM And rookie, at 7 minutes, everything is going real great.

SC Roger.

PAO A little word from rookie Schweickart there.

PAO 18,000 feet per second velocity now, 590 miles downrange, 96 miles high.

CAPCOM Apollo 9, at 8 minutes everything here is GO.

SC Roger, everything looks fine here too.

CAPCOM Very good. The comm is beautiful, Jim. You are really coming through to us.

SC Roger, your comm is nice and clear and loud, Smoky. We had no trouble with comm on launch at all.

PAO Apollo 9 has a GO for staging now. Looking for S-II cut-off about 8 + 55. Retro reports were right on ground track. S-II cut-off, staging is complete, S-IVB ignition. Thrust is good on the S-IVB. 920 miles downrange, 101 miles high, 23,000 feet per second velocity.

CAPCOM Apollo 9, you have mode 4 capability and everything is GO. You are real solid.

SC Roger. What time did the engine shut down?

CAPCOM We will have that for you in a flash, Apollo 9.

SC Okay.

PAO Guidance does not have a cut-off time yet. We expect it shortly.

SC My onboard FIDO here says we are doing okay.

CAPCOM Yes, everything is looking good here, Apollo 9.

SC Okay.

CAPCOM We will try to have your cut-off time shortly.

SC Better hurry, I'm going to cut-off first.

CAPCOM Roger.

APOLLO 9 MISSION COMMENTARY, 3/3/69, T-01, CST 10:00a 12/3

PAO 1,241 miles downrange, 102 miles high,  
25,256 feet per second. Plus 11 minutes, looking good.  
CAPCOM Roger, shutdown.  
SC Okay. Houston, we've got 103 by 89.5.  
CAPCOM Roger, Apollo 9, copy.  
PAO That was Dave Scott giving the onboard  
orbital parameters, 103 by 89.5. We will refine those later  
through tracking. FIDO says GO.  
CAPCOM 9, you are GO in the orbit.  
SC Roger.  
CAPCOM And your CMC is GO, it is valid.  
SC Okay.  
CAPCOM And Apollo 9, the S-IVB has been safed.  
SC Roger, safe. Do you have our apogee and  
perigee?  
CAPCOM Not yet, Apollo 9. Stand by.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 1200, CST 10:12a 13/1

CAPCOM And Apollo 9 S-IVB has been safed.  
 SC Roger, safed. Do you have our apogee  
 and perigee?  
 CAPCOM Not yet, Apollo 9, standby.  
 SC Okay.  
 CAPCOM Apollo 9 the S-IVB has been configured  
 for orbit. It's looking real good and your SPS helium is  
 solid as a rock.  
 SC Roger. We copy. Thanks a lot.  
 CAPCOM Roger.  
 PAO That's Astronaut Stu Roosa, the CAPCOM  
 from the Houston Control Center talking to the crew.  
 PAO Apollo 9 out over the Atlantic now in  
 contact with the tracking ship Vanguard. We're going to  
 want it tracked Apollo 9 for a while before we come up with  
 a fine tuned orbital parameter 103 by 89.5 was the onboard  
 readout from the command module computer.  
 PAO This is Apollo Control at 17 minutes.  
 Apollo 9 - now coming into contact at the Canary Island  
 station. We'll stay up live.  
 CAPCOM Nine, Houston.  
 SC Roger. Let's go ahead with it.  
 CAPCOM Roger. We've got Canaries here. You  
 can configure 10 plus alpha.  
 CAPCOM Apollo 9 Houston. Did you copy?  
 CAPCOM Apollo 9 Houston. Do you read?  
 SC Roger, Houston. Five by. How us?  
 CAPCOM Okay, you're coming in five square.  
 We switched over alright I guess and everything looks good.  
 SC Roger. What kind of (weather) did you  
 get us in?  
 CAPCOM We don't have it yet, Apollo 9. We are  
 still running it through the computers.  
 SC Okay.  
 PAO This is Apollo Control at 18 minutes  
 32 seconds. We've got the lift off heart rates for the crew  
 now from the Flight Surgeon Dr. Hawkins. He says they are  
 within the range the medical officers expected, with  
 Schweickart running a little lower than they expected.  
Jim McDivitt - 135, Dave Scott 120, Rusty Schweickart 72.  
 Rusty normally runs in the mid to low 60's, Dave Scott in  
 the high 60's to low 70's and McDivitt in the 70's to high  
 80's. - to all 80's rather.  
 CAPCOM Two point 9 is the first cut.  
 SC Roger, 107 98.9.  
 CAPCOM And we are continuing to massage this  
 Apollo 9 and we will keep you updated.  
 SC Roger. Understand.

*Initial orbit*

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 1200, CST 10:12a 13/2

PAO                    The first cut at the orbit from the  
ground shows 107 by 98.9. This - we haven't had too much  
tracking yet on this - we'll continue tracking.

END OF TAPE

LA 11:00  
Launch Phase 1/2/24

APOLLO 9 COMMENTARY, 3/3/69, GET: 22:00 (10:22a)

14/1

CC Apollo 9, we've got 1 minute with you at  
Canaries and we will see you over Tananarive at 37.

SC Roger. Tananarive at 37, thank you.

CC Roger that.

PAO This is Apollo Control at 23 minutes.  
We've had tracking through the Canaries now and we've refined  
the orbital parameters better. We are now showing an orbit  
of 103 by 102.3 nautical miles, very close to what we were  
shooting for; we were shooting for 103 circular. We've had  
LOS at Canaries now; Tananarive will be the next station, in  
approximately 15 minutes. We have the tape of the entire  
powered portion of the flight; we'll play that for you now.

SC Yes clock's going.

SC There's out Roll program, we read you  
loud and clear. Just have one problem.

CC Apollo 9, you are GO for staging.  
And you are mode 1 Charlie.

SC Affirmative.

SC (garble)

CC Apollo 9, Houston. Your thrust looks  
good. Apollo 9, you are GO for tower jet.

SC Yes. Tower has jettisoned. It's looking  
good here, I've got the power off.

CC Apollo 9, we are showing guidance initiate  
everything looks good. Apollo 9, you are GO all the way;  
everything looks good.

SC Roger. Houston, did you read our comment  
that our SPS helium pressure went to zero? Indicated zero at  
liftoff?

CC Apollo 9, this is Houston. I did not  
copy.

SC Roger. Be advised that our SPS helium  
pressure went to zero at liftoff.

CC Roger; copy.

SC If you get any good words on that, why don't  
you give them to me when you can.

CC Roger; it is GO here Apollo 9.

SC Very good.

CC And Apollo 9 at 5 minutes, everybody's  
happy as a clam here; looking good.

SC So are we.

CC Apollo 9, you have SIVB to orbit capability.

SC Thank you. Roger here.

CC Your level temp arm time is 8 plus 21,  
predicted S2 cutoff, 8 plus 56.

SC 8 plus 21, and 8 56; roger, and we got  
S band omni to Delta.

CC Copy. Omni Delta, thank you.

SC And a rookie says that looks beautiful.

CC And rookie, at 7 minutes everything is  
going real great.

SC Roger.

out of  
sequence  
(Launch  
Phase  
replay)

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 32:00, CST 10:32 am 15/1

CC Apollo 9, at 8 minutes, everything is  
GO.  
SC Roger, everything looks fine here, too.  
CC Very good. The COMM is beautiful, Jim,  
you're really coming through good.  
SC Roger, I read you nice and clear and  
loud, too, Smokey. We had no trouble with comm on launch  
at all.  
CC Roger, copy that Apollo 9, and you are  
GO for staging.  
SC Roger.  
SC We're getting a little vibration at  
about 8 - - staging complete and it's the best S-IVB that's  
running.  
CC Roger, we copy staging complete, we're  
showing a good thrust on the S-IVB, everything is GO.  
SC We're guiding now.  
CC Apollo 9, you have mode 4 capability, and  
everything is GO, you are real solid.  
SC Roger, What time do you think we can  
shut down?  
CC Roger, we'll have that for you in a flash,  
Apollo 9.  
SC Okay.  
SC My onboard computer here says we're  
doing okay.  
CC Yes, everything is looking good here,  
Apollo 9.  
SC Okay.  
CC We'll have your cutoff time shortly.  
SC Better hurry, I'm going to cut off soon.  
CC Roger.  
SC Shutdown, enter.  
CC Roger, shutdown.  
SC Check.  
SC Houston, we've got 103 by 89.5.  
CC Roger, Apollo 9, copy.  
CC And Apollo 9, you are GO in the orbit.  
SC Roger.  
CC And your CMC is GO, it is valid.  
SC Okay.  
CC And Apollo 9, the S-IVB has been safed.  
SC Roger, safe. Do you have our apogee  
and perigee?  
CC Not yet, Apollo 9, standby.  
SC Okay.  
PAO This is Apollo Control at 36 minutes.  
We have AOS at Tananarive, now, we'll standby live through  
this pass.

CC Apollo 9, Houston, through Tananarive.  
CC Apollo 9, this is Houston through  
Tananarive.  
SC Go ahead, Houston.  
CC Roger, Apollo 9, our Canary data shows  
your orbit at 103.9 by 102.3.  
SC Roger, understand 103.9 by 102.3.  
CC That is affirmative, and that changes  
slightly as the S-IVB vents, but that was a pretty good  
hack at it on Canary. And we'll have you here at Tananarive  
for about another 5 minutes.  
SC Roger. It looks good huh?  
SC Houston, Apollo 9. Do you copy our  
parking angles?  
CC We have no data here at Tananarive, Dave,  
you will have to read them to me.  
SC Very well. GET was 3900 plus 00116 minus  
00032 minus 00108.  
CC Roger, Apollo 9, this is Houston. I  
copied the time and the angles. Thank you.  
SC Works like a charm.  
CC Roger, looks like the platform was right  
there. And that was a nice speedy job on that 52.  
SC Good old auto optics.  
CC I see, copy.  
CC And Apollo 9, this is Houston. We are  
going to lose you here at Tananarive in about 45 seconds,  
and we'll see you over Carnarvon at 52.  
SC Roger, 52 at Carnarvon.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 4200, CST 10:42a 16/1

PAO                    Tananarive has lost the signal now. The next station to acquire will be Carnarvon at 52 minutes 11 seconds. At Carnarvon is the GO/NO-GO decision point for six revolutions. At 43 minutes 11 seconds, this is Mission Control Houston.

END OF TAPE

APOLLO 9 COMMENTARY, 3/3/69, GET: 36:00 (10:36a)

17/1

CC                    Apollo 9, Houston. We've got 1 minute  
with you at Canaries and we will see you over Tananarive at  
37.

SC                    Roger; Tananarive at 37. Thank you.

CC                    Roger that.

CC                    Hello Apollo 9, do you read?

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 5200, CST 10:52a 18/1

PAO This is Apollo Control at 52 minutes into the mission of Apollo 9. Apollo 9 coming up on Carnarvon right now. We will stand by through Carnarvon and Honey-suckle.

SC Hey Houston, how do you read, Apollo 9.

CAPCOM Apollo 9, Houston. Reading you loud and clear through Carnarvon.

SC Okay. I'm presently in a backup comm check. Thus far, they are on LMP 1 dash 2 and I'm on line 5. I got the initial contact and I got my S-band volume up.

CAPCOM Roger, understand you are in step 5 and stand by one here.

SC Roger. And I'm standing by for a GO for the backup voice check.

CAPCOM Roger, we will give you a GO on that in about 30 seconds here.

SC Okey-dokay.

CAPCOM Okay, Apollo 9, this is Houston. We are standing by for your voice check on S-band. Let her rip.

CAPCOM Okay, Apollo 9, this is Houston. I did not copy anything. I got one blast in there sounded like you keyed and that was all.

CAPCOM Apollo 9, this is Houston on VHF. Do you read?

CAPCOM Apollo 9, Apollo 9, this is Houston via the VHF. Do you read me?

SC Roger, Houston. We read you on VHF. I gave you a call on data wave backup and evidently you are not reading on it; however, I'm reading you up on the S-band.

CAPCOM Okay, and we can confirm with the site that we did not get an S-band downlink on that one, Rusty.

SC Roger. We will be standing by for suggestions. Let me just give you my configuration here, if you want to copy that.

CAPCOM Go.

SC Okay. I'm on the primary transponder and I'm reading you okay, everything else is in normal there. Going across, I've got the ranging switch off, I've got the S-band off tape in downvoice backup, the power PMP back up to normal, and everything else is vanilla.

CAPCOM Roger, I copy that, Apollo 9. Let us mull that over. We are going to have you here about another minute at Carnarvon and then we are going to pick up over

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 5200, CST 10:52a 18/2

CAPCOM Honeysuckle at about 50, it will be just about on the hour, so have your S-band volumes up at that time.

SC Roger. And be advised, we are rushing on through all our checklist here and we've got most everything done. The fuel cell purge check is checked out okay.

CAPCOM Roger. Sounds great and Apollo 9, you are GO for 6 dash 4.

SC Roger, GO for 6 dash 4.

SC And Houston, be advised that I'm going to go out of this backup comm check configuration here and go back to normal.

CAPCOM Roger. Let's meet you over Honeysuckle in normal configuration just about on the hour.

SC Roger.

PAO Carnarvon has had loss of signal now. We've got about a minute and a half gap between Carnarvon and Honeysuckle. We will come back up at acquisition at Honeysuckle.

END OF TAPE

APOLLO 9 COMMENTARY, 3/3/69, GET: 59:50 (11:00a)

19/1

PAO This is Apollo Control. Honeysuckle has acquired the Apollo 9; we will stand by for conversation through that station.

CC Apollo 9, thorough Houston through Honey-suckle.

PAO This is Apollo Control. We are showing cabin temperature 70 degrees F, cabin pressure 5.5 pounds per square inch.

SC You're 5 square on S band Apollo, or Houston.

CC Roger, you're ... that's really great Rusty. You're coming in, and if you want to try this back-up com check again, we can support it; it's dealer's choice. And if there's ... we were leaving Canarvon, the down length appeared to be coming through on the backup.

SC Okay. Why don't we forego it right now, and we'll try to check that at some quiet period.

CC Roger. We concur. And Apollo 9, this is Houston, we are going to loose you here at Honeysuckle in about 40 seconds, and we will see you over Huntsville in about 3 minutes.

SC Roger.

PAO This is Apollo Control, 1 hour, 5 minutes and we have had LOS at Honeysuckle. To summarize briefly, Apollo 9 was inserted into an orbit very near what we were shooting at; we were shooting at 103 circular. Tracking through the Canaries showed the insertion orbit to be 103.9 by 102.3; that's changing a little bit due to venting from the SIVB, but that was expected; we are well within where we want to be to continue this mission. Apollo 9 has been given a GO for 6 revolutions. We are now showing cabin pressure 5.4 pounds per square inch, temperature 67 degrees F, and at 1 hour, 6 minutes, this is Mission Control Houston.

END OF TAPE

possible to MC  
Extend docking probe

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 20200, CST 12:02p 20/1

PAO This is Apollo Control at 2 hours 2 minutes into the mission. Apollo 9 is in its second revolution over the continent of Africa - its status is GO. We have not yet identified whether there is a problem in the command module computer. The computer was about 4 tenths of a second late on lift-off. Over Bermuda in this first stateside pass we did successfully update a state vector - that is the ground told the command module computer the spacecraft's position and velocity in reference to the earth at that particular time. So we do have a good state vector aboard the spacecraft. The Guidance Officer is continuing to watch the computer - and will for some time yet before he is able to say whether there is a problem or there is not. To date we have not identified a problem. Just at the end of the Canaries pass a few minutes ago Dave Scott extended the docking probe for the first time. His comments were: "We've got a good one. It's just like in the chamber." He reported the crew could hear the docking probe extend. We're still reading good - H2 tank - the pressure is on the ground in that tank that was reading zero onboard. Ground telemetry shows the pressures are good there. We had a caution warning light on in the number one H2 tank. Briefly, however, just within a second the heater came on and the light went out. It has been determined that the limits are probably set a little too high on that caution and warning light in that parameter and that there is no problem. We had the tape of all the air-ground starting at the tracking ship Huntsville through the states and ending at Canary. We'll play that for you now.

CAPCOM Apollo 9 to Houston through Honeysuckle.

CAPCOM Apollo 9 this is Houston through Honeysuckle.

SC You are fine and square on S-band, Houston.

CAPCOM Roger. That's really great, Rusty. You are coming in and if you want to try this backup communications check again we can support it. It's dealers choice. And just as we were leaving Carnarvon the downlink appeared to be coming through on the backup.

SC Okay. Why don't we forego it right now. We'll try to check that at some quiet period.

CAPCOM Roger. We concur.

CAPCOM And Apollo 9, this is Houston. We're going to lose you here at Honeysuckle in about 40 seconds. And we'll see you over Huntsville in about 3 minutes.

SC Roger.

CAPCOM And Apollo 9, this is Houston through Huntsville.

SC Cannot maintain valid two-way range, so we lost signal bearing in the negative.

CAPCOM Hello, Apollo 9, this is Houston. We read through the Huntsville.

SC Huntsville at valid and (garbled).

CAPCOM And Apollo 9, this is Houston through the Huntsville.

SC Roger.

SC Houston, Apollo 9, you're coming through.

CAPCOM Okay, Apollo 9, this is Houston. You're breaking up pretty badly. We don't have much to pass you here - we're only going to have you for about another minute and a half and we'll talk to you as you come across the states and pass the data to you then.

SC Roger.

CAPCOM And Apollo 9, this is Houston if you can read me. We'll see you over the Redstone at about two-four.

SC Roger.

CAPCOM Huntsville LOS.

CAPCOM Apollo 9, this is Houston through the Redstone standingby.

CAPCOM Apollo 9, this is Houston through the Redstone.

SC Roger, Houston.

CAPCOM Oh, you're clear as a bell, Apollo 9 - this is Houston.

SC Roger.

CAPCOM And Apollo 9, we'd like to confirm that you are in omni Baker and primary S-band transpondent.

CAPCOM Apollo 9, Houston.

SC Go ahead.

CAPCOM Roger. It may be a coincidence, but we lost data just about the time I gave you that transmission to clarify that omni Baker. Did you change configuration then?

SC That's affirmative. We were on Delta and I just switched it to omni for you.

CAPCOM I understand you did go from Delta to Baker and the primary transpondent was ON. You didn't need to change that, did you?

SC That's a negative. The primary was OFF.

SC How are you doing down there, Smokey?

CAPCOM Oh, we're pressing along, Jim. And (garbled) we'll probably have a state vector we want to up-link over Bermuda or Vanguard - oh, in five or ten minutes and for Rusty's benefit the backup COM check over Carnarvon was 5 square. It came in - we had a momentary dropout there,

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 20200, CST 12:02p 20/3

but we got it real good.

SC Oh, goody. We'll write that one off then.  
Okay, we have got all of the checklist done except the glycol loop and some things that I am going to do right now. And we haven't taken the bias check either. I guess you guys want to do that.

CAPCOM Roger. We have no data right now, Nine.  
CAPCOM And Apollo 9, this is Houston. For your info we do have our data coming in now solid. And Jim, for the bias check. We really will get a good one on you after TD&E. It's not going to do us much good on the booster here.

SC Okay.

SC Houston - Apollo 9.

CAPCOM Go, Apollo 9.

SC Roger. We just got a master alarm cyro pressure on the number one H2 tank - just off the lower limit here. You might want to take a look at that.

CAPCOM Roger, Apollo 9, we copy. See what we can do for you.

SC Okay. And the heater just came ON and it's going back up again. And it looks like it's just tickling the (garbled) around there before it decides to heat up.

CAPCOM Roger, Apollo 9. Copy.

CAPCOM And Apollo 9 - Houston. That's probably Sym Soup just playing with the tolerances a little bit.

SC Yeah. Could be.

CAPCOM Apollo 9, this is Houston through Bermuda.

SC Roger.

END OF TAPE

CC Apollo 9, this is Houston through Bermuda.  
SC Roger, Houston through Bermuda. Go ahead.

CC Roger. We'd like to appoint you a state vector there Apollo 9. There is a discrepancy between your vector and ours; we don't have a real good story for you at this time; there was sorta a slow diversion trend that we would like to slip it in - there were some funnies about the liftoff time and everything that we are working on. But at this time we would like to give you a new vector.

SC Okay, understand you want to give us a new vector, and let me see ... stand by.

SC (garble) through and accept; you got it.

CC Roger, we'll go to work on it; thank you.

SC This is Apollo 9.

CC Go Apollo 9.

SC Roger. I checked the O2 purge before I noticed I didn't check the H2 so I got the purge 2 heater on for awhile, and I'm gonna check the H2 purge ... on that.

CC Roger; you're going to be checking H2 purge and Apollo 9, I have a nav check to go along with the state vector when you are ready to copy.

SC Oh Roger. Stand by on the purge and stand by on the nav check.

CC Roger. At your convenience. And Apollo 9, this is Houston, the computer is yours, the vector has been transferred, and it looks good.

SC (garble) and ready to copy on the nav.

CC Roger. Reading the nav check. Time ... 002, 29 all zeros, minus 3081 plus 11622. 1067. End of update.

SC Roger, read back. 002 29 all zips. Minus 3081 plus 11622. 1067.

CC Roger. Houston confirms the update.

SC Okay.

CC And Apollo 9, Houston, we copy your DSKY on the ground. Apollo 9, Houston.

SC Go ahead Houston.

CC Just for your info here, we'll be sending a command into the IU just to verify our response and this will have no affect on you and we are just trying to trouble-shoot our LVDC data, and we don't want you to move the IU accept switch; leave it in block.

SC This is Apollo 9.

CC Go Apollo 9.

SC Roger Houston, Apollo 9. Do you ... we are are now ready to terminate cabin pressure, is that okay with you?

CC Stand by 1 Apollo 9. Apollo 9, this is Houston, we concur. Go ahead and terminate.

CC Thank you.

SC Didn't work.  
 CC Roger; copy.  
 SC Houston, this is Apollo 9.  
 CC Go Apollo 9.  
 SC (garble) docking affirm. Are you ready?  
 CC Oh boy, we are all ears down here; please  
 let us see how that goes.  
 SC (garble)  
 CC Roger.  
 SC We got a good one.  
 CC Roger; copy. That makes us all happy.  
 SC Roger. Works just like a champion; we are  
 here to throw out (garble) couple three tenths of a second.  
 CC Roger; copy. And Apollo 9, this is  
 Houston, we'll fall off at Canaries here in about another  
 minute and we'll see you over Tananarive around 09.  
 SC (garble) AOS  
 CC Apollo 9, this is Houston through  
 Tananarives. Apollo 9 through Tananarive.  
 CC And Apollo 9, this is Houston; we'll  
 have you over Tanarive for about the next 5 minutes; we are  
 standing by; I have not heard any transmissions from you  
 here.  
 SC (garble)  
 CC Apollo 9, Houston; I heard just the first  
 part of that; I'll just stand by here. Apollo 9 this is  
 Houston; we'll lose you in Tanarive here in about 1 minute;  
 if you tried to call me, I haven't received anything but  
 we'll see you over Carnarvon at 26. And Apollo 9, that will  
 be Carnarvon at 26.  
 PAO This is Apollo Control, at 2 hours, 17  
 minutes into the mission of Apollo 9. Apollo 9 out of range  
 at Tananarive now, out over the Indian Ocean. Next station  
 to acquire will be Carnarvon in about 8 minutes. This is  
 Mission Control, Houston.

END OF TAPE

PAO This is Apollo Control at 2 hours 25 minutes into the mission. Apollo 9 coming up the tracking station Carnarvon. During the Carnarvon pass, the S-IVB instrument unit will be enabled for command and about halfway between Carnarvon and the tracking ship Huntsville, the S-IVB will maneuver to transposition and docking attitude. We should have ARIA aircraft in that area which may be able to pick it up. Here is Apollo 9 at Carnarvon now.

CAPCOM - want to take a look at you and we will give you a GO on that shortly. We would like to have you go ahead and arm the logic at this time.

SC Roger.

CAPCOM And would you confirm, up telemetry, are you enabled?

SC Negative. Up telemetry IU is in block. Do you want to go to up telemetry IU in accept?

CAPCOM That is affirmative. We would like to have up telemetry IU to accept.

SC In accept.

CAPCOM Understand.

CAPCOM And Apollo 9, this is Houston. We would like to have you have the up telemetry IU switched to block.

SC Up telemetry IU to block.

CAPCOM Very good, thank you.

SC And Houston, the logic on my mark 321 mark, 2 logic.

CAPCOM Roger, we copy. Stand by one.

CAPCOM Apollo 9, this is Houston. You are GO for pyro arm.

SC Roger, understand GO for pyro arm, thank you.

CAPCOM That is affirmative.

CAPCOM Apollo 9, this is Houston. You are GO for TD and E.

SC Roger, understand. GO for TD and E.

SC Houston, what time do we come into daylight?

CAPCOM Do you mean on this pass or for the ejection pass?

SC This pass.

CAPCOM Okay, stand by.

CAPCOM Apollo 9, Houston.

SC Go ahead.

CAPCOM Roger. You will come into daylight on this one at about 2 + 39 + 21,

SC Roger, thank you.

APOLLO 9 MISSION COMMENTARY, 2/3/69, GET 022500, CST 1225p 22/2

CAPCOM Here I was all primed for your ejection sunrise time. You faked me out on this one.

SC Next time I'll ask.

CAPCOM Roger.

SC Houston, Apollo 9.

CAPCOM Go, Apollo 9.

SC We have a rather consistent behavior on this number 1 H2 tank. It appears to light the cryo warning light every time it gets down there before the heater comes on. You might think about how we're going to handle that for the sleep period because it keeps setting off the master alarm.

CAPCOM Roger, Apollo 9, copy and that is in work.

SC Okay, thank you.

CAPCOM And Apollo 9, this is Houston. We will go right on through ARIA as soon as we come up off of Carnarvon on this one in about 20 seconds.

CAPCOM Apollo 9, this is Houston through an honest-to-goodness ARIA. How do you read me?

SC (garble) I get it?

CAPCOM Roger on the wawas, Apollo 9.

SC We are going to come into (garble) in about 6 or 8 seconds.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 2:35:00 CST 12:35p 23/1

SC (garbled) we're just about there.

PAO This is Apollo Control. We aren't having too much success in voice communications through this ARIA aircraft. We'll be at the Huntsville in about 2 minutes. Standby.

SC Hello.

CC Apollo 9, this is Houston, did you call HTV Huntsville AOS.

HTV Huntsville valid two-way lock.

PAO This is Apollo Control. Command and Service Module separation from the third stage is scheduled near the end of this Huntsville pass. Separation and turn around. We will have an ARIA aircraft between the Huntsville and Hawaii for that maneuver, too.

PAO This is Apollo Control. The crew is very busy at this time preparing for its separation.

CC This is Houston.

SC Roger, it's out there and we're turned around and proceeding with the station keeping and docking.

CC Tremendous, Apollo 9, thank you.

PAO Command and Service module has separated from the third stage, is turned around and is now station keeping.

SC (garbled)

CC Roger, copy that.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 24500, CST 12:45p 24/1

PAO This is Apollo Control. Apollo 9 scheduled to continue station keeping for about another 15 minutes, docking is scheduled over the Goldstone, California, station at about 3 hours even.

CAPCOM Apollo 9, this is Houston. We're going to lose you here in about 45 seconds. We'll see you over Hawaii in about 5 minutes at 51.

SC Roger.  
CAPCOM And we may have ARIA in here, but if it is like the last one, we won't hear much out of you.

SC Just a minute. As a matter of fact, we would be better without it.

CAPCOM Okay. We will see you at 51.  
PAO This is Apollo Control at 2 hours 47 minutes. Huntsville has loss of signal now. During this pass, the command and service modules did separate from the S-IVB, the third stage of the launch vehicle. The spacecraft has turned around and the crew is now inspecting the lunar module, which is still inside the spacecraft LM adapter attached to the S-IVB. They will continue this station keeping for another 10 or 12 minutes. Docking is scheduled just about 3 hours over the Goldstone station. We will come back up at Hawaii, scheduled at 2 hours 50 minutes. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 2 hours 50 minutes. Hawaii has acquisition now. We'll stand by.

CC Apollo 9, this is Houston. We should have you through Hawaii, standing by.

SC Roger.

PAO This is Apollo Control. The booster engineer reports the attitude rates on the S-IVB look very good.

PAO This is Apollo Control at 2 hours 57 minutes. The Redstone has acquired the Apollo 9 now. There has been no air-to-ground conversation as the crew is busy station keeping and visually inspecting the Lunar Module and the SLA. We'll continue to standby for any conversation.

CC Apollo 9, Houston. We've got you through the Redstone, standing by.

SC Roger, Houston. We are about 25 feet now and closing (garbled)

CC Copy.

PAO Apollo 9 is free to dock whenever the crew feels like they want to. They will not have to await a GO from the ground. The flight schedule shows it about 3 hours over California, but the crew is free to dock when they desire to.

SC Alright, Houston, we're hard docked.

CC Roger, Apollo 9, understand hard dock.

SC Good show.

PAO Reported hard dock at 3:02:08.

SC Hello Houston, Apollo 9. We had a master alarm on the - when we did the docking when we made the contact there. And we had some problems with our RCS thrusters we'll tell you about later.

CC Apollo 9, this is Houston. Understand you got a master alarm just as you docked and I didn't copy about the RCS.

SC We'll talk to you later, just a minute.

CC Roger.

SC Houston, Apollo 9.

CC Go Apollo 9.

SC We'll give you a quick rundown here. How much time do we have with you?

CC We've got you for a long time here. We're coming across the states here, you're just over California now.

SC Okay, I've got it. We came out just right, the angles were all just right, and we got turned off, turned around, and lined up, and didn't have any left translation for some reason.

CC Roger, copy, no left translation.

SC Would you check Service Module RCS for us?

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 2:50:00, CST 12:51p 25/2

CC Stand by a second, Apollo 9.

CC Apollo 9, this is Houston. It looks  
okay to us. Do you have a question?

SC Roger. It just had a light on it and  
it's difficult to tell with the helmets on whether we have  
any adjustment on it or not. Didn't see any motion, just  
wanted you to check.

CC Roger, Apollo 9, copy.

SC The pressures all look good up here.

END OF TAPE

SC Houston, our package temp on the quad A is running about 200. What do you have down there?

CAPCOM Stand by one and let's check it.

SC Houston, 9. Do you want to go on with the recap?

CAPCOM That affirmative, Apollo 9. Let's press ahead and your comm sort of cycles in and out. You are a little weak at times. We do confirm the temperature here however, and we will have some more words on that in a minute. And we are standing by for the rest of your recap.

SC Okay. When we got off we were in pretty good shape and then we noticed -- after we got that sorted out and probably used up quite a bit of gas putting us squared away, but the docking was smooth, the capture latches worked just right, there were no operations after we captured, we lined it up and did the retract and it took about 10 seconds and it sounded like we got a good solid line.

CAPCOM Roger, Apollo 9. Copied all that real good.

CAPCOM And Apollo 9, this is Houston. We will have another state vector for you over Bermuda.

SC Roger.

CAPCOM You will be coming just about overhead Apollo 9. You ought to be over Texas.

SC Roger.

CAPCOM Apollo 9, Houston.

SC Go ahead, Houston.

CAPCOM Roger. Could you give us P00 in accept, please? We have a state vector for you and I have a nav check when you are ready to copy. And we would also like to have your opinion on do you think you will have any problems continuing on the timeline through ejection with this situation.

SC Okay, you have got P00 in accept.

CAPCOM Rog.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 3:16:00, CST 1:16p 27/1

CC Apollo 9, this is Houston. The computer is yours, and that quad A temp has dropped about 8 degrees now coming across the states, and we're keeping an eye on it.

SC Okay, Houston. Standby, we're briefing.

CC Apollo 9, Houston. We've got you for about another minute. We'll see you over Ascension, around 28. We would like to have you to go BLOCK on your command module telemetry, and you don't have to slip a nav check, we've checked your vector and it's good.

CC Apollo 9, Houston, you're way down in the mud. Try again.

PAO This is Apollo Control at 3 hours 21 minutes into the mission. Apollo 9 beyond the range of the Vanguard now. During - right at the start of this long pass over the United States, the command and service module docked to the lunar module. The crew reported they were hard docked at 3 hours 2 minutes 8 seconds. Dave Scott, in recapping the events, said that the command and service modules came off of the S-IVB stage with no problems. During the turn around they discovered they had no left translation from the service module reaction control system. In trouble shooting that they found some isolation valves closed to one of the RCS quads. They corrected that, came on in and docked, reported the docking was smooth, without oscillation, the capture latches worked as advertised, so we now have the command and service modules docked to the lunar module, which is still within the SLA attached to the third stage of the launch vehicle. The crew is extremely busy now, preparing for the ejection of the entire spacecraft from the third stage. They are checking tunnel integrity between the two spacecraft, checking the docking latches connecting some umbilicals, some power umbilicals that provide power into the LM from the command module. Ejection of the combined service and lunar module is scheduled at sunrise just past LOS at Carnarvon. We may be in communication right at the tail end of that pass, but we may not be in communication at ejection. The crew was somewhat concerned about the temperature of one of the service module RCS quads, reported that at 200 degrees. We confirmed that on the ground, but during this pass over the states, the temperature has started down and the controllers here in the Mission Control Center do not believe we'll have a problem with that quad. Next station to acquire will be Ascension at 3 hours 28 minutes. At 3 hours 24 minutes this is Mission Control, Houston.

end of tape

PAO This is Apollo Control at 3 hours and 28 minutes into the mission. We are showing orbital parameters now at 2 revs of SIVB venting and the maneuvers of 107 by 110 nautical miles.

SC Roger, we are making the umbilical right now.

CC Roger, understand you are connecting the umbilicals. Apollo 9, this is Houston, we are going to have you for about another minute here at Ascension and then we'll see you over Tananarive at about 44 and we would like to know the time of when you transfer to the CSM power and I have a sunlight time any time you want it.

SC Roger, we transferred to CSM power at 3 hours, 33 minutes and zero seconds.

CC Very good; thank you.

SC Houston, we are also reading on the systems test meter through the LM tower to about a half a volt to sometimes up to 3 volts. It's in slow oscillation maybe every 10 seconds or so.

CC Roger, copy it's varying from a half to 3 volts slowly; thank you.

SC Roger. Tops open and tops back down. Sometimes for two. There is some small oscillation at a period of about every second. At about 2 or 3 tenths of a volt.

CC Roger. Copy small oscillations 2 tenths to 3 tenths; thank you. And we'll see you over Tananarive 4.4.

SC Roger. And what was the sunrise time Houston?

CC Sunrise time is 4 plus 08.

SC Roger. 4 plus 08.

PAO This is Apollo Control at 3 hours, 34 minutes. Ascension has LOS. During this pass the crew reported they had brought up CSM power and attached it to the LM at 3 hours, 33 minutes. We are showing an orbit for the combined spacecraft, the SIVB combination, of 107 by 110 nautical miles now. Passed up a sunrise time of 4 hours, 8 minutes. Ejection of the spacecraft from the SIVB scheduled at sunrise. This sunrise time is a couple of minutes past Carnarvon LOS, however there will be an ARIA aircraft in the area, so we may be able to pick up the voice communications during the ejection maneuver. Tananarive will acquire at 3 hours, 44 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 22400, CST 12:24p 29/1

CAPCOM Apollo 9, this is Houston through Car-  
narvon.

SC Roger, Houston. Go ahead.

CAPCOM Roger. We read you loud and clear. We  
would like to have the up telemetry IU switched to accept.

SC Go for the pyro arm anytime you want  
to run through it.

CAPCOM Roger.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 3:43:00, CST 1:43p 30/1

PAO This is Apollo Control at 3 hours 43  
minutes into the mission. Tananarive is acquiring now.  
CC Apollo 9, Houston, through Tananarive.  
CC Apollo 9, Houston, through Tananarive,  
standing by.

SC (garbled)  
CC Okay, Apollo 9, I heard you answer me,  
but it's unreadable at this time.

SC Roger, the tunnel is closed out, the  
hatch clears, we are preparing for ejection.

CC Roger, copy the hatch is closed out and  
your are pressurizing.

CC Apollo 9, this is Houston. We're losing  
you here at Tananarive. We'll see you over Carnarvon at  
about 59.

PAO Apollo Control at 3 hours 48 minutes.  
Tananarive has LOS. During this pass the crew reported  
the tunnel was closed out, the hatch has been installed,  
and the LM was being pressurized. The guidance officer  
continues to monitor the command module computer, and reports  
it is GO, he does not see a problem in it. However, he says  
he will continue to monitor. It is GO at this time. Next  
station to acquire will be Carnarvon, at 3 hours 58 minutes.  
At 3 hours 49 minutes, this is Mission Control, Houston.

END OF TAPE

PAO This is Apollo Control at 3 hours 58 minutes. Carnarvon is acquiring Apollo 9 now.

CAPCOM Apollo 9, Houston through Carnarvon.

SC Go, Houston, Apollo 9.

CAPCOM Roger. We have got you now in good voice contact. We will be giving you your GO here shortly and take a look at you.

SC Okay, very good.

CAPCOM And Apollo 9, we would like to have you arm logic busses.

SC Roger, Houston, you ready?

CAPCOM That's firm.

SC ... logic coming on now. 2 logic on.

CAPCOM Copying, stand by one. And Apollo 9, you are GO for pyro arm.

SC Roger, understood and understand the injection at 4 hour 11 minutes, is that correct?

CAPCOM That's a - negative. We - I gave you the sunrise time as 4 + 08.

SC Roger. You want us to go on sunrise or at 411?

CAPCOM Apollo 9, this is Houston. We would like to have you go at sunrise.

SC Roger, understand.

CAPCOM And Apollo 9, Houston. That will put your evasive maneuver at 4 + 11.

SC Roger.

SC Houston, 9.

CAPCOM Go, Apollo 9.

SC Listen, if you concur, we would sort of like to wait until we have good sunlight before we come off of that.

CAPCOM Roger, we concur with that. Use your judgment.

SC Okay, thank you.

CAPCOM And Apollo 9, we're still showing your command module telemetry switch in accept. We would like to have you go block on that.

SC Roger.

CAPCOM Roger, thank you.

CAPCOM Apollo 9, this is Houston. You are GO for ejection.

SC Roger, GO for ejection.

PAO This is Apollo Control. The ejection will be accomplished by the use of springs to which the LM is attached. They will be activated pyrotechnically. They will give the spacecraft slightly over 1 foot per

second velocity and then a few minutes later, the spacecraft will make a slight evasive maneuver with RCS thrusters, slightly under 1 foot per second. Total of the ejection and evasive maneuver about 2 feet per second. This is to place the CSM and LM on a trajectory that will go below and behind the S-IVB for the first S-IVB ignition. We will continue to stand by for air to ground.

CAPCOM Apollo 9, this is Houston. You are coming off of Carnarvon here but we will be monitoring your ejection through an ARIA.

SC Roger. Those ARIA's make an awful lot of noise, Houston. We have trouble hearing each other.

CAPCOM Rog, copy.

SC ARIA is making all kinds of noise and -

CAPCOM Apollo 9, Houston. Say again.

SC Houston, Apollo 9. We are making very much noise in VHF and it would be better if we do not show (garble).

CAPCOM Roger, understand that you want the ARIA down. Is that affirmative?

SC I think that would be better if the ARIA is out of it.

CAPCOM Okay, copy.

PAO This is Apollo Control at 4 hours 8 minutes. Communications from the ARIA aircraft are just too noisy for the crew. They have asked that we not keep the ARIA's up here. The aircraft will continue to stand by and if the need arises, we will ask them to go remote again, but we do not anticipate ARIA communication. The next station where we will be able to have voice contact will be the tracking ship Huntsville at 4 hours 14 minutes. This is Mission Control Houston at 4 hours 9 minutes.

END OF TAPE

PAO This is Apollo Control at 4 hours 14 minutes. The Huntsville has acquisition now.

SC Houston, Apollo 9.

CAPCOM Go, Apollo 9. This is Houston.

SC Okay, Houston. You're coming in very weak, but since (garbled) we had a very successful ejection and we are suddenly separating very slowly from the S-IVB. We've got them in site out of all of the windows.

CAPCOM Sounds beautiful. Could you give me your ejection time?

SC Okay, Houston. If you can read - the ejection time was 4 hours, 10 minutes and 5 seconds.

CAPCOM Say the minutes again please, Apollo 9. Just the minutes.

CAPCOM And Apollo 9, this is Houston. If you read - we did copy your transmission of the successful ejection. You are moving away. We did copy the time, but we would like for you to verify the minutes - if you can try it again.

SC Houston, this is Apollo 9. Say again, please.

CAPCOM Roger. Would you give your ejection time again, please?

SC Roger. It was 08 05.

CAPCOM Roger. We copy. Thank you and we'll see you over Hawaii at about two-four.

SC Roger.

CAPCOM And Apollo 9, this is Houston. If you can read me - the S-IVB maneuver time is 25 plus 04.

SC Roger. Two 5, zero four.

CAPCOM Oh, very good. We're talking to each other again.

PAO Huntsville has LOS now. Crew reported the successful ejection of the combined spacecraft from the S-IVB. At four hours, 8 minutes, 5 seconds (that's five seconds after sunrise) they had performed the evasive maneuver. They report Apollo 9 is separating slowly from the S-IVB and the S-IVB is in sightout of all windows of the spacecraft. Apollo 9 will go below and behind the S-IVB now on this trajectory. The minimum distance at S-IVB re-light is 500 feet and pulling away. However, we expect with this maneuver to be between 3,000 and 4,000 feet at the time the S-IVB is reignited. The S-IVB is scheduled to maneuver - 211, burn attitude at 4 hours, 25 minutes. The ground will release the reignition inhibit at 4 hours, 36 minutes and we are presently planning the second reignition of the S-IVB at 4 hours, 46 minutes into this mission. That would put it over the Merrit Island tracking station in Florida.

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 42500 CST 2:25pm 32/2

Hawaii will acquire Apollo 9 at 4 hours,  
23 minutes. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control, at 4 hours, 24 minutes; we are standing by for Hawaii.

CC Apollo 9, Houston, through Hawaii.

PAO The engineer reports the SIVB is maneuvering.

CC Apollo 9, Houston through Hawaii.

SC Roger, Houston. We've been sitting here watching the SIVB maneuver, and he's just about 90 degrees to our line of sight now.

CC Roger. The comm is beautiful now Apollo 9; we have (garble) SOR with delay. And I would like to pass you the ignition time for the SIVB.

SC Roger; go ahead.

CC Alright, stand by 1 here, we might get a better one. Apollo 9, Houston

SC Go ahead Houston.

CC Roger; we are showing the SIVB restart at 4 plus 45 plus 56.

SC 4 45 56.

CC That's affirmative.

PAO Booster engineer reports SIVB is at local horizontal now.

CC Apollo 9, this is Houston. The SIVB has completed its maneuver and we would like to have a GO from you to release the maneuvering (garble).

CC Say that again, Houston, Apollo 9.

SC Roger; the SIVB has completed its maneuver and we are standing by for its ignition with (garble) GO from you to (garble) restart inhibit.

SC Roger Houston, Apollo 9 here, we've just announced that we are (garble) to the rear (garble) and want a GO for restart inhibit.

CC Roger, Apollo 9, Houston, cut.

SC This is Apollo 9.

CC Apollo 9, this is Houston. Stand by about a minute and we'll pick you up later.

PAO We've had LOS Hawaii but we'll pick up at the Redstone momentarily. We'll continue to stand by.

SC Houston, this is Apollo 9.

CC And Apollo 9, this is Houston, we've got you now through the Redstone and you were faded out on your last transmission there.

SC Roger, you have a GO to release and to restart and inhibit.

CC Roger Apollo 9, We copy that; thank you.

SC Houston, Apollo 9, do you read me?

CC You are a little weaker than Rusty, Jim.

Go ahead.

SC Okay, I just was wondering; you weren't answering some of my transmissions. We are quartering behind (garble) at the present time and you do have that GO.

CC Okay, thank you Jim. We got it. You

APOLLO 9 COMMENTARY, 3/3/69, GET: 4:25:00 (2:25p)

33/2

the Y there; we had transmission was a ARIA at LOS coming off  
about a 40 second break here.  
SC Alright.  
CC I've got you real good now.

END OF TAPE

PAO The restart has been enabled, the booster systems engineer reports.

CC Apollo 9, this is Houston. If you got the time could you give me a guess at the range from the S-IVB?

SC It's a pretty tough question.

CC Okay, I thought it might be, I was just curious for a guess on it.

SC It's at a couple thousand feet or so, I'd guess.

CC Okay, thank you.

SC Looks like it's going to be right down the tail pipe.

CC That ought to be a good view.

PAO This is Apollo Control. The program duration of this S-IVB burn is 1 minute 2 seconds. We anticipate an apogee of 1722 miles.

SC (garbled)

CC Did you say that it was smoggy, Apollo 9?

SC Doesn't look like it, looks pretty clear.

CC Oh, very good.

SC (garbled)

CC I missed what Jim said there.

SC Houston, we're down like, it looks like about 1000 feet or so.

CC Understand you are now at 1000 feet, is that affirmative? Does it look like you are closing?

SC Well, just climbing up above. He's just crossing the horizon with respect to us, so he's going to get up above us again and then come back around us.

SC Houston, we're going to be just about down his tail pipe. It looks like about 1000 feet or so.

CC Roger, copy, right down to tail pipe and about 1000 feet.

SC Does that look like a good place?

CC Stand by one. It's better than being right off the nose, but let's see what somebody says.

CC Okay, Apollo 9, this is Houston. It's our understanding that the places not to be are directly above or below inside of 500 feet, so with that criteria sounds like you are doing okay.

SC Alright.

SC Houston, against the black sky you can really see the aps firing away.

CC Roger, copy.

CC And Apollo 9, when your lead cuts in its afterburner you're expected to keep up.

SC No thanks.

CC Okay.

SC Give us about an hour.

PAO Six minutes away from the burn now. We are looking for an apogee of 17 hundred 22 miles, a perigee of one hundred and nine miles at the conclusion of this S4B burn.

PAO Velocity should increase from about 25 thousand 500 feet per second to 27 thousand 800.

PAO Telemetry shows the present S4B orbit at 111 by 106 nautical miles. (Pause.) Booster reports the S4B looking good at 3 minutes. (Pause.)

SC Houston, Apollo 9, it looks like we have slid down enough below them now so they can be thrusting right at us with the engine.

CC Roge. Understand you all are a little below and I will wait until after this burn of course but I do have your SPS 1 pad when you get squared away after this burn. Okay.

SC Houston, what time should we begin to see the ullaging of the venting.

CC Stand by apollo 9. (Pause.) Apollo 9 this is Houston. You should see it starting in about 15 seconds from right now.

SC Okay, thank you.

CC Roger.

END OF TAPE

5 10 11 12  
A 1  
APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 44500, CST 2:45p 35/1

CAPCOM Apollo 9, this is Houston. You should see it start in about 15 seconds from right now.

SC ...Okay, thank you.

CAPCOM Rog.

CAPCOM All the way down, Apollo 9.

SC Roger, understand, overdrawn and we don't see any change yet.

CAPCOM Rog.

CAPCOM Mark 1 minute to ignition.

PAO Ignition reported.

CAPCOM Ignition on the S-IVB.

SC It's on the way.

SC It's just like a great star disappearing into the distance.

CAPCOM What is there, quite a bit of debris kicked out there, Apollo?

SC Looked like a real clean burn. You could see a lot of stuff coming out when he just started up but then it just went into a nice bright light.

CAPCOM Thank you,

SC We got some movies but I'm not sure they're going to be too good. He's pretty far out there.

PAO Apogee is 1200 miles now. Shut down. Normal shutdown.

CAPCOM And the S-IVB has shut down, Apollo 9.

SC Roger, he's just a speck in the distance right now.

CAPCOM Okay, now that we've got him out of the way, back with the business at hand. I'm ready to read SPS 1 pad any time.

SC Okay, stand by just a minute.

CAPCOM Apollo 9, this is Houston. Could we have computer in ACCEPT; we'd like to start you up target load.

SC Rog, you got it.

CAPCOM Understand we got it.

SC Rog.

SC Okay, Houston. Ready to copy the P-30.

CAPCOM Rog. Starting with the P-30 and there will be about a minute delay on the target load. We're going to switch stations starting now on the maneuver pad. SPS 1, 005 59 all zips plus 00368, all zips, all zips, 00368, 00324, 0051 58840 plus 100 minus 020 1713.

SC Houston, Apollo 9.

CAPCOM Go Apollo 9.

SC Roger, you cut out very badly in that.  
I got TIG and I got DELTA VX and DELTA VR and DELTA VC and  
that's all I got.  
CAPCOM Okay, we'll try you again. Now are you  
reading me okay?  
SC Roger, reading you okay now. Stand by  
just one minute. Okay, go ahead again.  
CAPCOM Say again Apollo 9.  
SC Roger, go ahead with your pad.  
CAPCOM Okay, I won't read the TIG again. That's  
55900, and reading the DELTA VX, plus 00368 and are you with  
us?  
SC Yes I am and that's as far as we got  
last time.  
CAPCOM Okay, all zeros for DELTA VY, all zeros.  
00368, 00324, 0051, 58840 plus 100 minus 020 171352033100.  
SC Houston, Apollo 9.  
CAPCOM Go, Apollo 9.  
SC Roger, the last thing I got was 937;  
you got any more?  
CAPCOM Rog, we'll try you again here. Stand  
by one here.  
CAPCOM Okay, Apollo 9, Houston. How do you  
read?  
SC Reading you five square, Houston.  
CAPCOM Okay, you're coming in a little weak.  
Understand you got up through CSM weight; is that affirma-  
tive?  
SC That's affirmative.  
CAPCOM Okay, reading PIPSTRAN. Plus 100 minus  
020, 171352033100, end of the pad.  
SC Roger, reading back. 00559 all zips.  
Plus 00368, all zips, all zips. 00368 00324 005158840 plus  
100 minus 020 171352033100.  
CAPCOM Houston confirms the pad. I would also  
now like to give you your gimbal angles used in the pad-  
ress max for SPS 1.  
SC Go.  
CAPCOM Rog. It's roll 00, pitch 359, yaw 001.  
SC Roger, understand 000 359 001.  
CAPCOM And this is affirmative; Houston con-  
firms.  
SC Roger, and is the computer ours? Did  
you get the P-27 in?  
CAPCOM The computer is yours, Apollo 9.  
SC Roger, thank you.

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 445, CST 2:45p 35/3

PAO                    This is Apollo Control at 4 hours,  
54 minutes. Antigua has LOS now. The next station will  
be Ascension in about 6 minutes...

END OF TAPE

PAO                      This is Apollo Control at 4 hours, 54 minutes. Antiqua has LOS now. Next station will be Ascension. In about 6 minutes. You heard the crew's reaction to the SIVB restart during this pass. An initial look at telemetry on this SIVB burn, this second burn of the SIVB in this mission shows an apogee of 1 680 nautical miles, perigee of 108 nautical miles; very early readout on it. We had predicted 1 722 by 109. A preliminary velocity achieved, 27 763 total; we were about 25 5 when we started the burn. Preburn we had expected something a total velocity of about 27 800. We passed up the maneuver updates for the first service propulsion system burn in the docked configuration. This will come at 5 hours, 59 minutes into the mission; DeltaV at 36.8 feet per second, duration of the burn, 5.1 seconds. The second SIVB restart will come within 7 or 8 minutes after this first SPS burn. At 4 hours, 56 minutes, this is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control, we are at Ascension now.

CAPCOM Repeat your state vector again, if you could give us through and accept.

SC Roger, your are through and accept.

CAPCOM Roger, and a couple of items. There is a bias in your x pipa and we are taking a look at this and the only steps we would like to do at this time would be to recommend that you stay in Average G as little time as possible. We are estimating that during the SPS 1 burn, there will be an error of about a foot and a half. So the only thing we will do at this time is you just come out of average G as soon as possible and we will talk about this later after the burn.

SC Okay, and we have another problem here. On the O2 (garble) highlight continues to come on and we seem to have a steady space flow on the on the (garble) PIPS - - - lbs per hour. We don't have the vent open yet. There is a little bit in the waste management vent, but we do have the LM pressurization on, and I'm wondering if you could you give us a clue as to whether you think we have a leaky LM or not.

CAPCOM Roger, we copied the transmission, Apollo 9. Stand by for some words of wisdom on that.

SC We're getting the master alarm light on every few minutes here. You can send the CRYO generator O2 flow high. It is almost like the simulator.

CAPCOM Roger, that is a shame. Apollo 9, Houston.

SC Go ahead.

CAPCOM Roger, we like to have the fans in H2 tank 1 turned on manually at this time and just leave it on. We will leave it on for a while and take a look at it.

SC Okay, we'll turn the fan on.

CAPCOM Okay, and we would like to know if you can see the docking angle index when you were up in the tunnel.

SC Negative, I didn't look.

CAPCOM Okay.

CAPCOM Apollo 9, this is Houston. The computer is yours and I have a NAV check to go along with that state vector.

SC Roger, stand by.

SC Okay Houston, ready to copy your NAV check.

CAPCOM Roger. Disregard, we have checked it here on the ground and unless you want it, I won't read it to you. Apollo 9, did you copy?

SC We won't need it.

CAPCOM Okay we won't read it. We are going to have you for about another minute at Ascension and then we will see you over Tananarive at 19.

SC Roger.

CAPCOM Apollo 9, Houston.

SC Go ahead Houston.

CAPCOM Roger, we would like to have you  
turn off the LM pressurization valve to see if that takes  
care of the O2 high flow.

SC Roger, we will check that in a few  
minutes and advise you.

CAPCOM Okay.

CAPCOM Apollo 9, Houston. We want you to go  
back to P30, P40 again, to recompute that restmat after this  
up link.

PAO This is Apollo Control at 5 hours,  
8 minutes. We have loss of signal at Ascension. During  
this pass the crew reported the oxygen flow high light on.  
Indicating that they were getting high rate flow from the  
oxygen tanks. The E COM officer, the environmental officer  
here on the ground is monitoring this and we just advised  
the crew to turn the LM pressurization valve off to see  
whether this will help the situation. This valve has been  
on to pressurize the LM, using the CSM oxygen. We have a  
report here now, on some activities following this third  
S4B burn which will put the S4B into an escape trajectory.  
This burn will be followed by a propellant dump about  
4000 miles above the Pacific Ocean. This is expected to  
create a cloud that may be visible from dark portions of the  
Earth. If the dump is started at its scheduled time, about  
5:12 pm Eastern Standard Time. The cloud will build up in  
size until it is about 1000 kilometers in diameter. This  
should make it visible from the darkened East Coast of the  
United States between 6 and 8:30 pm Eastern Standard Time.  
On the East Coast the cloud should be about the size of a  
full moon from 20 to 35 degrees above the western horizon.  
Binoculars would be helpful. Next station to acquire will  
be Tananarive at 5 hours, 19 minutes into the mission. This  
is Mission Control at 5 hours, 10 minutes.

END OF TAPE

PAO                    This is apollo control at 5 hours,  
19 minute. We're coming up on a short pass at Tananarive  
now. We'll stand by.

CAPCOM                Hello, Apollo 9, this is Houston,  
through Tananarive.

CAPCOM                Apollo 9, this is Houston, if you read  
me, we'll see you over Carnarvon at 3:02.

PAO                    This is Apollo Control, 5 hours, 21  
minutes. We've had loss of signal at Tananarive now.  
Went through that short pass without conversation. Next  
station acquired will be Carnarvon, at 5 hours, 32 minutes.  
At 5 hours, 21 minutes, this is mission control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69 GET 532, CST 15:32p39/1

PAO Apollo Control at 5 hours, 32 minutes  
and Carnarvon is acquiring Apollo 9. We'll stand by.  
CAPCOM Apollo 9, Houston. Through Carnarvon.  
sc Roger, Houston.  
CAPCOM Now we're reading you loud and clear.  
SC Signal if you are ready to copy.  
CAPCOM Go ahead.  
SC ... GET observe 5, 1830, plus 00153  
plus 00333, minus 00638.  
CAPCOM Roger. Apollo 9, I copy that.  
CAP COM Hello, Apollo 9, this is Houston.  
You are go SPS1.  
SC Ready here to go for SPS1.  
CAPCOM Apollo 9, Houston.  
SC Houston, Apollo 9. Go ahead.  
CAPCOM Roger. Just a word of info to close  
out that item on the power going into the LM, that duty  
cycle has now settled down and is exactly the same as the  
duty cycle was prior to launch. So, everything is good  
on the LM power. And it's 5 on and 28 off.  
SC (Garbled)  
CAPCOM Roger.  
PAO This is Apollo Control at 5 hours,  
37 minutes, Carnarvon has had LOS. During this pass, we  
just passed up the information on the LM heater. You  
recall sometime ago, Jim McDivitt asked about the needle  
hopping around and he was wondering about that. We  
have confirmed now that this heater is on the same duty  
cycle that it showed prelaunch. It's 5 seconds on and  
28 seconds off. So, there is no problem there with the  
heater. We're now in the orbits - we are on revolution 4  
and we're in the orbits that are getting up farther north,  
so we'll pick up Guam this time. It's the next station  
to acquire at 5 hours, 43 minutes. This is mission  
control, Houston, at 5 hours, 38 minutes.

END OF TAPE

PAO This is Apollo Control at 5 hours 43 minutes. We are standing by at GWM for aquisition of Apollo 9.

CC Apollo 9 this is Houston through GWM standing by.

SC Roger Houston, ... to do a check with you.

CC Apollo 9, Houston. I will have you here for about another 2 and a half minutes. I have got a couple of words of wisdom on your attitude on this burn, why you are going to be off a couple of degrees in PITCH and a couple of degrees in YAWS if you want me to give them to you.

SC Go ahead.

CC Okay. Your restmat is off slightly and we think this may have come about by the order in which you loaded the dap in relation to the P52. However we have taken a look at this and we are saying at burn attitude you are going to have zero roll, a pitch of 358 and a yaw of about 002, and this will give you the right burn if you want be at 000 on the ball.

SC Roger, Houston. Thank you very much.

CC Roge.

SC Houston, this is Apollo 9.

CC Go Apollo 9.

SC Okay, we seem to have our 02 thing in hand now. We have closed the frontal..... .. the return valve and one of us had our helmet off for just a moment there and that was... .. so it looks like we have the 02 problem in hand.

CC Roger, we copy that some of it was dropped out. I am about to loose you here. We will see you over Hawaii at 57.

PAO This is Apollo Control at 5 hours 50 minutes GWM has loss of signal. This first service propulsion system burn scheduled in 8 minutes now over Hawaii just after we acquire Hawaii. The third S4B burn is now 16 minutes away, it will be performed over Guaymas tracking station in Mexico. This SPS burn will be posigrade, very short burn low Delta V 36.8 feet per second. But it will give us a good look at the interface between the two spacecraft. The docking ring and the dynamics between the Lunar Module and the Command and Service Modules during a big engine firing. We will come back up just prior to Hawaii aquisition. At 5 hours 52 minutes this is mission control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 557, CST 1557 41/1

PAO Apollo Control at 5 hours, 57 minutes.  
Apollo 9 coming up on Guam acquisition now and we're a minute, 20 seconds away from the SPS burn.

CAPCOM Apollo 9, this is Houston. Standing by for your burn.

SC Roger, Houston, Apollo 9. A minute, 10 seconds ready to go.

CAPCOM Roger.

PAO Ignition confirm. Cutoff.

SC Burn complete.

CAPCOM Roger, copy. Burn complete.

CAPCOM And Apollo 9, Houston. I copy your residuals, plus 1.8 plus .5 minus .2.

SC Roger, Affirmative and the EMS was minus 4.2.

CAPCOM Roger, minus 4.2.

PAO Guidance Officer says a preliminary look indicates that it was a good burn.

CAPCOM Apollo 9, Houston. In about 30 seconds we'll lose you off Hawaii and have you back at Redstone about a minute later. They'll be a break in there and then we'll pick you up for a long pass.

PAO We're 4 minutes away from the third S-IVB restart. The spacecraft will be over Guaymas but the S-IVB will be over Guam during this burn. We're showing through tracking now an S-IVB velocity of about 20,500 feet per second. We expect to get a total velocity of 37,730 feet per second as a result of this burn. We'll burn to escape trajectory.

PAO Showing the S-IVB in an orbit right now of 1671 nautical miles apogee, 115 and a half perigee.

CAPCOM Through Redstone, we ought to have you now on a long stateside pass.

PAO And the duration of this burn will be 4 minutes.

CAPCOM Apollo 9, Houston through Redstone. How do you read?

SC Houston, Apollo 9. Are you reading?

CAPCOM You're down a little bit, Dave, but I'm reading you okay. We've got you through the Redstone now and it should be a nice long pass.

SC Apollo 9, how do you read me?

CAPCOM Rog, you're about the same. Stand by one here. I think we'll get better here in a couple of minutes.

PAO S-IVB ignition.

END OF TAPE

PAO ...S4B ignition.  
 Apogee just hit 3,000 miles. Velocity is up to 24,000 feet per second. 4,000 mile apogee, now. 5,000 mile apogee, now. 6,000 mile apogee. Still burning and apogee has hit 8,000 miles. 10,000 mile apogee, now. And, we've lost data here on the S4B.

CAPCOM Apollo 9, this is Houston, how do you read now?

CAPCOM Apollo 9, this is Houston. Trying again - how do you read?

PAO Flight Dynamics reports picking up a vector on the S4B which indicates a 53,000 mile apogee. Cut off.

CAPCOM Apollo 9, Houston, do you read?

CAPCOM Apollo 9, Houston, through Texas, how do you read?

SC Roger, Houston, Apollo 9, we read you loud and clear, how about us?

CAPCOM Oh, we're reading you loud and clear. We just sent the S4B hyperbolic and got it out of your way.

SC Roger. Very Good. We were reading you all along there; guess you just weren't reading us.

CAPCOM Roger. Guess we had some of our receivers tuned in on the S4B there, that I didn't know they had taken away from me.

SC Okay.

CAPCOM When you get squared away after the burn, I've got your star count update for you.

SC Okay.

SC Okay, Houston, go ahead with the uptake.

CAPCOM Roger. Star count update. 006494500. 068029113302. End of update.

SC Roger, understand. 006494500 0680291 3302.

CAPCOM That's affirmative. Houston confirms the update and would like to have you go ahead and open up the LM pressurization valve, if you concur.

SC Roger. We tried to get ahold of you before to tell you we're going to do it, so we'll do it at this time.

CAPCOM Okay.

SC Houston, Apollo 9.  
CAPCOM Go, Apollo 9.  
SC How are we making out on RCS as  
opposed to manual. What I'm wondering about is whether  
or not we should do the star count.  
CAPCOM Roger, stand by one minute.  
capcom Apollo 9, Houston.  
SC Go ahead.  
CAPCOM Roger. We're down a little bit, but  
we've got an excellent margin and nobody is sweating  
it at all. We recommend that you go ahead and do this  
star check.  
SC Okay.

END OF TAPE

SC Houston, Apollo 9.

CAPCOM Go, Houston.

SC Let me give you an up on the SPS Pu system there. Following the burn, reading 89.2 percent in oxidizer and 93.7 in fuel and an unbalanced peg on the decrease side.

CAPCOM Roger, copy 89.2, 93.7, and the unbalanced pegged on the decreased side.

SC Roger, and for your information, the fuel vent, SPS injector valve A1 opens slower than A2.

CAPCOM Roger, copy. A1 is slower than A2.

CAPCOM Apollo 9, this is Houston. We are about to lose you here. We will pick you up over Tananarive at 51.

SC Roger, Tananarive at 51.

PAO This is Apollo Control at 6 hours, 26 minutes into the mission. Antigua has LOS. Next station to acquire will be Tananarive at 6 hours, 51 minutes. During this last pass we have the first Service Propulsion System burn, with the spacecraft in the docked configuration. Guidance Officer says his data indicates that it was a good burn. We should have a valid orbital parameters very shortly. We will come back up as soon as we have those. That burn was performed at 5 hours, 59 minutes over Hawaii. That is 6 hours, 7 minutes, 18 seconds, while the spacecraft was over Guaymas and the S4B was over Guam. We had the third S4B restart. We lost data about half way into this burn and picked up one vector and lost data again, however all indications are that the S4B did go hypergolic and now is in an escape trajectory. We will come back up just as soon as we have some good orbital parameters on Apollo 9. At 6 hours, 27 minutes this is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 650, CST 1650 44/1

PAO This is Apollo Control at 6 hours, 50 minutes into the mission. We have the current orbital parameters now. They are 125.6 nautical miles apogee by 108.3 nautical miles perigee. We were predicting as a result of the SPS burn, 126 by 108. We had targeted that burn for a duration of 5.1 seconds; we actually got 5.0 seconds. We were looking for a DELTA V of 36.8 feet per second; we got 34.1 feet per second. So we're very close to what we had projected prior to the burn. We're coming up on Tananarive now, should have acquisition within a few seconds. We'll stand by.

PAO Our parameters prior to that burn were 108.7 by 106.5.

CAPCOM Do you read?

CAPCOM Okay, Apollo 9, this is Houston through Tananarive. We're probably not getting you here. We got about another minute and a half and if you can read me we'll see you over Guam at about 17.

SC Roger, Houston. This is Apollo 9 and we're reading you loud and clear through Tananarive. We'll look for you over Guam. How do you read me?

CAPCOM Oh, we're getting you in here now. I didn't read you at all the first time through.

SC Okay, I heard your call (garble) but we just weren't getting down to you.

CAPCOM Rog. It hasn't been too stern here off Tananarive today.

SC Okay. We're just taking a little time out to eat here right now. We haven't had anything to eat yet (garble).

CAPCOM Okay, our plan is that as we come over Guam and back across the states, why, we'll discuss all that distance stuff and so forth before you go to sleep tonight.

SC Roger.

CAPCOM And we say Sayonara over Tananarive; see you over Guam.

SC Roger.

PAO This is Apollo Control at 6 hours, 56 minutes. Tananarive has loss of signal. Communications not too good over the Tananarive station. The crew did report that they were having a meal, taking a little time out to eat. They'll be updated on the few minor problems that exist over Guam prior to their rest period. The white team is in the process of handing over now to the gold team headed by Flight Director, Jerry Griffin. The next station to acquire will be Guam at 7 hours, 17 minutes. This is Mission Control Houston at 6 hours, 57 minutes.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, CST 17:08 GET 7:08 45/1

PAO                    This is Apollo control at 7 hours 8 minutes ground elapsed time. We have had a shift change the gold team of course has replaced the white. Jerry Griffin is the flight director on this shift that is coming up and the capcom that is the voice that you will hear talking to the crew is that of astronaut Stu Roosa. At 7 hours 9 minutes ground elapsed time this is Apollo Control.

END OF TAPE

PAO This is Apollo control at 7 hours 15 minutes, ground elapsed time. Apollo 9 is in the fifth revolution at the present time. Flying over the Philippine Islands approaching the tracking site at GWM. On this the fifth revolution of the flight, controllers here at MCC will pass up permission for 14 more revs, that is the go no go for 14 more revs. Apollo 9 will be acquired by the GWM tracking site at 7 hours 17 minutes into the flight or a little less than a minute from now. And at that particular time the flight manual called for discussion of open items, the go no go decision and of course an MCC update state vector. In about 15 more seconds we should have acquisition. Let's monitor for a while and hear any conversation between the crew and the ground.

CAPCOM Apollo 9 this is Houston through gwm.

SC Hello Houston, Apollo 9 here.

CC Roger, we would like to have two and accept please we are going to give you state vector.

SC Roger you have two and accept.

CC And Apollo 9 this is Houston. Can you talk a few minutes here we are going to have you over gwm for about 5 minutes.

SC Sure go ahead. What shall we talk about?

CC Okay, stand by would you.

SC What I want to talk about is that extra

PIPA bias.

CC Okay we will take that one first. We are showing an error in that x step up of about .04 feet per second squared. The plan is to not do anything with that tonight and we will update that tomorrow prior to the first burn.

SC Okay is it within the tolerance of which you can update?

CC Yes it is. That is affirmative.

SC Okay very good.

CC Okay that takes care of that. I would just like to ask a fast question. You haven't mentioned it I assume that you have no reading on that SCS Helium pressure thats still gone.

SC That is affirmative and still reading full scale low.

CC Okay very good. Another item on this master alarm on the hard docking. We don't have you a good explanation, however we do have some info in from the cape that this was found on spacecraft 106 when they docked and they hadn't found out why but they did get an unexplained master alarm when they docked down there with 106.

SC Okay.

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 715, CST 1715, 46/2

CC And we are going to replay the data when you dock to see if we can get anything out of it but we can not close the loop on that one at this time.

SC Okay do you have any idea what could have caused our primary second and propellant valves to go closed.

CC I think you must be looking at my sheet here Jim because that was my exact item coming up next. I would like to ask you. We feel that two explanations, one was a stray electrical current there that actually did it or do you feel that you could have bumped the switches when you were changing seats?

SC No I don't think so because, I don't think we could have bumped them because we did a RCS check after that and it was dark in here but I looked through all of the quads and I looked at all the talk backs. The talk backs looked okay. It is possible but not very probable that I missed all three of those talk backs. I was wondering if we couldn't have had the jolt from the separation between the service module and the sla cause them to go closed. I can't imagine that we would only have one of the talk backs on the D-Quad go closed for any other reason.

CC Okay that was something we wanted to verify that the talk back that was closed on Quad Delta was the secondary propellant.

SC Roger C and primary and secondary closed, D or Delta .. just the secondary closed.

CC Okay we copy that and we agree with you we are really at a loss how the secondary propellant only talk back could have gotten in that condition.

SC Okay.

CC So that is something that we will have to think about here over night.

SC Alright, be advised of one other thing, sort of keep track of the venting cabin vent. We didn't go back to waste the vent overboard until 715, we didn't get that open again until then.

CC Roger copy.

SC And you know when we closed it it was just prior to the docking.

CC Roger. Okay and that is okay. Next item is I would just like to, we are closing this one out about that LM power cycling that is running, as I mentioned before just exactly on the cycle that we would expect and the way it was doing on the pad.

SC Okay fine.

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 715, CST 1715, 46/3

CC Okay we have got some other things. We will pick them up here over Hawaii at about 3 2. I have a minute left and I have a nav check to go with this state vector we just passed you.

SC Standby one we are going to have to sort through the food bags for a piece of paper.

CC Okay understand and the computer is yours.

SC Okay Houston go ahead with the nav check.

CC Okay time 00810 all 0's -2719 +02980

1256 end of update.

SC Roger understand, 00810 all zips 92719 +02980.

CC Okay Apollo 9 you went over the hill with everything confirmed except the altitude and we will see you over Hawaii.

PAO At 6 hours and 40 minutes some time ago there was to have been an S4B lox and hydrogen dump. The flight controllers here at MCC applied power to the system but there was no indication of a dump, and as yet we don't know why there was no indication of a dump. So there was no lox and hydrogen dump as was planned. The spacecraft has moved beyond range of the gwm tracking site. We will pick it up again at Hawaii in about 8 more minutes. In the mean time at 7 hours 25 minutes ground elapse time this is Apollo control.

END OF TAPE

APOLLO 9 COMMENTARY, 3/3/69, CST: 1731, GET: 7:31 pm 47/1

PAO This is Apollo Control at 7 hours, 31 minutes into the flight of Apollo 9. We expect that the crew will get its decision GO/NO-GO for 19-1 on this pass when the Hawaii tracking station acquires. There will also be some information passed up to the crew regarding the light housekeeping and preparation for the rest cycle which will be due very shortly. We estimate that the change of shift briefing involving the participants on the white team will take place here in Houston, at approximately 5:45 Central Standard Time. We should have acquisition very shortly. Let's monitor the conversation between the ground here in Houston and the Apollo 9.

CAPCOM Greetings Apollo 9, this is Houston through Hawaii.

SC Roger, Houston, Apollo 9.

CAPCOM Roger, I didn't get a confirm on your NAV checkout. If you run it, you have probably discovered the sign was wrong on the longitude.

SC (garble)

CAPCOM Say again Apollo 9.

SC Roger, we discovered that.

CAPCOM Roger, and did the rest of it go okay?

SC Roger.

CAPCOM Alright, and are you free to talk now?

SC Roger, go ahead.

CAPCOM First, is this cryo tank. What we would like to have you do at this time is turn off fans and heater in both H2 tanks. Let the pressure drop down to 200 and then have you manually maintain that at 200 until you power down. After you have powered down, just before sacking out, we are going to turn on the fan in H2 tank 1, and the estimates on this one is that it will slowly build up the pressure and when you wake up in the morning it will have built back up to 235 and it will keep the master alarm from coming on through the night.

SC Okay.

CAPCOM Okay, are we squared away on that, Apollo 9?

SC Okay, you want us to turn the heaters and fans off on both the H2 tanks, and when do you want us to do that now.

CAPCOM You can do that right now.

SC Okay fine.

CAPCOM Okay, very good. We would also - have you started a charge on battery B.

SC Negative, we weren't going to start the charge until we went to sleep. (garble) charge on battery B.

CAPCOM Okay, we will go ahead and agree with that Apollo 9.

SC Okay, we will turn it on right before we go to sleep.

CAPCOM                   Okay.  
CAPCOM                   Apollo 9, this is Houston. You are GO  
for 19-1.  
SC                        Roger, understand we are GO for 19-1.  
CAPCOM                   Okay, and this O2 flow high readings  
you were getting, we consider that a closed item. How do  
you feel on this one Apollo 9.  
SC                        I think it is a closed item also.  
CAPCOM                   Okay, and on Rusty's comment on SPS 1,  
our data shows that both ball valves opened right on the money,  
opened together.  
SC                        Okay fine, we may have just had a sticky  
gage in the cockpit. How about PICON valves that we have  
on the quantity gage.  
CAPCOM                   Okay, this one we will have to look at  
some more. We don't believe that it is a valid reading at  
this time, Apollo 9. On that short of burn we feel that the  
pugs worked for such a short time, and that it probably didn't  
get a valid reading and we don't believe that.  
SC                        Yes, that seems logical.  
CAPCOM                   Okay, and on SPS 1 everything uh it  
was a nominal burn. G and C is real happy, the PC and  
everything else looks real good, so it looks like we are in  
fine shape on it.  
SC                        Okay, very good.  
CAPCOM                   Okay, we are about to lose you here for  
about a couple of minutes and we will see you over the  
Redstone about 38.  
PAO                      Now, we have lost the contact with the  
spacecraft. We will pick it up in another minute or so, over  
the tracking ship Redstone. At 7 hours, 37 minutes into  
the flight of Apollo 9, this is Apollo Control.

END OF TAPE

PAO This is Apollo control. During the change of shift press conference the spacecraft was acquired by the tracking ship Redstone and the station at Guaymas and a portion of the Texas station. We recorded the air to ground between Houston and the 9 crew and are prepared to play that for you at this time.

CC Okay Apollo 9 this is Houston we should have you through to Redstone now.

CC Apollo 9 this is Houston through Redstone How do you read?

SC You are weak but clear Houston. Go ahead

CC Oh you are coming in clear here. Okay we would like to have you go back to BLOCK on your cm telemetry.

SC Roger. BLOCK. Let me ask you a question about the other H2 tank. If we run them both down to 200 and we turn the fan on in H2 tank number 1 what are we going to do with tank number 2?

CC We expect it will...

SC I didn't get that answer.

CC Apollo 9 this is Houston I copied that would you stand by.

SC Roger.

CC Apollo 9 Houston.

SC Go ahead.

CC Okay. Copy your question and what we are saying is that the pressure will stay equal in tank 2 just due to the heat leak even though we are feeding primarily out of tank one, but that pressure should come up right along with tank one.

SC Okay.

CC And also we would like-- Could you verify that the surge tank is on the line.

SC Roger the surge tank is.

CC Okay very good we just noticed that coming up a little slow.

SC Yea it sure is coming up slow isn't it.

CC Stand by. And Apollo 9 we are showing you about 60 degree yaw now, just wanted to mention that.

SC Roger.

CC And Apollo 9 this is Houston. That just about closes out my list here unless you have any questions about my comments on that 2 degree pitch and yaw on the attitude for the CS1.

SC What was your comment about 6 degree yaw.

CC Say again Apollo 9.

SC (Garble)  
CC Boy you are really coming in scratchy here on this one.  
SC Okay I think we understand what you said.  
CC Okay and that cleans us up here Apollo 9 have you got anything you would like to toss in here across this pad. This is about the last time we plan on doing much talking to you.  
SC No I guess it is just the general comment we were pretty well crowded today to get all of these things in so we shouldn't have missed much.  
CC Roger I understand you were really humping up there, pretty busy day.  
CC And Apollo 9 Houston would like to verify the canister change at 6:30.  
SC It's in now.  
CC Roger copy. Apollo 9 Houston. Apollo 9 Houston. Apollo 9 Houston how do you read?  
SC Apollo 9, we are reading you loud and clear.  
CC Okay we have got you in here now. Two other items. We would like to get an E memory dump from you to give us some homework here tonight if you can give us a mark and take that...  
SC Garble  
CC Wait stand by Apollo 9 our telemetry just dropped out.  
SC Okay we would like to know when you would like us to start charging the battery.  
CC Okay you can start it any time prior to sacking out. We are going to lose you here in about another minute and the only other time we will talk with you before sack time will be over Tananarive which will hit there at 24. So you can start anytime you want.  
SC Okay fine do you want that E memory dump now or do you want to just skip it.  
CC No we are standing by now go ahead and let her run.  
SC Okay stand by.  
SC Houston the E memory dump is on the way.  
CC Okay roger copy. And one other item over Tananarive if you can, we would like to have a PRD read out from each one of you. And we will see you over Tananarive at about 24 or 25.  
SC Roger. Thank you and we will get a PRD report as soon as we figure out what it is. And charging battery D right now for you.

APOLLO 9 MISSION COMMENTARY, 3/3/69 GET 819, CST 1819 48/3

CC Okay and that is a dosimeter reading over  
tanalarive, Apollo 9 this is Houston through Tanalarive.

SC Apollo 9.

CC Roger I am not reading you very good  
at all but are you reading me well enough to take your  
BLOCK data, I am ready to send that if you can read it.

SC Roger stand by just one.

CC Okay.

SC Okay Houston go ahead.

CC Roger reading BLOCK data number 2. 009  
3 bravo + 256 + 1450. Zero 131431 2928 010. Okay charley  
charley -195 -1617 015 3 bravo.

SC Okay roger ready to continue.

CC Okay continuing on. 012 alpha charley  
+101 -0321 0171349. 29 28 0132 Alpha +250 -0264 01850  
55 77 29 28 and the last one 014 alpha charley +308 -0279  
0202440 2928. That is the end of the BLOCK data and your  
SPS trim angles for this pitch -133 yaw +135.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 829, CST 1829, 49/1

CAPCOM I have 133 yaw plus 135 and that is the end of the BLOCK data. Before you start to read back, there are a couple of other comments for you.

SC Okay, go ahead.

CAPCOM Roger. We'd like to have you verify that you will do a waste water dump down to 25 percent prior to the rest period?

SC Roger. Waste water dump down to 25 percent prior to rest period.

CAPCOM That is affirmative, and we'd like to have a dosimeter reading if you've got it.

SC Roger, stand by.

SC Okay, the LMP dosimeter is 8001.

CAPCOM Roger. 80.....

SC Roger.

CAPCOM Go ahead.

SC 001

CAPCOM Roger. I copy LMP 8001.

Say the next one.

SC CDR is 3102.

CAPCOM Roger and CMP.

SC CMP is all sacked up.

CAPCOM Roger. Stop the no reading for the CMP. Thank you. We've only got about 20 seconds here before we leave. On this surge tank coming up, we say that if you would bring the repress back on the line and give us a reading on that, it might help us trouble shoot that.

SC

CAPCOM We're going to lose you here, Apollo 9 at the end of the pass. The next pass is scheduled over Hawaii at 05 which is right at the beginning of your rest period.

PAO The Apollo 9 spacecraft apparently has moved out of range of the Tananarive Tracking Station. We should pick them up again in about 32 minutes at the by the Hawaiian Tracking Site. At that time, the crew should be entering its rest period. The plan here is to limit the conversation, keep the conversation to a minimum with the crew. At 8 hours, 33 minutes into the flight of Apollo 9, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 904, CST 1904 50/1

PAO                    This is Apollo Control at 9 hours, 4 minutes ground elapsed time. Apollo 9 is in the sixth revolution at the present time approaching the tracking station Hawaii. About an hour ago during the Change of Shift Press Conference Mission Control here in Houston concluded S-IVB tracking and they turned that over - the balance of the tracking over to Goddard. That was about 815 GET. At that time the TM data coming back from the S-IVB stage indicated that it was tumbling. The crew at the present time, according to the flight plan, is in the process of powering down the spacecraft prior to going into drifting flight. This is done prior to the rest cycle. The crew plans to power down the spacecraft and go into that mode of flight identified as drifting flight. This is not new; it was used during the Mercury flights and again in Gemini. During that power down phase, the crew will reduce the power to the inertial measuring unit to the command module computer and to those other systems using electrical power. Generally, this power load is kept as low as possible with almost everything off or down except the environment control system. At 9 hours and 6 minutes into the flight, we have acquisition by the Hawaii tracking station. Let's monitor any air-to-ground that might transpire between Houston and the Apollo 9 crew.

PAO                    We're standing by to monitor any potential conversation between the crew and MSC.

PAO                    Evidently we're not going to have any commentary over this pass so we'll take the lines down and continue to monitor and if we have anything transpire we'll pick it up later.

END OF TAPE

PAO This is Apollo Control at 9 hours, 21 minutes into the flight of Apollo 9. The spacecraft has moved just out of range of the tracking ship Redstone at the present time on the sixth - still on the sixth revolution. During this last pass there was about 40 to 45 seconds of air-to-ground between the Center here in Houston and the Apollo 9 crew. Let's play that back for you at the present time.

CAPCOM Apollo 7, Houston. About one minute to LOS. Looks like the last time we'll be talking to you this evening.

SC Roger, that's Apollo 9.

CAPCOM Sorry about that.

SC That's alright. New guys are that way.

CAPCOM Okay.

SC Roger, and Houston, we are purging. Is

that what you want?

CAPCOM That's affirmative.

SC We're presently in the process of purging

O2 fuel cells.

CAPCOM Affirmative. And is your H2 tank 1 fan

on at this time?

SC We'll bring it on now. We noticed it's

300.

CAPCOM Okay.

PAO That was conversation between the Apollo 9 crew and Astronaut Ron Evans, who is the new CAPCOM at the present time. Reference was made during that pass to fuel cell purges there. There are actually two kinds of purges, one of course is an oxygen, and the other is a hydrogen purge. In this case, the crew did an O2 purge, an oxygen purge. What this was essentially was cleaning out the chemical impurities from the cells. Purging is merely forcing oxygen into the fuel cells and thereby forcing the unwanted chemicals out. The Apollo 9 crew is pretty much bedded down on their rest cycle at the present time and as the spacecraft heads over the Pacific, at 9 hours, 24 minutes into the flight of Apollo 9, this is Apollo Control.

END OF TAPE

PAO This is Apollo Control at 9 hours, 56 minutes into the flight of Apollo 9. During the last pass over Hawaii at about 905 GET, the Flight Surgeon, Dr. John Ziegelschmidt, reported the following mean heart rates on the crew. He said that the Commander was registering 80 beats per minute, the command module pilot registered 80 beats per minute, while the lunar module pilot registered 68 beats per minute. The respiration rates were as follows: 20 breaths per minute for the Commander, 16 for the command module pilot and 12 for the lunar module pilot. The astronauts at that time were not yet resting. They were still doing some minor housekeeping duties in preparation for the rest cycle. In the meantime here at MSC we're maintaining a radio silence to give the crew the maximum opportunity for rest. In the area of the spacecraft systems, all of them are looking okay and they're being monitored by the Flight Controllers here in Houston. No anomalies occurring whatsoever. At 9 hours, 57 minutes into the flight with the spacecraft now heading across the tip of Africa, the lower part of Africa, on the seventh revolution, this is Apollo Control.

END OF TAPE

PAO                    This is Apollo Control at 10 hours, 51 minutes into the flight of Apollo 9. The spacecraft has moved out of range of the Hawaii tracking station. During that pass over Hawaii the Flight Surgeon was monitoring the astro-bioenvironmental tab as they call it, the vital signs and rates of the crew, and noted that all of their vital signs appeared to be within the tolerable limits. The Commander, for example, was indicating between 80 and 84 beats per minute. The command module pilot showing approximately 60 beats per minute, and about 10 respirations per minute. Flight Surgeon assumes that the astronauts are still resting, perhaps another hour or so will be required before they can lapse into a sound sleep. Meantime, all of the systems on the spacecraft are reported operating well. As far as we're able to determine, the Commander and the command module pilot are resting in the couches and the LM, the lunar module pilot, evidently is in the sleep station. We assume that since we receive no biomedical data from the LM, the lunar module pilot, on this pass. Incidentally, at approximately 10 hours, and 42 minutes, some 9 minutes or so ago, Dave Scott doubled his total flight time in space. He was a member of the Gemini 8 crew that had to reenter in the Pacific on March 16, 1966, after some 10 hours and 41 minutes of flight. He now has 10 hours, 54 minutes of flight. All systems seem to be working well. The astronauts are in their rest cycle and this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, GET 1150, CST 2150, 54/1

PAO                    This is Apollo Control at 11 hours, 50 minutes, into the flight of Apollo 9. At the present time the spacecraft is flying over India on the 8th revolution. A little earlier when the spacecraft was in range of Pretoria Tracking Station, the digital chart indicated that the astronauts were flying following parameters. Apogee was 126.4 nautical miles and the perigee or low point was 108.1 nautical miles. The altitude was about the same as earlier altitudes following the first SPS burn. Spacecraft speed at that particular time was in the neighborhood of 25,500 plus feet per second. At the present time the spacecraft systems are powered down, they still register okay here at mission control. Spacecraft cabin pressure is maintaining stability at 4.9 PSIA at 11 hours, 51 minutes into the flight of Apollo 9, this is Apollo Control.

END OF TAPE

PAO . This is Apollo control at 12 hours 50 minutes ground elapsed time. During the Hawaii pass some 30 minutes ago the gold team flight surgeon reported receiving data on the lunar module pilot. Apparently astronaut Schweickart has moved from his sleep station into one of the couches. The LM pilots mean heart beat registered 50 beats per minute and his mean respiration registered 10 breaths per minute leading the surgeon to conclude that he is dozing or beginning to sleep. No data was received on the commander or the command module pilot during the Hawaii pass. Chances are they disconnected their biomed instrumentation according to the flight surgeon. Cabin temperature is 68 degrees fahrenheit a very comfortable 68 degrees. Meanwhile the count down clock shows 5 hours 36 minutes plus, indicating that that's the time left in the rest cycle for the Apollo 9 crew. The spacecraft at the present time is over the Atlantic Ocean east of South America coming up on the ascension tracking station on this 9th revolution all systems still seem to be functioning very well. At 12 hours 52 minutes into the flight of Apollo 9 this is Apollo control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/3/69, CST 2354, 56/1

PAO                      This is Apollo Control. Spider and Gumdrops, that's the code name for the Apollo 9 spacecraft, are over the Pacific Ocean on this, the 9th rev. Apollo 9 moved out of the range of the Guam tracking station about 10 minutes ago, and it will be acquired by the tracking ship Mercury shortly. However, since the crew is resting, no attempt will be made to talk with them. During a recent pass the flight surgeon reported that TM data on astronaut Schweickhart indicates that he is sleeping soundly. The countdown clock indicates that some 4 hours and 37 minutes of rest remain before the crew will be awakened in preparation for the second day's activities. Meanwhile, the flight controllers here at MCC in Houston monitoring the spacecraft report the systems appear to be functioning normally. At 13 hours 51 minutes GET, this is Apollo Control.

END OF TAPE

A/9, Mission Commentary, 3/4/69, CST 12:50am 57/1

PAO                      This is Apollo control 14 hours 50 minutes  
ground elapse time. Here in mission control we've recently had a  
change of shift to the orange team of flight controllers headed  
up by flight director Pete Frank. Apollo 9 fifteen minutes  
ago crossed over the Ascension Island tracking station in the  
South Atlantic at which time pulses of the system were felt  
on the ground so to speak by telemetry and all the systems  
are in pretty good shape. Flight surgeon John Zeigleschmidt  
reported that LM pilot Rusty Schweickhart was not apparently  
sleeping very soundly because his heart rate fluctuated some  
what during the past indicating that he was staring in his  
sleep. Cabin pressure at the present time is holding at 4.9  
pounds per square inch, with a the cabin temperature is 66  
degrees fahrenheit. The Apollo 9 space craft will cross over  
the tracking station at Guam at 8 minutes past the hour. At  
14 hours 51 minutes ground elapse time this is Apollo control.

END OF TAPE

PAO This is Apollo Control 15 hours 50 minutes ground elapsed time. Apollo 9 is just crossing the West Coast of the southern portion of South America at this time and should be beginning the eleventh revolution as it crosses the meridian of longitude of the launch point of Cape Kennedy. We have some two hours thirty-eight minutes until the Apollo 9 crew is awakened to begin the next day's activities. Among these activities will be service propulsion system burn number two which is scheduled at 22 hours 12 minutes and 03 seconds. This 850 foot-per-second burn will be primarily out of plane however it will raise apogee by some 64 nautical miles. The out of plane component of the burn will shift the orbital plane back to the East to improve tracking for the activities later in the mission, such as EVA and rendezvous. Most of these SPS burns as a matter of fact are out of plane for this reason and also to lessen the gross weight or mass of the spacecraft to improve the RCS LM rescue capability and for RCS de-orbit at the end of the mission. Here in the Mission Control Center, there's a cardboard mounted cartoon behind Pete Frank's console, the Orange Team flight director. It was drawn by Ed Pavelka who is the Gold Team flight dynamics officer. The cartoon says welcome to Manned Spaceflight to a Tenderfoot meaning flight director Pete Frank; this is his first time out as a flight director. We are coming up in approximately 12 minutes on the Ascension Island Tracking Station. Our present orbital measurements show a perigee of 108 nautical miles, apogee of 126.3 nautical miles, total weight of Gumdrops and Spider, the command and service module and the docked lunar module, is now calculated at 90 569 pounds. At 15 hours 52 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

A/9, MISSION COMMENTARY, 3/4/69, 1:35, CST: 02:50 59/1

PAO This is Apollo control 16 hours 50 minutes GET. Apollo 9 is presently over the island of New Guinea in the South Pacific and is within seconds of being acquired by the tracking ship Huntsville which is now to just east of New Guinea. Earlier this revolution over the Ascension Island pass Doctor Ken Beers reported that the biomedical telemetry beamed down from the spacecraft showed that Schweickhart apparently was in a sound sleep. The command module pilot and the commander are in the sleep stations underneath the couches, the sleeping bags, where there's no telemetry available because of the way the biomedical instrumentation cabling is arranged, however the command module pilot Rusty Schweickhart is in the couch with biomedical telemetry available. It is likely that the two passes over the ship Huntsville and Mercury which almost overlap here in this 11th revolution will be simply system status passes and no commentary or conversation with the crew is anticipated since it is likely that they are all still asleep. At 16 hours 51 minutes GET this is Apollo control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, CST 0350 am, 60/1

PAO                      This is Apollo Control 17 hours 50 minutes GET. The crew of Apollo 9 has less than an hour of their sleep period remaining. The countdown clock showing the wake time - one might call it the alarm clock - shows some 38 minutes remaining in the sleep period. Apollo 9, at the present time, is over the northern portion of Africa, approximately Libya or Tunisia at the start of the 12th revolution. All three crewmen apparently are still sleeping soundly. We've had no conversation with the crew in the recent passes over Canary Island station or the Mercury earlier in the preceding revolution. After the crew wakes up, the first order of business, of course, will be breakfast. The eat period is scheduled for about an hour after the wakeup. The spacecraft will be powered up during the pass over the tracking ship Vanguard during this next revolution. The Mission Control Center or the spacecraft communicator here in Mission Control will confer with the crew on the flight plan update for the upcoming day's activities and also coordinate the - all the numbers and values of the consumables remaining onboard the spacecraft. There will be also a fuel cell oxygen purge. The inertial measurement unit - inertial measuring unit on the command module will be aligned.                      e - over the tracking station at Antigua one revolution later, there will be what is called the maneuver pad or the all the numbers and necessary information passed up to the crew for service propulsion system burn number 2, which is now scheduled at some 22 hours 13 minutes into the flight. The GO-NO GO for this burn will be given over the tracking ship Mercury at 21 hours 45 minutes. There are some three burns scheduled in today's activities: SPS burns 2, 3, and 4. At 17 hours 52 minutes GET, this is Apollo Control.

END OF TAPE.

APOLLO 9 MISSION COMMENTARY, 3/4/69, CST 0430 am, 61/1

PAO This is Apollo Control 18 hours 33 minutes GET. Within the next few seconds, we'll be having acquisition of signal at the tracking ship Mercury in the South Pacific. We're some two-thirds of the way through revolution number 12. At this time the crew is scheduled to be awakened. The spacecraft communicator, Ron Evans, likely will put through a call to the crew remoting through the tracking ship Mercury. We'll stand by to monitor any conversation. Until we do hear Ron Evans put through a call, perhaps we could review some of the items coming up in the flight plan. We have service propulsion system burn number 2 at 22 hours 12 minutes GET. This will involve a test of the digital auto pilot set at the 40-percent amplitude stroking of the engine. It will be primarily an out-of-plane burn, but will raise the apogee some 190 nautical miles. Two other burns of the SPS are scheduled later in the day. Further details on those will be generated later in the day and passed up to the crew in what is called a maneuver pad. These are not expected to be changed too drastically from the prelaunch flight plan. We're continuing to monitor the air-ground loop for any call through the Mercury. We should have had acquisition signal a minute and half ago. Still standing by here. Spacecraft communicator Ron Evans is now standing up leaning over to look at the displays in the flight surgeon's console to see if lunar module pilot Schweickhart is awake. He's putting in a call. Let's eavesdrop.

CAPCOM Good morning, Apollo 9. Houston.  
SC ~~Good morning Houston. This is Apollo 9.~~  
CAPCOM Reg. Loud and clear. Looks like the  
night was in good shape. We didn't notice any anomalies.  
SC Very good. I guess we have to wake up  
now, Huh?  
CAPCOM Yeah. It's about that time.  
CAPCOM Houston. We've got about 2 minutes  
left here of Mercury, and then we'll pick you up at Antigua  
at 02. If you feel like talking, I've got a couple of com-  
ments for you.  
SC Okay. You say we'll be at Antigua at  
02. Did you have anything you wanted to tell us, Ron?  
CAPCOM No. I was just going to remind you in  
your power up there in the cryo stratification, when you  
cycle your fans just to note the pressures on them.  
SC Okay. You want us to break the fans  
out one at a time, is that right?  
CAPCOM That's affirmative. And to note the  
pressures as you bring them up.  
SC Roger.  
PAO Apparently, we have had loss of signal

APOLLO 9 MISSION COMMENTARY, 3/4/69, CST 0430 AM, 61/2

PAO from the tracking ship Mercury after a brief exchange between Apollo 9 and spacecraft communicator, Ron Evans, here in Mission Control. The crew will next break out their breakfast meals, and begin powering up the spacecraft for the day's activities. We'll be coming up on the tracking station Antigua followed by Vanguard and Canary. The acquisition time for Antigua will be 1 minute past the hour. At 18 hours 40 minutes GET, this is Apollo Control.

END OF TAPE.

A/9, Mission Commentary, 3-4-69, GET 10:00, CST 5:01 am, 62/1

PAO This is Apollo control. 19 hours 1 minute ground elapse time. Within seconds we should be coming over the tracking station at Antigua. The acquisition time table shows 19 hours 1 minute and 52 seconds. Mark 52 seconds we should have acquisition. We'll stand by until spacecraft communicator Ron Evans makes a call to the crew through Antigua. Between the Antigua loss of signal and Vanguard acquisition of signal there's a drop out of some two minutes and again between Vanguard loss of signal and Canary Island loss of signal there's approximately one minute drop out, we'll continue to stay on the line though and get these three stations in a semi-continuous fashion. Still waiting now for the conversation to begin. He's putting in a call now.

SC Alright. Houston, Apollo 9.

CAP COM Alright. I read you loud and clear. I've got a bunch of up dates if you're ready to copy some of them. Ah flight plan consumable from the block data.

SC Roger. Stand by.

SC Houston, Apollo 9. Go over the flight plan.

CAP COM Roger. Time 24 plus 44, page 3-15 delete MCC go, no go for 33-1.

SC Alright. 24, 44 315 delete MCC go, no go for 33-1.

CAP COM Affirmative. At time 23 plus 34 page 3-14 add MCC go, no go 433-1.

SC Roger. 23 34 page 314 add the MCC go, no go for 33-1.

CAP COM Affirmative. And that's the flight plan up date.

SC Roger. What's your next.

CAP COM Roger. Your consumables.

SC OK, go ahead with the consumables.

CAP COM GET is 018 8130 8440 8840 8636 564 48 31 36 39, now Houston over.

SC Roger. Copy 018 8130 8440 8840 8636 564 4831 36 39.

CAP COM Apollo 9 Houston read back correct.

SC Roger and ready for your block data.

CAP COM Roger. Our area is 0151 bravo plus 267 minus 0670 021 5249 3671 0161 bravo plus 324 minus 0670 0232803 3670 0171 bravo plus 335 minus 0670 0250225 3668 0181 bravo plus 318 minus 0663 0263758 3627.

PAO Apparently we've had loss of signal at Antigua. Should be acquiring at Vanguard in less than a minute. Ron Evans will be standing by to continue the block up date of contingency landing times and deorbit times and so on so that the crew will have this data aboard in case they're out of touch with the ground at any particular time and for some reason we'd have to go into any of these areas. These are routine updates that are passed up to the crew

CAP COM Apollo 9, Houston through Canaries.  
 SC On the 018 dash 1 Bravo block data I got down through the TAGE and then module if you wanna go from there.

CAP COM Roger, the TAGE is 0263758, the Delta VC is 3627, area 0191 Bravo plus 258 minus 0692 028 11 50 3627 020 4 Alpha plus 332 minus 1655 031 07 17 3620 and I have some trim angles if you want 'em.  
 SC Rog, stand by. Go ahead with the trim angles.

CAP COM Roger. Area 15 pitch minus 134 yaw plus 135, the next four - the next four areas pitch minus 080 yaw plus 130. Look for area 20, pitch minus 090 yaw minus 071.  
 SC Roger. Copy that. Drop one bit on the 017 dash one Bravo TAGE the last digit.  
 CAP COM Roger. 25 seconds.  
 SC Okay, you ready for the readback?  
 CAP COM Affirmative. Go.  
 SC Okay 015 dash one Bravo plus 267 minus 0670 0215249 3671 0161 Bravo plus 324 minus 0670 0232803 3670 017 Bravo plus 335 minus 0670 0250225 3668 0181 Bravo plus 318 minus 0663 0263758 3627 0191 Bravo plus 258 minus 0692 0281150 3627 0204 Alpha plus 332 minus 1655 0310717 3620. And for the trim angles vary of 15 pitch minus 134 yaw plus 135, area 16 through 19 pitch minus 080 yaw plus 130, for area 20 pitch 090 yaw minus 071.  
 CAP COM Apollo 9, Houston. Your readback is correct. I got about two minutes left here, we're missing a little data from the power down last night.  
 SC Roger. What would you like we got that.  
 CAP COM Ah --  
 SC Take it Houston.  
 CAP COM Okay. What we need is your command module RCS injector temperatures and your pyro A and B batteries and BATT C voltage. Before you give that though we'd like to configure your H2 tanks here.  
 SC Roger. How would you like them?  
 CAP COM Okay, H2 tank two heater in AUTO and H2 tank one heater OFF and both fans OFF.  
 SC Roger. H2 tank one fan OFF, tank 2 fan to AUTO, H2 fans both OFF.  
 CAP COM Negative. That's H2 tank two heater in AUTO and both fans OFF and tank one heater OFF.  
 SC Roger. I just read it backwards to you. H2 heaters number two in AUTO and number one OFF and the fans are both OFF.  
 CAP COM Rog.

SC And ah --  
 CAP COM Apollo 9, Houston, S-band up.  
 SC --the injector temperature if you want  
 it.  
 CAP COM Roger, Go.  
 Apollo 9, Houston through Madrid, S-band.  
 Apollo 9, Houston through Madrid, S-  
 band volume up.  
 SC Rog, Houston, 9 looks like we have a  
 good lock now. Did you get the battery readings.  
 CAP COM Negative.  
 SC Okay, BATT C was 37 Pyro A was 37,  
 Pyro B was 37 and that was on the power down last night.  
 CAP COM Ah -- Roger and I didn't get your injector  
 temp, command module temp either.  
 SC Okay, the injector temps I give you sys-  
 tems test meter readout.  
 CAP COM Affirmative.  
 SC All of 'em was full scale high except  
 six C and that was reading 5 volts.  
 CAP COM Roger, six Charlie with 5 volts.  
 SC That's correct.  
 CAP COM Okay, next thing is on your cryo surge  
 tank pressure, as you noticed it took a long time to come up  
 and then all of a sudden it came on up. Did you jiggle any  
 valves or anything.  
 SC Yeah. (static - cut out)

END OF TAPE

A/9, MISSION COMMENTARY, 3/4/69, CST: 03:21a, 64/1

PAO                      Apparently we have had lost of signal from the Madrid, Spain tracking station. Had a little problem there getting lock on between the spacecraft antennas and the ground antenna at Madrid. At 49 past the hour the spacecraft will be coming up on the Carnarvon, Australia tracking station. At 19 hours 22 minutes GET this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, CST 05:49 am, 65/1

PAO. This is Apollo Control 19 hours 49 minutes GET. Expecting acquisition of Apollo 9 by the tracking station at Carnarvon, Australia in a few seconds now. Apollo 9 is mid-way through the 13th revolution. The crew should be ending their breakfast meal about this time. At the end of the pass at Carnarvon there will be some 2-1/2 minutes of drop-out until the Honeysuckle Creek station in Australia acquires the spacecraft. We'll stand by now as we wait for spacecraft communicator Ron Evans to put a call in to the spacecraft. This is a fairly low elevation angle pass over Carnarvon - some 2.7 degrees. Somewhat higher over Honeysuckle - 10.7 degrees.

CAPCOM through Carnarvon.

SC Rog Houston, Apollo 9. Stand by one.

SC Houston, 9, Go.

CAPCOM Rog. We listened to your OJT during P-52 last night, but didn't copy any gyro torqueing angles. Would you give those, if you copied them down?

SC Oh, very well. Stand by.

SC Okay, Houston, 9. Are you ready to copy?

CAPCOM 9 go - or Houston, go.

SC Roger. GT is 082430 plus 00110 plus 00002 minus 00108.

CAPCOM Houston, Roger, copy.

SC And I'll give you a rundown on the H2 and O2 cryo pressures when we ran the fans if you've got a pencil.

CAPCOM Houston, go.

SC Okay. H2-1, when we turned the fan off, it was 228 for the pressure and right now it's about 228.

CAPCOM Roger.

SC H2-2, when we turned the fan on, it was 242. After 3 minutes of fans it was 242.

CAPCOM Roger. Sounds good.

SC O2-1, when we started out with the H2, it was 816 by the time we got to the O2 and it was 890 when the fans were turned on, it was 880 when the fans were turned off.

CAPCOM Roger, copy. 890 to 880.

SC That's correct, and O2-2, when the fans were turned on it was 880, and when they were turned off, it was 870.

CAPCOM Roger, 880 to 870, and S-band volume up at 56,

SC Roger. It's up now.

SC And Houston, 9, we're down through the CMC sub-tests and getting ready for a P-51 and do you want those CMC sub-tests numbers or on the DSKY?

APOLLO 9 MISSION COMMENTARY, 3/4/69, CST 05:49 am, 65/2

CAPCOM Roger, we have them.  
PAO Apparently, we've had loss of signal at Carnarvon. We'll continue to monitor the air-to-ground circuit until the tracking station at Honeysuckle Creek acquires Apollo 9.  
CAPCOM Apollo 9 Houston through Honeysuckle.  
SC Roger Houston, Apollo 9, loud and clear.  
CAPCOM Roger, same. We never did get what you did on those cryo valves, I'd like to get that first tank up.  
SC Oh, all I did was move the surge tank valve back and forth a little bit on the console, here, and then I went to bed. And I think that may have done it.  
CAPCOM Rog. That did it.  
SC And did it come up pretty fast after that, Ron?  
CAPCOM Affirmative, yeah.  
SC Okay. Well, we never did get our plus tank filled, so we're going to be filling that here along the - along the way today. It only has about 200 or 300 psi in it.  
CAPCOM Roger, We understand.  
SC Houston, Apollo 9.  
CAPCOM Houston, go.  
SC Roger. We're still charging Battery B. What's the status of that? Do you want us to continue or stop

END OF TAPE.

A/9, MISSION COMMENTARY, 3/4/69, CST: 05:59, 66/1

SC Houston, Apollo 9.  
CAPCOM Houston. Go.  
SC Roger. We're still charging battery B,  
what is the status of that. Do you want us to continue or  
stop or look at the forecaster?  
CAPCOM Affirmative. Go ahead and continue on  
it. We estimate there will probable be up to charge at about  
22 hours or just before SPS number 2 burns and we'll tell you  
at that time to turn it off.

SC Okay, very good,  
CAPCOM Apollo 9, Houston. Thirty seconds LOS  
Mercury at 08.

SC Roger.  
PAO Apparently we have had loss of signal at  
Honeysuckle tracking station. Meanwhile here in the control  
center the space flight meteorology group based here in the  
control center has issued a forecast for the Apollo 9 mission  
weather. Weather conditions for the flight of Apollo 9 will  
be satisfactory in most landing areas for the next 24 hours,  
and the primary landing area in the West Atlantic centered  
about 800 miles east of Jacksonville, skies will be mostly  
cloudy with scattered showers. Winds will be southerly at  
20 to 25 knots, with seas 5 to 8 feet and temperatures ranging  
between 64½ and 70½. In the Mid-Pacific landing zone, centered  
about 600 miles northwest of Honolulu weather will be mostly  
cloudy with a few showers. Winds will be southerly about  
25 knots, seas 8 feet and temperature 63½. In the West Pacific  
landing zone centered about 400 miles southeast of Tokyo skies  
will be partly cloudy. Winds will be northwesterly 15 to 25  
knots, seas 5 to 8 feet, and temperatures near 54½. In the  
East Atlantic landing zone centered about 500 miles southwest  
of the Canary Island the weather will be partly cloudy with  
easterly winds 10 to 15 knots and seas 4 to 5 feet. Temper-  
atures will be about 70½. The next station to acquire  
Apollo 9 will be the Mercury tracking ship. The acquisition  
table shows that 07 past the hour, some 3 minutes from now  
we'll come back up at that time and go live with the Mercury  
pass. At 20 hours 4 minutes GET this is Apollo Control.

END OF TAPE

PAO This is Apollo Control 20 hours 07 minutes ground elapsed time; we're some 40 seconds away from acquisition at the tracking ship Mercury. Just passed midway of the 13th revolution. At this time, the spacecraft crew is alining or orienting the inertial measuring unit as part of the procedures for getting the spacecraft ready for the days activities and maneuvers. We'll continue to stand by here as the spacecraft comes in range. The tracking map at the front of the Control Center has shown that the Mercury has acquired signal, the little spacecraft that's projected on the big screen changes color when the acquisition time comes in. That doesn't necessarily mean that we have voice contact but merely the time in which the spacecraft comes over the hill. The spacecraft communicator will wait a few seconds before making the call to assure that the lockon is solid. Spacecraft Communicator Ron Evans' replacement for the next 12 hours, Stu Roosa, has come into the Control Room and Evans is now briefing him on the nights activities and what is coming up in the next days activities. We'll leave the line open and await any call from the Spacecraft Communicator console to Apollo 9 through Mercury.

PAO This is Apollo Control again. Stu Roosa and Ron Evans are still in a hand-over type huddle down there at the spacecraft communicators console; apparently there are no plans to contact the crew through Mercury. We'll continue to leave the air-to-ground line active here and eavesdrop on any conversation that might take place.

CAP COM Apollo 9, Houston through Mercury standing by.

SC Roger, Houston.

CAP COM Roger.

Apollo 9, Houston. We indicate you're right close to gimbal lock.

SC That's affirmative.

PAO This is Apollo Control. We've had loss of signal at Mercury, very brief conversation there just a standing by and advisory from spacecraft communicator Ron Evans that the Apollo 9 was approaching gimbal lock, this has to do with the attitude of the spacecraft relative to the inertial measuring unit and the guidance system. We'll be coming up on Antigua with acquisition at 34 minutes past the hour. During that pass the Mission Control Center will pass up to the crew the so called maneuver pad, the velocity and the time of the ignition and all the other data the crew needs onboard for the service propulsion system burn number two which is now scheduled for 22 hours 12 minutes ground elapsed time. At 20 hours 15 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

A/9, Mission Commentary, 3/4/69, CST 6:34a.m.

PAO This is Apollo control. 20 hours 34 minutes ground elapsed time. We should be picking up the Apollo 9 spacecraft through the Antigua tracking station in some 6 seconds from now. The Antigua and the Vanguard tracking ship, the Canary Island and the Madrid pass all overlap this time. We should have a solid 20 minutes of tracking and possibilities for a conversation between the ground and Apollo 9. Spacecraft communicator Stu Roosa has relieved Ron Evans at the spacecraft communicators console. We're standing by now for Stu Roosa to make his call. Lets eavesdrop.

PAO This is Apollo control again. Flight director Pete Frank and Stu Roosa are having a huddle here over the console before Stu Roosa makes his call to Apollo 9. We'll leave the circuit open here and stand by for any conversation.

CAP COM Apollo 9, Houston to Antigua... dead air...  
 Apollo 9, this is Houston to Antigua.

SC

CAP COM

morning.

SC

Good morning. We were wondering whether maybe you want to give us the updates first or whether you want an E memory dump first.

CAP COM

SC

Ah, we do not need an E memory dump.  
 OK. OK, we're ready to accept your update then any time Houston.

CAP COM

Roger. Stand by one on that I have an SPS2 pad here for you any time you're ready to copy and well have the loads ready for you in a minute.

SC

SC

Stand by he's getting it.  
 OK, go ahead and read your copy.  
 Roger. SPS2 022 12 03 00 plus 00 niner niner 3 minus 08 446 plus 00 176 08 506 08 457 1512 and stand by what?... dead air... Apollo 9 we're ready to up link at this time and then I'll finish the pads there while they're doing that.

SC

CAP COM

The computer is yours  
 OK. We have the computer. And starting again, I finished up on the burn time which is 1512 58 504 plus 100 minus 0 20 21 20 840 13 200 plus 01 23 plus 05 514 16 45 end of up date.

SC

08 506 0845 static 504 plus 100 minus 020 212084 013200 plus (static) I beg your pardon 1645.

CAP COM

Apollo 9, the comm on that was extremely bad. I only got about 3 lines of the whole blooming smear. Let's standby one. I think we are going to hand off here and maybe we can try it again.

CAP COM

CAP COM

Apollo 9, this is Houston. Do you read?  
 Okay, Apollo 9, this is Houston. If you

read me. I cannot get you. I can hear that you are transmitting. You are way, way down, besides you are reporting no VHF downlink. You might check that, but I don't understand why our S-band isn't any better either.

SC

(Too low to understand.)

CAPCOM Apollo 9, this is Houston. I can barely read you - I just barely copied it.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, CST 06:44am, 69/1

SC Houston, Apollo 9, how now?  
CAPCOM Apollo 9, you are very, very weak. I can't get your read-backs, but I'd like to give you the nav check again. The na check I gave you was wrong. We're starting off good today, and I'd like to - if you can copy I'd like to review nav check again. It should be minus 2891 minus 16997 1228.

SC Okay, how now?  
CAPCOM I can just hear you transmitting and that's about all.

SC (Cannot hear speaker)  
SC Houston, Apollo 9, how do you read now?  
CAPCOM Hello Apollo 9, Houston, do you read now?

SC Houston, 9, read you five by.  
CAPCOM Oh great! We've got you through Canaries now. Evidently, we couldn't get Vanguard and cabled back through Goddard. Did you copy my correction on the nav check?

SC Roger, if you read, I got a minus 2891 minus 16997 122.8.

CAPCOM Rog. That ought to check a lot better, and I'm reading you five square now. We've got good comm through Canary here for about the next 5 minutes.

SC Roger. Did you read the read-back on the SPS-2 pad?

CAPCOM Okay, go ahead.  
SC Okay. 02212 03 00 plus 00993 minus 08446 plus 00176 08506 08457 1512 58502 plus 100 minus 020 2120840 13200 and you've already got the nav check.

CAPCOM Rog. I confirm the update. One small correction. The last number in the CSM weight is 4 vice 2 as you read, but that really doesn't matter.

SC Yeah, I guess I wrote it right and read it wrong.

CAPCOM Okay,  
SC 58504.

CAPCOM That's affirmative.

CAPCOM And Apollo 9, the computer is yours. We have given you a target load, a state vector and a verb 66.

SC Roger. Copy.  
CAPCOM Apollo 9, Houston.

SC Go.  
SC Roger, Houston, go.

CAPCOM Okay. We've got about 3 minutes here. I would like to update that PIPA bias and - if we can have the computer again.

SC Okay. The computer is yours, and while

APOLLO 9 MISSION COMMENTARY, 3/4/69, CST 06:44am, 69/2

SC                   you're doing that, I'd like to know  
what you would like us to do with Battery B. We are still  
charging it, and it's now down to about .4.

CAPCOM               Rog. Last word I had was we wanted to  
run the battery charger, probably run up to almost the time  
SPS 02.

SC                   Okay, thank you.

CAPCOM               And we are indicating about .43 or so  
and we would like to let it run a while and cut it off on  
our indication.

SC                   Okay.

CAPCOM               And Apollo 9 we'll be handing over to  
Madrid, so have S-band volume UP.

CAPCOM               Apollo 9, Houston, the computer is yours,  
the PIPA 5's is in.

SC                   Roger, thank you.

END OF TAPE

CAP COM            Apollo 9, this is Houston. We're about 30 seconds from LOS Madrid and we'll see you over Carnarvon at 21.

SC                    Roger. Carnarvon at 21.

PAO                    This is Apollo Control. Apparently we have had loss of signal at Madrid station. During the pass after communications were locked in, we had some problems over the tracking ship Vanguard with some of the return lines coming back through Goddard. During the pass over these stations the spacecraft communicator passed up to the crew the necessary information for the service propulsion system burn number two. The essence of which is burn time of ignition time of 22 hours 12 minutes and 03 seconds with a velocity change of 850.6 feet-per-second. We'll be coming up on the Carnarvon, Australia tracking station at 20 minutes past the hour. At 20 hours 56 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 217200, CST 0722a 70/1

PAO This is Apollo Control 21 hours 22 minutes ground elapsed time. Let's join the conversation in progress between the spacecraft communicator and the spacecraft Apollo 9 through Carnarvon, Australia.

SC Sure is.

CAPCOM Stand by for ARIA.

SC Houston, here's an interesting sidelight. When we woke up this morning and got the B-bands ready, and after drifting all night our highest drift rate was approximately 1/10th of a degree per second.

CAPCOM Rog, Apollo 9, copy.

SC Houston, Apollo 9.

CAPCOM Go, Apollo 9.

SC Houston, do you want us to cycle our H2 and O2 fans prior to the burn or do you want to just leave them alone?

CAPCOM Apollo 9, Houston. We do not want them cycled prior to the burn. Just let them go as is.

SC Okay, very good.

CAPCOM Apollo 9, Houston.

SC Go ahead.

CAPCOM Roger. You can terminate the charge on battery B and for your info, we took 10 amp-hours and put 7 back in.

SC Roger.

CAPCOM Apollo 9, Houston. Like to make sure you have your S-band volume up. We will be picking up Honey-suckle in about a minute.

SC Roger.

END OF TAPE

PAO                    This is Apollo Control here; we are still in acquisition through Honeysuckle but apparently the spacecraft communicator doesn't plan to talk. He's punching up now; perhaps he plans to call the spacecraft now before LOS. We'll continue to eavesdrop on the air to ground circuit.

CAPCOM                Apollo 9, this is Houston, we are one minute to LOS Honeysuckle; we'll see you over Mercury at 41.

PAO                    This is Apollo Control. We are right on loss of signal at Honeysuckle. One of the items that is upcoming is over Mercury will be GO/NO/GO for the SPS burn number 2 and this burn will take place over the States at 22 hours, 12 minutes ground elapsed time. Our present orbit stands at 107.8 nautical mile perigee, about 125.7 nautical mile apogee. The ... we have had LOS at Honeysuckle; flight director Pete Frank just advised the spacecraft communicator Stu Roosa to tell Apollo 9 that they were GO for SPS number 2 burn, however this was in the flight plan to take place over Mercury. As Apollo 9 came over the hill at Carnarvon, they just began talking to MCC through Carnarvon without spacecraft communicator having made a call. We'll go back and play a little catch up on the first several sentences of this transmission so that it'll tie it all together. Let's roll the tape now.

SC                    Interesting side line here Houston, whenever we give the command module LM combination a positive direct, acceleration command attitude control system, we get a lot of cut-back from pitch to yaw back to pitch. I suspect the stroker test may be fairly safe.

CC                    Roger. I guess it must be a lot more noticeable than the simulator then on it.

SC                    Sure is.

PAO                    This is Apollo Control here, 21 hours, 38 minutes ground elapsed time. We'll be coming up on Mercury Tracking Ship at 41 minutes past the hour. This is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 21:41:00, CST 7:41a 73/1

PAO This is Apollo Control 21 hours 41 minutes, ground elapsed time. Should have acquisition with the tracking ship Mercury of Apollo 9 spacecraft. During this pass Stu Roosa will no doubt go ahead and give the crew the GO decision for the SPS burn number 2 that he attempted to pass up just at loss of signal at Honeysuckle. We'll leave the circuit open now, and listen for any air-to-ground communications through Mercury.

CAPCOM

Apollo 9, Houston, through Mercury.

SC

Alright, Houston, Apollo 9.

CAPCOM

Oh, sterling, you are loud and clear.

SC

We are in process of donning our helmets

and gloves here for the burn.

CAPCOM

Roger, got that.

CAPCOM

And Apollo 9, this is Houston. I believe you went over the hill at Honeysuckle there before I got you, but you are GO for SPS 02.

SC

Roger, understand we are GO for SPS 02.

Thank you.

CAPCOM

Roger.

CAPCOM

Apollo 9, Houston, 1 minute LOS Mercury,

and we'll see you over Texas at 04.

SC

Roger, over Texas at 04.

PAO

This is Apollo Control. Although we have not had loss of signal at tracking ship Mercury, it is unlikely there will be any further conversation. The crew presently is donning helmets and gloves on their pressure suits for the burn scheduled at 22 hours 12 minutes over the Texas tracking station. This SPS burn number 2 is one of a series of tests to demonstrate the attitude control of the command and service module during the service propulsion system thrusting, when both the CSM and the Lunar Module are docked. These burns are varying durations, are set up where the digital autopilot will damp out the oscillations that are induced by gimbaling the big engine of the service propulsion system, and thereby give a measure of the dynamic response of the spacecraft's structure. Other byproducts of the burns is to reduce the command and service module weight, and also being out-of-plane it drives the orbital plane further back to the east so that it improves tracking later in the mission for the rendezvous and the extravehicular activity. We'll be coming up on the Texas station at 22 hours 04 minutes ground elapsed time, at 21 hours 49 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

PAO This is Apollo Control at 22 hours 04 minutes ground elapsed time. We are coming up on a state-side pass here, across Texas, Mila, Bermuda, Vanguard, and on over to Canaries, a total time of about 25 minutes. At this time, the command module pilot should be climbing out of the lower equipment bay and on up into the couch and strapped in for the burn. The burn is scheduled for 22 hours 12 minutes and 03 seconds ground elapsed time, some 08 minutes from now. We will stand by, he is making a call now.

SC Roger.

PAO This is Apollo Control some 03 minutes 48 seconds away from ignition time. No conversation going on at the present time. The guidance reported that the gimbal motors on the big engine had come on, according to telemetry. We will continue to monitor the air-to-ground circuit for any conversation between Mission Control and Apollo 9.

CAPCOM Apollo 9, Houston.

SC Houston, go.

CAPCOM Roger. We are showing your scale in 5-5.

SC Roger. Understand 5-5 will shift to 5 and 1 when we get ready to do a stroker.

CAPCOM Roger, thank you.

PAO Apollo Control here. One minute mark until ignition SPS burn number 2.

PAO Five seconds.

PAO Apogee is going up. Apparently the burn did go off on time and is still underway. Some 45 seconds into the burn. No conversation from the crew; they are quite busy at this time and will probably read back their residuals at the conclusion of the burn. We will continue to monitor the circuit.

PAO We've had confirmation of the end of the burn. Perigee has remained right where it was supposed to; however, apogee is going on up around 187.6 and from the initial tracking, this will be refined somewhat as we get further tracking across the states. Gimbals motors are off on the big engine. These are the motors that actually swivel it in its mount to move the thrust vector. Now showing an apogee of 189.5. Let's listen in.

CAPCOM - I've got -0001 + 0007 + 0003.

SC Okay, that's pretty good and the delta V counter was -5. --

CAPCOM Say again, -5.?

SC -5.1.

CAPCOM -5.1. It looked pretty smooth, Apollo 9. And Apollo 9, Houston. Our first catch shows you 189 by 108.

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 220400, CST 0804a 74/2

CAPCOM  
Apollo 9.

And I copy your onboard NOUN at 44,

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 22:17:00, CST 08:17 75/1

CAPCOM Apollo 9, Houston, through the Vanguard.  
How do you read?  
SC Loud and clear, Houston, how do you read us?  
CAPCOM That's about a thousand percent improvement over the last pass, reading you loud and clear. Our earth-band track now shows you 192 by 107. Looks like we are about to agree with you.  
SC Roger. How's our PIPA 5's?  
CAPCOM Standby.  
SC Houston, Apollo 9.  
CAPCOM Go, Apollo 9.  
SC Roger. Stroker looks pretty smooth.  
We had a 40 percent (garbled) about 30 percent of 1 degree, and the MAX rate in pitch was about a tenth of a degree, and there didn't appear to be any trouble in the yaw. It all damped out probably about 5 seconds after the stroker stopped.  
CAPCOM Roger, Apollo 9, copied. Sounds great.  
SC Okay, Houston, Apollo 9 here, SPS  
PU sensor light came on during the burn because of the large unbalance we had. However, it immediately jumped back down, and we are presently reading 69.25 percent oxidizer, and 69.4 percent fuel, and the unbalance is reading decrease about 30 pounds.  
CAPCOM Roger, Apollo 9, copied, sounds like things are shaping up.  
SC We still don't have an indicated helium pressure, though.  
CAPCOM Well, maybe if you kick that transducer again you'll get that back.  
SC If you'll tell us where to kick, we'll try it.  
CAPCOM Roger, in work. And at your convenience I have your gimbal angles for SPS 03 using your SPS 02 ref mat.  
SC Roger, standby. Okay, ready to copy.  
CAPCOM Roger, reading roll 024, pitch 001, yaw 353.  
SC 024, 001, 353.  
CAPCOM Roger, 353 on the yaw, and let's make sure your S-band volume is UP. We'll be handing over to Honeysuckle in about 3 minutes, 3 or 4 minutes. I meant Madrid - sorry about that.  
CAPCOM Apollo 9, Houston.  
SC Go ahead, Houston.  
CAPCOM Roger. We're showing PIPA 5's as minus .02 feet per second squared.  
SC Roger. It looks like we counted up about

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 22:17:00, CST 08:17 75/2

SC almost a foot per second there in that  
30 seconds we were waiting for the burn to start.

CAPCOM Roger, copy. And Apollo 9, Houston,  
that looks like it was in tolerance, we checked that.

SC Roger, Houston. And be advised the  
count in R-03 was positive, also there prior to the burn,  
not negative.

CAPCOM Roger, copy.

CAPCOM Apollo 9, this is Houston. Fido is real  
happy with that burn, says it's completely nominal, looks  
like he won't even have to retarget for SPS 03. You did  
good work.

SC Roger, and I assume you'll give us a GO  
for the structural demonstration before we get there, right?

CAPCOM That's affirmative.

SC Okay.

SC Houston, Apollo 9.

CAPCOM Go.

SC Roger. For your information on the clock  
the burn shut off about 8/10ths of a second early.

CAPCOM Roger, copy.

PAO This is Apollo Control still standing by  
on the tail end of this pass.

SC I'll call you again in a minute.

CAPCOM Say again.

SC Hey, Smokey.

CAPCOM Go.

SC Have you ever been attacked by a band  
of wild elephants?

CAPCOM Negative.

SC You ought to see what it looks like here  
with these six big black hoses.

CAPCOM Roger, copy.

SC Did you ever dream about octopuses?

CAPCOM Hey, speaking of dreaming, how did the  
night go?

SC I guess we did okay for our first cut.

CAPCOM Okay, sounds real good. I'm going to  
lose you here at Madrid in about 30 seconds and we'll see  
you over Carnarvon at 54.

SC Hey, Stu, one thing we ran into a problem  
with was a lot of radio jazz coming off the ground.

CAPCOM Okay, we'll see if we can stop that  
tonight.

SC (garbled)

PAO Apparently we have had Loss of Signal  
at the Madrid tracking station. The next station to acquire  
Apollo 9 will be the Carnarvon, Australia tracking station

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 22:17:00, CST 08:17, 75/3

PAO at 53 minutes past the hour. Apollo 9 has just begun the 15th revolution. Service propulsion system burn number 3 is scheduled to take place at 25 hours 17 minutes 38 seconds. It will be a much longer burn and will exercise the digital autopilot in the full stroking of the big engine. The last 45 seconds of SPS burn number 3 will be under manual thrust vector control by the crew. At 22 hours 29 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

PAO This is Apollo Control, 22 hours, 53 minutes ground elapsed time. We are less than a minute away from acquisition at the Carnarvon, Australia tracking station. The refined tracking after the service propulsion system burn number 2 during the last stateside pass has now come up with numbers of 107.7 nautical mile perigee, by 189.6 nautical mile apogee. This is a more refined number than the earlier cuts that were given by the flight dynamics officer after first tracking. We'll stand by here as we come up on the acquisition here; they are putting in a call now.

SC Go ahead Houston.

CC Roger. You're making it 5 square, standing by.

SC Okay, we're chlorinating our water.

CC Oh, very good. Very good; you are chlorinating your water.

SC That's a little behind schedule on that, but that's when we did it.

CC And Apollo 9, Houston. Remind you on your S band volume, we'll be going over to Honeysuckle in about 2 minutes.

SC Roger.

CC Apollo 9, Houston. I've got a question for you when you've got time, at your convenience. Apollo 9, do you read? Apollo 9, Houston. How do you read through Honeysuckle?

SC Houston, say again.

CC Roger. I've got a question for you when you get time.

SC Yes, go ahead.

CC Okay, just to ease our mind here to make sure we're working on the same procedures, we're curious about loading the DAP. We'd like to verify that you are doing that prior to the P 30, P 40 program.

SC The last time we did it after P 30 but prior to P 40.

CC Okay, we would like to have you load the DAP prior to both P 30 and P 40 prior to your P 52.

SC Okay, we'll do that.

CC Okay, very good.

SC I guess we also have a question on when you want us to load the pitch trim and yaw trim you send us up next time which looks like it will be somewhat different from what the DAP ended up with ... on the SPS 2.

CC Okay, would you say the first part of your question again Dave.

SC Roger. We've looked at the nom SPS 3 pitch trim and yaw trim, the gimbals, and they look somewhat different from what we ended up with after SPS 2, and I guess the question is do you want us to load your numbers or our numbers ... ?

APOLLO 9 COMMENTARY, 3/4/69, GET: 22:53:00 (08:53) 76/2

CC Okay copy; we'll give you that info when  
I have the pad.  
SC Okay, stand by. Houston, do you have a pad at this  
time?  
CC That's negative Apollo 9.  
SC Okay.  
CC And Apollo 9, this is Houston. We're about a minute  
to LOS at Honeysuckle, and we'll see you over Mercury about  
15.  
SC Roger.  
PAO This is Apollo Control at 23 hours, 12 minutes.  
Apollo 9 is out of range at Honeysuckle Creek. The orange  
team of flight controllers lead by Pete Frank now in the pro-  
cess of handing over to Gene Kranz and his white team. We're  
estimating the change of shift news conference for 9:30 CST.  
This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 231500, CST 09:15a 77/1

PAO This is Apollo Control at 23 hours, 15 minutes into the mission. The Mercury tracking ship in the south Pacific is acquiring Apollo 9 now.

CAPCOM Apollo 9, this is Houston through the Mercury standingby.

SC Roger. Go ahead.

CAPCOM Roger. Just checking in. You are coming in 5 square. Sounds like the Mercury is working good.

SC That's a very (garbled).

CAPCOM Roger.

SC What's new in Houston, Smokey?

CAPCOM Hey, would you believe that there was ice on the windshield this morning.

SC No, I wouldn't.

CAPCOM Well, I speak with a straight tongue.

SC Is the place washed away yet?

CAPCOM No, we are keeping all the water out and everything's pretty good. It's just a little chilly.

SC Very good. I wish we could say the same.

CAPCOM Does that mean you are running hot or you're not dry?

SC We're kind of damp on occasion.

CAPCOM I also copy.

SC There's nothing wrong. Those are human errors.

CAPCOM Roger. Smoke understands.

SC You've never made one, you've just heard about them. Is that right?

CAPCOM Now, that's a negative.

CAPCOM Sounds like you all are too relaxed today. We'll have to put you to work tomorrow - save it up.

SC It's hard enough today just trying to figure out how we eat and sleep.

SC Houston, Apollo 9.

CAPCOM Go, Apollo 9.

SC I get some data here on our little interruptions last night. Seems like we were going over some station that was transmitting VHF from a tower clearing people to land and it was daylight when we went over and I have got some times. I doubt if it will do any good, but you can have them anyway.

CAPCOM Okay. Go ahead.

SC We picked up some at 1018 - 10 hours and 18 minutes. Again at 11:57, again 16:35, again at 18:12. And the first couple sounded somewhat like Chinese.

CAPCOM Roger. Understand the first couple was a Navy tower.

SC Something like that. I'm not an expert in that particular branch, but it was strange.

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 231500, CST 09:15am 77/2

SC Hey, I'll give you a clue they've got a runway that's 112 and they have a (garbled) 112. They fly a whole bunch of different kinds of airplanes - Mohawks, and C-47 and 01's. And if you really wanted you could call Green Hornet 35 or Black Hawk 15.

CAPCOM Roger. Copy all that. You know I thought you were jesting a while ago when you said about the transmissions interrupting you.

SC Bring it in every hour and a half. We had two six or seven minute passes. Chris ought to incorporate these guys into the network.

SC Actually it was one of the better tower operators I've heard. The guy really had a lot of traffic, and he was doing pretty good.

CAPCOM Okay, Apollo 9, this is Houston. We'll do a little work on this to see what's going on. Yeah, I didn't realize you had this and it is on the BFC. We'll take a look at it.

SC Okay, good.

CAPCOM I guess it's all right just as long as you don't have to get clearance through that tower. And I am going to lose you in Mercury in about a minute and we'll see you over Guaymas around three-four.

SC Okay.

PAO This is Apollo Control at 23 hours 23 minutes into the mission. Mercury has LOS of signal now. Very chatty pass. This time crew reporting at least four occasions where they have heard VHF communications from control tower at an airfield. Dave Scott complimenting the tower operator for his ability to handle heavy traffic. The network controller is now attempting to run a check and see where this traffic may have come from. They identified 4 times - elapsed times 10 hours 18 minutes, 11 hours 57 minutes, 16 hours 35 minutes, 18 hours 12 minutes. Smokey to whom you have heard reference to several times is Astronaut Stu Roosa. Back in his college days he spent several summers as a smoke jumper with the U.S. Forest Service - parachuting in to fight forest fires. At 23 hours 24 minutes - this is Mission Control Houston.

END OF TAPE

PAO this is Apollo Control at 23 hours  
50 minutes, Apollo 9 out over the Atlantic now in it's  
16th revolution. It's been a fairly quite pass over the  
United States. We did pass up the maneuver pad for the  
third SPS burn. We have the tape of this pass starting with  
the Guaymas station, we'll play that for you now.

CAPCOM

Roger, I haven't heard anything.

SC

Okay, standby, Houston, how do you read

Apollo 9?

CAPCOM

Apollo 9, this is Houston reading you

loud and clear. Apollo 9, this is Houston, I read you loud  
and clear.

SC

Houston, Apollo 9.

CAPCOM

Apollo 9, I'm reading you loud and clear.

How me?

SC

Same. Ready to copy.

CAPCOM

Roger, standby here, don't have yet.

Let me give you an estimate of when it's going to come out  
of the trench.

SC

Okay.

CAPCOM

pad already with the exception of the star data, and we ought  
to have it for you in another 4 or 5 minutes. We've got you  
now on a nice long stateside pass here.

SC

Go ahead Houston.

CAPCOM

vector and a target load, if you will go crew in ACCEPT.

SC

Roger, it's yours.

CAPCOM

Understand it is ours.

SC

That's affirmative.

CAPCOM

Apollo 9, Houston, I have your SPS 03

pad.

SC

Roger, Houston, ready to copy.

CAPCOM

00151 minus 25707 minus 00002 25707 25640 4419 51207 plus  
118 minus 017 2112010 21600 minus 2145 plus 16867 1610, end  
of update.

SC

Okay, are you ready for the readback?

CAPCOM

Go.

SC

0025707560 4419 51207 plus 118 minus 017 2112010 21600 minus  
2145 plus 16867 1610.

CAPCOM

Roger. I think you got it all there, Rusty,  
but I want to confirm tough one. Seemed like you were coming  
out on the 2's on the time, it's 025 DELTA-VY is a minus  
25707, and DELTA-VZ minus 00002 and DELTA\_ZC 25640.

SC

Roger. We've got that.

CAPCOM

Okay, and Apollo 9, the computer is yours,  
you have your target load, and the state vector in both lots.

SC Roger, did you happen to notice the pitch and yaw trick that we have in the DAP at this time, after the last burn?

CAPCOM Roger, it looked like we were running pretty close.

CAPCOM Apollo 9, Houston.

SC Go ahead.

CAPCOM Roger, just for your info, we did take your values and use them. That's why they checked so well.

SC un huh.

CAPCOM We're shaping up.

SC (garbled)

CAPCOM Roger, the data from the SPS 2 burn on the stroker looks real nominal with rigid body results, max rates, and pitch was about 2 seconds after initiation, and peaked out about a minus .15, the yaw was real low, and everything was essentially nominal, and you are GO for a full amplitude on SPS 03.

SC Okay, and we'll give you a full structural demonstration.

CAPCOM Roger, copy.

SC It's sort of interesting. The RCS quads, when they fire, even in the middle of impulse, and particularly when we are moving around in ADAPT, you can feel the whole thing shake and vibrate. It really feels just like a (garble) it's pretty solid.

CAPCOM Roger, copying.

SC Houston, Apollo 9.

CAPCOM Go, Apollo 9.

CAPCOM Apollo 9, Houston here, go ahead.

CAPCOM Apollo 9, this is Houston, I didn't copy your last transmission. If you will just hang loose for just a couple of minutes we will be over Canary and I'll be able to read you then.

SC Roger.

CAPCOM Apollo 9, Houston, through Canary, how do you read?

SC Read you 5 by.

CAPCOM Roger, Apollo 9, you have a GO for 33-1.

SC Roger, understand go for 33-1.

CAPCOM And I'm reading you 5 square, and I missed your last transmission when we were mixed up on the Vanguard there.

SC Roger, I was just commenting that the machinery here is very interesting because with the RCS quads, you can feel the whole structure bend and vibrate, just one or two propulsions, yet the SPS seems pretty solid, you can hardly feel any bending at all.

CAPCOM Roger, copy, thank you.

SC Houston, Apollo 9.  
 CAPCOM Go, Apollo 9.  
 SC What the time for this burn? We have  
 25173820 in our computer, and I just have 25:17:38 here.  
 CAPCOM Apollo 9, this is Houston. Go with the  
 time in the computer.  
 SC Okay.  
 CAPCOM Apollo 9, Houston.  
 SC Go ahead Houston.  
 CAPCOM Roger, we would like to have you  
 confirm this onboard. It appears here that the  
 evaporator appears to be drying out. If this is true we  
 would recommend your shutting it down, not to reservice it  
 at this time.  
 SC Okay, we can confirm that onboard, and  
 I'll go ahead and shut it down.  
 CAPCOM Roger, understand.  
 CAPCOM Apollo 9, Houston.  
 SC Go ahead.  
 CAPCOM We're about a minute and a half LOS  
 Canaries, and Tananarive is down this pass, we'll see you  
 over Carnarvon at 30.  
 SC Roger, Carnarvon at 30.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 240000, CST 1000a 79/1

SC Houston, do you still read Apollo 9?  
If you do, we would like to advise you that we did get the secondary water flow control off yesterday.

CAPCOM Rog, copy that. And I should be able to copy you for about another 45 seconds or so.

SC Okay.

PAO This is Apollo Control at 24 hours 2 minutes into the mission. We have had loss of signal at the Canary Islands station. During this pass we passed up information for the third service propulsion system burn. That will come at 25 hours 17 minutes 38 seconds, delta V 2,570.7 feet per second, duration of this burn 4 minutes 41.9 seconds. The biggest component of this delta V will be out of plane. We are expecting a resulting orbit from the third burn in the neighborhood of 270 by 109 nautical miles. We are now at about 189 by 108. The Tananarive station is down as far as the voice is concerned and we will not be in contact at Tananarive during this revolution, the 16th revolution. The next station to acquire will be Carnarvon at 24 hours 29 minutes. This is Mission Control Houston at 24 hours 4 minutes.

END OF TAPE

APOLLO 9 COMMENTARY, 3/4/69, GET: 24:25:00 (10:25a) 80/1

PAO                    This is Apollo Control at 24 hours, 25 minutes into the mission. Apollo 9 is in the nightside of the 16th revolution, out over the Indian Ocean, east of Tananarive. Tananarive Station is down; we had no communications during this pass. Command Module pilot Dave Scott should be down in the lower equipment bay at this time at the optics station and the crew should be realigning the inertial measurement unit. We are about 4 minutes away from acquisition at Carnarvon; we'll come back up then. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 24 hours, 29 minutes. We should be acquiring Carnarvon very shortly. This pass will continue right on through the tracking ship Huntsville just about a 10 second break between the Honeysuckle Station and the Huntsville; we will carry it through live through the Huntsville.

CC Apollo 9, Houston through Carnarvon, standing by.

SC Roger.

SC Houston, are you ready for torquing angle - over?

CC Go ahead.

SC Plus 232 minus 473, minus 841. 242800.

CC Apollo 9, Houston. We copy that. The time 242800.

SC Roger.

CC Apollo 9, bring up your S band volume; we'll be going over the Honeysuckle in about a minute and a half.

SC Roger; S band is up.

CC Copy.

CC Apollo 9, Houston.

SC Go ahead Houston.

CC Roger. You are GO for SPS 3.

SC Roger; understand. GO for SPS 3.

CC And Apollo 9, this is Houston. We are going to lose you here at Honeysuckle in about 30 seconds. The comm through the Huntsville is reported to be a little bad here; if we don't make contact there, we'll see you at the Redstone at 02.

PAO This is Apollo Control, 24 hours, 46 minutes and we have had LOS at Honeysuckle. The Huntsville due to acquire within a few seconds; we'll stand by and see what the quality of the communications is there.

COMM Huntsville, valid, two-way.

CC Say again Apollo 9.

CC And Apollo 9, this is Houston. We'll have you through the Huntsville here for about 5 minutes; if the noise gets to blasting you, let us know; we'll just turn it off.

SC Roger. (garble)

CC You're down in the mud a little bit; I can copy.

PAO This is Apollo Control, 24 hours, 50 minutes and it seems very unlikely we are going to have good communications here at the Huntsville and we will not assault your ears with that noise any more. If there is communication, we will come back up and play it for you. We are at 27 minutes and about 10 seconds away from this third SPS burn, which will occur right at the end of the 16th revolution. We'll still be in contact with the Texas station with overlapping coverage

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 242900, 10:29a 81/2

from Mila. The biggest component of this very long burn, 4 minutes 42 seconds, almost, 4.41.9 and 2,570.7 feet per second, out of plane. Designed for two primary purposes. One, to lower the weight of the command and service module so that when we reach the rendezvous stage, the command module will be in a better posture to use its reaction control system in the event that a rescue maneuver is required. It doesn't need as much thrusting propellant to shove around a lighter spacecraft. Also designed to move the node of the orbit, that's the point at which the ground track of the orbit crosses the equator. We are driving this node about 10-1/2 degrees east, with this one burn. We launched deliberately on a pitched azimuth of 72 degrees which put the node about 22 degrees west of where we want it to be during the rendezvous and this series of out of plane burns, the docked SPS, and the docked descent propulsion system burn, which comes later in the mission, primarily out of plane to move this node to the east for proper ground track over the tracking stations and also for lighting, to get the proper lighting at the terminal phase and breaking and docking of the two spacecraft. There has been no further communication at Huntsville, we have LOS now. The next station to acquire will be the Redstone. at 25 hours 3 minutes. We are now at 24 hours 53 minutes, this is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 250300, CST 11:03am 82/1

PAO This is Apollo Control at 25 hours 3 minutes. We are coming up on the Redstone and then we'll go right into the states pass. And we are about 14 and one-half minutes away from the burn.

CAPCOM And Apollo 9, this is Houston through the Redstone. Standing by for your burn.

SC Roger.

PAO Apollo Control. We may not have much conversation. Crew getting busy for this burn. We'll do another stroker test on this third SPS burn. The computer wagging the engine bell on the service module. It's checking the digital auto pilot and seeing how quick the auto pilot can steer out the little inaccuracies put in. In some ways it's like checking the play in your steering wheel of your automobile. During the last 45 seconds of this burn the crew will take over manually. Called manual thrust vector - the last 45 seconds.

PAO Apollo Control. We are now 7 minutes away from this third SPS burn.

PAO Apollo Control. We expect the resulting orbit following this burn to be in the neighborhood of 270 by 109 nautical miles. We are now at 190 by 107.

PAO Flight Director Gene Kranz has just taken a status report. All of his controllers report they are GO for this burn.

PAO This is Apollo Control. We are two minutes away from the burn now.

PAO Mark one minute.

END OF TAPE

PAO Fifteen seconds.  
PAO We have ignition. G&C reports it looks very stable.  
PAO Still nice and stable.  
PAO Engine looks good, the rates are low, and very stable burn. Apogee going up slowly as most of this burn is out of plane, approaching 200-mile apogee. Still looking good at the 2-minute 30-second mark into this third SPS burn.  
PAO Engine and vehicle both still stable. Apogee is up to 225 nautical miles now.  
PAO Looking for cut-off at 25 hours 22 minutes 20 seconds. We are 21 minutes 28 seconds now.  
PAO Crew flying it manually now and it looks good. Cut-off.  
PAO Initial look at the onboard computer looks like we are right in there close.  
SC Houston, Apollo 9.  
CAPCOM Roger, Apollo 9. I copy the residuals at + 26 -21 and -25.  
SC Roger, that's pretty close and we have a -6.6 on the delta V counter. Burn was nominal, stroker was fine.  
CAPCOM Roger, copy -6.6 on the delta V and we were monitoring here and it looked real smooth and everything looked great.  
SC In our orbit, Houston, 274.5 by 109.6.  
CAPCOM Roger, copy that and it's - the burn looks real good here, we will have your onboard readings but it's going to be real nominal. I mean we will have the ground orbit for you shortly.  
CAPCOM Dave, did you have to do much flying on that MTVC?  
SC Roger, we had a pretty good transient in roll, but when I switched over I believe because the V mags were caging zero, and we were sitting in the edge, the DAP did bend about 5 degrees over. We were - by the time we got to the switchover our gimbal trim was almost 2 and we trimmed a little over 1 in pitch, which gave a little transient at pitch and we had about 1/2 degree in trim and yaw, which gave a little transient in yaw, but pretty easy to damp out all of A and do just about like the simulator.  
CAPCOM Roger, thank you.  
SC Houston, we've got a couple of other system things I want to tell you about here before you go over the hill.  
CAPCOM Roger, go ahead. We have got several minutes.

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 251700, CST 1117a 83/2

SC                    Okay, we would like you to take a look at fuel cell 3. At the present time, the fuel cell 3 O2 flow is high, reading .78 in it, and the H2 flow at the same time is .072. We may have a leaky fuel cell O2 purge valve or something.

CAPCOM                Roger, copy.

SC                    Kind of rambles all over during a burn and we are presently 500 pounds on the increase side. The light must have come on at least 6 or 7 times. I went to auxilliary on it and the light came on and off there also. I switched back to normal and we are presently reading 23.1 and 21.1, oxygen and fuel, respectively.

CAPCOM                Roger, copy that, 23.1 and 21.1.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 252700, CST 11:27am 84/1

CAPCOM And Apollo 9, Houston. I have your gimbal angles for SPS4 using REFSMMAT.

SC Go ahead.

CAPCOM Roger. Roll 017, pitch 001, yaw 355.

SC Roger. 017 001 355.

CAPCOM That's affirmative, Apollo 9.

PAO This is Apollo Control. We are in a keyhole between the Vanguard and the Canaries now. We'll continue to standby live. Flight Dynamics Officer wants to look at tracking for a while before he comes up with refined orbital numbers, but it looks like we are going to be very, very close to nominal - what we were expecting after this burn.

PAO The E COMM has been taking a look at this fuel cell number 302 flow-high. He reports its running about 2 tenths of a pound per hour above normal. He says he will continue to watch, but he is not really concerned with it at this time - at that low-rate.

PAO And we have the heartrate highs during that long SPS burn. McDivitt - 115, Scott - 108, Rusty Schweickart - 70 - seven zero.

PAO This is Mission Control. We still have about 2 minutes left at the Canaries. We'll continue to standby.

CAPCOM And Apollo 9 - Houston. We are about a minute from LOS on Canaries and we'll see you over Tannarive about four-eight.

SC (Garbled) Houston, Apollo 9.

SC What's our overages Houston?

CAPCOM Roger. Stand by. We haven't got that out of FIDO yet.

SC Okay. And also, Houston, you might have some words to say after you look at the data there on the SPSP sensor. Both normal and off have a pretty high increase. I'd like to know if you want to go decrease on the next burn.

CAPCOM Roger, Apollo 9. We are going to have some work on the bug for the SPS4.

SC Okay.

CAPCOM And Apollo 9, Houston. We're losing you here. We'll see you over Tannarive with a preliminary orbit - I hope.

SC Roger.

PAO This is Apollo Control - 25 hours, 37 minutes into the mission. Canaries has loss of signal now. FIDO, the Flight Dynamics Officer, expects to have a good look at the orbit by the time Apollo 9 gets to Tannarive, and we'll pass up the numbers at that time. This long third

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 252700, CST 11:27am 84/2

SPS burn went essentially as planned, according to all preliminary indications. We will acquire Tannanarive at 47 minutes 44 seconds. We are now at 25 hours, 38 minutes, 23 seconds. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 25 hours, 47 minutes. Apollo 9 coming up on Tananarive now; we'll stand by.

CC Apollo 9, Houston through Tananarive.

SC (garble) (static)

CC Okay Apollo 9, Houston. I think you are trying to answer me but you are unreadable. Our orbit is showing you in a 271.8 by 109.5.

SC (garble)

CC You are essentially unreadable Apollo 9; I can detect you are transmitting.

SC (Garble)

CC Apollo 9, Houston. We are going to loose you at Tananarive in about a minute and we'll see you over Carnarvon at 05.

SC Roger. (garble) now.

CC Missed that Apollo 9; say again.

SC Are you able to read us now?

CC I can make you out now, but barely. Before I couldn't read you at all.

SC Okay, we'll see you at 05 at Carnarvon.

CC Roger.

PAO This is Apollo Control. Apollo 9 is beyond Tananarive's range. Next station to acquire will be Carnarvon at 26 hours, 5 minutes. During this pass communications were bad, we did pass up the ground computed orbital parameters based on tracking information through the Canary Islands. We are showing an orbit of 271.8 by 109.5 nautical miles. At 26 hours, this is Mission Control, Houston.

END OF TAPE

PAO This is Apollo Control at 26 hours 4 minutes. Apollo 9 still in the nightside on this 17th revolution, coming up on Carnarvon now.

CAPCOM Apollo 9, Houston through Carnarvon.

SC Roger, Houston, Apollo 9.

CAPCOM Roger, you are loud and clear and we've got you here at Carnarvon for about 10 minutes.

SC Beautiful. This must be one of those long passes.

CAPCOM Roger. I guess you copied the orbit we're showing you in over Tananarive.

SC Roger, we did and I'd like to update you on the malfunction procedure. Stand by just one.

CAPCOM Roger.

SC Okay, we've gone through malfunction 1 golf and we've worked our way through steps 1, 5, and 6 and presently standing by to see if the cryo quantity decreases abnormally. And be advised our, if you are ready to copy, I've got some data on the purge flow.

CAPCOM Rog. I copied malfunction 1 goss, your steps, and I'm standing by to copy.

SC Okay. In step 5 there, when I purged fuel cell 3, the O2 flow increase was much greater than normal, in fact, it went off scale high, so I don't know how much of an increase I got, but the increase went from .65 to off scale high.

CAPCOM Roger, copy from .65 to off scale high on the O2 flow, purged fuel cell 3.

SC Roger.

CAPCOM Apollo 9, Houston.

SC Go ahead, Houston.

CAPCOM Rog. Just a couple items on the flight plan. In regards to this subject, at about 2945 there is an O2 purge on the fuel cells shown and we would like to have you do that over a ground station so we could watch it.

SC Okay, you want us to purge over a ground station on that 2945 purge.

CAPCOM That is affirmative.

CAPCOM Go Apollo 9.

SC Roger, I beg your pardon. Would you like that over Hawaii?

CAPCOM Hawaii will be fine.

SC Okay.

CAPCOM And one other item on the flight plan.

SC Why don't we do that over Carnarvon and that way if you have any good news for us or any instructions

you can give them to us at Hawaii and not interrupt our rest period.

CAPCOM Roger, that's a sterling idea, Apollo 9.

SC Okay.

CAPCOM Apollo 9, Houston.

SC Go ahead.

CAPCOM Roger. One other item on the flight plan. Along in here any time we would like to have you re-service the waterboiler.

SC Okay.

CAPCOM Okay, and that is to just leave it off, Apollo 9. Just reservice it and leave it off.

SC Okay, I understand you want to reservice it and leave it off.

CAPCOM That is affirmative and we are also picking up trouble with the DSE voice. We are showing about 4 discrete tones wiping the voice on it and we would like to have you verify your VHF configuration there just as a first cut at it. We have got a handle on the problem.

SC Okay. We are in syntax alpha and everything else is off.

CAPCOM Roger, copy.

CAPCOM Apollo 9, Houston. Would you bring up your S-band volume. We are going to go over to Honey-suckle in a couple of minutes.

SC Roger.

CAPCOM And for your info, FIDO tells us that we are within seconds of the proper setup on the rendezvous right now.

SC Roger, good news. ... we want to fix it before we get there.

CAPCOM (laughter) Rog.

END OF TAPE

CAPCOM Apollo 9, Houston.  
 SC Houston, Apollo 9.  
 CAPCOM Roger. Could you trip your surge tank  
 for us, please?  
 SC Roger, we're just filling the PLSS tank  
 there.  
 CAPCOM Roger, understand, thank you.  
 SC Houston, we just filled the PLSS tank up  
 to 600 and we've let the surge tank fill back up again. We  
 want to work that up this time.  
 CAPCOM Roger, copy, we concur, we just wanted  
 to verify our reading here on the third tank.  
 SC Roger.  
 CAPCOM Just viewing over your shoulder.  
 SC Yes, we didn't think you were watching.  
 CAPCOM Big brother is ever watching.  
 SC Good. How about big sister?  
 CAPCOM Negative, just old Smokey.  
 SC Hey, has old Golden throat made it back  
 yet?  
 CAPCOM I haven't seen or heard from him.  
 SC How about Funny? Is he there?  
 CAPCOM I understand he is in the local area,  
 but I haven't seen him over here yet.  
 SC Tell him we send our love.  
 CAPCOM Alright, sure will.  
 CAPCOM Apollo 9, Houston, we are about to come  
 off with Honeysuckle and we're going to try the Huntsville  
 again this time through a satellite, so we'll see if the  
 comm has improved any.  
 SC (garbled)  
 PAO This is Apollo Control at 26 hours 23  
 minutes. We have acquisition at the Huntsville and we will  
 continue to stand by.  
 CAPCOM Apollo 9, this is Houston, through the  
 Huntsville, how do you read?  
 PAO This is Apollo Control, The Huntsville  
 is very very noisy again this time. We're going to come  
 down off this loop. If there is any air-to-ground over  
 the Huntsville we will come back up. This is Mission  
 Control Houston at 26 hours 24 minutes.

END OF TAPE

PAO This is Apollo Control, at 26 hours, 25 minutes. We've had a little bit of air to ground in with all this noise; we will play that for you.

CC Apollo 9, this is Houston. Through the Huntsville. (garble) trying to evaluate the dock pretty noisy to me can you read me at all?

CC Apollo 9 This is Houston. We are giving you a short count to maybe help set up your equipment. 12345 54321. Houston out.

CC Apollo 9, Houston, do you read?

SC I read you clear.

CC Okay, understand. Weak but clear, and I copied you about the same on that one.

CC 21 ... and Apollo 9, Houston. Just for your info - we're trying these tests ... trying to get some comm set up here looking ahead to rendezvous day.

SC I read you now.

CC Okay, you are coming through real weak; I can make it out however.

SC Same for you. You are coming through clear but very weak.

CC Okay, understand. Clear but weak. Are you getting this background static?

SC There is some background static, but not tremendous.

CC Roger. Copy.

CC Apollo 9, this is Houston. We'll have you over Hawaii at about 34 and at that time, we would like to get a long count from you from about 15 seconds while we work some ground comm equipment at that time. I'll give you a GO on your count.

SC Roger. Apollo 9.

PAO This is Apollo Control at 26 hours, 30 minutes. Huntsville has LOS now. The crew has been running some malfunction procedures on the fuel cell number 302 flow, which is still a little higher than it should be, and even more so when they purge. So, comm would like for them to do the next purge over a ground station where he can watch it also; that next purge comes about 29 hours and 45 minutes. They'll delay it a couple of minutes till they get into acquisition at Hawaii; that'll be during the 19th revolution. The DSE voice you heard them refer to, in which the tone is wiping out some of the voices, data storage equipment, is used to store the voice comments when the spacecraft is out of range of a station, and then it can be dumped to the ground at selected stations. We are getting a tone on there which is interfering with the voice quality on the tape, and they are going to take a look at that. Next station to acquire will be Hawaii at 26 hours, 34 minutes, at about 2 minutes from now. We'll be doing some more communication tests over the Hawaii station looking forward to rendezvous day. This is Mission Control, Houston, at 26 hours, 32 minutes.

PAO This is Apollo Control 26 hours 34 minutes into the Mission, and we are within range of Hawaii, we'll stand by.

CAPCOM Apollo 9, Houston, through Hawaii. How do you read?

SC (garbled) Houston.

CAPCOM Apollo 9, say again.

SC Roger, you are coming in loud and clear now.

CAPCOM Real good. Stand by one here, let me check and see if we are ready for your long count.

CAPCOM Okay, Apollo 9, this is Houston. We would like to start in about 30 seconds. What we need is we are trying to get this equipment setup for rendezvous day and we need a long slow count, up to about 15 seconds, and bring it on pretty slow here for us because we will be changing some ground antenna configurations during your count.

SC Roger.

CAPCOM Okay, Apollo 9, Houston, you can begin the count any time.

SC Okay, long count (garbled) starting 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 9, 8, 7, 6, 5, 4, 3, 2, did I miss any?

CAPCOM Roger, we copied all that except for 1, but it was really enlightening down here. We switched some configuration right about 5 and you went from down at a fairly low level, you popped right up to 5 square, and we'd like to repeat this test again in about a minute or minute and a half.

SC Okay, we'll choose that 5 square configuration for rendezvous.

CAPCOM That's affirmative. In fact, we might just do you one better, we might just use that from now on, as well as the rendezvous.

SC What did you all do, turn on the receiver?

CAPCOM That's about it.

CAPCOM Apollo 9, Houston, we would like to have you repeat that test, please.

SC Okay, long count coming 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 9, 7, 8, 6, 5, 4, 3, 2, 1, How was that?

CAPCOM That was real good, appreciate that, think we got some good data then.

SC (garbled)

END OF TAPE

CC Apollo 9, this is Houston.  
SC Go ahead Houston.  
CC Roger. We'd like to uplink your state vector in the target load if you'll give us two and accept.  
SC Okay, you've got it.  
CC Okay, and if you'd drag out your pads, I'll have an SPS 4 pad for you in about 1 minute.  
SC Just say when.  
CC Okay. Apollo 9, Houston; I have this SPS 4 pad. Apollo 9, Houston, I have SPS 4 pad ready to read.  
SC Roger, Houston. Apollo 9, how do you read? We are ready to copy.  
CC Roger. Reading you 5 square. Reading 028244030 minus 00012 minus 03009, all zips, 03009, 02945, 0283, 32743, plus 150 minus 069, 2624560, 25100 minus 1737 plus 13970, 2092, end of update.  
SC Houston, Apollo 9 - do you have time for the readback?  
CC That's affirmative; we've got time here, we may have a handoff here to Bermuda, but go ahead, it should bring us up.  
SC Okay. Reading back. 028244030 minus 00012, minus 03009, all zips, 03009, 02945, 0283, 32743, plus 150 minus 069, 2624560, 25100 minus 1737, plus 13970, 2092, over.  
CC Roger. Houston confirms that and we went right through that handoff without losing a digit.  
SC Fantastical. Hey Smokie, got a minute?  
CC ... press.  
SC Hey, when we flew across Texas a minute ago I looked down and I thought I saw a whole bunch of flags flying in Nassau Bay. And if I did, would you thank all those people down there for us?  
CC Alright, sure will. They probably heard you here over our friendly radio station.  
SC Alrightey, tell them we all think it's pretty neat.  
CC Alright. Apollo 9, the computer is yours; we have sent you a state vector and a target load.  
SC Roger, understand. We got the computer state vector, and target load. Houston, this is Apollo 9; we did another realign before SPS 3 before ... at the torquing angles and the times, we'll give it to you when we get you, that is if we haven't already given it to you. Are you still with us?  
CC Roger. I copy that. Apollo 9, I'm trying to look back at the last time we got them from you was 24 plus 28 ... plus 00.  
SC Yeah, we had some later ones here. You ready to copy?  
CC Roger. Go ahead.

APOLLO 9 COMMENTARY, 3/4/69, GET: 26:44:00 (12:44p) 90/2

SC Okay, plus 00006 plus 00010, minus 00022,  
and the time was 245100.

CC Roger. Copy. Thank you.

SC That was the second alignment before that  
burn.

CC Roger. Understand.

SC Figure that one and make sure.

END OF TAPE

..POLLO 9 MISSION COMMENTARY, 3/4/69, GET 265900, CST 12:59pm 91/1

CAPCOM Hey, we're getting better.  
SC Last time you were perfect.  
CAPCOM Okay.  
SC If you keep this up you will figure

out where we are.

CAPCOM Hey, I was just looking at the difference  
in the - in your vectors on the tube here and it is almost  
all zeros. You've really got a winner onboard there.

SC You mean our computer?

CAPCOM That's affirmative. Yes, it's a com-  
parison between your onboard vector and the ground vector  
is almost no error between the two. CMP has really been  
tracking good.

SC Say, one thing I'm still a little con-  
cerned about is everytime average G comes on at T minus 30  
there. We're picking up almost a foot per second in that  
30 seconds waiting for the burn to start.

CAPCOM Roger. We copied your query on that  
before and everybody says that that is well within the  
balance. I looked through the checklist here and it says  
as long as it is less than 2 feet per second in 5 seconds  
it's GO.

SC Yes, but we want to be perfect.

CAPCOM I see. You want to trim those -

SC (Garbled.) It is sort of unusual to  
see anything really.

CAPCOM Yeah. We agree with that. I guess  
that's probably a good thing - we ought to load some into  
the simulator.

SC Probably be a good idea.

CAPCOM Hey, if you got a minute for a question,  
I'm curious about your windows. Are they fogged up? How  
is your visability?

SC I just took a picture of the left hand  
rendezvous window and it's starting to fog up around the  
sides. It looks like some sort of film on the outside of  
the outer pane or the inside of the outer pane - it's hard  
to tell. It has moved in from the edge about one-half inch.  
Now on the far right side and all the way down and about  
4 inches down from the top on the left side from the top  
of the apex - and the hatch window has got a big circle in  
the middle of it. It is beginning to fog up.

CAPCOM Roger. Copy that. Sounds like problems  
still with us then.

SC And windows 4 and 5 are clear. I don't  
see any trouble with them at all. And be advised that  
hatch window - it's a pretty light coating still.

CAPCOM Roger. Understand.

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 265900, CST 12:59pm 91/2

SC It almost looks like it goes away when the sun shines on that - that and window number 1.

CAPCOM Roger. Copy. And --

SC Window number 1 seems to fog up periodically, but I'd say for the most part they are pretty good.

CAPCOM Roger. Understand and I got a few words of wisdom on the cryo tanks for tonight.

SC Okay. Go ahead.

CAPCOM All right, you are starting to fade out on me a little bit - still got some time here with you, but tonight we'd like to just about repeat the plan that we did last night. At this time go ahead and turn off the heaters in both H2 tanks. Allow the pressure to drop to 175 PSI and use the heaters to keep the pressure from going below 175 and then prior to the sleep period we'll turn on the fans and H2 tank number 2 and we hope that it will keep the pressure up during the night.

SC Okay. We've got the heaters OFF now and you want us to let it go down 175 - keep it to 175 using the heaters and then tonight use H2 fan number 2 rather than 1.

CAPCOM That's affirmative.

SC Roger.

CAPCOM Apollo 9, Houston. We're showing a pretty big middle gimbal angle there.

END OF TAPE

CAPCOM Apollo 9, Houston. We are showing a pretty big middle gimbal angle there.

SC Roger.

SC Houston, Apollo 9. What's your temperatures on the quads for the burn here, the roll quad.

CAPCOM Rog, Apollo 9, copy. Stand by.

SC Okay. We've been using B and D because they show highest up here, but if you have any other preferences, let us know.

CAPCOM All right, understand. You are going to plan on using Baker and Delta unless we advise you otherwise.

SC That's affirm.

CAPCOM Okay.

CAPCOM And Apollo 9, Houston. We are losing you at Canaries. We will see you at Tananarive about 25, excuse me, Ascension here coming up here real soon. Sorry about that.

CAPCOM Apollo 9, Houston. Do you read?

SC Houston, Apollo 9.

CAPCOM Go ahead, Apollo 9.

SC Roger. You called?

CAPCOM Yes. We've got one other question for you on the PUGS system. Rusty commented that he switched from prime or normal to aux. We would like to know if the meter changed when you switched and if it did, the readings before and after.

SC Okay, the answer is yes, it did change. The unbalance tended to decrease but then it came back up again and it also caused the master alarm to go on and off and so I switched back to normal. Both normal and aux indicate an increase in the oxidizer unbalance. I can't give you a quantity reading on the auxiliary system because it was moving. For your information, during the burn, the oxidizer unbalance jumped all around.

CAPCOM Okay, Apollo 9, we copied that. Thank you very much.

SC Okay, and if you can't think of anything better to do with it, we might consider shutting it off on some of these later burns, because it's taking a lot of time to reset the master alarm during those burns.

CAPCOM Roger, Apollo 9. We've been considering that and unless we can come with something better, that is probably going to be our recommendation. We are still trying to troubleshoot it, that is the purpose for this question.

SC Okay. Besides that, it changes the pulse rate too.

CAPCOM I'm sorry, Apollo 9. Change of what?  
I didn't catch your last statement.

SC The master alarm changes the heart rate.

CAPCOM (laughter) Roger, understand.

CAPCOM We didn't notice that down here. You  
looked cool as a cucumber.

PAO This is Apollo Control at 27 hours 18  
minutes. Ascension has loss of signal now. We are an hour  
and 5 minutes away from the fourth SPS burn. That burn will  
take place at 28 hours 24 minutes 40.3 seconds. Delta V  
of 300.9 feet per second, duration of the burn 28.3 seconds.  
This again will be an out of plane burn. We expect the  
perigee to stay essentially where it is, 109 and 1/2 nautical  
miles and we expect the apogee to go up about 2 miles from  
271.8 to 273.8. We got a report on the windows. The first  
window report in this report. The crew reported the left-  
hand rendezvous window starting to fog up a bit, film on  
the outer pane. It was difficult to tell whether it was on  
the inside or outside of that pane. It's moved about 1/2  
inch from the edge. They also reported a circle of fog in  
the middle of the hatch window, appeared to be a very light  
coating, disappeared when the sun was shining on it. The  
other windows reported clear. We will acquire at Tananarive  
in about 4 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 27:24:00, 13:24 93/1

PAO This is Apollo Control at 27 hours  
24 minutes ground elapsed time. Apollo 9 about to acquire  
at Tananarive.

CAPCOM Apollo 9, this is Houston through  
Tananarive.

SC Houston, Apollo 9.  
CAPCOM Okay, I'm reading you okay, just standing  
by here. we'll have you for about 8 minutes across Tananarive.  
SC Roger, do you want to copy the purging

angles?

CAPCOM Roger, go ahead.  
SC Okay, plus 00298 minus 00394 minus  
00649.

CAPCOM Roger, I copy.  
SC Beginning of the time will be 27:28:00.  
CAPCOM Roger, copy time 27:28:00, and I copied

angles.  
SC Roger.

END OF TAPE

APOLLO 9 COMMENTARY, 3/4/69, GET: 27:34:00 (13:34p) 94/1

CC And Apollo 9, we'll see you over Carnarvon,  
at about 42.

PAO This is Apollo Control at 27 hours, 36  
minutes. Tananarive has had LOS; next station will be  
Carnarvon at 27 hours, 42 minutes. Astronaut Al Worden,  
another member of the Apollo 9 support team, has joined  
Astronaut Stu Roosa at the cap comm console. This is Mission  
Control, Houston.

END OF TAPE

PAO This is Apollo Control at 27 hours  
41 minutes. Apollo 9 is nearing acquisition at Carnarvon.  
We will stand by.

CAPCOM Apollo 9, Houston through Carnarvon.

SC Roger.

CAPCOM You're loud and clear. Apollo 9, I  
would like to close a loop I mentioned a while back about  
the DSE voice interference. Evidently that was a ground  
playback problem; we've run your last dump through and it  
is real good. So that DSE voice is okay.

SC Okay, fine.

CAPCOM Apollo 9, Houston. Another item, fuel  
cell 3 O2 flow looks normal to us. It's settled back down.

SC Yes, it does look like it is coming  
down again.

SC Houston, Apollo 9. Do you plan to have  
us charge that A tonight?

CAPCOM Copy, Apollo 9. Stand by.

CAPCOM Apollo 9, that is affirmative.

SC Roger, thank you.

CAPCOM Apollo 9, Houston.

SC Go ahead.

CAPCOM Rog. Another question on our PUGS  
problem. Have you tried the temp switch on this.

SC That's a negative.

CAPCOM Roger, understand. Have you got time  
to run that for us now, Rusty? If we so request it?

SC Sure do.

CAPCOM Okay, stand by one. Okay, Rusty, we  
would like to have you do that. I'm sure you are familiar  
with this procedure, but we would like to have your values  
now so you can return to those. A caution on this is to  
not stay in position 1 or position 2 longer than 10 seconds.  
And we would like it run in both normal and aux.

SC Okay, understand you want to do it in  
both normal and aux and let me know when you are ready.  
You want test 1 and test 2 in both of them.

CAPCOM That is affirmative. And as I say, note  
here that you will have to note your values so you can bring  
it back to your present values now.

SC Okay, I'll give you about 8 seconds.  
We are starting and you ready to go?

CAPCOM Roger, Apollo 9. We can't monitor this,  
we would just like to have you do it on board and we would  
like to have you go up and down back to the present values  
in normal and primary and then the same thing in aux. And

give us a few words of wisdom as you proceed through it.

SC Okay, in work.

CAPCOM Okay.

SC Okay, Houston. Just ran test 1 in primary, rather normal, and in 10 seconds I got no motion at all. The master alarm light did come on after 5 seconds, but no motion at all on the counters and for that reason I don't think I will go down to test 2. I may not be able to get it back up where it belongs.

CAPCOM Roger, we copy that. Stand by on it. That's a pretty definite test of some sort, but stand by one, Apollo 9.

SC Rog, and any time you want to give me a go, I'll go ahead and run the same test in aux.

CAPCOM Okay, stand by.

END OF TAPE

CC And Apollo 9, this is Houston; we're about to lose you here at Carnarvon; we'll see you at Huntsville at about 59.

SC Roger. Do you want me to try and test it ON or are you still thinking about it?

CC Well, the plan is that we're going to have you disable these ... the PUGS for this burn and we'll talk about that over the Huntsville or Hawaii; we're coming up on 30 minutes of the burn, and we figure we should just go ahead and chuck it for this one.

SC Okay.

PAO This is Apollo Control at 27 hours, 53 minutes into the mission. Carnarvon has LOS. Over this station we performed a test on the PUGS, the propellant utilization gageing system, it's been acting up causing warning lights to come on, warning tones and lights during the burn. We have decided to disable this system for the 4th SPS burn which is scheduled at about 30 minutes, 30 seconds from now. We can perform the burn without this system, It is merely a gageing system, and we will disable it. The Huntsville will acquire at 27 hours, 58 minutes, 23 seconds. This is Mission Control, Houston.

END OF TAPE

PAO This is Apollo Control, 27 hours 58 minutes into the mission. We'll stand by for conversation at the Huntsville.

CAPCOM Apollo 9, this is Houston through the Huntsville.

CAPCOM Huntsville M&O, Houston CAPCOM. How do you read?

HTV Houston CAPCOM, Huntsville M&O read you loud and clear. We have not established valid two-way lock yet with the spacecraft.

CAPCOM Roger, understand. Will you give me a call when you do?

HTV Roger, will call.

SC Hello Houston, Apollo 9.

CAPCOM Apollo 9, Houston, you are loud and clear.

SC (garbled)

CAPCOM Apollo 9, this is Houston. I read you loud and clear. How me?

CAPCOM Okay, Apollo 9, this is Houston. I think you are reading me. We are recommending that we turn the PUGS off for this burn. We would like to have you turn the SPS gaging switch OFF, we would like to have you pull 2 circuit breakers on Panel 08, they are the heater gaging circuit breakers through MAIN A, MAIN B.

SC Okay.

CAPCOM And Apollo 9, this is Houston, I am not reading you at all.

HTV Houston CAPCOM, this is the Huntsville M&O. At the time of the comm with the spacecraft we had valid two-way lock and we've lost it presently.

CAPCOM Roger, you say I did have 2 way lock at the time of my transmission?

HTV Roger, during the brief transmission you had 2 way lock, presently you do not have it, the signal is very weak.

CAPCOM Roger, understand, thank you.

SC Houston, Apollo 9, how do you read now?

CAPCOM Apollo 9, this is Houston, I read you loud and clear. Did you copy my last transmission?

SC That's negative. You were way down in the mud.

CAPCOM Okay, we're recommending that you disable the PUGS for this burn. We would like to have you turn the SPS gaging switch OFF, and pull the 2 circuit breakers on panel 08, labeled SPS HEATER GAGING MAIN A AND MAIN B.

SC Roger, SPS gaging OFF, and the breakers are open.

CAPCOM Okay, very good, thank you Apollo 9.

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 27:58:00, CST 13:58 97/2

SC Roger.

CAPCOM And Apollo 9, this is Houston. We are losing you over the Huntsville, we'll see you over Hawaii at 10.

SC Houston, this is Apollo 9. You are breaking up very badly, lots of noise on the S-bands plugging out there.

CAPCOM Roger, we'll see you over Hawaii at 10.

SC Roger, over Hawaii at 10. You came through pretty good that time if you want to try it again.

CAPCOM No, I was just telling you we were LOS.

PAO This is Apollo Control at 28 hours 6 minutes, and the Huntsville does have loss of signal. During this pass Apollo 9 disabled the propellant utilization system, will not be used during the 4th service propulsion maneuver. We're 17 minutes 36 seconds away from the 4th SPS burn, will be performed near the end of the 18th revolution, while in acquisition at Texas. Next station to acquire is Hawaii, the GO/NO-GO decision for this SPS burn will be made over the Hawaii station. This is Mission Control Houston.

END OF TAPE

APOLLO 9 COMMENTARY, 3/4/69, GET: 28:10 (14:10p) 98/1

PAO This is Apollo Control at 28 hours, 10 minutes and Hawaii has acquired Apollo 9.

CC Apollo 9, this is Houston through Hawaii, standing by.

SC Roger Houston, Apollo 9. Coming up on the burn here.

CC Roger. You are loud and clear, and we'll have your GO/NO/GO shortly; let everybody take a look at the data.

SC Okay.

CC Apollo 9, this is Houston. You are GO for SPS 4.

SC Apollo 9. Roger.

PAO This is Apollo Control; we are 10 minutes away from SPS number 4. To summarize again, the Delta V, or change of velocity on this burn, 300.9 feet per second, duration of the burn, 28.3 seconds. We expect the resultant orbital parameters 273.8 by 109.5. Perigee is the same as the present perigee, the apogee would move up 2 miles. This burn essentially out of plane.

PAO 5 minutes away from the burn.

END OF TAPE

PAO Telemetry confirms the gimbal motors are on now. Those are the orders that drive the engine bell - steer it.

PAO Three minutes away from the burn now.

PAO Ignition planned at 28 hours, 24 minutes, 40 seconds - cutoff 28 hours, 25 minutes, 9 seconds. G&C confirms the spacecraft is trimmed up - ready for the burn.

PAO One minute away.

PAO Thirty seconds.

PAO Ignition.

PAO Good burn so far - nice and steady.

PAO Engine OFF.

CAPCOM And Apollo 9 - Houston. I copy your residuals as plus 00003 plus 00035 plus 00032.

SC Roger. That's correct for the Delta V curve that's a minus 6 point 2.

CAPCOM Roger. Minus 6 point 2.

CAPCOM And Apollo 9 - Houston. I copy the order.

SC Roger. Roger.

SC Good burn.

CAPCOM Roger. Understand - looked good here.

SC You're really (garbled)

PAO Initial onboard orbit looks like 274 by 109.

SC And Houston you want us to begin charging BAT A.

CAPCOM That's affirmative, Apollo 9, let's start charging battery A.

SC Okay.

SC Houston, this is Apollo 9.

CAPCOM Go, Apollo 9.

SC We just want to advise you that the command-in-service module now weights less than the LM.

CAPCOM Roger. Copy.

CAPCOM Hey, Jim, I think you must like the heavy job. Soon as you got this one lighter - now tomorrow you are going to crawl into the heavy one.

SC It always happens this way with those heavies.

CAPCOM Yes.

SC You notice the way we end up though at the end of the run.

CAPCOM Okay.

PAO This is Apollo Control. We have the heartrates now during this short burn - SPS number 4. Jim McDivitt - 108, Dave Scott - 68, Rusty Schweickart - 62.

END OF TAPE

CAPCOM Apollo 9, Houston.  
SC Go ahead.  
CAPCOM Roger. Comm dropped down there a little bit when you were commenting on your master alarm during the burn. Would you repeat that?  
SC Roger. The comment was that it was a real good burn and we didn't have any master alarms that time.  
CAPCOM Roger. Well, the white hats picked up one on that one.  
SC We had one caution light, but it was on before the burn, so I guess that's okay.  
CAPCOM That's right.  
SC Sim Sup must be falling down on his job.  
CAPCOM We'll talk to him about that; see what he can do for you tomorrow.  
SC No thanks, okay?  
CAPCOM Okay.  
PAO This is Apollo Control. Sim Sup is the simulation supervisor who introduces problems into the simulations prior to the actual mission.  
PAO Apollo Control, we had during that burn, and they are still here, two members of the backup crew of Apollo 9, the backup crew commander Pete Conrad, and the command module pilot Dick Gordon.  
SC Houston, did you call?  
CAPCOM Apollo 9, Houston.  
SC Go ahead, Houston. Apollo 9.  
CAPCOM Roger. Just for your info, that Y residual on that burn took out those few seconds that we were off on the rendezvous and now we are trying to measure it in centiseconds.  
SC Good, we've got just the computer that can take centiseconds.  
CAPCOM Okay.  
SC I have something to do, he is going to have to - you can just make the numbers smaller and smaller.  
CAPCOM Okay.  
SC Houston, Apollo 9.  
CAPCOM Apollo 9, go.  
SC Are you going to leave the SPS engine circuit down for the rest of the flight?  
CAPCOM We haven't really decided on that yet, Apollo 9. I guess it depends on how our troubleshooting goes.  
SC Okay, we will just stand by for whatever you want to do then.

CAPCOM Roger. If we can come up with some good ideas we will work on it.

SC Roger.

SC Houston, Apollo 9.

CAPCOM Apollo 9, go ahead.

SC Roger. We would like to know what your plans are for purging of the fuel cells, if any?

CAPCOM Roger. We would like to have that O2 purge as we talked about before over Carnarvon and stand by here. We will see if we got any other on that. And we would like to have an E memory dump at this time, standing by now on your mark.

SC Okay, 3, 2, 1, mark. E memory dump.

SC Houston, we are going to fill the PLSS tank again so the surge will be coming down.

CAPCOM Roger, understand.

CAPCOM And Apollo 9, this is Houston. We've got about 1 more minute at Antigua and then we will see you over Ascension at 46.

SC Roger, Ascension 46.

END OF TAPE

APOLLO 9 COMMENTARY, 3/4/69, GET: 28:41 (14:41p)

101/1

PAO                    This is Apollo Control; we are 28 hours, and 41 minutes into the flight. And Apollo 9 is beyond the range at Antigua now. This burn, SPS number 4 went very well. The initial onboard readout of the orbit - 274 by 109. That will be refined from ground tracking. We do not have that number yet but very, very near the nominal we were looking for. We were expecting on the order of 273.8 by 109.5. Ascension will acquire the spacecraft in about 3 minutes; we'll be back up then. This is Mission Control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 28:45, CST '14:45 102/1

PAO This is Apollo Control at 28 hours 45 minutes. Apollo 9 coming up on the Ascension station now. We'll stand by.

CAPCOM Apollo 9, Houston.

CAPCOM Apollo 9, Houston, through Ascension.

SC Roger, Houston, Apollo 9.

CAPCOM Hello, tremendous comm this pass. We'd like to have crew in ACCEPT. We'd like to give you a state vector.

SC Roger, you've got it.

CAPCOM Understand.

CAPCOM And Apollo 9, Houston, I have a nav check to go along with the state vector update.

SC Roger, go ahead with your nav check.

CAPCOM Roger, reading nav check: 02940 all zips plus 1227 plus 16044 1358.

SC Roger, reading back: 02949 all zips plus 1227 plus 16044 1358.

CAPCOM Roger, confirm the update.

CAPCOM Apollo 9, Houston, you have both the state vector clocks loaded, the computer is yours.

SC Roger, computers ours, thank you.

SC You guys were perfect again.

CAPCOM Roger, I see it on there now. With a little practice, by gosh we may make it yet.

SC Roger, we're ready for BLOCK data any time you've got it.

CAPCOM I'm sorry about that, Rusty, we don't have that yet. We'll try to catch back. I know it's through your eat period here, but we're going to have to catch it over Carnarvon, some spot over there, during the next hour.

SC Okay, fine.

SC And Houston, we're going to be powering down the G&N here.

CAPCOM Roger, understand, any time.

SC Okay.

CAPCOM And Apollo 9, if you would like to do that 02 purge now that would be one less thing you would have to do next hour. We've still got you here at Ascension for almost 6 minutes.

SC Okay, we'll run through that 02 purge right now.

CAPCOM Roger, understand you are starting an 02 purge, very good.

PAO E COMM reports that the crew is purging all three fuel cells and the purge rates look normal.

CAPCOM Apollo 9, Houston, just why we're late on that BLOCK data is the weather has turned pretty bad in some areas and we had to shift the areas.

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 28:45, CST 14:45 102/2

SC Roger.  
CAPCOM In fact, it looks like we are going to  
have to keep you flying or either land you out here on -  
Red Fish Isle in Galveston Bay.  
SC Why, don't we just stay up for a few  
days.  
CAPCOM Okay, that sounds like a good idea.  
SC The food and bubbly are holding out  
alright.  
CAPCOM Tremendous, and Apollo 9, another thing  
I would like to get from you would be your RCS quads, your  
onboard readout, quantity, and your thruster temp.  
SC Roger. I'll be right down with them.  
CAPCOM Okay.  
SC Okay purge is complete.  
CAPCOM Roger, copy purge complete.  
SC Houston here is the RCS quantity if you  
want to copy.  
CAPCOM Roger, go ahead.  
SC A quad is 79 percent. B is 84, C is 79  
D is 79.  
CAPCOM Roger, I copy 79, 84, 79, 79.  
SC That is affirm.  
SC And Houston, stand by on the injector  
tabs for just a second.  
CAPCOM Roger, understand.

END OF TAPE

APOLLO 9 COMMENTARY, 3/4/69, GET: 28:56 (14:56p) 103/1

SC Houston, Apollo 9. We'll get you with the injector temps on next station.

CC Roger; we're about to lose you here at Ascension and the next station is Tananarive at about 04, but our comm has been pretty bad. I won't even try to talk with you unless you contact us and I'll contact you next over Carnarvon at 19.

SC Roger.

PAO This is Apollo Control at 28 hours, 57 minutes and Ascension does have LOS. We are in the process now of handing over from the white team lead by flight director Gene Kranz to the gold team, flight director Jerry Griffith. Next station to acquire will be Tananarive in about 6 minutes, however, as you heard, Stu Roosa said that he would not attempt to contact the crew over the Tananarive station; we will stand by in case the crew wants to put in a call to us, but the voice quality experienced over Tananarive today has been pretty bad, so it's very likely that the next station over which we will have communication will be Carnarvon, at 29 hours, 19 minutes. The crew is in the process of powering down the spacecraft for the night, going into drifting flight, during the next hour, they will be eating and then their rest period begins at 30 hours even. This is Mission Control at 28 hours, 58 minutes.

END OF TAPE

PAO This is Apollo Control. Good afternoon from the Gold Team. Here at Mission Control we've completed the shift changeover. Flight Director Jerry Griffin's crew has replaced the White Team and they made a status check of the consoles here and they indicate that they are ready to support Apollo 9. The spacecraft will come within range of the tracking station at Carnarvon in a matter of a minute or so. At that time we expect some conversation between the crew and the CAPCOM. Meantime, we estimate that the change of shift briefing involving the participants of the White Team will start here in Houston at 3:45 PM Central Standard Time. We'll be standing by momentarily for expected air-to-ground conversation between Houston and the crew at Carnarvon. This is Apollo Control standing by.

PAO We've acquired the spacecraft at the Carnarvon tracking station. Standing by.

PAO While we are waiting for air-to-ground conversation, we have received refined tracking data on the apogee and perigee from the last SPS burn and we understand that it was 200 - the resulting perigee was 272 nautical miles and 109.3 nautical miles.

CAPCOM Apollo 9, this is Houston through Carnarvon, standing by.

SC Okay, Houston. You're coming in five square. How us?

CAPCOM Oh, it's sterling. Five Square.

SC Okay, we've got some readouts for you. Did you copy the RCS?

CAPCOM We copied the RCS quantities.

SC Okay, here come the bat voltages: bat C, 37.0; pyro A, 37.1; pyro B, 37.1; and I've got the injector temperatures for you.

CAPCOM Rog, I copy the battery voltages; go with the injector temperatures.

SC Roger, 5C and D, off scale high; 6A and B, off scale high; 6 Charlie and Delta, respectively, 4.0 and 4.6.

CAPCOM Rog, copy 5 Charlie and Delta, off scale high; 6 Alpha and Bravo, off scale high; and Charlie and Delta, 4.0 and 4.6.

SC That's Charlie.

CAPCOM Okay, and we'd like to confirm with you that before you sack out you'll turn the fan on in H2 tank 2.

SC Roger, we will and be advised that it doesn't look like we're going to get down to 175.

CAPCOM Rog, we confirm that. And another thing

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 29:17, CST 1517 104/2

We'd like to recommend that tonight you turn your VHF B receiver off. We will be guarding that frequency on the ground and we will be monitoring the spacecraft and if we can't get through to you on A, VHF A, we'll use the crew alert.

SC Okay, we'll turn Bravo off. You want us to stay just in simplex A.

CAPCOM That is affirmative. Simplex Alpha and turn off your VHF B.

SC Okay, we're in simplex Alpha at this time and we're ready with the block data now.

CAPCOM Roger, it'll still be a little bit - the weather is shifting those sites around and I do not have the block data for you yet, and I would like to confirm that we will be monitoring B frequency if you need to bring it up in transmit.

SC Roger, understand you'll be listening on B also. Thank you.

CAPCOM Rog.

PAO We expect additional conversation between the ground and the crew on this pass so we'll just continue to monitor and stand by.

CAPCOM Apollo 9, Houston.

SC Go ahead, Houston. Apollo 9.

CAPCOM Oh, Rog. I've only got about 2 minutes here at Carnarvon. I'd like to start the block data though and finish it up over Guam.

SC Okay, ready to copy.

CAPCOM Rog. Reading block data 021 4 Alpha plus 325 minus 1610 03244343859 022 4 Charlie plus 259 minus 1610 034 19 01 38 59 023 4 Charlie plus 145 minus 1675 035 56 03 48 56 024 Alpha Charlie minus 21 6 minus 007 00 36 24 11 53 97 - I believe I've lost you.

PAO We have an indication here at Mission Control that the spacecraft has moved out of range of the Carnarvon tracking station. It will be reacquired by the site at Guam in another 3 minutes or so. We'll come up at that time. At 29 hours, 30 minutes in the flight of Apollo 9 this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 29:32, CST 1532 105/1

PAO This is Apollo Control at 29 hours, 32 minutes into the flight. We expect acquisition at Guam momentarily. At that time CAPCOM will transmit some final data up to the crew, and if all goes well as planned that will be about our last conversation with them. For we plan to have them go into their rest cycle immediately after loss of signal at Guam. In the meantime, we will standby here, we have acquisition at the present time. We will standby and listen for the air to ground.

CAPCOM Apollo 9, Houston. Do you read through Guam?

SC Houston, Apollo 9. Roger, we read you.

CAPCOM Roger, I read you 5 square. How far did I get?

SC Okay, I got to the last line in 24 alpha charlie, and I got a 53 there, and that is all.

CAPCOM Okay, the last line in alpha charlie is 53 niner 7, and reading on the next one, 0254 charlie minus 178 minus 162003 niner 13138020. The last one, 026 alpha charlie minus 042 minus 026003 niner 335 niner 4000. That is the end of the update. I would like to go back to the third line and 4 charlie 0234 charlie, the third one I read. The third line in that should be minus 1625, and your SPS trim angles, pitch minus point niner, yaw minus .7.

SC Okay, a readback on all. Do we have enough time to read them all back?

CAPCOM Apollo 9, before you start the readback, we would like to have you turn on the H2 purge heaters; and what we are working up to is just before your rest period, it looks like we are going to have to purge to get the pressure in H2 cryo tanks down to 175.

SC Roger, we've got the H2 purge heater ON.

CAPCOM Understand, and I am ready for the readback.

SC Roger, 021 dash 4 alpha plus 325 minus 16100324434385 niner 0224 charlie plus 25 niner minus 16100341 niner 01385 niner 0234 charlie plus 145 minus 162503556034856. Are you still with us?

CAPCOM Roger, we've got 3 minutes left.

SC Okay, 024 alpha charlie minus 216 minus 0070036241153 niner 70254 charlie minus 178 minus 162003 niner 13138020026 alpha charlie minus 042 minus 026003 niner 335 niner 4000. Pitch .9, yaw .7. That is a minus and a minus.

CAPCOM That is affirmative, Houston confirms that update. We still have about 2 and 1/2 minutes left in this pass and we will see what our words of wisdom are on the tanks and that should be the last time we will have to talk to you tonight, I believe.

SC Okay. Can we talk to you if we want to?

CAPCOM            Okay Apollo 9, the way we would like for you to do it is after your time is up on the heater, to go ahead and do a purge as required to get it down to 175; and discontinue the purge, turn the heaters OFF and turn the fan ON in tank 2.

SC                 Roger, understand when the 20 minutes are up, you want us to purge H2 on all three fuel cells until the cryo gets down to 175. Discontinue the purge, turn the fan ON in tank 2, and sack out.

CAPCOM            That is affirmative. One other item I would like to get, if you can give it to us, is a dosimeter reading.

SC                 Roger, standby I'll give you mine.  
(garble).

CAPCOM            Apollo 9, if that was a transmission, I didn't get it. Apollo 9, do you read, Houston.

PAO                We have an indication that the spacecraft has moved out of range of the tracking station at Guam. At 29 hours, 40 minutes into the flight of Apollo 9, this is Mission Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 30:15, CST 1615 106/1

PAO This is Apollo Control at 30 hours, 15 minutes into the flight. Sometime back during the last pass over Hawaii we recorded about a minute of air-to-ground between the CAPCOM here at Houston, which is Stu Roosa, and the Commander, Jim McDivitt. We're prepared to play that back to you at this time.

CAPCOM Apollo 9, Houston through Hawaii.

SC Go ahead Houston, Apollo 9.

CAPCOM Rog, if you'll give me a dosimeter reading I'll be quiet for the rest of the night.

SC Roger, the dosimeter for Dave, 6102. My dosimeter is packed down in the bottom of my seat. If you really want it I'll unpack it. If you don't need it I'll delay it until tomorrow and give it to you.

CAPCOM That's negative. We don't want you to unpack it and the first one was for Dave, is that right?

SC 6102 is Dave's.

CAPCOM Okay, I got that.

SC You already got Rusty's, didn't you?

CAPCOM And I did not get Rusty's. Could you give me that one?

SC Oh, okay, just a minute. 8002.

CAPCOM Roger, 8002. And with that we'll close out. What we'd like to have you do in the morning would be to give us an evaluation of your sleep in hours, if you could, for tonight and the first night. We don't want to bother you with that now and unless you have something else, why, Smokey bids you a fond night's sleep.

SC Okay, thanks very much. Would you tell my family I said, "Hello."

CAPCOM Rog, will do that.

CAPCOM Apollo 9, this is Houston. You don't even have to answer me but if you don't get that filter changed as shown on the 30 hours, you're going to have a master alarm before your rest period ends.

SC Roger, Houston. Understand if we don't get the LIOH canister changed before 30 hours we'll have a master alarm before the end of our rest period?

CAPCOM That's affirmative. It's shown in the flight plan and I just wanted to remind you of it before we got too far into the rest period.

SC That's all right. You know what I told you about little reminds. How are things in Houston there, Smokey?

CAPCOM Say again.

SC How are things in Houston? Now that we're

not working I want to talk to you.

SC Negative. We refuse to talk to you; it's a rest period. The only thing we want is you to answer one question. Did you happen to move the B3 thruster switch, B1 thruster switch?

SC Roger, I did.

CAPCOM Okay, very good. That solves that problem and we've reminded you of the canister and that will keep you from getting a master alarm and we're not going to answer you anymore.

SC What are you, a smart guy?

CAPCOM No, sir.

SC Which one of those good teams is on right now, Gold or White or Orange?

CAPCOM It's the G squared team, good Gold.

SC Good Gold (garble).

PAO At 30 hours, 19 minutes into the flight of Apollo 9 the spacecraft now is heading over the tip of South America. The next station to acquire will be Ascension. The crew pretty much has rested, or bedded down rather, not rested yet, but they're pretty much bedded down. Doing a few housekeeping duties. We'll continue to monitor here in Mission Control. At 30 hours, 20 minutes, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 3050, CST 1650 107/1

PAO                      This is Apollo Control at 30 hours, 50 minutes, ground elapsed time. Apollo 9 has just passed out of range of the Tananarive Tracking Station at this time heading out over the Indian Ocean. Crew is settled down during their rest cycle with the spacecraft commander, Jim McDivitt, as the only one who is connected to bio-instrumentation at the present time. We've had some recent readings on McDivitt's heart rate and respiration and the flight surgeon reports this is what he saw. He read McDivitt as having 72 beats per minute and having a respiration of 11 per minute. The cabin temperature at the present time is holding at 72 degrees Fahrenheit, while cabin pressure has been steady at 4.9 pounds per square inch. Next station to acquire the spacecraft will be the Carnarvon tracking station on this 20th revolution. They will get acquisition in about 30 hours, 57 minutes or almost 30 hours, 58 minutes. However, we do not expect any communication between the ground since we are in the rest cycle and there has been no effort here to talk to the crew. All systems are looking well on the spacecraft at the present time at 30 hours, 52 minutes into the flight. This is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 3150, CST 1750 108/1

PAO                    This is Apollo Control at 31 hours, 50 minutes into the flight. Apollo 9 is just crossing the South American country of Ecuador, at the present time. Our present orbital measurement show a perigee of 109.2 nautical miles, apogee of 272.1 nautical miles, a total weight of gum drop and spider, that is the Command Service Module and docked Lunar Module, is now calculated at about 62 605 pounds. During the pass, the last pass over the States where we had acquisition at the tracking station Texas, the Flight Surgeon, Dr. John Zieglschmid reported that the Command Module pilot and the Commander were both in their couches and we were receiving biomedical information on them indicating they were resting, but not yet sleeping soundly. There is no indication of sleep on the part of the two pilots. The Lunar Module pilot, of course, is down in the sleep station and he is not connected with the - at the present time with biomed instrumentation. And as a result, we haven't received any data, any recent data on him. Mean while, the Flight Controllers here at Mission Control in Houston report that the systems are looking okay. They have been powered down for some time now, and that the spacecraft, of course, is in drifting flight. At 31 hours, 52 minutes, ground elapse time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 3252, CST 1852 109/1

PAO                    This is Apollo Control at 32 hours, 52 minutes at GET. Apollo 9 is presently in West Pacific area having moved out of range at the tracking station at Guam. We had a very short pass over Guam because of the position of the spacecraft in reference to the tracking site. Very little information was transmitted down, however, the spacecraft systems are working or looking well. We had a report that we were getting a good charge on battery A, for the batteries are being charged at the present time. About an hour and a half ago we had a shift change here with Astronaut Ron Evans at Capcom, replacing Astronaut Stu Roosa. We expect to acquire the spacecraft again in about ten minutes over the Hawaii tracking site. On this the 21st revolution at 32 hours, 53 minutes into the flight of Apollo 9. This is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 3350, CST 1950 110/1

PAO                      This is Apollo Control at 33 hours, 50 minutes GET. Apollo 9 presently is over the Atlantic Ocean approaching the lower tip of the continent of Africa. Earlier during this pass Dr. John Ziegelschmidt reported that biomedical telemetry beamed down from the spacecraft showed that the Commander, that would be Jim McDivitt, and the Command Module Pilot, Dave Scott, were in the initial stages of sleep. Dr. Ziegelschmidt reported that the Commander, Commander's heart rate was averaging about 60 beats per minute, and the Command Module Pilot's heart rate was averaging about 48 beats per minute. The next station to acquire the Apollo 9 spacecraft will be Tananarive in about 3 more minutes. We expect no conversation since the crew is in its rest cycle. At 33 hours, 52 minutes into the flight of Apollo 9 this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 3459, CST 2059 111/1

PAO                    This is Apollo Control at 34 hours, 59 minutes ground elapsed time. The crew of Apollo 9 has some 4 hours and 20 minutes of their sleep period remaining. The countdown clock shows, well, less than 4 hours and 20 minutes of - left in their rest cycle. I guess one might call that an alarm clock. Earlier while the spacecraft was in range of the Hawaii station, the Flight Surgeon reported that McDivitt and Scott appear to be sleeping rather soundly now. Their rates were 54 heart beats per minute, that is an average, for McDivitt; and 42 for Scott. The LM pilot, Rusty Schweickart, is in the sleep station under the crew couches and therefore his TM is not available because of the way the biomedical instrumentation cabling is arranged. Spacecraft systems appear to be functioning normally and well at this time. The next station to acquire Apollo 9 will be Tananarive at about one-half hour from now. At 35 hours, 1 minute ground elapsed time all systems are well and the crew is sleeping. This is Apollo Control.

END OF TAPE

PAO                      This is Apollo Control. Apollo 9 is in the 23rd rev at the present time, flying over the Indian Ocean - well, it's actually across India at the present time. During the Tananarive pass which occurred about a quarter of an hour ago, the TM again indicated that spacecraft systems were performing well and the crew apparently is sleeping rather soundly. So, the period of quiet is being maintained and it's fairly quiet here in the control center also, at 35 hours and 52 minutes, GET. This is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY 3/4/69 GET 36:51 CST 2251 113/1

PAO This is Apollo Control at 36 hours 51 minutes into the flight. There is increased activity in Mission Control at this time. A change of shift is under way. The gold team members are saying goodnight while the orange team members are saying good morning. Meanwhile the Apollo 9 is crossing the Atlantic Ocean approaching the ascension tracking station. Aquasition there will be in about four more minutes. During the last pass over Hawaii about a half an hour ago the biomedical telemetry from the commander showed that he had an average heart rate of 68 beats per minute. This lead Doctor John Ziegelschmidt, the flight surgeon to conclude that Astronaut McDivitt probably was awake, however there was no air to ground conversation between the two, the ground letting him rest. All systems appear to be working normally on the spacecraft at this time. The astronauts still have about two hours and 26 minutes of rest, rest time before they will be awakened for what promises to be a very very busy day. At 36 hours 53 minutes into the flight of Apollo 9 this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/4/69, GET 37:50, CST 23 50 114/1

PAO                    This is Apollo Control 37 hours 50 minutes ground elapsed time. The Apollo 9 spacecraft is over the Central Pacific at this time and will be coming over the tracking ship Mercury in approximately 6 minutes. The three crewmen aboard Apollo 9 are still apparently asleep; there have been no conversations with the ground in the last several hours since the rest period began. The onboard cabin pressure readouts as telemetered to the ground now show a cabin pressure of 4.9 pounds per-square-inch, a temperature of 69 degrees Fahrenheit. Recent tracking has shown the orbit to be 109.1 nautical mile perigee by 271.9 nautical mile apogee. The gross weight is computed to be 62 605 pounds of the command and service module and the docked lunar module. The countdown clock, or alarm clock, for waking up the crew shows one hour 28 minutes remaining of the rest period. When the crew is awakened and have breakfast, they immediately go into putting on their pressure garment assemblies and prepare to transfer two men, the lunar module pilot Rusty Schweigart first and the commander Jim McDivitt later on, into the lunar module through the tunnel connecting the two spacecraft for complete rather exhaustive series of systems checkouts. At 37 hours 52 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 38:50, CST 00:50a 115/1

PAO                    This is Apollo Control 38 hours 50 minutes ground elapsed time. Apollo 9 is presently over North Central Africa at the beginning of the 25th revolution. Earlier in the evening during the later part of the 24th revolution and crossing over the tracking ship Mercury at about 38 hours ground elapsed time, flight surgeon Ken Beers, reported that the commander and command module pilot heart rates were in the mid 50's and mid 30's respectively for the two men. The lunar module pilot, Rusty Schweickart, is in the sleep station beneath the couch and is not - does not have his biomedical harness attached. The wake time now - the clock on the wake up clock is 28 minutes 55 seconds; a second countdown clock here in Mission Control gives a time of 3 hours 18 minutes until the hatch between the command module and the lunar module will be opened for the intravehicular transfer of the lunar module pilot and later the commander into the LM for the days activities in powering up and checking out the lunar module. At 38 hours 51 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

PAO This is Apollo Control 39 hours 18 minutes ground elapsed time. Apollo 9 midway through the 25th revolution is now over the tracking station at Guam. The tracking at Guam and also the ships Huntsville and Mercury all overlap for a total time of about 25 minutes. The countdown clock for awakening the crew now shows a minute and a half left until the end of the rest period for the crew of Apollo 9. After the crew does wake up and get a flight plan update here from Mission Control, they will then go into an eat period for their breakfast before a very busy day of checking out and activating the lunar module, the first manning of the lunar module of this mission. We're monitoring the air-ground here for any calls that spacecraft communicator Ron Evans might make to the crew of Apollo 9 to see if they're awake. We'll stand by to join that conversation when it begins. Another countdown clock here in Mission Control is showing now 2 hours 50 minutes until the hatch is open between the lunar module and the command module for the intravehicular transfer of two of the crewmen into the LM. He's putting in a call now, let's listen.

CAP COM Apollo 9, Houston calling.

SC Good morning Houston, Apollo 9.

CAP COM Rog. I'm a long ways away so you can't hit me for waking you up.

SC Say again.

CAP COM I'm a long ways away so you can't swing and hit me on waking up.

SC Okay. How's everything lookin' down there?

CAP COM It's looked beautiful all night, kept it so quiet here we didn't have too much to do.

SC Oh-h. Very good.

CAP COM I have a lot of good information here, flight plan update, consumables and some block data when you get around to copying some of it.

SC Okay, stand by one. (pause) Okay Houston Go with your flight plan update.

CAP COM Roger. At time about 39 plus 55 primary glycol accumulator refill, fill to 50 to 55 percent, LMP two dash seven step four. Over.

SC 39 plus 55 primary glycol accumulator refill, fill to 50 to 55 percent. Houston Command, did you read that?

CAP COM Houston. Roger came through kind of weak but I got it okay. Change. Move S-band conference lift in relay up to 44 plus 18 over Honeysuckle. Systems page 27. Over.

SC Okay. Move S-band conference command S-band relay up to 44 plus 18 over Honeysuckle. Systems page 27.

CAP COM Roger, next one. Move CSM one way relay

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 39:18:00, CST 01:18a 116/2

CAP COM up to 45 plus 38 over Carnarvon. Systems  
page 31. Over.

SC Roger. Move CSM one way relay up to 45  
plus 38 over Carnarvon, systems page 31.

CAP COM Roger. That's all of the general things  
we're gonna try to give your state vector and your reference -  
REF MATS we'll send it over Guam at 40 plus 51.

SC Roger. 40 plus 51 for the state vector  
REF MATs.

CAP COM Roger. I have your consumables.

SC Roger and the consumables, okay.

CAP COM GET 039 75 17 76 22 81 22 76 22, 528 44  
36 31 39. Over.

SC Okay 039 75 17 76 22 81 22 76 22, 528

44 36 31 39.

CAP COM 9, Houston. Your readback correct.

SC Roger.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 3928, CST 0128, 117/1

SC Houston, 9, Did you want to go over the  
block data, too?  
CAPCOM Roger. I have it if you're ready.  
SC Okay, go.  
CAPCOM Roger. 027 Alpha Charlie plus 090 minus  
0310 04116 03 3529 0282 Alpha plus 249 minus 0264 043 0257  
3001 029 Alpha Charlie plus 317 minus 0285 044 46 10 3569  
0302 Charlie plus 340 minus 0290 04624 14 3859 0312 Charlie  
plus 321 minus 0320 047 5831 3859 0322 Bravo plus 253 minus  
0330 04934 33 4358. Your SPS trim - Pitch minus 0.9, Yaw  
minus 0.7. Over.  
SC Go ahead.  
CAPCOM (Too low to be understood) ready to go.  
CAPCOM Apollo 9, Houston.  
CAPCOM Rog. Rusty (too low)  
SC (cannot understand)  
CAPCOM Okay.  
CAPCOM Okay. Great.  
CAPCOM Put that (too low to be understood)  
CAPCOM Rog. Chief, this is the stuff that I  
wanted to (too low) Rusty, do you have your headset on?  
SC (cannot understand)  
CAPCOM Okay (too low) He was concerned about  
the (garble) call out for (garble) rev number is 140 - 1 4 0  
(garble)  
SC (cannot understand)  
CAPCOM Roger.  
PAO This is Apollo Control Again. We're  
still over the tracking ship Mercury with something like  
7 minutes left in this pass over the ship, but there's no  
conversation going on at the present time from the spacecraft  
communicator's console. Apparently the crew is still getting  
waked up and ready to start their breakfast meal. We'll  
continue to monitor the air-ground in case some further con-  
versation does arise. We're standing by on air-to-ground.  
SC (cannot understand)  
CAPCOM (cannot understand)

END OF TAPE.

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 39:38:00, CST 01:38a 118/1

PAO                    This is Apollo Control still over Mercury with some four minutes left. Apparently there will be no further conversations with the crew at this time until they come over Ascension. Scheduled originally over Ascension was the block data but that has already been read up to the crew by spacecraft communicator Ron Evans. Wake-up took place at 39 hours 21 minutes ground elapsed time; command module pilot Dave Scott responded to the first call and also jotted down all of the flight plan updates and the block data. At 39 hours 38 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 40:10, CST 02:10a 119/1

PAO This is Apollo Control 40 hours 10 minutes ground elapsed time. Apollo 9 is coming up on the tracking station at Ascension Island in the South Atlantic; this will be a pass lasting some 7 minutes 36 seconds. We'll stand by until spacecraft communicator Ron Evans puts in a call through Ascension to the crew of Apollo 9. We'll monitor the air-ground loop at this time.

CAP COM Apollo 9, Houston through Ascension.  
Apollo 9, Houston through Ascension. Apollo 9, Houston.  
Apollo 9, Houston.

SC Go ahead.

CAP COM Rog. If you haven't already done it we'll set up our hydrogen tank one and two heaters to AUTO and the fans OFF for the day.

SC Okay. Heaters one and two to AUTO and the fans OFF.

CAP COM Roger. And I have your block data if you're ready to copy.

SC Okay, stand by one, please.

CAP COM Roger.

SC Houston, how long's this pass?

CAP COM They got a keyhole, I'll have about a minute and a half here yet.

SC Okay, stand by. Okay, go ahead Houston how about starting with 28 dash 2A?

CAP COM Roger! 028 dash 2A alpha plus 249 minus 0264 043 02 57 3001; 029 alpha charlie plus 317 minus 0285 044 46 10 3569; 030 2 charlie plus 340 minus 0290 046 24 14 3859 and 9 Houston you still with me? Apollo 9, Houston.

PAO This is Apollo Control again, apparently we've had loss of signal at the Ascension Island tracking station. During the pass earlier this morning over the tracking ship Mercury, MSC director of medical operations Dr. Charles Berry did discuss with the crew their present physical condition. He ascertained their medical status for the next several days for a very busy flight plan. They reported no additional symptoms of colds although there was some nasal stuffiness reported due to the oxygen environment and he recommended they take afrin spray for that. They also gave him a sleep report for the first night; command module pilot Dave Scott reported 6 hours the first night, four hours on the second night and another block of an hour and a half's sleep for a total of some 5-1/2 hours. Commander Jim McDivitt had only two hours sleep the first night but a total of 7 hours sleep on the second night. Lunar module pilot Rusty Schweickart had a good solid 7 hours sleep on both nights. There had been no -- there has been no evidence of motion sickness of any kind on --

*1st  
Private  
Conversation  
(SUMMARY)*

END OF TAPE

A/9, MISSION COMMENTARY, 3/5/69, GET 00:45, CST 40:20, 120/1

LOTS OF DEAD AIR.

END OF TAPE

A/9, MISSION COMMENTARY, 3/5/69, GET: 40:51 CST: 02:51 121/1

PAO This is Apollo Control, 40 hours 51 minutes GET. We're some 30 seconds away from acquisition at the tracking station Guam, which in turn overlaps with the coverage by the tracking ship Huntsville and on down through the Mercury. All of the three stations overlap each other for a total pass of around 28 minutes. During the series of three tracking station passes, the Mission Control Center here is scheduled to pass up to the crew a state vector update. The lunar module alignment optical telescope star observation pad and also the lunar module S-band steerable antenna pad. This information will be used during the later checkouts of the lunar module after it is manned. We're now some hour and 17 minutes away from opening the hatches between the command module and the lunar module. We should have had acquisition now, we'll stand by for spacecraft communicator Ron Evans to call the crew through Guam. Listening for the familiar beep sound as the spacecraft communicator keys his mike. There he goes.

CAPCOM - through Guam.  
SC Rog. Houston, Apollo 9 Co.  
CAPCOM Rog. We see you have Poo. Request  
accept.  
SC Rog. You got accept.  
CAPCOM Roger. We'll send your state vector and  
your REFSMMAT up to you,  
SC Okay.  
CAPCOM We might continue with block data when  
you get a chance there.  
SC Okay. Stand by there please.  
SC Houston, Apollo 9.  
CAPCOM Houston Co.  
SC Okay. Let me copy it up through the job  
that we see on 030 dash 2 Charlie. Do you want to go from  
there?  
CAPCOM Roger. Delta VC on 030 dash 2 Charlie  
3859 031 dash 2 Charlie plus 321 minus 0320 047 5831 3859  
0322 Bravo plus 253 minus 0330 049 3433 4358, and your SPS  
trend pitch minus 0.9 yaw minus 0.7. Over.  
SC Roger understand. I'll read them all  
back to you if your ready.  
CAPCOM Roger. Go.  
SC How do you read now, you fading on me.  
CAPCOM Roger, loud and clear.  
SC Okay. 027 Alfa Charlie plus 090 minus  
0310 041 1603 3529 028 dash 2 Alfa plus 249 minus 0264 043  
0257 3001 029 Alfa Charlie plus 317 minus 0285 0444610 3569  
030 dash 2 Charlie plus 340 minus 0290 0462414 3859 031 dash  
2 Charlie plus 321 minus 0320 0475831 3859 032 dash 2 Bravo  
plus 253 minus 0330 0499433 4358 and I have for a pitch trend

A/9, MISSION COMMENTARY, 3/5/69, GBT: 40:51, CST: 02:51, 121/2

SC - minus 0.9 and yaw trend minus 0.7.  
CAPCOM Apollo 9, Houston. You read back correct.  
CAPCOM Apollo 9, Houston. The computer is yours.  
SC Okay, I understand and did you copy all  
that.  
CAPCOM Affirmative. You read back was correct  
and I have a NAV check for you.  
SC NAV check. Okay, go ahead.  
CAPCOM Roger. 042 00 0000 plus 2858 plus 00646  
1126 and this is 30 minutes prior to NAV update.  
SC Roger. 042 0000 plus 2858 plus 0646 1126.  
CAPCOM Apollo 9, Houston. You read back correct.  
SC Roger.

END OF TAPE

A/9, Mission Commentary, 3/5/69, GET 41:01, CST 03:01, 122/1

CAP COM Apollo 9 Houston.

CAP COM Apollo 9 Houston.

SC Houston Apollo 9, go ahead.

CAP COM Roger. I have a new CSM weight for your

Dap Data Load.

SC OK, go.

CAP COM Roger. CSM weight 30571

SC Apollo roger, 30571 for CSM weight.

CAP COM Affirmative.

PAO Apollo control here. We still have approx-

imately 10 minutes left in this combined Guam, Huntsville, Mercury pass. There's no conversation taking place at this time. We'll leave the circuit up though and continue to monitor.

CAP COM Apollo 9 Houston. I have your AOT star observation pass.

SC OK stand by please.

CAP COM Wilco.

SC OK. Houston Apollo 9. Go with the AOT

PAP.

CAP COM Roger. GET 043 plus 55 plus 00 AOT descent  
2 nav. star 15 sirius CSM gimbal angles roll 079 pitch 358  
Yaw 309

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4111, CST 0311, 123/1

CAPCOM Pitch 358, Yaw 309, comments, Earth in field-of-view until 43 plus 55. Over.  
SC Okay. Copy that at 0435500, AOT D-tent 2, nav star Sirius 15, Roll 079, Pitch 358, Yaw 309, Earth in field-of-view until 43 plus 55.  
CAPCOM Apollo 9, Houston. Correct.  
SC Okay.  
SC Houston, Apollo 9.  
CAPCOM Houston, go.  
SC Hey when you sent us a REFSMMAT, did you put it in the preferred location?  
CAPCOM Affirmative.  
SC Okay, thanks. Just wanted to make sure.  
CAPCOM Rog.  
CAPCOM Apollo 9, Houston, about 1 minute to LOS. I've got some S-band antenna checks, gimbal angles and times, if you want them?  
SC Okay. I guess a good of time as any.  
CAPCOM Okay, the first one GET: 44 plus 06 plus 00, Pitch 188, Yaw 070, GET: 44 plus 08 plus 00, Pitch 169, Yaw 044. GET: 44 plus 10 plus 00, Pitch 159, Yaw 017.  
SC Okay. S-band 4406, Pitch 188, Yaw 070, 4408, Pitch 169, Yaw 044, 4410, Pitch 159, Yaw 017.  
CAPCOM Roger. Correct and Canaries at 52.  
PAO This is Apollo Control. Apparently we have had LOS at Mercury, at least the acquisition table shows it. It's time to lose the signal at Mercury. Most of the information passed up to the crew of Apollo 9 during

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 41:21, CST 03:21a 124/1

PAO                    --at Mercury at least the acquisition table shows its time to lose the signal at Mercury. Most of the information passed up to the crew of Apollo 9 during these three station passes here had to do with exercises to be done during the manning of the LM this morning. Among these were some numbers for using the optical alinement telescope onboard the LM and would involve using the star Sirius in the constellation Canis Majoris or Greater Dog in the southern celestial sphere. This star has been known to mariners for centuries as the Dog Star. Next station for acquisition will be the Ascension Island station. As you were, scrub that. Canary Islands, we miss Ascension on this particular rev, we're coming up on the end of rev 26 and will begin rev 27 and we'll acquire at Canary Islands at 51 minutes 50 seconds past the hour. At 41 hours 22 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

A/9, Mission Commentary, 3/5/69, CST 03:51, GET 41:51, 125/1

PAO This is Apollo control. 41 hours 51 minutes ground elapse time. Some 15 seconds away from acquisition by the Canary Island tracking station. This pass will have a duration of some 6 minutes 46 seconds. One of the items to be passed up to the crew during this pass by spacecraft communicator Ron Evans will be a go for intravehicular transfer by Rusty Schweickart and Jim McDivitt into the LM. They don't go through at the same time, let's listen in on the conversation.

SC Alright. Houston Apollo 9 go.  
CAP COM Roger, loud and clear. Everything looks good down here. You have a go for IVT.  
SC Roger. I understand a go for IVT. Thank you. We're all mushing along.  
CAP COM Roger.  
CAPCOM Apollo 9 Houston. 1 minute to LOS. S band up for Honeysuckle at 37 will try Aria at 29.  
SC Roger. Honeysuckle at 37 and Aria at 29 and S band up at Honeysuckle.  
CAP COM Roger.  
CAP COM Have a good day. Will see you this evening

SC OK. Thank you Ron.  
CAP COM Roger.  
PAO This is Apello control. We should have had loss of signal at this time with the Canary Islands station. At the present time the flight plan calls for the crew of Apollo 9 to be clearing the tunnel hardware from the tunnel connecting the lunar module and the command module. The hatches have to be removed, the probe and drogue assembly and then lunar module pilot Rusty Schweickart will travel through the tunnel into the LM and begin the status check. And also preparations for powering up the LM's systems. He's due to transfer into the LM at 42 10 ground elapse time and will be followed at about 43 10 by commander Jim McDivitt. Some 10 minutes away from hatch opening according to the count down clock which is set up to count down to various events during the mission. Here in mission control center Ron Evans is handing over the job of spacecraft communicator to Stu Roosa for the next 12 hours. The spacecraft analysis staff support room in the side hall of mission control here at ground elapse time of 40 hours, some 2 hours ago. They show a spacecraft status report. The report states that the environmental construscent, er, environmental control system and all the asociated crew equipment have no change in the earlier status. In the propulsion and power systems the service propulsion system has no change. All measurements are within limits. The same holds true for the reaction control system. In the battery situation, battery A is continuing to charge with approximately nine and a half amp-hours put back into battery A. Of a total charge required at 12...  
END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4201, CST 0401, 126/1

PAO put back into Battery A of a total charge required of 12.2 amp hours. Battery B has 6.8 amp hours drained out and remaining amp hours are 33.2. Battery C amp hours out 1.13 with 38.87 amp hours remaining. The cryogenic oxygen and hydrogen aboard the spacecraft - all of the quantities at least in the oxygen are slightly above prelaunch predictions, while the hydrogen quantities are remaining slightly below the predictions. The hydrogen pressures continue to come back up while the oxygen is cycling normally. Some percentages and quantities in pounds are as follows: Oxygen - cryogenic oxygen tank 1 has 81.07 percent for 262 pounds; cryogenic oxygen tank 2 has 82.16 percent for a quantity of 266 pounds; hydrogen tank 1 79.64 percent for 22.4 pounds; hydrogen tank 2 77.85 percent for 21.9 pounds. The totals in oxygen are 528 pounds; hydrogen 44.3 pounds. The service module fuel cells are performing normally according to this report. All command and service module temperatures are within limits in the structures and thermal area of the report. The next station to acquire Apollo 9 will be Honeysuckle. However, just prior to Honeysuckle acquisition at 37 minutes past the hour, there will be an attempt to relay through an ARIA aircraft, that is, Apollo Range instrumented aircraft, at 29 past the hour, which will be somewhat to the north of the Honeysuckle, Australia station. At 42 hours 04 minutes GET, this is Apollo Control.

END OF TAPE.

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4229, CST 0429, 127/1

PAO This is Apollo Control 42 hours 29 minutes GET. We should be acquiring with the ARIA aircraft somewhere just west of the Island of New Guinea. We'll stand by. We hear a side tone of the relay from the aircraft. However, the spacecraft communicator, Stu Roosa here in Mission Control, has not put through a call yet. The ARIA's relay will overlap the Honeysuckle station between Honeysuckle LOS and Mercury. Actually, we'll have some tracking there by the ship Huntsville. And then on to the Mercury with a few seconds dropout between Huntsville and Mercury. The orbital tracks are beginning to be to the southwest of the ships and this will likely be the last pass in which these two ships in the South Pacific will be able to acquire Apollo 9 until some 24 hours later when the orbital track comes back over them. We're still standing by here for any possible contact through the relay aircraft. Apollo Range Instrumented Aircraft with an acronym, ARIA. At this time, Lunar Module Pilot Rusty Schweickart should be inside the LM and for the first time in this mission, the code names for the two spacecraft, Gumdrop and Spider, will come into use as we have three-way communications. Scott and McDivitt still inside the command module and Schweickart in the lunar module. He's calling now.

CAPCOM Houston CAPCOM. Go remote.

ARIA Houston, this is ARIA I'm going remote at this time.

CAPCOM Rog. Apollo 9 this is Houston through ARIA 1. Do you read?

PAO This is Apollo Control. Apparently there is some difficulty in establishing contact through the ARIA aircraft. We'll continue to monitor the air-ground circuit.

PAO This is Apollo Control. Still nothing but noise on the air-ground circuit. We're still approximately 1 minute away from acquisition at Honeysuckle. We'll continue to stay on the air-ground circuit in case there is contact through the ARIA aircraft.

CAPCOM Apollo 9 this is Houston through Honeysuckle, standing by.

SC Roger, Houston, this is Apollo 9 here. Go ahead.

CAPCOM Rog. Copy. We're just standing by.

SC Okay. We're still trying to do a P-51 here. We haven't starting clearing the tunnel so we're running quite a bit late.

END OF TAPE.

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 42:39:00, CST 04:39a 128/1

PAO                    This is Apollo Control. We're still standing by here over Honeysuckle. There'll be a brief drop out between Honeysuckle loss of signal and tracking ship Mercury acquisition signal. Apparently the crew is quite busy at this time doing a platform alinement. They advised spacecraft communicator Stu Roosa here in Mission Control that they had not cleared the tunnel as yet to begin the intravehicular transfer from the command module to the lunar module. We'll continue monitoring this pass but it is unlikely there will be too much conversation.

...                    Huntsville ...  
CAP COM                And Apollo 9, Houston, we'll see you over  
Mercury in about 3 minutes.  
SC                      Roger.  
...                    Huntsville LOS.  
CAP COM                And Apollo 9, Houston, we got --

END OF TAPE

A/9, MISSION COMMENTARY, GET: 42:47, CST: 04:47a, 3/5/69, 129/1

CAPCOM Apollo 9, Houston. We've got you through Mercury.

SC Houston, Apollo 9. Say again.

CAPCOM Rog. We've got you through the Mercury solid, have you for about another 8 1/2 minutes.

SC Roger. We've just completed a P51-52 and we'll be rushing on.

CAPCOM Rog.

SC Houston, Apollo 9.

CAPCOM Go Apollo 9.

SC Roger. We're going to be pretty busy here for the next few minutes. If you see us getting toward gimble lock, let's us know.

CAPCOM Rog. We'll only have contact with you for the next 3 minutes and then our next station is Antigua at 17.

SC Okay.

PAO This is Apollo Control. We're still in acquisition by the tracking ship Mercury, however it appears there will not be to much additional conversation during this pass. Earlier in the pass over Honeysuckle, spacecraft commander Jim McDivitt reported that the tunnel between the two spacecrafts has not been cleared yet of the probe and the droge and the hatches. They were still in platform alinement task. We'll continue to monitor the Mercury pass untill loss of signal but it will likely be dead air.

PAO This is Apollo Control. According to the tables in front of the control room, we should have had loss of signal at the tracking ship Mercury. The next station will be Antigua at 17 past the hour. At 42 hours 57 minutes GET this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4316, CST 0516, 130/1

PAO                    This is Apollo Control at 43 hours 16 minutes GET. We are a few seconds away from acquisition at the Antigua tracking station. At the beginning of revolution number 28. Apollo 9 presently is in an orbit with a perigee of 109.1 nautical miles and an apogee of 271.7 nautical miles. Total weight of both spacecraft is now at 62 545 pounds. Here in Mission Control, there is several huddles going around and discussion of how best to get back on the mission time-line. The delay is caused by the crew not having been able to aline the platform prior to the intravehicular transfer into the lunar module. We'll stand by now for acquisition at Antigua overlapping tracking ship Vanguard on through the Canary Islands and Madrid for a total time of some 20 minutes. Standing by for the familiar beep beep sound as CAPCOM keys his headset.

SC                    Houston, the docking tunnel index angle is plus 2.1.

CAPCOM                Rog, copy, plus 2.1. Thank you.

SC                    Houston, Apollo 9.

CAPCOM                Go, Apollo 9.

SC                    Since we're running so far late here, you might take a look at the flight plan and see what needs to be changed. I don't have time to do that.

CAPCOM                Rog. We're working on that now. We can give you some recommendations later on.

SC                    Rog.

SC                    Houston, just for info, tunnel clearing went pretty much according to plan.

CAPCOM                Rog. I understand that tunnel clearing went real well and just for info, we're looking ahead. We're just saying press right on down the line right now, Jim, and we may just slip the docked DPS a rev.

CAPCOM                But I think with your activity in negative, this may make up a good bit of the time.

SC                    Houston, Apollo 9.

CAPCOM                Go, Apollo 9.

CAPCOM                Apollo 9, Houston, go ahead.

SC                    Houston, Apollo 9.

CAPCOM                Go ahead Apollo 9, Houston is reading you loud and clear.

SC                    Rog. Another little piece of info for you. The drogue looks as good as new. There was a very small pencil line about 4 inches long, and that's about all we could see on it.

CAPCOM                Rog, Apollo 9, copy.

END OF TAPE.

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 43:26, CST 05:26a 131/1

PAO This is Apollo Control here. We're in a gap now between Vanguard loss of signal and Canary acquisition just a few seconds drop out here. We'll continue to monitor the air-ground circuit for any possible conversation.

SC ... Houston, Apollo 9.

CAP COM Go, Apollo 9.

SC One little problem we might advise you of here, you might think about it. On the optics on the drive the manual drive of the optics, the shaft seems to hang up around 64 degrees when you try to drive it manually. Seems to drive okay automatically. The teapot, the readout on the LEV, the mechanical readout is frozen at 64 degrees. The numbers read 64.0 and we haven't been able to get that to move since yesterday. Once you get past the 64 degree mark, it seems to work okay.

CAP COM Rog, Apollo 9. Houston copies.

SC Okay.

CAP COM And Apollo 9, Houston. We'd like to have you bring up your S-band volume, we'll be working Madrid.

SC Roger. S-band up. (pause) Houston, Apollo 9.

CAP COM Go, Apollo 9.

SC Okay I've got the gyro torquing angles for the P-52 if your ready to copy.

CAP COM Go ahead.

SC GET 42 48 00 minus 01172 minus 00 099 plus 00413.

CAP COM Rog, Apollo 9. I copied those, thank you.

SC Okay.

END OF TAPE

A/9, MISSION COMMENTARY, 3/5/69, GET: 43:36, CST:05:36 132/1

CAPCOM            Okay, Apollo 9, Houston. We're going to lose you at Madrid in about a minute and we'll see you over Carnarvon at 04.

PAO                This is Apollo Control. Apparently we have had loss of signal at Canary Islands. During that combined pass over Antigua, Vanguard, Canary and Madrid there was some discussion there of getting back on the time line. Stu Roosa, spacecraft communicator, indicated that perhaps they may slip the dock descent propulsion system burn by one revolution. Jim McDivitt, Apollo 9 commander, reported that they had some minor problem with the command module sextant and telescope optics in the manual mode where it sticks at 64½. The space flight meteorology group here at mission control has issued an advisory for weather conditions for the flight of Apollo 9, and landing zones for today and tomorrow. The primary landing zone in the West Atlantic centered about 800 miles east of Jacksonville, skies will be partly cloudy, winds will be northerly 20 to 25 knots with seas 6 to 8 feet and temperatures near 68½. In the Mid-Pacific landing zone centered at about 600 miles northwest of Honolulu, weather will be partly cloudy with southerly winds 15 to 20 knots. Seas are expected to be 7 feet with temperatures ranging from 60 degrees to 70 degrees. In the west Pacific landing zone centered about 400 miles southeast of Tokyo, skies will be partly cloudy, winds will be northeasterly with seas 5 feet and temperatures 50 degrees to 55 degrees. In the east Atlantic landing zone centered about 500 miles southwest of the Canary Islands, partly cloudy skies are forecast with easterly winds 10 to 15 knots, seas upto 3 feet, and temperatures 60 degrees to 70degrees. Next station to be aquired by Apollo 9 will be the Carnarvon, Australia tracking station. At 3 minutes past the hour, lapping over Honeysuckle and on in to Mercury for a total pass time of the three stations of some 30 minutes. At 43 hours 40 minutes GET this is Apollo Control.

END OF TAPE

1st Schweickart 11245/11

A/9 Mission Commentary, 3/5/69, GET 4350, CST 0550, 133/1

PAO This is Apollo control. At 43 hours, 51 minutes ground elapse time, Apollo 9 is currently over the Persian Gulf. And we've had confirmation that lunar module pilot Rusty Schweickart has indeed transferred to the lunar module. We're beginning to get data now on displays from the various lunar module systems and Jean Kranz the white team flight team flight director who is in for the first manning of the LM although he does not go on duty for a couple of hours ah did ah say that apparently at Canary sometime during the Canary pass Schweickart did transfer to the lunar module. There likely will be a three way conversation during the coming pass over Carnarvon, Honeysuckle, and Mercury with the call signs gumdrop and spider. Gumdrop representing the command module with McDivitt and Scott still aboard and spider meaning the lunar module with Rusty Schweickart minding the store and powering up the spacecraft getting ready for the day's activities and activating the LM and the later docked descent propulsion system burn. At 43 hours 52 minutes ground elapse time this is Apollo control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 44:03, CST 6:03a 134/1

PAO This is Apollo Control, 44 hours 03 minutes ground elapsed time. Approaching acquisition at Carnarvon, Australia which will overlap with the Honeysuckle station and on into the Mercury for about 30 minutes total time. We've had one initial call, we'll eavesdrop now.

... (cutting in and out)

SPIDER Gumdrops, Spider.

GUMDROP Go ahead Spider, Gumdrops here.

SPIDER Spider. Do you want the tape off now

also?

GUMDROP It doesn't say so. Seems like a good idea though.

SPIDER Yeah. Tape coming off.

CAP COM And Spider got the --

GUMDROP Okay, we're configuring the CSM now for the --

SPIDER Go ahead, Jim.

GUMDROP --LM data and we want 'cha to go to telemetry low.

SPIDER Roger. We're telemetry low.

GUMDROP VHFB transmitter to data and VHFB receiver to OFF.

SPIDER Roger, got.

GUMDROP Okay, we've already done the antenna check, just a second.

CAP COM Spider, this is Houston. Could you give us high bit rate, please?

SPIDER Roger, Houston, Spider, high bit rate.

How do you read Houston?

CAP COM I read 'cha five square and Gumdrops I'm copying you five by by.

GUMDROP Roger. Okay, I've got the tape off here now. Was there any noticeable difference between the antennas?

SPIDER Oh, a little bit but I had a lot of noise in the S-band when I tried it.

GUMDROP Okay, let's just stay where you are, this is good over here.

SPIDER ... good here, too.

GUMDROP Okay, I'm gonna be coming over now so I'll see 'ya in a minute.

SPIDER Okay, now wait a minute. I've gotta get my hose hooked up here, Jim.

GUMDROP Roger.

SPIDER Gumdrops.

GUMDROP Go ahead.

SPIDER Roger. We're gonna have to transfer me onto the ECS, first few steps there are mine I think.

GUMDROP Okay, let me go back here and get these.

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 44:03, CST 6:03a 134/2

GUMDROP Yeah, when you get ready to transfer over  
let us know, we'll turn your suit flow off.  
SPIDER Okay, standby. Let me advise.  
GUMDROP Okay.  
CAP COM Gumdrop, Houston.  
GUMDROP Go ahead.  
CAP COM Rog. We're trying to do a little plan-  
ning here, we'd like to have your opinion on how you're doing  
on the timeline and we're looking trying to size up whether  
or not you're more than an hour behind it.  
GUMDROP Just a minute and let me see. We're just  
about ready to start the CDR transfer which is suppose to  
take place at 43:08 and we're at 44:06.  
SPIDER Let me turn my suit (garble) Gumdrop.  
GUMDROP Okay, just a minute we'll get it off.  
So we're running just about an hour behind.  
CAP COM Okay, copied.  
GUMDROP We haven't run into any Glitches yet so  
we're going right along here. Maybe we can pick up some time  
here in a minute.  
CAP COM Rog, copy,  
GUMDROP It's okay, Rusty. Suit (garble) coming off now.  
SPIDER Okay.  
GUMDROP Okay, then the LMP's supposed to take  
his suit isolation valve and let his suit flow when you get  
plugged in.  
SPIDER Okay (garbled) suit flow  
GUMDROP We'll egress from the umbilical here. Okay  
pass the ISO over to you in just a minute soon as we get the --  
CAP COM Spider, Houston. We'd like to have DFI  
on when able.  
GUMDROP And did you get that Rusty, they want DFI on? And  
Spider, configure the cabin with the stops you ... restraint.  
SPIDER Okay, Houston, we got the DFI on and be  
advised we had a master alarm with the DFI on and I don't  
have any other lights on.  
CAP COM Rog, copy.  
GUMDROP Okay, and I'm gonna disconnect here, I'll  
be on my way over in a minute, Rusty.  
SPIDER Okay, standby. Okay, I'm ready.  
GUMDROP Okay I'll put the checklist away and I'll  
take my helmet off and I'll be over in a minute.  
CAP COM Spider, Houston. When you get a chance  
we'd like to have the DFI off, we're heating up the glycol  
a little bit.  
SPIDER Roger. I'll be with you in just a second.  
CAP COM Rog, and Gumdrop and Spider, like to  
insure S-band volume up we're going over to Honeysuckle

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 44:03, CST 6:03a 134/3

CAP COM                   shortly.  
GUMDROP                   GUMDROP  
SPIDER                    And Houston, this is Spider.  
CAP COM                   Go.  
SPIDER                    Roger, for your information the supercrit  
pressure is reading zero at the moment.  
CAP COM                    Rog, copy, we're reading 686, Spider.  
SPIDER                    Okay.  
GUMDROP                   Houston, Gumdrops.  
CAP COM                    Go Gumdrops. Go ahead Gumdrops, Houston  
here.  
GUMDROP                   Houston, Gumdrops.  
CAP COM                    Gumdrops, Houston. I'm reading you loud  
and clear, go ahead.  
GUMDROP                   Okay, the noise is gone now. Would you  
keep an eye on the gimbal angles please?  
CAP COM                    That's affirmative, we'll watch 'em for  
you and we'll have you over Honeysuckle here for 10 minutes.  
GUMDROP                   True, very well. Thank you.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4413, CST 0613, 135/1

SPIDER Houston, Spider.  
CAPCOM Go, Spider.  
CAPCOM Spider, Houston, I'm reading you loud  
and clear.  
GUMDROP Spider, Gumdrop, he's reading you.  
CAPCOM Spider, this is Houston. I'm reading  
you loud and clear.  
GUMDROP Spider, Gumdrop. He reads you five by.  
GUMDROP Houston, Gumdrop. Did you copy to Spider?  
CAPCOM That's negative, Gumdrop. Maybe you'd  
better relay it.  
GUMDROP GFI is off and the R and D is open.  
CAPCOM Rog. copy.  
CAPCOM And Gumdrop, you're 30 degrees Yaw. We're  
watching it for you.  
GUMDROP Okay. Thanks.  
CAPCOM And Spider, Houston, We'd like to have  
R and D instrumentation circuit breaker Baker in as soon as  
you can.  
GUMDROP Spider, Gumdrop. R and D instrumentation  
circuit breaker Baker in when you have a chance.  
GUMDROP You say it is in?  
CAPCOM Okay, thank you Gumdrop.  
CAPCOM And Gumdrop, you're 40 degrees Yaw. We're  
watching it.  
GUMDROP Okay, thank you.  
SPIDER Houston, this is Spider. If you read,  
be advised that we got good signal on S-Band, but we're  
getting some static and and a steady tone.  
CAPCOM Rog. Spider, and we're reading you loud  
and clear now. Honeysuckle had you on a side lobe. We've  
got you in good voice and we're getting data.  
SPIDER Hello, Gumdrop, this is Spider. How do  
you read?  
Gumdrop Five square. How me?  
Spider Loud and clear. We've just come on the  
buttons here.  
Gumdrop Okay.  
SPIDER How do you read me on this one?  
Gumdrop Five square.  
Spider Okay, let me try - check the box.  
Spider Hello Gumdrop, this is Spider, how do  
you read?  
Gumdrop Sounds good.  
Spider Do you read me now, alright?  
Gumdrop Five square.  
Spider That's good.  
CAPCOM And Gumdrop, Houston, copied all three  
of those. You're coming through loud and clear, Jim.

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4413, CST 0613, 135/2

CAPCOM And Gumdrops, this is Houston. We're going to drop off with Honeysuckle, here. You've got 60 degrees and you've got about a 10th of a second rate.

CAPCOM Gumdrops, Houston. You've got about 60 degrees of Yaw.

...

Who's in the tunnel now?

...

Stand by, we're going to check that.

...

Okay.

...

(garble)

...

(garble)

...

Roger.

CAPCOM Mercury now.

Spider and Gumdrops, we've got you through

SPIDER read?

Roger, Houston, Spider here. How do you

CAPCOM

I'm reading you okay, Spider.

SPIDER

coming up on the S-Band, there over Carnarvon.

SPIDER

Or make that Honeysuckle.

CAPCOM

You were coming through here loud and clear, after we got a main lobe lockup.

SPIDER

a steady high tone on it.

CAPCOM

Rog. Understand you had a high comm.

CAPCOM

And, Gumdrops, we're showing you 60 degrees.

GUMDROP

and I think the trend looks like we'll clear it fine. Thank you.

CAPCOM

Rog. Thanks.

END OF TAPE.

End of 1st Comm. Houston

A/9, MISSION COMMENTARY, GET 4426, CST 0626, 3/5/69, 136/1

SPIDER Gumdrop, Spider.  
GUMDROP Go ahead.  
SPIDER Roger. We're ready to start re-installing  
GUMDROP Okay. Drogue's in.  
SPIDER Dave i guess you don't need me anymore  
in Apollo here, I'll go ahead and close up our hatch.  
GUMDROP I'd like for you to check the capture  
latches.  
SPIDER Yeah. Okay. I'm up here waiting for you.  
GUMDROP Be right up.  
SPIDER Yeah, I see your problem.  
GUMDROP Boy, I tell you these hoses are really  
something.  
SPIDER Houston, Spider.  
CAPCOM Go Spider.  
SPIDER Roger. We're picking up an awful lot of  
noise and static on the S-band again here.  
CAPCOM Rog. Understand, Gumdrop are you getting  
it also.  
GUMDROP Rog. Not bad.  
CAPCOM Did you say you were not getting it bad  
there?  
GUMDROP No, I'm not getting it bad, Gumdrop sounds  
clear, sounds like your standard S-band pass, Houston.  
CAPCOM Okay, copy that. Did you copy Spider.  
SPIDER Yes. I copied.  
SPIDER Okay, Dave, I'm right here.  
GUMDROP Okay.  
SPIDER Okay, that looks like that did it.  
GUMDROP Okay, now give a pull and it feels solid.  
SPIDER Yeah, I'll look for you out.  
GUMDROP Okay.  
SPIDER Fine. See you later - I'm gonna close the  
door.  
GUMDROP Alrightie, have a nice time.  
SPIDER We will.  
GUMDROP I'll get dinner ready when you're ready.  
SPIDER Man, am I hungry.  
GUMDROP Houston, Gumdrop.  
CC Go Gumdrop,  
GUMDROP How much longer do we have you here?  
CC Okay, we're gonna have you hear for about  
another 3 minutes and then we're coming up over Antigua at  
about 53, and I would like to pass to Spider also that we would  
like to try to pick up a nominal flight plan at Antigua with  
the secondary S band check. We are recommending eliminating  
the comm check and whatever you have to do to pick up the flight  
plan at that time.  
SPIDER Okay, Houston; we read you; this is Spider.

CC Okay.  
SPIDER What time is that pass at Antigua?  
CC Okay, Antigua will be at 53.  
SPIDER Roger, we'll be ready for you.  
GUMDROP Gumdrop copies.  
CC Okay, Spider, we have no good data for  
that AOT star visibility check; we'll have to eliminate that  
and so you could leave your rendezvous radar stowed if you  
want to.  
SPIDER Roger, understand.  
CC And we'll see you over Antigua.  
SPIDER Roger.  
CC And Gumdrop, I know with all the activity  
I'd like to remind you of your CO2 cartridge change that's  
due at 44.10.  
GUMDROP Roger. I'll have to get the tele closed  
up first but I'll get it first chance.  
CC Roger; no sweat. I just wanted to pass  
it to you.  
GUMDROP Okay, thank you.  
CC Spider, this is Houston. Would you go  
low-bit rate.  
SPIDER Roger, go on low-bit rate.  
PAO This is Apollo Control, 44 hours, 34 minutes  
ground elapsed time. We've had LOS at the tracking ship  
Mercury. Coming up toward the end of the first - or the  
beginning of the next revolution over Antigua, Vanguard,  
Canary Island and Madrid - at that time, some adjustments will  
likely be made in the flight plan to get back on the time  
line. Acquisition time for Antigua will be 52 minutes, 39  
seconds past the hour. At 44 hours, 34 minutes ground elapsed  
time this is Apollo Control.

END OF TAPE

PAO This is Apollo Control at 44 hours 52 minutes ground elapse time. We're a few seconds away from acquisition at the Antigua tracking station lapping over Vanguard, Canary Island, and Madrid for a total time of about 20 minutes. We'll stand by for Stu Roosas call to the crew and subsequent conversation three way between the ground here in mission control and Gum Drop and Spider. Still no attempt yet by CAP COM Stu Roosa to talk to the crew. Should be placing a call shortly, here he goes.

CAP COM Houston, how do you read?

SPIDER You're fine Houston how about me?

CAP COM Oh, you'r coming in great Spider. How are you doing?

CAP COM And Spider, we're standing by for the secondary S-band check - at your convenience.

SPIDER Roger. Power in going OFF now.

CAP COM Roger.

GUMDROP Houston, Gumdrop here. Come as close out and everything works as it should.

CAP COM Roger, Gumdrop. Thank you.

SPIDER And Houston, this is Spider. How do you read?

CAP COM We're reading you (interupted tape), Spider. We've had a data drop out here, let's hang loose and see if we can get our data check.

SPIDER Roger.

GUMDROP I could hear your data drop out.

CAP COM Very good.

CAP COM And Spider, this is Houston. Could you give us high bit rate?

SPIDER (Garbled.)

CAP COM Okay, Spider, we'll have to hang loose here for a minute. I'm getting your VHF down. We don't have a good lock on S-band.

SPIDER Roger.

CAP COM And while we are waiting could you comment on if you accomplished the - with the exception of the COMM check are you up on the flight plan now?

SPIDER We got the glycol check done and a suit integrity done. We have not accomplished a regulator check or the rest of the COMM, or the daylight star visibility.

CAP COM Okay, we are scrubbing the daylight star visibility and the COMM check. How about your SN battery?

SPIDER Roger. The SN battery checked out okay and the pyro. Are you ready to copy?

CAP COM Go ahead.

SPIDER Roger. 36.8, 37.5 - A and B.

CAP COM Roger. Copy - 36.8 and 37.5. Thank you.

SC Roger.  
SPIDER And for your information the ascent batteries were sharing just about equally.  
CAP COM Roger. Understand.  
CAP COM And Spider, we have got our data check.  
Let's go on with the secondary S-band check - step 2.  
SPIDER Roger. Power amp going to second A.  
CAP COM Roger.  
SPIDER Okay, and we are on secondary transmitter receiver. How do you read?  
CAP COM Roger. I'm reading you loud and clear.  
Let me verify that it is S-band, Spider.  
SPIDER Okay.  
CAP COM And Spider, this is Houston. Let's go on to set 3.  
SPIDER Roger.  
SPIDER And Houston, we are back in primary primary and be advised on the primary transmitter receiver I've got a squeal.  
CAP COM Roger. Understand you're primary primary and there is a squeal. You're coming through loud and clear hear without any static at all. Standby for a data. I will give you a call.  
SPIDER Roger.  
CAP COM And Spider, also we'd like to - at your convenience get an E memory dump in here. It's a little ahead of schedule, but we'd like to get it now if you can give us a verb 74 sometime on your mark.  
SPIDER Roger. Standby.  
SPIDER Okay. Three, two, one - mark.  
CAP COM Roger. We got your mark. We'll stand by and see if we got it. We might have you repeat it again shortly and let me see if we are through with this check.  
CAP COM Spider, this is Houston. We have completed the secondary S-band check.  
SPIDER Roger.  
CAP COM And Spider, if you have still got the squeal on primary, let's go secondary on your transmitter receiver.  
SPIDER Roger. It has gone away now. We'll see how it works.  
CAP COM Okay. Thank you.  
CAP COM Spider and Gumdrop this is Houston. We'll have you now for about another 12 minutes.  
GUMDROP Gumdrop Roger.  
SPIDER Spider Roger.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 45:02, CST 07:02 138/1

CAPCOM Spider, Houston, we'd like to know when you are going to deploy the landing gear. We'd like to have a mark on it and would like to get it before we lose you at Madrid, in about 8 minutes, if possible.

SPIDER Right away.

GUMDROP It will be pretty close to the end.

CAPCOM Okay, understand.

SPIDER Hey, gumdrop, this is Spider. why don't you deploy the landing gear in a few minutes (garbled)

GUMDROP Sounds good. Tell me when.

SPIDER Roger.

GUMDROP (garbled) give me a minute, will you?

CAPCOM Gumdrop and Spider, insure S-band volume UP. We'll be going over ti Madrid shortly.

GUMDROP Okay, how long before you want the gear down?

CAPCOM We're ready any time.

GUMDROP How long do we have?

CAPCOM Okay, you've got about another 5 minutes before we'll lose you at Madrid.

GUMDROP Okay.

CAPCOM And Spider, for your info we DFI, we can not read at Madrid, so we've only got about another minute here on Canaries to monitor that gear.

SPIDER Okay, Dave, we'll do it very quickly.

GUMDROP Okay, Houston. This is SPIDER. Are you ready?

CAPCOM We're ready.

SPIDER Houston, Spider, do you read?

CAPCOM Spider, this is Houston, read you loud and clear, we are ready, go ahead and deploy the gear.

SPIDER 3, 2, 1, MARK.

GUMDROP Spider, Gumdrop.

SPIDER Dave, (garbled) I've got (garbled)

GUMDROP Spider, Gumdrop. Okay, I think they copied you. they were listening when you said the 3, 2, 1, then I got a broken - the (garbled)

CAPCOM Gumdrop -

GUMDROP We've got one out here too, boy (garbled)

CAPCOM Gumdrop and Spider we copied you. We heard talk back gray, and you got a visual (garbled)

GUMDROP By the way, can you see me out your overhead window? Go ahead, don't let me bother you.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4512, CST 0712a 139/1

CAPCOM Spider, this is Houston. Can you give us low bit rate?

SPIDER Roger, going low bit rate and we are going to cal right now.

CAPCOM Roger, understand. We will see you over Carnarvon at 39.

SPIDER Okay. Did you get that gear extension, Houston?

CAPCOM That's affirmative, Spider. It came through loud and clear. We are showing the relay closed and I copied all your transmissions.

CAPCOM Gumdrop, this is Houston. Could you give us your up telemetry switch - your command to reset and back to normal?

CAPCOM Gumdrop, Houston. Could you give us reset and back to normal on your command reset?

CAPCOM And we will see you at Carnarvon at 39, Gumdrop and Spider,

PAO This is Apollo Control 45 hours 14 minutes into the mission. Madrid has LOS. We are essentially back on the time line after eliminating some communication checks and a daylight star check. The landing gear has been deployed. We have verified that on the ground, as well as visual verification from Gumdrop. The LM cabin pressure is holding at 5.15 pounds per square inch. Cabin temperature is 67 degrees. Gene Kranz's White Team has relieved the Orange Team, led by Flight Director Pete Frank. We are estimating the change of shift briefing for 8 am central standard time. The next station to acquire will be Carnarvon at 45 hours 39 minutes. This is Mission Control Houston.

END OF TAPE

*Mc Brath request for  
2nd Mission Commentary*

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4538, CST 738a 140/1

PAO This is Apollo Control 45 hours 38 minutes into the mission. Gumdrops and Spider coming up on Carnarvon now. We will be running through a series of communications checks with the portable life support system, CSM one-way relays, and LM one-way relays. Stand by.

CAPCOM Spider, this is Houston through Carnarvon.

SPIDER I would like to go private with you.

CAPCOM You cut each other out there. Say again, please.

SPIDER I'll get it, Dave. Houston, this is Spider. I would like to go private with you, please.

CAPCOM Roger, understand. Will do.

PAO This is Apollo Control. We have had a request from the crew for a private conversation. We will take this line down and come back up as soon as possible.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4553, CST 753a 141/1

PAO This is Apollo Control at 45 hours 53 minutes into the mission. The private conversation has been concluded. We do not know the nature or content of it yet. That conversation did not come into the Control room; however, the crew is back in normal communications now. We will come up live with the remainder of this Honeysuckle pass. As soon as we have some information on the private conversation we will report that.

SPIDER - pass over Houston, with the PLSS, and at that time we're going to try taking the PLSS apart and that will be the end of the comm check.

CAPCOM Spider, this is Houston. I copy that and what I'm recommending is that we configure for that mode 10 over Mercury. We will have about an 11-minute pass over Mercury and we will get all set up then and then we will be ready to go when we come into the states.

GUMDROP Okay, Spider, Gumdrop. What do you want me to do? He understood what you said. He would like for you to configure for the mode 10 over Mercury so you can get all set up to get an 11-minute pass here.

CAPCOM Gumdrop, this is Houston. If they will not be ready for that, it's no problem. We've still got you here at Honeysuckle for about 5 minutes; we will have you at Mercury for 11.

GUMDROP Okay, he got it, Houston. He said Roger, and --

CAPCOM Okay, very good.

PAO This is Apollo Control at 45 hours 58 minutes. We have loss of signal at Honeysuckle. The change of shift briefing, estimated for 8 o'clock has been delayed. We do not have a new time estimate at this time. We will notify you as soon as we do have a time. Mercury will be the next station to acquire at 46 hours. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 46:01 CST 08:01 142/1

PAO This is Apollo Control at 46 hours  
01 minutes, and we are at Mercury.  
CAPCOM Could you give a high bit rate, please?  
GUMDROP Spider, Houston wants high bit rate.  
CAPCOM Gumdrop, Houston, did he copy you?  
GUMDROP Roger, he said he'd get it in just a  
minute.  
CAPCOM Okay, evidently I'm not getting anything  
out of him. I'll check the sack.  
GUMDROP Okay.  
SPIDER This is Spider.  
GUMDROP Houston, Gumdrop, Spider says he's reading  
you 5 by now.  
CAPCOM Roger, understand. Spider, can you give  
me a transmission. How do you read me?  
SPIDER I'm reading you loud and clear. 1, 2, 3, 4,  
5, 5, 4, 3, 2, 1.  
CAPCOM Okay, I'm reading you real good. We've  
got 8 minutes in this pass, and if you'd like to get set up  
for the LM two-way relay and adjust your box and so forth,  
I can give you a count any time you want it, and let me know  
when you are going to that configuration.  
SPIDER Roger, Houston, we'll be with you in a  
minute. Stand by.  
CAPCOM Roger, standing by.  
SPIDER And Houston, we're going FM now.  
CAPCOM Roger, going FM.  
CAPCOM And Gumdrop and Spider, be advised I'm  
going to go to our test configuration, which will be LM  
S-band only back to Houston. And Mercury M&O, this is  
Houston CAPCOM, would you inhibit my VHF uplink and remote  
LM S-band only.  
CAPCOM And Spider, this is Houston, if you read  
could you give me antenna number 2, S-band antenna number 2.  
SPIDER Roger, you've got 2, do you want 1?  
CAPCOM Negative, leave it in 2 right now, and  
I'm reading you okay.  
SPIDER Okay, roger. That's what you had all  
along.  
CAPCOM Okay.  
GUMDROP Why don't you go ahead and do it?  
SPIDER (garbled)  
GUMDROP Oh, take it off, what the hell.  
SPIDER (garbled) How'd you hear it?  
CAPCOM Okay, Spider, I got just the last part  
of that. How about a short count?  
SPIDER (garbled)  
CAPCOM Okay, Spider, it's breaking -  
SPIDER Which one?

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 46:01, CST 08:01 142/2

SPIDER (garbled) SC audio closed.  
GUMDROP Roger, just a minute.  
GUMDROP (garbled)  
SPIDER Audio for the LMP side. S-band and TI.  
RCS OFF. (garbled) ON. (garbled) outside RCS transmitter.  
GUMDROP RCS transmitter  
SPIDER Just voxed about 8.  
GUMDROP Voxed about 8.  
SPIDER HMA to kickout.  
GUMDROP A to TR.  
SPIDER OFF  
GUMDROP A OFF.  
SPIDER HMA (garbled) adjusted at C-ax and here  
at the CSM.  
SPIDER Gumdrop, Spider here, give me a short  
count.  
GUMDROP Roger, Gumdrop. 1, 2, 3, 4, 5, 5, 4, 3, 2,  
1. Gumdrop out.  
SPIDER Roger. Fine, that was good. Thank you.  
GUMDROP Say, Jim, you're broken to me.  
SPIDER Roger, I'm on vox now, I said that was  
good. And Gumdrop, we're configuring for the TV mode,  
which is mode 10.  
GUMDROP I'm not hearing you at all, Jim.  
SPIDER Gumdrop, this is Spider, do you read me?  
Do you have your audio ON?  
CAPCOM Gumdrop, if you hear Spider would you  
call him?  
SPIDER Gumdrop, Spider, do you read?  
CAPCOM Spider, this is Houston, how do you read?  
SPIDER Roger, gumdrop, this is Spider. How  
do you read?  
GUMDROP (garbled)  
SPIDER Roger, we're configuring mode 10 COMM,  
which is the TV EMU relay.  
GUMDROP Roger.  
SPIDER Very good.  
CAPCOM Okay, Spider and Gumdrop, it's about  
a minute and a half to LOS here at Mercury. Your acquisition  
time at Texas is 25.  
SPIDER There's our (garbled)  
CAPCOM Spider, this is Houston, do you read?  
If you do, we are going to lose you in about a minute. Your  
acquisition time at Texas is 25.  
SPIDER (garbled) 25.  
CAPCOM Okay, it will be 25, and we'll have about  
2 minutes to mend before the TV pass starts.  
SPIDER Roger.  
CAPCOM And spider, could you give us low bit rate?

APOLLO 9 MISSION COMMENTARY 3/5/69, GET 46:01, CST 08:01 142/3

CAPCOM                    And Spider, this is Houston. We'd like to have low bit rate and data on VHF B until we get you.

PAO                        This is Apollo Control at 46 hours 11 minutes. Mercury has LOS. We do still anticipate this first television pass at an elapsed time of 46 hours 27 minutes, that's 8:27 am Central Standard Time, over the Florida tracking station. During this Mercury pass you heard a considerable amount of communications testing back and forth between the two spacecraft in various modes. Next station to acquire will be Texas at 46 hours 24 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 COMMENTARY, 3/5/69, GET: 45:51 (07:51)

143/1

CC Hello Spider, did you call? This is  
Houston.  
CC Gumdrop, this is Houston. How do you read  
through Honeysuckle?  
GUMDROP Roger Houston, you are 5 by.  
CC Roger. I believed Spider called. We  
might be having S band troubles with them again; can you read  
me Spider?

END OF TAPE

*Report on the  
Private Conversation*

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4621, CST 08:21 144/1

PAO This is Apollo Control at 46 hours, 21 minutes. We have a report now on that private conversation. Rusty Schweickart felt some nausea a few hours ago, but he is feeling better now. He told doctors that he had an upset stomach and had vomited. He emphasized that his nausea had cleared and is feeling all right now. The flight crew and the flight controllers here on the ground in Houston have agreed to continue with the flight as planned. The change of shift briefing originally scheduled for 8'o clock will begin after the TV pass. We do not have a definite time on the conference yet. We will give that to you as soon as we do, but it will be after the TV pass which is scheduled for 8:27 Central Standard Time. We should be acquiring at Texas in about 2 - 2 and one-half minutes. We'll come back up then. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4624, CST 824a 145/1

PAO This is Apollo Control 46 hours 24 minutes. We are coming up on the Texas station now. To repeat the report on that private conversation, Rusty Schweickart felt some nausea a few hours ago, but he is feeling better now. He told doctors that he had an upset stomach and that he had vomited. He emphasized that his nausea had cleared and that he was feeling all right now. The flight crew and the flight controllers have agreed to continue with the flight as planned. We're coming up now on Texas. We will stand by.

CAPCOM Spider, this is Houston.

CAPCOM Okay, Spider, this is Houston. Do I have you?

CAPCOM Spider, this is Houston. Do you read?

SPIDER We should have had acquisition now, shouldn't we?

CAPCOM Hello, Spider, this is Houston. Do you read me?

CAPCOM Spider, this is Houston. If you read, you can go ahead and put in your TV circuit breaker. We are going to be handing over to Mila in about 20 seconds.

PAO Apparently we are having trouble with voice comm. We will continue to stand by.

CAPCOM Hello, Spider, this is Houston. How do you read?

SPIDER Roger, Houston, this is Spider. Loud and clear.

CAPCOM Roger, you are loud and clear here. Now we have you in Mila AOS. You can start your TV pass.

PAO We are still standing by for a picture here at the Control Center.

CAPCOM Beautiful, Spider. We've got a picture now. And Spider, this is Houston. If you read me, could you give us high bit rate? And the picture is coming through good, Spider. We are copying it. We've got a good view of Rusty and the PLSS.

CAPCOM Okay, Rusty, if you read me, how about raising your left arm there? Very good. We can see you, coming in real good.

CAPCOM Well, we just went through a little snow storm there, Spider, but it looks like it might come back in. Okay, the blizzard is gone and you are back real sharp now. We've got good detail. And Spider, like I say, we are getting a good picture, we're getting no voice at all. And I can see you talking there, Jim. Too bad I can't read your lips.

CAPCOM Okay, why don't you just go VHF if you can, Spider?

SPIDER Roger. How do you read me right now?  
CAPCOM We're reading you loud and clear, Spider.  
SPIDER Okay. I guess we're just not getting  
out, like a vox or something. Gumdrops is reading me all  
right, but you aren't.  
CAPCOM Okay, I'm not reading Gumdrops at all,  
and I am reading you loud and clear now. The TV picture has  
been real good.  
SPIDER Okay. We are going to have the LMP talk-  
ing into the PLSS comm.  
SPIDER Okay, how do you read now, Houston?  
CAPCOM PLSS? You are coming through loud and  
clear, Rusty. Real good.  
SPIDER Okay, we have to go to PTC on the hand  
controller to do it and then maybe ICS won't do it.  
CAPCOM Roger, copy. It's coming through real  
good now. We've got just a little under 3 minutes in the  
pass.  
CAPCOM And Rusty, if you --  
SPIDER Houston, this is Spider. Say again.  
CAPCOM Rog. If it's real convenient, we would  
like to have position 5 on the PLSS, but don't sweat it if  
you can't give us that.  
CAPCOM Okay, we had a loud squeal in there. I've  
got you back again now. The request was, if it's real con-  
venient, we would like to have position 5 on the PLSS.  
CAPCOM Okay, Jim, could we have a couple of  
words on - of wisdom to go along with the TV show?  
CAPCOM Okay, we are not receiving you. Rusty,  
how about you trying it again? Maybe we can pick you up.  
CAPCOM Okay, Spider, this is Houston. That's  
the end of the Mila pass. If you read me, you can go back  
to comm basic at your convenience and press ahead with the  
flight plan.  
PAO This is Apollo Control. We are not get-  
ting any --  
SPIDER End the comm checks here and we will get  
them some other time.  
CAPCOM Rog, understand, and that transmission  
came through loud and clear and we will be standing by.  
PAO This is Apollo Control. Very bad voice  
communications during this pass. We did get some voice when  
the crew went to the push-to-talk button on the hand control-  
ler. That was the PTC you heard reference to. We were try-  
ing communications vox, voice operated circuit prior to that,  
without luck. We got a little bit of voice on the push to

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4624, CST 824a 145/3

talk, and then we lost comm again. The total length of that TV pass was 6 minutes 45 seconds. Apollo 9 is still in contact through Antigua. We will continue to stay up.

SPIDER Roger, Houston. We are reconfiguring the basic comm and we are going to push on and prepare for auto systems here.

CAPCOM Roger. We will be standing by.

SPIDER Roger.

SPIDER And Gumdrops, did you read that?

GUMDROP Negative. I'm not copying Houston at all.

SPIDER Roger. We're reconfiguring and we are going to press on with the systems.

GUMDROP Okay, understand.

CAPCOM And Gumdrops, this is Houston. I've got you now.

GUMDROP Rog, Houston, Gumdrops. You are 5 by.

CAPCOM Very good.

CAPCOM Houston, Gumdrops.

GUMDROP Houston, Gumdrops.

CAPCOM Rog. We would like to terminate the charge on battery A.

GUMDROP Roger, understand. Battery A, terminate charge.

CAPCOM And Gumdrops, Houston. We put in 13 amp-hours. You are right back up at 40.

GUMDROP Roger, thank you. Very nice.

END OF TAPE

CC                    Okay, 'Spider and Gumdrop, we're gonna lose you in about a minute and a half here, and we'll see you over Carnarvon at 16. Spider, this is Houston, if you read, give us low bit rate.

SPIDER                Alright; we're in low bit rate.

CC                    Okay we'll see you at 16 over Carnarvon.

SC                    Very fine.

PAO                    This is Apollo Control at 46 hours, 49 minute and we've had loss of signal at Madrid. Got some heart rates here on the crew - the two astronauts in the LM, Jim McDivitt's heart rate has been running around 100, Rusty Schweickart around the mid 80's - 85, 86 - Dave Scott in the Command Module is showing mid 70's - low to mid 70's. The next station to acquire will be Carnarvon at 47 hours, 15 minutes; stand by, we'll get a time now here I think on this news conference. We are estimating the news conference for 9 AM CST, in about 10 minutes. 9 AM for the news conference. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4729, CST 929a 147/1

PAO This is Apollo Control at 47 hour 29 minutes into the mission. Apollo 9 over the Honeysuckle Creek station in its 30th revolution. This pass started at Carnarvon about 14 minutes ago. During the pass, the crew is checking out the primary guidance and navigation system, the abort guidance system, the computers aboard, and they are aligning their inertial measurement unit in the LM. We will start the tape at Carnarvon now.

SPIDER Ready.

GUMDROP -- 6400308.

SPIDER All right, it was a little fast, but 351280686400308.

GUMDROP Roger, you got it.

SPIDER Thank you, Dave, are your rates slow?

GUMDROP No, but what a bunch of gyoos I've got over here.

CAPCOM And Gumdrops, I haven't heard from you on this one, and Spider, I've got a couple of items to pass to you when you have a chance,

SPIDER Spider here, go ahead.

CAPCOM Roger. I've got a couple of addresses that have got to be changed as a result of the 3-day slip in the launch date, and when you are ready to copy, I'll give them to you.

SPIDER Okay, before you give us those, be advised that we have got a cockpit error here and we loaded, in starting up the PGNCs, we loaded location 30,000 with 2176 and we would like to know what we should put back into 30,000.

CAPCOM Roger, stand by. In work.

SPIDER If you want a reference on that, it's system 36, step 1.

CAPCOM Rog, copy.

GUMDROP And Gumdrops, Houston.

CAPCOM Rog, Gumdrops. And Gumdrops, this is Houston. At your convenience, you might drag out your block data pad. I have block data 6 to give you as we get along here. I have the pad now.

GUMDROP Okay.

SPIDER And Gumdrops, this is Spider. You can get out of your narrow deadband hold there. We will take an 0620 on your mark.

GUMDROP Okay, stand by.

GUMDROP Roger. Spider, Gumdrops, 3, 2, 1, mark.

SPIDER Okay, we're ready to copy your angles and you can go to drift.

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4729, CST 929a 147/2

GUMDROP Thank you. 351680688800282.  
SPIDER Roger. Houston and Gumdrops readback  
from the Spider, 351680688800282.  
CAPCOM Roger, Spider. I have that. I'm reading  
back Gumdrops as +351680688800282, I'm reading your's as  
311482487935590.  
SPIDER That's a verify and the docking ring  
angle was +2.10 degrees.  
CAPCOM Roger, +2.1.  
SPIDER Spider ready to copy your updates.  
CAPCOM Okay, these addresses, if you are - if  
this unit W were the North Pole there and your first address  
is 1714. What we want to load in there is 11143. The next  
address is 1716. We would like to load 30341. Now there  
were a couple of updates needed in the TFM but you will pick  
those up as you go through that step. These are the only  
two that we would like to have you load.  
SPIDER Roger. Be advised we already loaded TFM.  
Do you want us to read that down to you?  
CAPCOM Yes, let's have it to verify.  
SPIDER Okay, ready to copy?  
CAPCOM Go ahead.  
SPIDER Okay. 4 balls 73501631153.  
CAPCOM Rog, that's verified.  
SPIDER Okay, and we will be using these right  
now.  
CAPCOM Okay, very good. †  
GUMDROP Houston, Gumdrops. I'm all ready for the  
block update.  
CAPCOM Rog, stand by just one if you can, Gum-  
drops.  
GUMDROP Alright.  
CAPCOM Spider, Houston,  
SPIDER Go.  
CAPCOM Rog. We would like to know if you got  
an operator error when you hit (broken tape) at 30,000 ad-  
dress?  
SPIDER That's a negative.  
CAPCOM Roger, copy no operator error.  
SPIDER Not that I noticed, anyway.  
CAPCOM Okay.  
SPIDER Let me put it this way. If there was  
an operator error, it disappeared by itself when I loaded  
the data, because I did not key a reset.  
CAPCOM Rog, copy.  
SPIDER Gumdrops, Spider. We would like to in-  
sure that the rates are less than a 1/10th of a degree per

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4729, CST 929a 147/3

second and you won't be firing any jets for the next minute or so.

GUMDROP Okay, you are all set.

SPIDER Roger, thank you.

CAPCOM Okay, Gumdrop, this is Houston. I would like to get started on this block data.

GUMDROP Roger, go.

CAPCOM Rog. 0331 alpha + 297 - 0621051043238 70 and I would like to have both vehicles insure S-band volume up. 0344 alpha + 325 - 1579053580938530354 alpha + 337 - 1579055290838570363 alpha + 292 + 145005653164638. Like to verify you are with me, Gumdrop. We didn't lose you over in the handover?

GUMDROP I'm with you. I dropped about 4 bits there but go ahead.

CAPCOM Okay. 0374 alpha + 244 - 16190583931 45740383 Baker + 320 + 150006002284618 and for your SPS trim angles, through your first three through 35 dash 4 alpha, your pitch is -.88, yaw is -.60, through the rest of them, your pitch is -.93, yaw is -1.21, end of update.

GUMDROP Roger, okay. I dropped one bit on the seconds on 344 alpha, and the next area I dropped the first three lines, and the rest of it I've got. So how about giving me those that I dropped?

CAPCOM Okay, the second line in 344 alpha is +325, the first three lines in the next one 035 --

END OF TAPE

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CAPCOM 5. The first 3 lines in the next one  
0354 ALFA plus 337 minus 1579, and I'd like for you to hold  
the readback for a little bit, and Spider I have your LM  
torqueing angles.

SPIDER

Roger, stand by just one.

CAPCOM

Roger.

GUMDROP

Roger, this is Gumdrops. give me the

seconds of the time of 344 ALFA.

CAPCOM

Oh, I'm sorry, I thought you said the

second line.

Okay,

the second 09. The time 0535809.

GUMDROP

Alright, 09 and I'll read it back whenever

you're ready.

CAPCOM

Okay.

SPIDER

Houston, this is Spider, ready to copy

the angles.

CAPCOM

Alright, reading the torque angles: plus

00910 minus 00150 plus 01210.

SPIDER

And reading back plus 00910 minus 00150

plus 01210.

CAPCOM

That's affirmative, we've got you.

SPIDER

Thank you.

CAPCOM

Spider, Houston.

SPIDER

Roger, go ahead.

CAPCOM

computer dropped a 3 and loaded addresses all zeros and there  
is no action required on your part.

SPIDER

That's fortunate, thank you.

CAPCOM

Roger.

CAPCOM

of the GSC we have received no LM data. Would like to have  
you check your cockpit configurations to receive the LM data,  
and also for Spider to send it.

GUMDROP

Spider and Gumdrops, on the last 2 dumps

SPIDER

Would like to have  
you check your cockpit configurations to receive the LM data,  
and also for Spider to send it.

CAPCOM

Roger, Gumdrops configuring.

SPIDER

Gumdrops, Spider. What was that last call?

We've got a lot of noise on the S-band.

GUMDROP

Roger, on the last 2 passes on the GSC

SPIDER

they have not received any LM data on the dump.

GUMDROP

Roger, we're configured for data here.

SPIDER

Okay (garbled)

GUMDROP

Houston, Gumdrops.

CAPCOM

Go, Gumdrops.

GUMDROP

Roger. I don't see the tape recorder running

at this time.

CAPCOM

Stand by, Gumdrops.

SPIDER

Gumdrops, this is Houston, could you verify

your tape recorder switch is in the RECORD position.

GUMDROP

Stand by.

CAPCOM

Okay, thank you.

SPIDER

Houston, this is Spider.

CAPCOM

Go Spider.

CAPCOM Spider, this is Houston, go ahead.  
SPIDER Gumdrops, is he reading us?  
GUMDROP Roger, go ahead.  
SPIDER Okay, I'll have to transmit in the blind.  
Be advised we're beginning the RCS pressurization on system 42  
and the second step we have an interesting result there. When  
I recycled system A, F and B2 to close, both barber poles  
jumped to J, Access speed 1 went back to barber pole immediately,  
and Access speed 2 waited for about 20 seconds and then went  
back to barber pole, and that's happened twice in a row.  
CAPCOM Roger, copy. Stand by on that one.  
GUMDROP He got you, Spider.  
SPIDER Okay, if you have any recommendation -  
I'm going to try in system B. If he has any recommendations  
let me know.  
GUMDROP Okay.  
CAPCOM Alright, we sure will, we're massaging  
that now, Spider.  
GUMDROP Spider, Gumdrops, they are working it over.  
CAPCOM Spider, Houston.  
GUMDROP Houston, Gumdrops, I don't believe he's  
reading. I can relay for you.  
CAPCOM Okay, we're about to lose you here at  
Honeysuckle, we'll see you over Mercury about 37, in about  
3 minutes, and we'll clean it up then.  
GUMDROP Very well, Mercury at 37.  
CAPCOM Gumdrops, if you still read me, why don't  
you start the readback of that BLOCK data here until we go  
over the hill.  
GUMDROP Roger, we'll give it a go.  
GUMDROP 0331 ALFA, oh, I'm reading (garbled)  
SPIDER Okay, roger, and you might advise on  
this that System A (garbled) appear to be normal now, and it  
looks like we might have had a glitched barber pole on  
SNG 2.  
CAPCOM We copied that, Spider, and we concur.  
SPIDER Okay.  
CAPCOM Okay, Spider and Gumdrops, we should have  
you through the Mercury.  
GUMDROP Roger, Houston, here's the Gumdrops.  
SPIDER And Spider here, Houston.  
CAPCOM Roger, we're showing your RCS pressurized,  
and we're also requesting you check the address 1457 and  
verify that it is 62045, and the reason why I'm talking on  
this is back on systems 41 when you loaded 1456 we believe  
it also changed 1457.  
SPIDER Okay, the address is 1457, what are the  
numbers supposed to be now?  
CAPCOM Should be 62045.

CSM-LM  
weights

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SPIDER Roger, 1457 should be 62045.  
CAPCOM That's affirmative,  
GUMDROP Roger, Houston, you might check 1453  
and 1455 also. My understanding those are double precisions  
for the FIFA bias and that's why we loaded zeroes in all  
three of those.  
CAPCOM Roger, copy, SPIDER, in work.  
SPIDER Okay.  
SPIDER Houston, this is Spider,  
CAPCOM Go Spider.  
SPIDER 1457 is all balls.  
CAPCOM Okay, we'd like to have you load 62045.  
SPIDER Okay, then probably 3 and 4 (garbled)  
and I'll load this one up right now.  
CAPCOM Okay, we'll get back with you on that.  
We're going to have you over the Mercury here for about  
7 and a half minutes left, and I'd like to pass you your  
gimble drive angles so we'll be all rocking on ready for  
your gimble drive check when we hit Guaymas.  
SPIDER Would you stand by just one,  
SPIDER Would you go ahead?  
CAPCOM Roger, your VDA angles are 100 - plus  
00588 and R2 plus 00679.  
SPIDER Roger, plus 00588 plus 00679.  
CAPCOM That's affirmative, and stand by and  
I'll have you what you need in address 1453 and 55.  
SPIDER Roger, do you have LM and CSM weights,  
by the way?  
CAPCOM Stand by one, Spider.  
CAPCOM Spider, Houston.  
SPIDER Roger, go.  
CAPCOM Alright, your LM weight: 32418 and that's  
also for Gumdrops if he wants it. CSM 30127.  
SPIDER Roger, 32418 and 30127.  
CAPCOM That's affirmative, Spider.  
SPIDER Roger, how much time do we have in this  
pass?  
CAPCOM Roger, Spider, we've still got about  
5 minutes left in this pass.  
SPIDER Okay, I'd like - some of the Systems  
guys might have noticed that I had a little anomaly there  
At the end of the RCS pressurization on Step 6.  
CAPCOM Okay.  
SPIDER Make it step 5, I beg your pardon. I  
inadvertently placed system A access speed 2 -

END OF TAPE

SPIDER I inadvertently placed system A, ascent B2, momentarily to open instead of close, thereby opening the interconnect - I closed it immediately and I see no change in the systems pressures however it's probably an anomaly and (garble) you might note and I'd like to know if there is any further action required.

CC Roger, Spider, Houston copies, and we anticipate no problems and I have your loads for 1453 and 55.

SPIDER Roger. Ready to copy.

CC 1453 0066 1455 60 462.

SPIDER Roger; let me read all of those. 5355 and 57. 60066 60462 62045.

CC That is affirmative Spider; Houston confirms.

SPIDER Roger; we'll load them now.

CC Okay, and Gumdrops, let's go ahead with your readback, starting right from the first line.

CC Gumdrops, Houston. Standing by for your readback.

GUMDROP Houston, Gumdrops.

CC Roger. I'm ready for your readback.

GUMDROP Okay, sorry, I must have lost you there for a minute - okay, here we go. 0331 Alpha, plus 297, minus 0621, 0510432, 3870, 0344 Alpha, plus 325, minus 1579, 0535809, 3858, 0354 Alpha, plus 337 minus 1579, 0552908, 3857, 0363 Alpha, plus 292, plus 1450, 0565316, 46380374 Alpha, plus 244, minus 1619, 0583931, 4574 0383 Bravo, plus 320, plus 1500, 060, 0228, 4618 - with me that part?

CC I've gotten it all; and everything's good.

GUMDROP Okay, and the pitch trim and yaw trim for 331 Alpha through 354 Alpha, pitch is minus .88, yaw minus .60. For 363 Alpha through 383 Bravo, pitch minus .93, yaw minus 1.21.

CC Roger; Gumdrops. We're gonna lose both of you in about 1 minute - we'll see you over Guaymas at about 57 and we'll be rocking on ready for you, Spider.

SPIDER Roger; what time will be Guaymas?

CC Roger. It'll be Guaymas at 57, and we'd like to have low bit rate at this time.

SPIDER Roger.

PAO This is Apollo Control at 47 hours, 52 minutes and we will acquire at the Redstone, a low elevation pass there in about a minute. During this pass across Australia and over the Mercury Ship in the South Pacific, the crew in the LM has been checking out the computer, aligning the platform, pressurizing the RCS system.

SPIDER Houston?

GUMDROP Gumdrops.

CC Roger. And to get a leg up on this Guaymas pass, I have a nav check I'd like to give to you now, and we'll be uplinking state vector's to both vehicles over Guaymas, some-time in the States pass.

PAO We're live at the Redstone now.  
 CC Okay, Spider, are you ready ... Gumdrops,  
 I'll be ready to send you a nav check when you're ready to copy.  
 GUMDROP Ready for nav check.  
 GUMDROP (garble) over up.  
 CC Houston, say again.  
 GUMDROP Gumdrops ready.  
 CC Roger, Gumdrops. I'll give it to you. Are  
 you ready Spider?  
 SPIDER Roger. Spider ready.  
 CC Alright - reading the nav check. 049  
 11, 33, 40. Minus 22 16 plus 16 516 2309; end of nav check.  
 GUMDROP Roger. Say the time again please.  
 CC Roger. Reading the time. 049 11 33 40.  
 SPIDER Say Gumdrops, I got 33.40, is that right  
 Gumdrops?  
 CC That's affirmative Spider; this is Houston.  
 SPIDER Okay, I'll read it back to you. 049 11  
 33.40. Minus 2216 plus 165 16 2309.  
 CC Your readback is correct Spider and  
 Gumdrops, if you will verify.  
 GUMDROP Gumdrops verifies.  
 CC Roger. And while I've got you in a  
 writing mood, I've got about a minute and a half I'd like  
 to give you the dock DPS pad.  
 SPIDER Roger. You should be advised that you are  
 not coming through too good here to Spider; I'm not sure  
 why, but you are breaking up pretty badly.  
 CC Roger; we're going to lose you in about  
 a minute - and then we'll just catch you over Guaymas.  
 GUMDROP Did you get that Spider?  
 SPIDER Roger. I heard you. Understand you are  
 going to get us over Guaymas  
 GUMDROP That's affirm.  
 CC And Gumdrops and Spider, if you read, we are  
 GO for 48 dash 1.  
 GUMDROP Roger, understand. GO for 48 dash 1.  
 CC That is affirmative.  
 GUMDROP Did you get that Spider?  
 SPIDER Got it.  
 GUMDROP Okay.  
 SPIDER We'll stay docked with you.  
 GUMDROP Oh, very well.  
 CC And Gumdrops, we've got you now at  
 Guaymas, we'd like to have 2 and accept for your uplink.  
 GUMDROP Roger. Gumdrops. You've got 2 and accept.  
 CC Roger. Copy.

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149/3

CC  
in both slots.

GUMDROP  
CC

please?

SPIDER  
CC

END OF TAPE

And Gumdrop, you'll be receiving a Vector

Roger, understand.

Spider, could you give us high bit rate

Roger. You in high bit rate?

Roger, copy.

PAO Apollo Control. That is Rusty Schweikart doing most of the communicating from the Lunar Module.

SPIDER And Houston, this is Spider.

CAPCOM Go ahead, Spider.

SPIDER Roger. We are ready to go on the gimbal drive - anytime.

CAPCOM Roger. We are standing by to support you. You can let her rip.

SPIDER Roger. Here we go - three, two, one, mark.

SPIDER And are you ready -

CAPCOM You faded out, Spider. Say again.

SPIDER Roger. The gimbal is driving.

GUMDROP Houston, Gumdrop, Spider says the gimbal is driving.

CAPCOM Roger. Copy. And Gumdrop the computer is yours.

GUMDROP Roger. Understand you copy and I got the computer.

SPIDER Houston, do you read Gumdrop or Spider?

CAPCOM Reading you loud and clear, Spider.

SPIDER Here we have the GGA RCGA light ON at this time and are you ready to support the throttle test?

CAPCOM Spider, you are GO for the throttle test.

SPIDER Roger. LMP throttle is idle. We are now at the throt-stop.

CAPCOM Roger. Copy.

SPIDER Okay, full throttle point and back idle.

SPIDER Okay, Houston Commander's throttle is in idle. Now throt-stop - maximum - back down to the throt-stop and then idle.

CAPCOM Roger, Spider.

SPIDER Okay, Houston, this is Spider. We are standing by for your verification on the GDA angle.

CAPCOM Roger. I believe they look good. Stand by one, Spider.

CAPCOM Spider, this is Houston. You are GO on the gimbal drive angles.

SPIDER Roger. Stand by for hot fire.

CAPCOM Roger. We are standing by.

CAPCOM We are standing by to support your hot fire, Spider. We are ready.

SPIDER Houston, we are ready to GO.

CAPCOM Let her rip, Spider.

SPIDER Okay. A couple more switches.

SPIDER Okay, Houston, this is Spider here. We have (garbled) a proportionalized check for Spider.

CAPCOM Roger. Understand and we are ready to GO.

SPIDER Roger.

SPIDER Okay. That's complete.  
CAPCOM Roger.  
SPIDER Gumdrops, we are about to fire our jets here. So you want to be in three?  
GUMDROP Roger, three standing by.  
SPIDER Roger.  
GUMDROP How are you with respect to gimbal line?  
SPIDER Oh, about 15 or 20 degrees - you can eyeball that. Okay, I will be right with you.  
SPIDER You told us to take the hot fire OFF.  
CAPCOM We're ready to GO. Press.  
SPIDER Roger.  
SPIDER Houston, it's complete.  
CAPCOM Roger. Copy.  
GUMDROP Good job, rate is almost normal.  
SPIDER I still have some more to go.  
SPIDER Okay, Houston, here comes a little hot fire on a 2TCA.  
CAPCOM Roger, Spider. This is Houston. Would you go through it slower, please? You are going to have to go slower.  
SPIDER Okay. We'll go TTCA.  
CAPCOM Roger.  
SPIDER We are not going to hold them very long. We'll just read lines between pulses.  
CAPCOM Roger. That will really help us out, Spider.  
SPIDER You don't want them held out on you - you just want them logged between pulses. Is that right?  
CAPCOM That's affirmative, Spider.  
SPIDER Okay.  
SPIDER We'll start again.  
SPIDER (Garbled) up. Down, right, left, aft.  
SPIDER How was that, Houston?  
CAPCOM That looked real good, Spider.  
SPIDER Okay, here comes the PNGS GGA check.  
CAPCOM Roger, Spider.  
SPIDER Up, down, right, left, forward, aft. How was that?  
CAPCOM That looked real good, Spider. Everything looks good.  
SPIDER Okay (garbled) that's all of the hot fire.  
CAPCOM Okay. Good job - you moved us away from it.  
SPIDER And Houston, you have to give us the update at this time.  
CAPCOM Roger. I have the PAD ready to go and can you take an uplink now?  
SPIDER Roger. The computer is yours and ready to copy the docked dif.

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4759, CST 09:59

150/3

SPIDER This is Spider.

CAPCOM Roger. Spider, standby one.

GUMDROP Gumdrops ready.

CAPCOM Okay. Copied you, Gumdrops. And Spider,  
the uplink is on its way. I'm reading docked dif - 049 41  
33 40 minus 00 603 minus 17 43 0 minus 00 00 7 17 44 0, all  
zips, all zips, minus 00 587 minus 17 43 0.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4809, CST 1009a 151/1

CAPCOM - 17430 - 00139, end of update.  
SPIDER Roger, Houston. Spider reading back.  
049413340 - 00603 - 17430 - 0000717440, all zips, all zips,  
- 00587 - 17430 - 00139.  
CAPCOM Roger, very good. The readback was correct.  
GUMDROP Gumdrop copied.  
CAPCOM And Spider and Gumdrop, it looks like we are making good work on this pass. We've still got about 15 minutes here.  
SPIDER Houston, Spider here. You broke up.  
SPIDER Houston, Spider.  
CAPCOM Go, Spider.  
SPIDER Roger. We are going to start the landing radar self bits here if you are ready.  
CAPCOM Spider, this is Houston. The computer is yours, we are standing by for the landing radar self test. Press ahead.  
SPIDER Okay. Stand by, it's coming on now.  
CAPCOM Rog.  
CAPCOM Gumdrop, Houston.  
GUMDROP Houston, Gumdrop.  
CAPCOM Rog. We would like to have you bring quad C back on the line when you disable Baker 3.  
GUMDROP Wilcc.  
SPIDER Gumdrop and Houston, be advised that Spider did not unstow the radar antenna today.  
CAPCOM Rog. We understand that. Will you be unstowing it for the rendezvous radar self test?  
SPIDER I don't believe so. I think we can run the self test without unstowing it since we're not going to do the EVA tomorrow, there is no sense in unstowing it. We've already skipped the spire comm check in the daylight, so we have no reason to get it out of light.  
CAPCOM Rog, copy.  
SPIDER If you have any other comment, please let us know.  
CAPCOM All right, sure will.  
GUMDROP And Gumdrop copied.  
SPIDER And Houston, here comes the landing radar spurious noise test.  
CAPCOM Rog, copy, Spider.  
SPIDER Houston, do you read, Spider.  
CAPCOM Go, Spider.  
SPIDER Roger. How long do you want us to run this spurious noise test here?

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4809, CST 1009a 151/2

CAPCOM Stand by one.

SPIDER Roger. Step 16, system is 49. We are ready to stop it any time you are ready.

CAPCOM Roger, understand. We are taking a look at it, Spider. And Spider, you can terminate the test now, and Gumdrops, we would like to have quad Charlie on whether you disable Baker 3 or not.

GUMDROP Rog, Charlie coming on.

END OF TAPE

CAPCOM And Gumdrops, we are showing your quad balance as excellent. It's looking real great, Gumdrops.

SPIDER Houston, Spider.

CAPCOM Go ahead, Spider. This is Houston.

SPIDER Your R&D telemetry calibrate coming ON now.

CAPCOM Roger. Copy.

CAPCOM And Gumdrops and Spider, this is Houston. We have finished up that famous pass with 6 minutes to spare.

SPIDER Both of you are so smooth I just can't believe it. You are just directing us magnificently.

CAPCOM I'm getting mad with power down here, Spider.

SPIDER Say, Gumdrops, this is Spider.

GUMDROP Go ahead.

SPIDER You are still going to have to disable B3 for a while so we don't get any (garbled) on our radar.

GUMDROP Okay. Say when.

SPIDER About right now. Okay?

GUMDROP It's disabled.

CAPCOM Gumdrops, Houston.

GUMDROP Houston, Gumdrops. Go ahead.

CAPCOM Roger. We're still recommending two jet roll authority - we're recommending able Charlie roll OFF.

GUMDROP Houston, Gumdrops. Say again.

CAPCOM Roger. We are recommending that two jet roll authority, roll AC - we'd like to leave it OFF.

GUMDROP Houston, Gumdrops. You get knocked down with static everytime. Try it again.

CAPCOM Okay. We would like to stay with two jet roll authority - recommend AC stay OFF.

GUMDROP Okay. Very well. AC coming back OFF.

SPIDER Houston.

CAPCOM Say, Spider and Gumdrops, we are going to lose you here in about 1 minute. We'll see you over Tananarive at three-seven and that was a good show on both vehicles there.

SPIDER Okay.

GUMDROP Roger, Gumdrops.

SPIDER Houston, this is Gumdrops - ah - Spider. Before you go - if you are still reading us - we are not reading any range and range rates on the DSKY for the radar.

CAPCOM Roger. Understand - no range and range rates and Spider, we'd like to have low bit rate, please.

SPIDER Roger.

CAPCOM And we are looking at that problem on your range and range rate right now, Jim. We think the



APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 48:37, CST 10:37 153/1

PAO This is Apollo Control 48 hours 37 minutes and we've just put in a call to Apollo 9 at Tananarive. We'll stand by.

CAPCOM Spider and Gumdrops, this is Houston through Tananarive standing by.

CAPCOM Tananarive M&O this is Houston CAPCOM. Do you read?

CAPCOM Tananarive M&O, Houston CAPCOM. Voice check.

TAN CAPCOM, Tananarive.

CAPCOM Tananarive M&O, this is Houston CAPCOM. Am I coming through to you? Am I going up?

TAN The first transmission was very low down in the mud. You called back, asked for the M&O, I received it clear and then we were switched over to Melbourne circuit.

CAPCOM Okay, am I going up to the spacecraft at this time?

TAN Alright (garbled)

CAPCOM Alright, this is Houston CAPCOM.

TAN Affirmative.

CAPCOM Alright, Spider and Gumdrops, this is Houston through Tananarive.

CAPCOM Tananarive M&O, Houston CAPCOM, am I receiving a down link from the spacecraft?

TAN (garbled) I'll copy.

PAO This is Apollo Control at 48 hours 42 minutes. We're not having any luck trying to establish communications through Tananarive. The station has been bad several other times during this mission. Stu Roosa will not try to make a call up any more for the rest of this pass. If communications are established and the crew calls us we will come back up. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 58:52, CST 10:52 154/1

PAO this is Apollo Control at 48 hours 52 minutes. Apollo 9 should be tagging up at Carnarvon momentarily, we will monitor the pass.

CAPCOM Spider and Gumdrop, this is Houston through Carnarvon, and Spider we would like to have high bit rate.

SPIDER Got you, Houston, going to high bit rate.  
GUMDROP Gumdrop is with you.

CAPCOM Roger, and just maybe till we shoot our  
COMM, did either of you read me over Tananarive?  
SPIDER SPIDER, i read you.

GUMDROP And Gumdrop did, too.  
CAPCOM Very good, thank you.

SPIDER Houston, Spider, I've got your stuff for you  
CAPCOM Go ahead, I'm ready to copy.

SPIDER Okay, number 1, our helium (garbled)  
pressure is reading it again at 750.

CAPCOM Roger, copy Spider, we're showing 735.

SPIDER okay, my helium air-vent pressure is down  
to 210. I think that's a little lower than it's supposed  
to be.

CAPCOM Roger, we confirm that. We're showing  
208 and it's okay.

SPIDER Okay, be advised we can not initialize  
the AGS on the PGNCS, we can not initialize the AGS on the PGNCS.

CAPCOM Roger, copy, you can not initialize AGS  
from the PGNCS.

SPIDER The update part of it from the PGNCS  
to the AGS. The down link part of it will not get into the  
AGS. When we put 10 000 up it just stays there at 10 000.

CAPCOM Roger, understand that the AGS will not  
accept the PGNCS downlink.

SPIDER Roger.  
SPIDER Spider. Did you get our message on the  
rendezvous readout?

CAPCOM Roger, undestand you - we're just about  
to lose you. You said you had no range rate on the DSKY, and then  
you did something, and I didn't copy that.

SPIDER Okay, we got the range to come in the  
DSKY one time and the range-rate a couple of times, but it's  
not consistant at all.

CAPCOM Roger, copy.

SPIDER Say Houston, did you get our gimbal angles  
and other stuff?

CAPCOM That is a negative, we have not received  
anything from you over Tananarive.

SPIDER Okay, Gumdrop to sent them down  
those -

GUMDROP I'll get them.

APOLLO 9 MISSION COMMENTARY 3/5/69, GET 48:52, CST 10:52 154/2

SPIDER Okay, never mind, I guess we have them all. Gumdrop  
why don't you send them the torqueing angles first?  
GUMDROP Okay, Houston, Gumdrop, are you ready  
to copy?  
CAPCOM Go ahead.  
GUMDROP Okay, the P52 torqueing angles: GET 484400  
plus 00213 plus 00042 minus 00147.  
CAPCOM Roger, copy those, Gumdrop.  
GUMDROP Roger.  
SPIDER Okay, Houston, and I've got an IMU  
relinement angle for you.  
CAPCOM Understand, Spider, ready to copy.  
SPIDER Roger, Command module angles 02029 02856  
33357. LM angles 28202 20876 02659.  
CAPCOM Roger, Spider, I copy: for Command Module  
02029 02865 33357. For the LM 28202 20876 02659 and we'll  
go to work on them.  
SPIDER Roger, and when you're ready I've got  
some AGS calibration data.  
CAPCOM Roger, I'm ready to copy. I'm ready to  
copy your data, Spider.  
SPIDER Roger, stand by.  
SPIDER Okay, the bias coefficients before the  
cal minus 77777 plus all zips minus all 7's. The Gyro good,  
we're plus 00027 plus 00047 plus 00006. Did you copy those?  
CAPCOM Roger, I copied those.  
SPIDER Okay, and following the cal, plus all  
zips, plus all zips, minus all 7's, and the gyro dripped  
after the cal. plus 00021 plus 00036 minus 00020.  
CAPCOM Roger, Spider, I copied those.  
SPIDER Okay, and the only other thing I need  
right now is the procedure from one of the AGS guys about  
how to get 414 back to zero. As I recall, you can not  
simply set it to zero, you have to go through a little pro-  
cedure there. I wonder if you would get that for us.  
CAPCOM Roger, Spider, I copy, 414 back to zero,  
and that's in work.  
CAPCOM And Gumdrop and Spider, I'd like to have  
both vehicles with S-band UP. We'll be going over to  
Honeysuckle in a couple of minutes.  
GUMDROP Gumdrop.  
SPIDER Spider.  
CAPCOM Spider, Houston.  
SPIDER Go.  
CAPCOM Roger, we're suspecting a leak in the  
DIP helium manifold, and, stand by one. And we'd like to  
have you take a look at DIP malfunction procedure number 1.  
SPIDER Roger.

APOLLO 9 MISSION COMMENTARY 3/5/69, GET 48:52, CST 10:52 154/3

CAPCOM Spider, Houston.  
SPIDER Go.  
CAPCOM Roger. We just noticed you doing a  
verb 47 there, and we would like to have you try the  
initialization again.  
SPIDER Roger, understand, you want us to do it  
again?  
CAPCOM Stand by one.  
SPIDER Be advised we tried to verb 47 2 times  
and it seems to come out of the PGNCs okay, but the AGS 414  
never goes back to zero.  
CAPCOM Roger, I copy that, Spider, and I have  
your torqueing angles while we work on that.  
SPIDER Roger, stand by just one.  
CAPCOM Roger.  
SPIDER Ready to copy.  
CAPCOM Roger, reading your torqueing angles:  
minus 00040 plus 00180 minus 00160.  
SPIDER roger, copy minus 00040 plus 00180 minus  
00160.  
CAPCOM That's affirmative, we confirm those.  
SPIDER Roger, thank you.  
SPIDER Houston, do you want us to descent helium  
rate 1.  
SPIDER And which one do you want us to do on  
this porcedure?  
CAPCOM Roger, we copy that Spider, stand by one.

END OF TAPE

CAPCOM Spider, Houston.  
SPIDER Go.  
CAPCOM Roger. We would like to have you try  
that initialization while we've got some data here on you.  
SPIDER Roger, will do.  
SPIDER Gumdrop, are you sort of angling toward  
the burn attitude here?  
GUMDROP That's affirm.  
SPIDER Okay.  
CAPCOM Spider, this is Houston.  
SPIDER Go ahead, Houston, Spider.  
CAPCOM Rog. We misinterpreted your question  
here. We would like to have you press ahead with mal 1,  
and just press right ahead.  
SPIDER Houston.  
CAPCOM Go ahead, Spider.  
SPIDER You want 10 and 12.  
CAPCOM That is affirmative. Go ahead and press  
through blocks 10 and 12.  
SPIDER Okay.  
SPIDER (garble)  
CAPCOM Spider, Houston. Say that again.  
SPIDER Roger. We threw in a VERB 47 and dog-  
gone if it didn't go in that time.  
CAPCOM Rog. We waved our magic wand over it  
through Honeysuckle, there, Spider.  
SPIDER You guys got what it takes with Sim Sup.  
CAPCOM That's affirm.  
CAPCOM Spider, Houston. I have a little bit  
of info when you are ready to listen. No need to copy.  
SPIDER Okay, good. I'm a good listener. Be  
advised that our regulator pressure doesn't seem to be  
dropping. It's holding at about 232, that's for the DPS.  
CAPCOM Rog. That is your regulator pressure,  
Spider.  
SPIDER That's right. We were reading off the  
fuel and oxidizer pressures. They are both reading 232  
and have been since I closed the rate. Also, my ambient  
tank has been holding at about 210.  
CAPCOM Roger, copy 210.  
CAPCOM And Spider, my little tidbit here is  
that during our hot fire test we do have a thrust chamber  
pressure switch failed closed on thruster B4 up. It failed  
on the first firing. It will have no effect to you at  
all with the exception that the caution and warning will  
not detect an off failure of that thruster. That is Baker  
4 up.

SPIDER                   Okay, will it detect abort for a stuck  
on thruster?  
CAPCOM                   Stand by. That is affirmative.  
CAPCOM                   Spider, Houston. This sensor is not used  
in the thruster on logic, it's strictly thruster off, so the  
answer to your question is affirmative. Caution and warning  
will detect a thruster on failure.  
SPIDER                   Okay.  
SPIDER                   And Houston, do you want me to press on  
any further with this malfunction procedure, or do you just  
want me to open up that rate again?  
CAPCOM                   Stand by, Spider.  
CAPCOM                   Spider, Houston. We would like to have  
you go back to normal configuration, open regulator 1.  
SPIDER                   Roger. (garble) and be advised that  
we're just about in a posture to perform the DPS burn at  
this time and get some last minute checks.  
CAPCOM                   Roger, understand. I'm about to lose  
you at Honeysuckle. We can have you through the Huntsville  
with no loss.  
SPIDER                   Roger.

END OF TAPE

GUMDROP Spider, Gumdrop.  
SPIDER Go ahead.  
CAPCOM Spider and Gumdrop, if you read me, we  
will see you over the Redstone at 28.  
SPIDER Roger, Spider.  
PAO This is Apollo Control at 49 hours 18  
minutes. We've completed communications at the Huntsville.  
During this pass, started at Carnarvon, we thought for a while  
there was a possibility of a descent propulsion system helium  
manifold leak. The crew started through a malfunction pro-  
cedure. They have quite a number of checklists on board that  
have malfunction procedures in them for numerous systems'  
problems. We've watched it on board and we've watched it  
on the ground. We have now determined that there is not a  
leak. There is no problem with the descent propulsion sys-  
tem helium manifold. The crew also had some difficulty in  
initializing the backup guidance system from the primary  
guidance system. However, they successfully initialized the  
AGS prior to the end of this pass. There is no problem there.  
It's been determined that a thrust chamber pressure switch  
on the LM thruster B4 up in the reaction control system is  
stuck; however, the only effect of this will be that the  
caution and warning system will not detect an off failure,  
it will detect a thruster on failure, but not a thruster off  
failure. This is not considered a serious problem. So, es-  
sentially, we are up and ready for the docked descent pro-  
pulsion system burn. The GO/NO-GO for this burn will be  
given over the Redstone. We acquire at the Redstone at 492737,  
and should we get a go for the burn there, we're about 21  
minutes away from the docked descent propulsion burn. We  
will come back up at the Redstone. This is Mission Control  
Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4927, CST 1127a 157/1

PAO This is Apollo Control at 49 hours 27 minutes. Apollo 9 coming within range of the Redstone.

CAPCOM Spider and Gumdrop, this is Houston through the Redstone.

CAPCOM Spider and Gumdrop, Houston through the Redstone.

CAPCOM Spider and Gumdrop, do you read, Houston.

GUMDROP Gumdrop is with you.

CAPCOM Okay, Gumdrop, I'm talking to you. Would you pass on to Spider that when he arms the DPS he may get a descent reg warning light due to the low manifold pressure.

GUMDROP Roger. Understand he may get a descent warning reg light through the low manifold pressure, right?

CAPCOM That is descent reg warning light, and he may get that when he arms the DPS.

GUMDROP Roger. Descent warning on when you arm the DPS. You copy that, Spider?

GUMDROP Okay, that is what he said.

CAPCOM Okay, thank you, Gumdrop and we are standing by for your burn.

SPIDER And Houston, do you want high bit rate again?

GUMDROP Houston, Gumdrop. Do you want high bit rate out of the Spider?

CAPCOM Copy, Spider then Gumdrop. Yes, we do want high bit rate.

GUMDROP Roger, affirmative on high bit rates, right?

CAPCOM Spider and Gumdrop, this is Houston. You are go for the docked DPS burn.

SPIDER Roger, we're go.

GUMDROP Gumdrop understands go.

CAPCOM And Spider, we are copying you loud and clear now.

SPIDER Gumdrop, why don't you go to free, and we will take control here.

GUMDROP Roger, Gumdrop is in free.

PAO Apollo Control. The LM has assumed attitude control with its RCS system. G&C says it looks nice and stable.

PAO Seven minutes away from this docked descent propulsion burn.

PAO During a portion of this burn, spacecraft commander Jim McDivitt will use the throttle manually. He is also scheduled to cut-off this burn manually 3 seconds prior to the automatic cut-off time.

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 4927, CST 1127a 157/2

SPIDER Houston, Spider.  
CAPCOM Rog. We are showing the AGS address  
407 as 10,000, write the checklist as 000.  
SPIDER Roger, thank you.  
CAPCOM You're welcome.

END OF TAPE

CC Spider - Houston.  
 SPIDER Go.  
 CC Okay, Rusty, that 407 flipped to 10 thousand again; we are recommending that you sit still and then inner-ride it right around ignition.  
 SPIDER Houston, you cut off that opinion.  
 CC Roger; your address 407 in the AGS has now gone back to 10 thousand; we are recommending you set up 0000 and enter right around ignition time.  
 SPIDER Roger.  
 PAO The engine has been armed and we are coming up on 2 minutes away from the burn.  
 SPIDER A minute, 45 seconds, Gumdrop.  
 GUMDROP Roger. I read you.  
 SPIDER Boy Houston, we are right over a white deck of clouds and is it ever bright.  
 CC Roger, copy.  
 PAO One minute.  
 SPIDER One minute.  
 CC Roger. Copy, 1 minute. Everything looks good.  
 SPIDER Okay, 28 seconds. 15 seconds Gumdrop.  
 Over the yaw. All the reserve. 3 even, AMU. All clear and ignition.- up to 40 percent Dave. It's 40 percent. (garble)  
 Okay, stand by for the auto pilot final descent red light now. Pressure's going down; here comes the full throttle up. Okay, the pressure dropped down to about 190 there Houston.  
 CC Roger; we copied it Spider.  
 SPIDER We're full throttle into the air; there's practically nil Davey.  
 GUMDROP Okay, looks pretty good over here too.  
 SPIDER Yeah, ditto. Flying this thing ...  
 GUMDROP Okay, your HP is 109 and holding.  
 SPIDER Thank you. Got 440 to go.  
 GUMDROP I've got 443.  
 SPIDER I'm pulling 8 tenths of a lunar G in case your interested; we're starting to get a little excursion in high yaw.  
 CC Roger, copy.  
 GUMDROP Can't see much on the tail end here.  
 SPIDER We just threw a big hunk down on the ground there; there goes another hunk.  
 GUMDROP Yeah, I saw a few pieces go too.  
 GUMDROP Gee, I got 405.  
 SPIDER Roger. So do we. And the PGNCS and AGS are count down right together.  
 GUMDROP Okay. 109.3 on the HP.  
 SPIDER Roger.  
 SPIDER Man, am I hungry.

GUMDROP That's pretty smooth.  
 SPIDER Yeah, it really is. It's going along  
 like a dream.  
 GUMDROP Jim, there's some pieces back there; some  
 of the oil's coming out.  
 SPIDER Yeah. Hey, we're going over Texas right  
 now I think we ought to be over Houston pretty soon.  
 GUMDROP 330.  
 SPIDER Okay, 330 here. Air (garble) the same  
 down less than one degree.  
 GUMDROP Roger. 109.3 HP.  
 SPIDER Okay. We have 1100 feet per second to  
 go.  
 GUMDROP Right with you.  
 SPIDER Man, the AGS and the PGNS are right  
 together. And for the information of the ground and the  
 tape, the quantity is reading 76 and 74 and we don't seem  
 to have any serious blockups at this time.  
 CC Roger Spider. Houston copies.  
 SPIDER Reg pressure is holding pretty steady;  
 it's about 232. And the landing radar temperature is read-  
 ing 95 at the present, and started out at 81.  
 GUMDROP Okay, HP is 109.3 and everything's clean  
 over here.  
 SPIDER Okay, same here. Looks like it's done  
 a real good job of steering. We've only got 890 feet per  
 second left to go.  
 GUMDROP I'm 885 when you called in.  
 SPIDER Okay.  
 GUMDROP 229.  
 SPIDER Roger. 225 here.  
 SPIDER Okay, we'll go over and start my throttle  
 profile at 124.  
 GUMDROP Roger.  
 GUMDROP Two minutes.  
 SPIDER Two minutes here; I have 7 04.  
 GUMDROP 109.2  
 SPIDER Roger.  
 GUMDROP Your rates on all axes are less than  
 a tenth of a degree per second.  
 SPIDER Is that right? I'm going to attitude  
 hold. Solid here.  
 SPIDER 600 feet per second to go.  
 GUMDROP Right with you.  
 SPIDER Okay, I've got about a minute, 25.  
 GUMDROP Right with you.  
 SPIDER Okay, when I start throttle, we're  
 gonna have about a second under that.  
 GUMDROP Roger.  
 SPIDER 450. 420 to go.  
 GUMDROP One minute.  
 SPIDER One minute now.

GUMDROP 109.2  
 SPIDER Roger. Hanging right in there, isn't it?  
 GUMDROP Yeah, really slick.  
 SPIDER We are getting a roll, or some sort of an  
 oscillation now here, Scott. Hey now, we're getting slosh  
 and I'm at 228 to go and the camera coming back on.  
 GUMDROP Ready for throttle profile?  
 GUMDROP Roger.  
 GUMDROP Ready.  
 SPIDER Okay, 170. 157. 145. Firing the throttle  
 40 percent. Going down to 10 percent. Back up to 40 percent.  
 Back down to 25 percent.  
 GUMDROP Back up again.  
 SPIDER Okay, coming up to 40 percent. Throttle  
 profile complete; just let it sit there.  
 GUMDROP 101.1  
 SPIDER Roger; 24 seconds to go.  
 SPIDER I'm going to shut down the area at 3  
 seconds to go, 18, 16, 15, 14, 13 -  
 GUMDROP No sweat.  
 SPIDER - 12, 10, 9, 8, get your hand open -  
 6, 5, 4, shut down.  
 GUMDROP Got that  
 SPIDER Help to do it all here.  
 GUMDROP Right with you all the way.  
 SPIDER Okay.  
 CC Spider, that was a beautiful burn, man,  
 you were right down the tube.  
 SPIDER Looked pretty neat from here too. You  
 want our residuals Houston?  
 CC I can copy them on your DSKY now Spider.  
 SPIDER Okay, very good.  
 SPIDER Man, you can really feel that stuff  
 sloshing around here at the end.  
 GUMDROP I thought the max rate you got was about 3 tenths  
 of a degree per second.  
 SPIDER Yeah, with the offset that I had on my  
 rate scale over here, I can't tell where zero is, but it  
 didn't deviate hardly at all.  
 CC That was mighty beautiful all the way  
 Spider.  
 SPIDER Okay.  
 GUMDROP Roger, landing radar temperature is 100  
 degrees right now.  
 CC Roger; copy. 100 degrees end of burn.  
 SPIDER Roger. When your in the groove man; you  
 gotta do that.  
 GUMDROP Even the AGS were good; the AGS 500  
 degrees plus 3. (garble)  
 GUMDROP Okay..

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 49:50, CST 11:50 159/1

CAPCOM And Spide, Houston, I copy 500 501 502  
plus 3 minus 5 minus 0.  
GUMDROP And the Gumdrop's got 271.7 by 109.1.  
CAPCOM Roger, Gumdrop, Houston, copy.  
SPIDER That isn't the way the fuel and oxide  
pressures drop off there during the sputter.  
SPIDER Houston, are you going to get a PFI  
call?  
CAPCOM Roger, understand you're getting PFI cal.  
SPIDER Houston, how long do we have to that  
burn 5?  
CAPCOM Stand by one, Spider.  
SPIDER Listen, I'm going to get something to eat.  
All I've had so far today is a little bag of fruit salad,  
and I'm about to starve to death, and I'm going to get some-  
thing to eat right after we do this burn. PFI cal complete.  
CAPCOM Spider, Houston.  
SPIDER Vehicle power is OFF.  
CAPCOM Spider, Houston.  
SPIDER Roger, Houston, Spider.  
CAPCOM Alright, we're going to do SPS 5 at the  
nominal time, and that's 4 hours and a half from now.  
SPIDER Okay, very good, thank you.  
CAPCOM Roger.  
SPIDER Gumdrop, Spider.  
GUMDROP Go.  
SPIDER Roger, we'd like to stop at an AGS cal  
attitude here somewhere.  
GUMDROP Very well.  
PAO This is Apollo Control. We are still in  
acquisition at the Vanguard, and we'll have overlapping  
coverage at the Canaries.  
PAO The voice heard most frequently from the  
Spider was Jim McDivitt's, and he is the one that got hungrey  
in the middle of the burn. Rusty Schweickart did come up  
several times with some radar temperatures and with one  
"No sweat" comment. The flight surgeon was monitoring one  
man in each vehicle during that burn, Jim McDivitt in the LM  
and Dave Scott in the Command Module. He reported the range  
of heart rates for Commander Jim McDivitt 107 to 87; for  
Dave Scott 97 to 60, with the high rate coming just prior  
to ignition in each case. We'll continue to stand by live  
through the Canaries.  
PAO Apollo Control, initial tracking shows  
the orbit 270 by 109, which is what we were shooting for.  
We will continue to refine that.  
GUMDROP Okay, Spider, Gumdrop powered down.  
(garbled)  
CAPCOM Spider, Houston.

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 49:50, CST 11:50 159/2

SPIDER This is Spider, go ahead.

CAPCOM Roger, Spider, we would like to ask you if after you finish eating there before you transfer back, if there would be any change of getting the regulator check, checklist systems page 17.

SPIDER Oh, yes, Okay. Roger, we'll get it.

CAPCOM Okay, thank you.

SPIDER I'm going to eat first, though, before I just drop over up here.

CAPCOM Roger, I just wanted to pass that on before you dismantled something. We would really like to see you go ahead and eat, and we'll see you over Tananarive about 13.

SPIDER Roger.

CAPCOM And Spider, we would like to have low bit rate.

SPIDER Roger, low.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 5000, CST 1200p 160/1

PAO                    This is Apollo Control at 50 hours 2 minutes. Canaries has loss of signal. A very successful descent propulsion burn just completed. A lot of good graphic commentary from the crew. Jim McDivitt eating now. As soon as he completes this meal, he will transfer back into the command module. Rusty Schweickart will stay aboard the LM for an additional hour, tying it down and waiting for the sublimator or water boiler to dry out before he transfers back into the command module shortly after 51 hours. The next station to acquire will be Tananarive at 50 hours 13 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 5012, CST 12:12 161/1

PAO This is Apollo Control at 50 hours, 12 minutes and Tananarive is about to acquire Apollo 9. We will standby.

CAPCOM Apollo 9 - Spider and Gumdrop this is Houston through Tananarive. Stand by.

TANANARIVE Tananarive M&O Houston COMM TECH network.  
HOUSTON Houston COMM TECH (garbled).

TANANARIVE Roger, verified CAPCOM is uplinking to your site.

HOUSTON (Garbled)

TANANARIVE Thank you.

PAO This is Apollo Control at 50 hours, 18 minutes. Cap Com Stu Roosa has just advised us that he will not try to communicate through Tananarive. Very noisy - communications are bad and he figures the crew is eating and he doesn't want to disturb them. So we will take this line down. If we do get a call from the spacecraft, we'll come back up. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 5030, CST 1230p 162/1

CAPCOM Spider and Gumdrop, this is Houston.  
Spider, we would like to have high bit rate.  
SPIDER Roger. High bit rate, Houston.  
CAPCOM Rog, copy, and I've got you through  
Carnarvon. You are five square.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 5030, CST 1230p 163/1

PAO This is Apollo Control and we are at  
Carnarvon now.  
SPIDER Roger, understand five square and we've  
already started the waterboiler dryout. We will do the reg  
check tomorrow.  
CAPCOM Rog, understand you will do the reg  
check tomorrow.  
CAPCOM And Spider, we would like, if you agree,  
to do a VHFB check here and secondary S-band check.  
SPIDER Okay, go ahead.  
CAPCOM Roger, Spider. We would like to do a  
VHFB check here, if you agree.  
SPIDER Roger, we agree. Go ahead with your in-  
structions.  
CAPCOM Roger, stand by one.  
CAPCOM Spider, Houston. Could we get some  
calibration data?  
SPIDER Roger, stand by.  
CAPCOM Rog.  
SPIDER Okay, you ready to copy?  
CAPCOM Spider, let's configure your spacecraft  
for B operation and I will copy your calibration data as a  
comm check.  
SPIDER Okay, we are on B. Do you read?  
CAPCOM Okay. Carnarvon M&O, this is the Hous-  
ton Capcom. I want you to remote VHFB only.  
CAPCOM Carnarvon M&O, did you read? Houston  
Capcom.  
SPIDER Houston, Spider. How do you read?  
CAPCOM I'm reading you five square. Let's go  
with the AGS calibration data.  
SPIDER Roger. Initial readings are the same  
as final readings before, right?  
CAPCOM Okay.  
SPIDER + all zips, + all zips, - all 7's, + 21,  
+ 36 and - 20.  
CAPCOM Okay, we've got that on the tape. That  
was a little fast.  
SPIDER Okay. Here is the final data after  
the cal. It was + all zips, + all zips, - all 7's.  
CAPCOM Copy.  
SPIDER And stand by here.  
CAPCOM Rog.  
SPIDER Hey, I beg your pardon. I powered  
down before I ran them out.  
CAPCOM Rog, understand.

SPIDER Stand by just one. I'll power back up  
and read them out.  
SPIDER Okay, Houston, are you still with us?  
CAPCOM That is affirmative. We've got you here  
for another 6 minutes or so across Carnarvon.  
SPIDER Okay. 54844546 + 7 + 28 + 0.  
CAPCOM Rog, copy + 7 + 28 + 0. Thank you very  
much and we do have a good VHFB system. Could you give us  
a secondary S-band check as per system 28 at this time?  
SPIDER Roger, stand by.  
CAPCOM And Carnarvon M&O, this is Houston Capcom.  
I would like for you to remote S-band back to Houston.  
SPIDER Okay, Houston. How do you read now?  
CAPCOM I'm reading you loud and clear, Spider.  
SPIDER Okay, done step 1, I'm ready to go to  
step 2.  
CAPCOM All right, let's go to step 2.  
SPIDER Okay, Houston.  
CAPCOM Spider, this is Houston. Do you read?  
SPIDER Roger, Houston. How do you read, Spider?  
CAPCOM That's beautiful. That's loud and clear,  
Spider.  
SPIDER Roger, same here.  
CAPCOM Okay, that takes care of that. We are  
ready for step 3.  
SPIDER Roger, going to step 3.  
SPIDER Hey, Houston, how do you read Spider  
now?  
CAPCOM You are five square, Rusty. That is  
real nice. Everything sounds great on that check. And while  
we've got you in the mood, would you care to do an S-band  
backup voice check? That's on page --  
SPIDER Just a minute. Try that once again.  
CAPCOM While we've got you in the mood, would  
you care to try an S-band backup voice check as per system  
27?  
SPIDER Roger. I just got the last two words  
of that. Say again.  
CAPCOM An S-band backup voice check, as the  
checklist system 27.  
SPIDER Roger.  
SPIDER This is Spider. How do you read on  
backup voice?  
CAPCOM Spider, this is Houston. Loud and clear.  
How me?  
CAPCOM Spider, this is Houston. How do you  
read me on the backup voice?

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 5030, CST 1230p 163/3

CAPCOM Spider, this is Houston. I'm reading you loud and clear. How do you read me?

SPIDER Okay, you are five square. I'm supposed to be able to talk to you without pushing PTT. I'm not sure I'm getting backup voice. Tell me if you read up through 5 and back down. 1, 2, 3, 3, 2, 1.

CAPCOM Okay, Spider. You blanked out at 3 on the way up and came in with 3 on the way down.

SPIDER Okay, I was using PTT up to 3 and from 3 on down and I understood the backup voice was supposed to go right off the intercom.

CAPCOM Spider, check biomed off and give me another fast check.

SPIDER Roger. The biomed is off.

CAPCOM Rog, verify biomed off.

CAPCOM Okay, Spider. We've got you through Honeysuckle. How are you reading me?

END OF TAPE

CAPCOM Spider, this is Houston through Honey-suckle. How do you read me?  
 CAPCOM Okay, Spider, I could hear you transmitting there. You are way down and breaking up. How about giving me a short count here. We are supposed to be locked up on you.  
 SPIDER One, 2, 3, 4, 5 (garbled).  
 CAPCOM Okay, Spider, you are relatively clear, but way, way down.  
 SPIDER (Garbled.)  
 CAPCOM Spider, this is Houston. We'd like to have you to return to COMM basic.  
 SPIDER Spider, this is Houston. I'd like to have you return to COMM basic and give me a check.  
 SPIDER Roger, Houston. We are in COMM basic. How now?  
 CAPCOM Okay, you're coming through clear now, Rusty. And we did get the backup voice check in - it was just way down low.  
 SPIDER Roger.  
 CAPCOM And we'd like to have the BIOMED switch on the LMP for the rest of the time, Spider.  
 GUMDROP Spider, Gumdrops.  
 GUMDROP The tunnel is clear.  
 SPIDER Roger, it is on the LMP, Houston.  
 CAPCOM Roger. Understand. Thank you, Spider.  
 SPIDER Be advised we are presently 28 minutes into the sublimator dryout.  
 CAPCOM Roger, Spider. I copy that - 28 minutes into the dryout.  
 SPIDER Roger.  
 CAPCOM Okay, Spider. You are breaking up. You will have to repeat that for me, please.  
 CAPCOM No VHF -  
 CAPCOM Okay, Spider and Gumdrops, I think we are about to drop you here at Honeysuckle. We'll be over Huntsville in a couple of minutes if you want to talk there and Hawaii at five-nine.  
 PAO This is Apollo Control. Gumdrops and Spider are over the Huntsville now. We'll stay up live through this pass. Flight Dynamics Officer Dave Reed reports the orbit now as 108.9 by 271.2 nautical miles.  
 SPIDER (Garbled.)

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 50:50, CST 12:50 165/1

PAO                      This is Apollo Control 50 hours 56  
minutes. The Huntsville has loss of signal. Hawaii will acquire  
at 50 hours 58 and a half minutes. This is Mission Control  
Houston.

END OF TAPE

PAO This is Apollo Control at 51 hours, and Hawaii is tagging up now with Gumdrops and Spider; we'll stand by.

CC (garble) Honeysuckle LOS.  
 SPIDER Spider to Gumdrops.  
 GUMDROP Go ahead (garble).  
 SPIDER Roger; stand by. Not yet.  
 GUMDROP What do you need?  
 SPIDER Just checking the comm.  
 CC And Gumdrops, this is Houston. We've got you through Hawaii now.  
 GUMDROP Gumdrops, roger.  
 CC Gumdrops; Houston. We'd like to turn the heaters and H2 tanks 1 and 2 off.  
 GUMDROP Okay, have to stand by for that one.  
 CC Roger; understand. No sweat.  
 SPIDER Gumdrops, can you give me flow?  
 GUMDROP You've got flow (garble) haven't you?  
 SPIDER I don't know; I can't tell.  
 GUMDROP Yeah, I gave it to you when you first called in.  
 SPIDER Okay, I'm gonna switch comms; give me a few seconds and then turn my temp power on.  
 GUMDROP Okay.  
 GUMDROP Houston, say again the heaters and volts.  
 CC Roger, Gumdrops. We would like to turn off the heaters in both H2 tanks.  
 GUMDROP Roger. Both H2 heaters are OFF.  
 CC Roger. Thank you.  
 CC Gumdrops, Houston. You might watch your middle gimbal.  
 GUMDROP Roger; thanks Houston; got an eye on it.  
 No, we got 2 eyes on it.  
 SPIDER Houston, this is Spider.  
 CC Go Spider.  
 SPIDER Roger; we've been running the dry-on now for 52 minutes and we are just starting the circulator pull out and the glycol temperature is right now 70 degrees. We are all drawn to it.  
 CC Roger. Copy.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 51:10, CST 13:10 167/1

CAPCOM And Gumdrops, this is Houston, just to remind you again about the gimbal lock. You are just making us nervous.

GUMDROP Okay, we've got somebody in the couch watching it at all time now.

CAPCOM Alright, thank you.  
PAO This is Apollo Control. Jim McDivitt is back in the command module now. We expect Rusty Schweickart to start moving into the command module within a very few minutes.

GUMDROP Houston, this is Gumdrops, how do you read?

CAPCOM Gumdrops, we read you loud and clear.  
SPIDER Okay, this is Spider. I figure our water boiler is dry at 57 minutes, and we have a lot of power on, and I want to give you a call here.

CAPCOM Roger, you must be a mind reader, that's just what we were thinking.

GUMDROP Houston, this is Apollo 9.  
CAPCOM Calling Houston, say again, please, I didn't get it, Gumdrops.

CAPCOM Gumdrops, this is Houston, I did not copy your last transmission.

CAPCOM Gumdrops, this is Houston, I did not copy your last transmission.

CAPCOM Gumdrops, this is Houston, how do you read?  
GUMDROP 5 by, Houston, go.  
CAPCOM Roger, I'm reading you real good now. I couldn't copy off Texas there. You made a transmission, I did not get it.

GUMDROP Roger, Houston. This is Apollo 9. We would like to know what the position of our tail (garbled) bus power circuit breakers are supposed to be. They are both circuit breaker panel 11 and 16.

CAPCOM Roger, Apollo 9, copy. Stand by.  
SC Just for when we (garbled) in the spacecraft.

CAPCOM Roger, understand.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 5120, CST 1320p 168/1

CAPCOM                    Okay, Apollo 9, those translunar buss  
tie circuit breakers are to be open, I say open.

GUMDROP                   Breakers will be open, Roger.

PAO                        This is Apollo Control 51 hours 23 min-  
utes. Apollo 9 over the Grand Bahamas station now. Rusty  
Schweickart has just returned to the command module. All  
three crewmen have their biomedical harnesses plugged in.  
Schweickart heart rate running about 60, Dave Scott is show-  
ing 63, and Jim McDivitt in the mid-seventies. We will con-  
tinue to stand by through Antigua which is just acquiring.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 5130, CST 1330p 169/1

CAPCOM Apollo 9, Houston. We are about 1 minute  
LOS Vanguard. We will see you over Ascension at 36.

SC Roger.

PAO This is Apollo Control 51 hours 31 min-  
utes. We have LOS at the Vanguard. All three crewmen back  
in the command module. The LM powered down and closed out,  
is now being supplied with what little power it needs from  
the command module. Next station to acquire will be Ascen-  
sion at 51 hours 35 minutes, about 3-1/2 minutes from now.  
This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 5135, CST 13:35, 170/1

PAO This is Apollo Control at 51 hours, 35 minutes. Apollo 9 coming up on the Ascension station now. We'll standby through this pass.

CAPCOM Apollo 9 this is Houston through Ascension standing by.

SPIDER Roger, Houston, Apollo 9.

CAPCOM Apollo 9, Houston. No need to acknowledge we are showing you with (garbled) a master alarm in about a minute on the H2 pressure.

SPIDER Houston, you are off by about 59 seconds on that one. It came on while you were talking. Very good.

CAPCOM Okay. Thank you.

CAPCOM Apollo 9, Houston. We're going to lose you at Ascension in about a minute. We'll see you over Tananarive at around five-one.

SPIDER Roger.

PAO This is Apollo Control - 51 hours, 44 minutes and Ascension has LOS after a very quite pass. Next station to acquire will be Tananarive at 51 hours, 50 and one-half minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 5150, CST 1350 171/1

PAO                    This is Apollo Control 51 hours 50 minutes. Apollo 9 coming up on Tananarive now; however, the network officer just informed the Flight Director that Tananarive is down. It doesn't have voice capability this pass, technical problems at the station. If we regain capability at Tananarive, we will come back up. The next station to acquire will be Carnarvon at 52 hours 7 minutes. This is Mission Control Houston at 51 hours 50 minutes.

END OF TAPE

APOLLO 9 COMMENTARY, 3/5/69, GET: 52:01 (14:01)

172/1

ALL DEAD AIR

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 52:00, CST 14:06 173/1

PAO                    This is Apollo Control, 52 hours 5 minutes, we're about a minute away from the Carnarvon acquisition. In the meantime, I would like to recapitulate here on the EVA situation. EVA has not been eliminated at this time. The ground intends to talk to the crew about the possibility of eliminating it just prior to the rest period this evening, and perhaps again in the morning after the crew has awakened. However, at this time, the EVA has not been eliminated and we will have a conversation with the crew just prior to the rest period this evening concerning EVA. We'll stand by now for the Carnarvon pass.

CAPCOM                Apollo 9, Houston, through Carnarvon, standing by.

SC                    Roger, Houston, Apollo 9.

CAPCOM                Roger. We're going to have you here for about 11 minutes at Carnarvon, and if you can handle it we would like to initiate a waste water dump at this time and dump it down to 25 percent.

SC                    Okay, waste water down to 25. We're all back in the Gumdrop, the tunnel is closed out, and everything looks okay.

CAPCOM                Say, sounds great, Apollo 9.

CAPCOM                And, Apollo 9, this is Houston, just at your convenience, when you have a couple of three minutes to talk I've got several questions that can be handled at any time. I'd just like to start working down the list before we get too close in to the burn.

SC                    Okay, stand by.

CAPCOM                Roger.

SC                    Go ahead Houston, Apollo 9.

CAPCOM                Roger. There are a couple of questions we have, and one is on the adjustment of this VOX sensitivity during our COMM test. We're trying our best to trouble shoot some of our difficulties, and we would like to have any comments that you could give us in that regard.

SC                    Well, we finally ended up with the VOX sensitivity about 8 and a half or 9. We still weren't getting the PLSS to the ground, though. We should read him from -

CAPCOM                I'm sorry, you broke out there, Apollo 9, said you could read and then say again all after.

SC                    I'm thinking.

CAPCOM                Oh, okay, I'm sorry.

SC                    Houston, we were reading - we had communications from the PLSS to the CSM, from the CSM back to the PLSS. I guess we were just having trouble getting to the ground, and even though I had the VOX sensitivity up to about 8 and a half or 9, which is about as high as it goes, we still weren't able to get him to trigger the VOX, I guess.

CAPCOM                Roger, copy, and you know I wasn't getting

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 52:06, CST 14:06 173/2

CAPCOM The CSM at all, in the Texas-Mila pass, and down over the Mercury you came in loud and clear. It looked like the one time there during the Mercury we were going to have real good comm, and then it got ratty again. Okay, that's enough of that one then, unless tell-comm will come up with some more questions. If you have anything else to add on it they would like to take it at this time.

SC Tell them we (garbled)

CAPCOM Okay, and I'm curious about the foil coming off of the Spider during the burn. Were they, you know, large hunks, small, is there any thing you would like elaborate on that?

SC I couldn't say - the stuff I saw I couldn't say for sure was foil. I think Dave said that, just a minute.

SC Yes, looked like there were some pieces, maybe 2 to 3 inches square in area, but not square in dimension, they weren't clean pieces like something that was supposed to be there left. It looked it might have been scraps or something that had been hanging loose, but I did see some that were black and some that were partially black and silver, and they came off pretty fast, so it was hard to track them.

SC That's kind of - they stayed with us. They didn't look like they were being shot out of the engine or anything. They stayed with us and we sort of left them, but not too rapidly, and they were sort of down between from us toward the ground, and I couldn't tell exactly where they originated.

SC Yes, I couldn't tell where they came from either.

CAPCOM Okay, Apollo 9, copied that. That was a real good description, and the other question I was wondering if you would care to comment if in all that HUBBUB if you had a change to try out the LM drinking fountain.

SC Roger, I did, and there seemed to be appreciably less water in the LM system than there was - I mean in the LM system than there is in the command module. It's much better over there.

CAPCOM Okay. How was the temperature of the water?

SC It was pretty good, it was cool. It was very tolerable.

CAPCOM Okay, sounds great, and I would like, if you haven't buried them, the battery voltages and so forth that was on the closeout checklist, they're system 74, at your convenience.

SC Battery check voltages, Houston?

CAPCOM I'm ready to copy, Apollo 9.

SC (garbled) batteries 1 through 4 with 31 volts. Battery 5 and 6 were 37. Commander's bus and

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 52:06, CST 14:06 173/3

SC System Engineer's bus were 31 and 31.  
ED BAT A was 36.5, ED BAT B was 37.2.  
CAPCOM Roger, very good, Apollo 9, we got those.  
SC (garbled) Tonight, probably after this  
next burn, I'd like to go over with you what we are going  
to do tomorrow.  
CAPCOM Okay, very good, we agree to that.  
SC Do you have a plan for us, or are you  
open for suggestions, or what?  
CAPCOM Roger -

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 5216, CST 1416 174/1

SC - suggestions or what?  
CAPCOM Rog. We would rather wait until after the burn and then we can get together and have a meeting of the minds.

SC Okay.  
CAPCOM That pretty well takes care of my list. One other question. I take it from your comments that the rendezvous self test, we never did get any good, valid data from that, is that affirmative?

SC Not consistent, no. Occasionally, one time we got the range to come into the computer and three or four times maybe for range rate, but from the computer 10 times we got nothing.

SC It wasn't anything we could pin it down to.

CAPCOM Okay, copy that and just as a last item, I would like to alert I'll be calling you again right after SPS fire that we want to initiate a charge on battery B.

SC Okay.  
CAPCOM And that's all I have. We are going to have you here for about another minute and a half and then we will see you, we can talk through the Huntsville about 25; if not, Hawaii at 35.

CAPCOM Okay, we speak sayanora at Carnarvon, Apollo 9 and we would just like to have you take a look at the middle gimbal.

SC We'll watch it.

CAPCOM Okay, we are too.

SC Seems like we are getting some disturbance torque as we go around.

CAPCOM Rog, copy.

PAO This is Apollo Control 52 hours 18 minutes. Huntsville will acquire 52 hours 24 minutes. We will come back up then.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 5224, CST 14:24

175/1

PAO                    This is Apollo Control. 52 hours, 24 minutes. Huntsville about to acquire Apollo 9. We'll stand by.

PAO                    This is Apollo Control at 52 hours, 30 minutes. Apollo 9 beyond range of the Huntsville now. Went through that pass without any conversation at all. Hawaii will acquire at 52 hours, 34 and one-half minutes - about 3 and one-half minutes from now. We'll come back up then.

END OF TAPE

PAO                    This is Apollo Control 52 hours 34 minutes. We are about to acquire at Hawaii. We have a report here on medication taken by the crew to date in this mission. All three astronauts have used Afrin spray to relieve stuffiness in their nose caused by the oxygen environment. The lunar module pilot, Rusty Schweickart, has taken two Marezine tablets on day one, he has had one Seconal on day one, that's a sleeping pill, a Seconal on day two, and on day three, he has had a Lomatil. The other two have had no medication other than the Afrin spray. We have acquired at Hawaii. We will stand by live starting with Hawaii and going through the States.

CAPCOM                Apollo 9, this is Houston. We've got you through Hawaii. Standing by, eyeing the old gimbal.

SC                    Roger. We're dumping the water.

CAPCOM                Roger.

SC                    You know, we've been sitting watching this gimbal too, and I've been chasing the thing all day long. It seems to seek the red bullet - the red dot in the center of this thing, and I wonder if we are not trimming along the flight path angle. What would you say to that?

CAPCOM                By jove, I believe that requires some heavy concentration on our part.

SC                    Well, it will give you something to do tonight.

CAPCOM                What you are trying to say is you are being stabilized with the gravity gradient, then?

SC                    I guess I don't really know what I'm saying, is the reason why. I don't really understand it, but it seems to seek the in-planeness, even when you get it sort of moving away from the gimbal lock area, it stops and starts to move back unless you have enough rate. If you have enough rate to move away permanently, it will swing around to the other side.

CAPCOM                By jove, that's a real good observation. How about vertically? Is it trying to align itself vertically too, along the gravity gradient?

SC                    No, I don't think so. I haven't noticed that so much, just in any roll orientation, it seems to want to go to the in-planeness. I guess maybe we can watch the vertical alignment tomorrow to see if it is gravity gradient.

CAPCOM                Okay. I've got another question for you, Dave? Did you get any alarms during the day from the cyro tanks?

SC                    No, not a one. Not until you called. That was the first one.

CAPCOM                Okay, thank you.

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 5234, CST 1434 176/2

SC Hey, Smoky?  
CAPCOM Go ahead.  
SC You know, now that I think about it, I  
guess maybe 70, 80 percent of the time today, I've been able  
to see the horizon out of the hatch window.  
CAPCOM Rog.  
SC Which sort of means maybe it is bo mine  
red(?).  
CAPCOM My goodness. Maybe we've come up with  
something here that will become an international law or  
something, you know, like F = MA.  
SC Say, now. Wouldn't that be something?  
CAPCOM Tremendous.

END OF TAPE

CC Gumdrop, Houston.  
GUMDROP Go ahead Houston.  
CC Roger. We'd like to have two and accept please. We have a state vector and a target load for you, and you might start fumbling for a maneuver pad; I'll have one for you when you're ready to copy on this SPS 5.  
GUMDROP Roger. You have two and accept and we are ready to copy.  
CC Okay. I'll be ready in about one minute.  
CC Okay, Gumdrop, this is Houston with the pad.  
GUMDROP Go.  
CC Roger. Reading SPS 5. 054 26 11 20 minus 02 109 minus 03775 plus 037960575405673043230545 plus 110 minus 080251761028800 minus 0388 plus 130761769 and I'd like to pass the LM weight - is 21860.  
GUMDROP Roger. Can you give me the shaft angle again please?  
CC Roger. Reading the shaft angle. 17610 and under remarks I have your gimbal angles that will give you 90 degrees out of plane in case of the early shut down. Reading row, all zips, pitch 040, yaw 030; end of update.  
GUMDROP Roger; stand by just one on the readback.  
CC Roger; standing by for the readback and the computer is yours; you have been loaded a state vector and a target load.  
GUMDROP Okay, Smoky, do you have a preferred time on those angles; I realize that they are out of plane all the time but do you have a preferred time or anything on them?  
CC That's negative; just under the ... in all the ground rules that we had; just as soon as possible, once you determined the cause and feel like kicking it off again.  
GUMDROP Okay, here comes the readback. 054261120, minus 02109 minus 03775 plus 03796, 05754 05673 0432 3054, oops, excuse me, 30545, plus 110 minus 080 2517, pitch 1728800 minus 0388 plus 13076 1769 and understand roll 0, pitch 40, yaw 30, we're 90 out of plane, LM weight 21860.  
CC Roger; Houston confirms the update. It looks good.  
GUMDROP Thank you.

END OF TAPE

PAO                      Spacecraft has just moved out of the range of Antigua tracking station. We've had a shift change here at Mission Control Center in Houston. The Gold Team now has replaced the white and let me pass on an administrative announcement for the news media representatives who are watching - covering the flight. We anticipate the change of shift briefing will be between 3:15 and 3:30 CST. On this upcoming pass, the major item of action as far as we're concerned is the SPS-5 burn which should take place approximately at 54 hours and 25 minutes, while the spacecraft is acquired by the tracking stations at Goldstone, California, and Corpus Christi. During the burn, the crew will be shooting for a velocity vector or DELTA V of about 575 feet per second. Duration of the burn is 43.2 seconds and the maneuver is designed to put the spacecraft into a circular orbit. It's the final shaping really for the LM-CSM exercise which is scheduled for day No. 5 in this Apollo 9 flight. If the burn is normal, we expect the new spacecraft altitudes to be 129.9 by 129.8 nautical miles. Before the crew fires that SPS engine on the CSM, they will light up the RCS thrusters for a ullage burn, this required prior to ignition to settle the propellants. During earlier SPS maneuvers, the tanks were full and therefore no settling was necessary, but as you get more empty space, you have to relocate those weightless propellants to a position where they can feed the engines. Four RCS thrusters will be used for ullage and we estimate the firing time for that exercise will be about 18 seconds. At 53 hours, 10 minutes, ground elapsed time, with spacecraft heading over the Atlantic Ocean, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 5312, CST 1512 179/1

PAO This is Apollo Control. We have reacquired the spacecraft at the Ascension Island tracking station and we'll stand by to monitor any conversation between Astronaut Stuart Roosa, who is the CAPCOM here in Houston, and the crew of Apollo 9. We'll stand by.

CAPCOM Gumdrop, this is Houston through Ascension, standing by.

SC Roger, Houston. This is Apollo 9 here.

CAPCOM Rog, Apollo 9.

SC We're just getting ready to start the

B-52.

CAPCOM Rog, copy.

PAO We're standing by here monitoring the pass of Apollo 9 as it passes within range of the Ascension tracking station. We'll continue to monitor the loop for any conversation between the ground here and the crew.

CAPCOM And we followed that, Apollo 9.

SC Oh, very well, thank you.

CAPCOM Rog.

PAO During this portion of the pass the program 52, the inertial measurement unit realignment, was accomplished. The spacecraft still is within range of the Ascension Island tracking station. We'll have it for about another minute before it moves out of range, next to be picked up by the station at Tananarive.

PAO We have lost signal from the Apollo 9 through the Ascension tracking station. We would expect to pick up the spacecraft at Tananarive at 53 hours, 28 minutes, or about 6 more minutes from now. At 53 hours, 22 minutes into the flight of Apollo 9, this is Apollo Control.

END OF TAPE

PAO This is Apollo Control at 54 hours 11 minutes into the flight of Apollo 9. During the recent change of shift press conference we recorded some of the conversation that took place, although it was somewhat limited over Tananarive, Carnarvon, and the station at Guam. Spacecraft at the present time is approaching Hawaii. We have a new, also we have a new capcom on at this time it is astronaut Ron Evans. We are prepared to play that conversation between the ground and the crew back to you at this time.

CAPCOM Apollo 9, Houston, we have you through Carnarvon.

GUMDROP Hello there Houston, Apollo 9.

CAPCOM Roger loud and clear.

GUMDROP Roger same with you. We are over Hawaii drifting slowly over towards deep burn attitude.

CAPCOM Houston, roger. Apollo 9, Houston you are go for SPS 5.

SC Roger go for SPS 5.

CAPCOM Apollo 9 Houston through Guam standing by.

SC Hello there Houston through Guam, how are you today?

CAPCOM Roge good shape.

SC It is nice to talk to you in the day time, you keep waking me up in the morning.

CAPCOM It's better for me too.

SC I guess somebody must be easy on you down there, hum...

CAPCOM 9, Houston, say again.

SC Roger, who ever is doing the scheduling must be getting easy on you.

CAPCOM Yea concur.

SC Apollo 9, we just completed our daylight star check, and low and behold a star was there.

CAPCOM Hey great. Apollo 9 Houston 1 minute LOS, Hawaii at 12.

SC Roger, Hawaii at 12. Oky doky. Hey Ron is Sonny there with you?

CAPCOM Is who with me?

SC Oh never mind he is over in Hawaii.

CAPCOM Roger. Smokey is still here.

SC No Sonny, Sonny Morton.

CAPCOM Yea he's here too.

SC Okay.

CAPCOM Hello Jimmy.

PAO Well we've been acquired by the Hawaii station and at this time we are about a quarter of an hour

PAO and 15 minutes still from the burn. The SPS 5 burn. As you heard in the conversation, in addition to Ron Evans, Astronaut Al Warden and Pete Conrad now both came into the Mission Control Center here. In that SPS 5 burn again those important objectives of course, will be an ullage maneuver to settle the propellants and the burn itself for some 43.2 seconds, Delta-V of 575 feet per second as planned, and this should result in a circular orbit of about 129.9 by 129.8 nautical miles. Meantime let's monitor some more of the conversation between the ground here and the crew.

CAPCOM Apollo 9 Houston through Hawaii, standing by.

SC Roger.

CAPCOM Roger. Apollo 9 Houston, I'll give you a mark on 10 minutes.

SC Roger.

CAPCOM Mark 10 minutes.

SC Roger we're right together.

PAO According to our information here we've had loss of signal at the Hawaii station. We should be up again at the Redstone at 54 hours 19 minutes. That is in about a minute. At 54 hours 18 minutes ground elapsed time this is Apollo Control.

END OF TAPE

PAO This is Apollo Control at 54 hours, 19 minutes into the flight. We expect acquisition by the tracking ship Redstone in a few more seconds. At the present time the spacecraft apogee is 270 nautical miles and its perigee is 109. We want to move from that orbital altitude to a circular and we hope to do so on the SPS-5. Meantime, we'll stand by and monitor any conversation between the Capcom here in Houston and the flight crew.

PAO We would anticipate that the crew is kind of busy at the present time, and therefore we may not have much conversation. We'll continue to stand by.

PAO According to our clock here, we're less than five minutes from ignition.

PAO On my mark, 4 minutes from ignition.  
Mark.

PAO Three minutes from ignition, SPS-5 ignition, three minutes. At this time the flight controllers here all report systems looking good on spacecraft.

PAO We are now less than two minutes from the SPS-5 burn.

PAO On my mark, one minute from ignition.  
Mark. One minute from SPS-5 burn.

PAO Thirty seconds. All systems still appear to be functioning normally. Ten seconds and we have a report of ullage. We have a report of ignition. Flight control has the report that the burn is good so far -- at 26 seconds. Another report, burn is looking good. And the flight control has report cut-off. From the report it looks like a good burn. The onboard computer on the spacecraft reports that the ....now, let's stand by.

CAPCOM Up your residuals, Delta VC.

SC Roger, Delta VC is 9.9.

CAPCOM Roger.

PAO The onboard computer reported an apogee of 129 and a perigee of 123 nautical miles. We'll refine those later. In the meantime we'll stand by for more conversation.

PAO Fido reports the whole burn looked good. Solid as a rock.

SC (Garbled)

CAPCOM Roger, we copy. 129.6, 127.7.

SC Roger. (Garbled)

CAPCOM Roger. Apollo 9, Houston. Request about the charging as soon as you get there.

SC Roger. In route.

CAPCOM Roger.  
PAO Little earlier there was a report of residuals.  
SC ..... charge, Houston, and we're drawing 2 and one quarter amps, now.  
CAPCOM 9, Houston, we copy.  
PAO Those residuals are those refined feet per second DELTA Velocities that the SPS burn didn't quite achieve. They could be a little bit short or they could be a little long. The crew will burn out the exact number using the RCS thrusters.  
CAPCOM Apollo 9, Houston.  
SC Go ahead.  
CAPCOM Roger. We'll be going private over Antigua in about 35.  
SC Okay.  
CAPCOM Apollo 9, Houston.  
SC Go Houston, Apollo 9.  
CAPCOM Roger, We see you are in Program 6 right now. Just be advised we want to give you your state vector before you power down..  
SC Roger. We'll bring the CMC back on the line.  
CAPCOM Roger.  
SC You're pretty fast. When it gets close to time to rest, we're really in motion.  
CAPCOM Come again.  
SC I said when it gets close to time for resting, we really get in motion.  
CAPCOM I noticed that.  
PAO This is Apollo Control here in Houston. As you know, we've had a request from the crew for a private conversation, and we are prepared to take this line down at 35. That's 54 hours and 35 minutes or some, about 35 or 40 seconds from now, and then we'll come back up as soon as possible.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 5435, CST 1635 182/1

PAO  
Control.

At 54 hours, 35 minutes this is Apollo

END OF TAPE

PAO This is Apollo Control at 54 hours, 50 minutes into the mission. FIDO, the Flight Dynamics Officer, gave us a refined figure, some refined figures on our last burn. And our apogee reads at the present time, 129.1 nautical miles, and the perigee is 123.7 nautical miles. The orbital weight of the spacecraft at the present time is 49,486 pounds. We expect the crew to be acquired by the station Ascension momentarily and we'll stand by to monitor any conversation that should transpire between the ground and the crew.

PAO This pass over Ascension will be a relatively short one, about 2 minutes. We may not get any conversation. Here we are.

CAPCOM Houston. Go.

SC Roger, we've got consumable status for you here.

CAPCOM Roger, ready to copy.

SC Okay, service module RCS A, B, C, D -

Ready to copy?

CAPCOM Go.

SC 75, 76, 74, 74.

CAPCOM 75, 76, 74, 74.

SC Roger, bat C, 37.0; pyro A, 37.1; B,

37.1.

CAPCOM Roger.

SC We've got the injector temperatures for you. 5, off scale high; 5 Delta, 4.85; 6 Alpha, Bravo, Charlie and Delta, all off scale high.

CAPCOM Roger, all off scale high except 5 Delta, and it's 4.85.

SC That's Charlie. I mean that's affirmative.

CAPCOM Okay. We show you 129.1 by 123.6. We're refining it but it looks okay.

SC Roger, do you have any word on purge tonight?

CAPCOM Say again, word on the purge?

SC Roger. Do you want to purge the fuel cells tonight?

CAPCOM Roger, stand by.

PAO Well, we've evidently lost communication with the spacecraft, it having moved beyond the Ascension tracking station range. Conversation that transpired during that last pass was between Dave Scott on the Apollo 9 crew and Ron Evans here in MCC. At 54 hours, 54 minutes GET this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 5506, CST 1706 . 184/1

PAO                    This is Apollo Control at 55 hours, 6 minutes Ground Elapsed Time. We're about to acquire the spacecraft over the Tananarive site, should have it in a few more seconds. And at that time we will monitor any air-to-ground conversations between the crew and the ground here. We're standing by at the present time to monitor any conversation between MCC and Apollo 9.

PAO                    According to the flight plan the Lunar Module Pilot is in the process of taking off his pressure garment assembly in preparation for his night's rest, or his rest cycle. He'll be followed by the Commander who will doff his pressure garment assembly so it could be that our conversation over this station will be limited. The crew is probably fairly busy buttoning up the spacecraft so to speak, for its - in preparation for the rest cycle that's coming up.

PAO                    This pass over Tananarive has about 2 more minutes before the expected loss of signal. We'll stand by and continue to monitor any conversation if such conversation does transpire.

PAO                    Our comm between Tananarive and the spacecraft has been - has had a history today of being rather poor. Apparently this is no departure from what we have done earlier. We still have about a half a minute of time left before the expected loss of signal. We'll continue to monitor any conversation that develops.

PAO                    We have an indication that the spacecraft moved out of the range of the tracking station at Tananarive. Next up will be Guam on this the 35th revolution in the flight of Apollo 9. At 55 hours, 11 minutes this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY 3/5/69 GET 55:32 CST 1732, 185/1

PAO This is Apollo Control at 55 hours, 32 minutes into the flight. The station in Guam has acquired the spacecraft at the present time and we'll monitor the conversation if ---

SC Roger Houston, Apollo 9 go ahead.

CAPCOM Roger we're kind of standing by for S-band lock up here to get an E memory dump from you.

SC Oh very well, and we never saw a state vector go in.

CAPCOM Roger it'll be coming in here shortly soon as they get the lock up.

SC Okay.

CAPCOM Okay Apollo 9 looks like we got it. Request a verb 74 and give us a mark when you do it.

SC Roger, okay here we go, 3, 2, 1 mark.

PAO Okay we're standing by here listening to some of their conversations. We'll continue to stand by and pick up some of their conversation if anymore transpires. I'm up, I was up on the pass.

CAPCOM Apollo 9 Houston, request two and accept.

SC Roger have two and accept.

CAPCOM Okay should be coming.

PAO Oh your going to, okay.

CAPCOM Dosimeter read outs, too, if you have those handy.

SC Okay stand by, we can give you two out of three.

CAPCOM Okay.

SC Okay the CMP is 16111.

CAPCOM 16111.

PAO This is Apollo Control, Houston. We want to break into this to try to summarize for you a private conversation that was held about 45 minutes ago with the crew. In summary, during the conversation Rusty Schweickart said that he had had no additional nausea during the day. I repeat Schweickart said he had had no additional nausea during the day. He did say that he did not have much of an appetite and that he had not had any lunch and also that he wasn't feeling completely up to par. Now for that and other reasons Apollo 9 commander Jim McDivitt at that point in the conversation came up on the line and recommended that the EVA portion of the flight be suspended with the LM hatch opening tomorrow. Project officials here in Houston concurred unanimously with that judgement and it has been decided that the exterior LM pilot transfer part of the lunar, of the EVA exercise tomorrow will in fact be eliminated. In addition to Rusty Schweickart's well being, other factors which came to bear

PAO on the decision the recommendation of Jim McDivitt which subsequently became the decision, included the finding this morning of just how tight the time line was, associated with preparations for the transfer. This was mentioned several times in the conversation that factors which the crew had anticipated would go faster than they had hoped. In general it was an extremely busy, very tight transfer, and this fact came into play in the decision. Another factor was, that by reducing, taking the EVA out of the, the Schweickart transfer out of the exercise tomorrow, will permit an overall saving of approximately one and a half hours on the total operation, and this will give the crew additional rest time coming up on the critical rendezvous exercise planned for Friday. The exact time for, the exact time lines for tomorrows operations are presently being shaped here by flight planners and will, this activity will go on for several hours. But before those precise time lines are available we are able to identify these major activities that will be included in the operation tomorrow. For one Rusty Schweickart will go on the PLSS completely, he will be dependant on it. The number 2, the LM cabin will be depressed and the LM hatch will be removed. Number 3 the command module hatch also will be opened. Number 4, the exact time of the television pass has yet to be determined, it could move forward or move up as much as an hour and a half but we will have a television pass, the precise nature of it is not yet known, but it'll probably include a tour of the Lunar Module, and perhaps a look down the tunnel, a look out the windows, and that sort of thing. No precise plan yet but it will be a 15 minute pass and the time will be determined later this evening. It will be passed to you as soon as we have it. In concluding the conversations project officials stated to the crew that they were extremely pleased with the performance of the Lunar Module in its first manned flight, and they congratulated the crew on a job very well done. That concluded the conversation at about 4:50 P central standard time. We're going to go back now and we have some tape which has been accumulated while we have talked. We'll play that for you at this time.

SC CDR's is zero 3 ill.

CAPCOM 03111. Nine, Houston on the first contact we had today they were recorded real good at the site and we had just a bit of a problem getting them back to MCC, but the contacts were good.

SC Oh very good, okay what kind of ... configuration would you like tonight on the CRYO.

CAPCOM Okay, we will give that to you over Texas probably heaters off and we'll have the fan on. Okay

SC Standing by for your word.  
CAPCOM Okay I've got a nav check for you if you're ready to copy it.  
SC Stand by. Okay go ahead with the nav check.  
CAPCOM Okay of course the purposes for going off the range, GET 056 30 0000, -3251 -00910 1258, over.  
SC Roger 056 30 0000 -3251 -00910 1258.  
CAPCOM Roger it's good and the computer is yours.  
SC Oh very well thank you.  
CAPCOM Nine, Houston, and another thing we came to a conclusion here was that we had to be in high bit rate for the PINGS to AGS initialization.  
SC Roge understand.  
CAPCOM Now we're just about to LOSer, I'll give you some more dope on tomorrows activities when we get over Hawaii.  
SC Okay understand.  
CAPCOM You might be thinking about if there's any changes in the window fogging from yesterday.  
SC ..... it looks like it'll be okay through rendezvous but its ....  
PAO We just caught up on the tape of the pass that transpired over Guam while they reported a private conversation was being read. The spacecraft at the present time is out of the tracking range of the Guam station, it's approaching Hawaii. We will expect to acquire that in about two minutes and we will come up again at that time. At 55 hours 44 minutes GET this is Apollo Control.

END OF TAPE

PAO This is Apollo Control at 55 hours, 48 minutes into the flight. The spacecraft now has been acquired by Hawaii, the Hawaii tracking station, and there has been a little conversation. We are prepared to play that back for you now and then catch up and go live with it.

CAPCOM Apollo 9, Houston through Hawaii.  
SC Rog, Houston. Apollo 9.  
CAPCOM Okay, I missed your comment on the windows there as you went over the hill.  
SC Okay, the windows are looking pretty good. All of them are just fine as a matter of fact, except the left-hand rendezvous window and the film that we had yesterday is continuing to grow, the little light band around the edges. It'll be fine for the rendezvous but interesting to see how long it lasts on into the 10 days. Let's see, only one of the bunch really, that looks like it has a problem. The little circle that was in the center of the hatch window hasn't seemed to grow any. And the rest of them are remaining about the same. Pretty good.  
CAPCOM Okay.  
SC And temperature is about 98.6.  
CAPCOM Roger, 98.6. Okay, I've got a few comments on tomorrow's time lines if you're ready to do that and copy it.  
SC Okay, just a second.  
CAPCOM Okay, basically what we've planned is to stay on the normal time lines for both vehicles up to the point of going EVA, and when we get into the PLSS things there we'll go through the normal PLSS hookups, but stay on the LM ECS hoses in suit disconnect from the LM, instead of connecting the OPS.  
SC Okay.  
CAPCOM Okay. we want to keep the TV pass as scheduled and it's kind of dealer's choice there, shots inside the LM, tunnel, or whatever you want.  
SC Okay.  
CAPCOM Okay, do you have any druthers on the PLSS comm? We were thinking that maybe you can go ahead and use the LM relay mode.  
SC Stand by.  
CAPCOM 9, Houston.  
SC Rog, go ahead.  
SC Houston, 9. Go ahead.  
CAPCOM Roger, we are curious, did Rusty take a Marezine and a Lomotil this morning?  
SC That's affirmative.

CAPCOM Roger.  
SC We're massaging your plan right now.  
CAPCOM Okay.  
SLAYTON 9, this is Deke, how do you read?  
SC Say again.  
SLAYTON Deke here, how do you read?  
SC Stand by one, Deke.  
SLAYTON Okay.  
SC Okay, go ahead.  
SLAYTON Oh, rog. I think we had LOS on you before we finished our last transmission. I thought I'd let you know that everybody down here is very happy with the way the day has gone and I'd like to congratulate you for an outstanding job.  
SC Thank you.  
CAPCOM Apollo 9, Houston.  
SC Roger, Houston. Go ahead.  
CAPCOM Rog. I think we might add a little bit to what we were saying about tomorrow and that is that we intend to just have the hatch open only during the first daylight pass and then button it up.  
SC Roger. Fading out. We haven't got a solid lock I don't think yet. Would you say it once more, please?  
CAPCOM Okay, how are we now?  
SC Okay, I think you're coming in better now.  
CAPCOM I might add that we plan to have the hatch open only during the first daylight pass and then button it up rather than going all the way around with the hatch open.  
SC Roger, yes, I'd like to finish up tomorrow's activities a little earlier, if we can.  
CAPCOM We understand that.  
SC Okay. We only have a 7 and a half hour rest period tomorrow night and I want to make sure that we have enough time to configure the spacecraft for the transfer the next day and still get some sleep.  
CAPCOM Concur.  
SC It looks like we're going to have to open the hatch at normal time, leave it open for that daylight pass, close it, configure it for the TV, and when the TV is over then we would leave the LM, come back in the command module. Is that right?  
CAPCOM That's right and as a matter of fact, we don't even want the TV to interrupt the transfer. If

possible you can, you know, start the transfer early.

SC Oh, okay, I see what your saying. Your saying we plan to follow normal time line and when we get to the time to open the hatches, we do that, leave them open during the first daylight pass, close them up, and then we egress the LM, and tune in the TV on the way out, sort of.

CAPCOM Something like that, yes.

SC Yes, that sounds like a pretty reasonable plan.

CAPCOM And 9, Houston, while we've got a little bit of comm here, I've got some block data number 7 for you.

SC Okay, we'll whip up the pad here. One thing that you might take under advisement is be prepared for us to be a little bit late in the morning because it's really a scramble trying to get suited and once you get suited you become all tangled up in these hoses, so we have to take a little bit longer, I guess, in the morning than we really have allotted in the flight plan. So we might be just a little late getting over there.

CAPCOM Okay, we understand.

SC I think once we get to the LM we find that we worked that through enough and there's not that much jumping around that requires to take too much longer than normal.

CAPCOM Okay.

SC Okay, do you have any block data?  
SC Houston, go ahead with the block data.

We're ready.

CAPCOM 9, Houston. One more thing here. We plan to turn H2 tank 1 fan on at 56 plus 00.

SC Say again the time, please.

CAPCOM At 56 plus 00.

SC H2 fan 1 on at 56 plus 00.

CAPCOM Roger. And how about S-band volume up at 56 plus 22. We'll try an S-band ARIA pass.

SC Okay, S-band, 56 plus 22.

CAPCOM Okay, now we're ready for block data.

SC Okay, go ahead.

CAPCOM Area 039 3 Alpha plus 273 plus 1450 061  
35 08 43 55. 040 Alpha Charlie minus 091 minus 0120 062 2934  
4355. 041 Alpha Charlie minus 008 minus 0230 064 0226 4355.  
042 Alpha Charlie plus 090 minus 0320 06535 55 4355. Still  
with me, 9?

SC Rog, pass on.

CAPCOM 043 2 Alpha plus 247 minus 0270 067 12  
51 4355. 044 Alpha Charlie plus 313 0 - belay that - minus

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0290 068 46 52.

END OF TAPE

CAPCOM ...06846524355 and, 9, your FBF trend,  
pitch minus 0.9 yaw minus 1.1. Houston, over.

SC Roger. I didn't know Retro had so  
many areas.

CAPCOM Yes, he's got a batch of them.  
SC Okay, I guess we start at 0393 alpha,  
right?

CAPCOM Affirmative  
SC Plus 273, plus 1450, 06315084355, 040  
Alpha Charley, minus 091, minus 012006229340355, 041  
Alpha Charley, minus 008 minus 230, 06402264355, 042  
Alpha Charley, test 090, minus 032006355543550432 Alpha.  
Test 247 minus 027006712510355044 Alpha Charley. Test 313  
minus 029006846524355.

CAPCOM 9, Houston, your readback is correct,  
and request you verify a CO2 cannister change there a while  
back.

SC That's verified, on time.

CAPCOM Roger.

SC Houston, Apollo 9.

CAPCOM Houston, here.

SC Do you have any good information on  
why our radar data was not getting into the computer.

CAPCOM We've got the bigheads mowing it over  
down there and we haven't come up with a real good answer  
yet.

SC Okay. Did you get any .....From  
those checks that we did?

CAPCOM Say, again.

SC Did you get any downweight data from  
the radar checks that we did.

CAPCOM That's affirmative. We did get some  
data.

SC Okay, so you've got the data to look  
at, too.

CAPCOM Yes.

SC Okay, we'll be standing by anxiously  
to find out what your conclusion is.

CAPCOM Okay. And the computer is yours, and  
you can go to block on the computer.

SC And it's already put to bed.

SC Say, Houston, think we've got H2  
heaters off now and O2 heaters on.

CAPCOM Say again, Dave.

CAPCOM Apollo 9, Houston.

CAPCOM

Apollo 9, Houston.

PAO

This is Apollo Control. The Apollo 9 spacecraft has moved out of the range of the Texas Station at the present time, and since there will be no more air-to-ground for about 17 minutes, NASA will pull down the PL release line for about 10 or so minutes to conduct some audio checks. We expect to be back up for the transmission from an Aria aircraft, that's an Apollo range instrumentation aircraft at about 56 hours, 22 minutes. At 56 hours, 6 minutes, of ground elapsed time, this is Apollo Control.

END OF TAPE

PAO This is Apollo Control at 56 hours, 22 minutes into the flight. We anticipate that we will have some communication between the Mission Control Center here in Houston and the crew at about this time, and that communication should come through on Apollo Range Instrumentation Aircraft, identified as an ARIA. We will standby to monitor any conversation on that. The spacecraft now is in its 36 rev. If we have com, it should be coming shortly.

PAO We have a report that we have intermittent acquisition of signal with ARIA 5, we will continue to monitor.

CAPCOM ARIA 5, Houston CAPCOM go remote.

CAPCOM Apollo 9, Houston through ARIA 5.

CAPCOM Apollo 9, Houston.

CAPCOM Apollo 9, Houston.

CAPCOM Apollo 9, Houston through AIRA.

PAO Astronaut Ron Evans has been trying to call the crew through ARIA 5. He is now trying VHF to see if we can get comm with the crew.

CAPCOM Apollo 9, Houston through ARIA.

SC Roger Houston, Apollo 9. You're garbled, but we (garble).

CAPCOM Roger, we are VHF at this time. I tried you on S-band. Did you hear me at all?

SC Negative, we didn't hear you on S-band, and I've got it turned off.

CAPCOM Okay, evidently the S-band didn't work, let's go ahead and keep the VHF here, we will try S-band at the end of the pass again. Got some good dope for you on the rendezvous radar DSKY test.

SC Standby a minute. Okay Houston, go ahead.

CAPCOM Roger, the downlink shows that the rendezvous radar self test is okay, and in checking it out a little bit more, the self test doesn't show up on the DSKY because the antenna is in a stowed position.

SC Okay, understand Houston. Downlink shows that the (garble) self test is okay, and the reason that it didn't show up on the DSKY was because it was in a stowed position.

CAPCOM That is affirmative. We ginned up a procedure so that you could look at it on a DSKY, however, since it was good on the downlink, rather than mess around with a new procedure, we will probably go ahead - we would like to go ahead and say it works and try it out on rendezvous day.

SC Okay, understand. Houston, Apollo 9.

CAPCOM Houston, GO.

SC Standby Houston.

SC Houston.

CAPCOM Houston, GO.

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 56:22, CST 1822 188/2

SC                    Okay, how about whipping those procedures into reasonable form and if there is time tomorrow, I guess we would like to look at that and perhaps even stowe it, just to get the feeling onboard, okay?

CAPCOM                Okay, we can do that for you and we will have it for you tomorrow.

SC                    Okay very well, thank you.

CAPCOM                Okay, that was the USB we're talking on here, it looks like we are about LOS and talk is not too good over Tananarive, so if you don't hear from us, have a good nights sleep.

SC                    Okay, thank you very much. See you in the morning.

CAPCOM                Roger.

PAO                    That conversation was between Astronaut Ron Evans here at Mission Control and Dave Scott, the Command Module pilot. We still have about 45 seconds of time in which the ARIA could pick up the spacecraft. We could have additional comm, so we will standby for a few more moments or a few more seconds before turning down the line.

PAO                    We have apparently passed out of range of the tracking aircraft ARIA, the Apollo Range Instrumentation Aircraft. Next station to acquire will be Tananarive at 56 hours, 40 minutes. That is about 8 minutes from now. There may be some communication from air to ground at that particular time. In the meantime at 56 hours, 32 minutes ground elapsed, this is Apollo Control.

END OF TAPE

PAO                      This is Apollo Control at 56 hours, 52 minutes, ground elapsed time. We monitored the pass over Tananarive, which occurred a few moments ago, and at that time there was no com - no air-to-ground communication between Mission Control and the crew. The crew evidently is in the process of settling down for their rest cycle and hopefully for a good night's sleep for them - or a period of sleep for them. We will continue to stand by and watch the circuits in the meantime at 56 hours and 53 minutes with the spacecraft now heading out over the Indian Ocean. This is Apollo Control.

END OF TAPE

PAO This is Apollo Control at 57 hours, 50 minutes into the mission. We've had no new or additional communication with the crew since our last report. The spacecraft at the present time is on the 37th rev flying over - crossing South America. During a recent pass in which Redstone had acquisition, we received no downlink of bio-instrumentation leading the flight surgeon, Dr. John Zieglschmid, to conclude that the crew is probably in the stages of finishing its light housekeeping preparation for a sleep portion during the rest cycle. We've maintained a silence here in an effort to permit the crew to have as much rest time as possible after their having completed a rather busy day checking out the systems on spider, the LM spacecraft. All systems seem to be working well as far as the spacecrafts are concerned. At 57 hours, 52 minutes into the flight of Apollo 9, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY 3/5/69 GET 58:57 CST 2057 191/1

PAO This is Apollo Control at 58 hours 57 minutes ground elapsed time. The spacecraft at the present time has been acquired by the tracking station at Hawaii. And we have been observing to see if there was any biomedical data that would be down late. At this particular time there is no indication that biomedical data is being downlinked. We'll continue to observe that. Meanwhile other data, as far as the spacecraft systems are concerned looks good. The Hawaii station will have the spacecraft for another 4 or 5 minutes, and then we'll have about 5 minutes of acquisition by the tracking ship Redstone. We'll continue to monitor the systems and come back up if there is any significant change. At 58 hours 59 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

PAO                      This is Apollo Control, at 59 hours, 15 minutes, into the mission. During the last part of the Hawaii pass, and the portion of the Redstone pass, the flight surgeon received some bio-medical information on the command module pilot, that would have been Dave Scott who is in the right couch and the initial indications were that his rates were 60 beats per minute and respiration was averaging about 20 per minute. During the balance of the pass across Redstone, those rates were decreasing, leading the flight surgeon to suspect that Dave was in the process of going to sleep - settling down for sleep. We have not received any bio-medical parameters on the other two astronauts; however, since conversation has been kept to a minimum, no conversation in fact, since early in the flight after Tananarive following the SPS-5 burn, we believe that they have settled down also and all three are resting, perhaps the other two are sleeping, also. At 59 hours, 17 minutes, this is Apollo Control.

END OF TAPE

# Flight Plan Update

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 59:59, CST 2159 193/1

PAO This is Apollo Control at 59 hours, 59 minutes, GET time. We have some more definitive information on the revised time line, covering the activities on day 4, that is tomorrow. The flight plan is essentially the same, up to LM hatch opening, which is approximately - which occurs approximately 72 hours, 50 minutes, GET. The hatches in the LM and the CSM will remain open for approximately 1 daylight pass during that general time range. Then they will be closed at approximately 74 hours GET. This closing is about an hour and one-half earlier than that in the original flight plan. During the CSM hatch opening, the Command Module pilot, Dave Scott, will attempt to retrieve those thermal samples, which are near the CSM hatch, if he can at all possibly do it. The TV pass that was scheduled for 75 hours, GET, has been moved up slightly. Goldstone acquisition will be 74 hours, 57 minutes. During this time, we expect that the Commander will either be in the process of transferring from LM back to Command Service Module, or - he will either be actually transferring or will be making preparations for it. This information should be transmitted to us during the TV pass. What we will do essentially is finish the operation, approximately, or this exercise, approximately one and one-half hours earlier than the flight plan shows. Some of the other activities that could take place during that period of time will be to catch up or redo some of the communication checks, which were missed today. And, of course, have the TV camera show the LM interior more in detail, than was shown on the pass we had on day 3. Now, one and one-half hours of time that is saved, will be time that probably is used to reconfigure or probably can be used to reconfigure the CSM in preparation for the rendezvous exercise which is scheduled for day number 5. And then also, the time could be used for additional rest period for the crew. Some of that time could be devoted to an additional rest period for the crew. More definitive time line information is still being worked on by the flight control people here at Mission Control. For administrative announcement for those who are interested, as I said earlier, Goldstone acquisition is 74:57:25. And the MILA loss of signal is now set at 75:13. During our last transmission at 59 hours, 17 minutes, we reported incorrectly that our last previous conversation or the last previous conversation between MCC and the crew, the Apollo 9 crew, occurred during the pass over Tananarive. The last conversation between the crew and ground occurred during the ARIA acquisition at 56:22. That is from that time frame 56:22 to 56:32 GET. At 60 hours, and 4 minutes into the flight of Apollo 9, with the spacecraft now over India and with the Astronauts in their rest period, with one of them fairly well - fairly soundly asleep, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 60:48, CST 2248 194/1

PAO                    This is Apollo Control at 60 hours, 48 minutes Ground Elapsed Time. Apollo 9 is over the Pacific Ocean at the present time approaching the west coast of South America. And on this, the 38th rev, the crew has settled down during this rest cycle. Biomedical data on the Commander and the Command Module Pilot recently was monitored and the information led the Surgeons to conclude that the CMP, that's Dave Scott, was soundly asleep while Jim McDivitt, the Commander, was resting, but perhaps not soundly asleep. Scott's heart rate was in the low 40's. That is his average heart rate, his mean heart rate. While the Commander's heart rate was in the 70's. The cabin pressure in Apollo 9 is holding steady at 4.9 pounds per square inch and the temperature is about 70 degrees fahrenheit. All of the systems seem to be functioning well on the spacecraft at this time. There is - meanwhile here at Mission Control there is a beehive of activity with the shifts just about ready to change. The Gold Team, which has been on for the past several hours, is about ready to leave and it will be replaced by the team identified as the Orange Team. At 60 hours, 51 minutes Ground Elapsed Time this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/5/69, GET 61:50, CST 23 50 195/1

PAO                    This is Apollo Control 61 hours 50 minutes ground elapsed time. Apollo 9 is presently just south of Japan, in two minutes we'll be acquired and its pulse felt by the tracking station at Guam. The crewmen in Apollo 9 are apparently still asleep, we've had no conversation. At this time of the night the orbital track is more or less on the backside of the range and as we go further into the night the orbital track will begin to come over the stations in Australia and Ascension Island and so on in the South Atlantic but station passes drop off to one or two stations per revolution until we come back over the range, so to speak, of Carnarvon and the Stateside series of stations. Mercury, tracking ship Mercury in the South Pacific will pick up the spacecraft at 10 minutes past the hour. We will monitor these passes in case the crew does call in but no attempts will be made to converse with the crew unless they call us. At 61 hours 51 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

A/9,MISSION COMMENTARY,3/6/69,GET:62:50,CST:00:50, 196/1

PAO                      This is Apollo Control. Apollo 9 is presently over the tracking station at Ascension Island coming up on the west coast of Africa. At the beginning of revolution number 40, the measurements of the present orbit are still showing 124.1 nautical mile perigee by 128.6 nautical mile apogee. Total spacecraft weight is now computed to be 49,394 lbs. We've got quite a gap between the ascension pass with loss of signal in less than a minute from ascension and not acquiring the next station at Guam until 25 minutes past the hour. At 62 hours 50 minutes GET this is Apollo Control.

END OF TAPE

A/9 Mission Commentary, 3/6/69, GET 6350 CST 0153, 197/1

PAO                      This is Apollo Control. 63 hours 50 minutes ground elapse time. Apollo 9 has just passed out of range of the tracking ship Mercury in the South Pacific preceded by a pass over the tracking ship Huntsville and the tracking station at Guam. Nearing the end of the 40th revolution, flight surgeon Ken Beers reported that his telemetry readouts biomedical information on the crew men that are connected to the biomedical harnesses show that they were resting fairly well, although with some slight stirrings during the passes where the data was available. We'll be coming up over the Ascension Island station at 18 minutes past the hour however it is not anticipated that there will be any conversation now. Spacecraft communicator Ron Evans has come back into the control center after being spelled by Al Warden for a short period. At 63 hours 51 minutes ground elapse time this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 6450, CST 0253a, 198/1

PAO                      This is Apollo Control 64 hours 50 minutes GET. Some 2 hours remaining in the Apollo 9 rest period. All three crewmen are apparently sleeping rather well. Apollo 9 presently is flying over the northern portion of India. The next station pass will be over Guam with acquisition scheduled at 59 minutes past the hour. This, in turn, joins the Huntsville tracking ship pass followed thereafter by the Mercury for almost continuous pass wherein the spacecraft systems will be monitored on the ground, and also the crew bio-environmental data will be read out on the ground. At 64 hours 51 minutes GET, this is Apollo Control.

END OF TAPE.

A/9,MISSION COMMENTARY,3/6/69,GET:6550,CST:0350, 199/1

PAO                    This is Apollo Control 65 hours 50 minutes  
GET. Apollo 9 has just began it's 42 revolution and is cross-  
ing the East coast of Brazil. We'll be coming up on the  
Canary Island station in some 6 minutes. During the pass  
toward the end of the 41 revolution over the tracking ship  
Mercury, the telemetry read out showed the cabin pressure  
holding at 4.9 lbs per square inch. ~~Cabin temperture~~ 65°F.  
The sleep clock shows another 59 minutes, almost a full hour  
remaining in the sleep period, or rest period for the Apollo 9  
crew, and the accumulative time of rest is now 8 hours 50 minutes.  
At 65 hours 51 minutes GET time this is Apollo Control.

END OF TAPE

A/9 Mission Commentary, 3/6/69, GET 6650, CST 04:50a 200/1

PAO This is Apollo Control 66 hours 50 minutes ground elapse time. The crew of Apollo 9 at this time is scheduled to end its sleep period. We're less than a minute away from acquisition at the tracking ship Mercury in the South Pacific. There may be problems in communications during this pass. The comsat relay antenna on the Mercury seems to be acting up somewhat however there is a stand by high frequency relay available for relaying voice communications back to the mission control center. Meanwhile the spacecraft analysis report on systems shows that the cryogenic oxygen and hydrogen for the fuel cells in the command service module are holding pretty well at nominal values. Quantities ranging around 75 percent of cryogenic oxygen in both tanks and around 70 percent average on both tanks of hydrogen. In total weight there are 487 pounds of oxygen in both tanks and 40 pounds of hydrogen. Fuel cell performance is quite nominal. The temperatures in the fuel cell are holding very tight limits and the performance all around seems to be quite excellent with no problems. All the Command and Service Module temperatures are registering along the normal range. And another recommendation by the spacecraft analysis people for the TV pass coming up at ground elapse time of 74 hours 57 minutes. They recommend the LM forward omni antenna be used for the Gold Stone tracking station until about midway through the pass when the hand over is to the Merritt Island station at which time they would switch to the aft or number two omni all the way through the end of Merritt Island loss of signal. This likely would improve or optimize the TV pass. We're standing by here at the Mercury for a possible call by spacecraft communicator Ron Evans to the crew. To continue with the spacecraft analysis systems report, battery B is still on charge. Charge has been in progress as of the time of this report of more than ten hours and battery B has received some 5.7 amp hours of charging. Batteries A and C remain unchanged in their status. In the propulsion and power area of the spacecraft, all the measurements there are reading normal. The Lunar Module reaction control system propellant quantities remain unchanged. In the command module, command and service module reaction control system propellants have quantities totaling 870 pounds. There goes the call now.

SC Good morning Houston.

CAP COM Roger. Comes mighty early doesn't it?

SC Oh yeah. It's still dark outside too.

CAP COM Say, that's right.

CAP COM 9 Houston. We've got quite a few things to pass up to you here this morning before we get started.

SC Ok. Have at it.

CAP COM OK. First of all battery B is charged so you can terminate bat B charge.

A/9 Mission Commentary, 3/6/69, GET 6650, CST 0450a, 200/2

SC OK. Terminating B at this time.  
CAP COM Ok. On your H2 tanks. We like tank one heater off, tank 2 heater off. Let me relay that tank 2 heater and auto.

SC OK. Tank one heater is off and tank 2 heater isn't on.

CAP COM OK. And of course the fans are off. H2 fans are off.

SC Rog. H2 fans to off.

CAP COM OK, I have a consumables update whenever you want it and then I can go through some stuff on the EVA.

SC OK, stand by.

SC OK, Houston go ahead with the consumables.

CAP COM OK. GET 067 70 23 69 29 76 30 70 30 485 40 38 36 39 100 97 41 1019 588 over.

PAO Spacecraft Communicator Ron Evans was reading up con-sumables update to the crew of Apollo 9 as they went over the hill at Mercury. Likely he will pick this up where the break occurred as we come up over Antigua. Antigua acquisition will be 19 minutes past the hour. Also scheduled during the Antigua Vanguard, Canary Island and Madrid pass will be block updates of contingency landing area information. And the crew just prior to this time will have begun they're breakfast period. At 66 hours 58 minutes ground elapse time this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION CONTROL, 3/6/69, GET 6720, CST 0520a, 201/1

PAO This is Apollo Control 67 hours 20 minutes GET. We are in acquisition at Antigua overlapping with Vanguard tracking ship and on into Canary Islands and Madrid. For approximately 14 minutes total time. As you were, 24 minutes total time. We are waiting now for spacecraft communicator, Ron Evans, to put in a call to the crew and pick up where he left off as Apollo 9 went over the hill at Mercury toward the end of the last revolution. Spacecraft has just begun the 43rd revolution as it crossed the parallel or meridian and longitude of Cape Kennedy. Still no call. Continue to stand by until spacecraft communicator resumes his conversation with Apollo 9. Here goes the call now.

SC Rog. Houston, Apollo 9, how do you read?

CAPCOM Rog. Loud and clear Dave.

SC Okay, here's your readback on the consum-

ables. Ready?

CAPCOM Go to left.

SC 067 70 23 69 29 76 30 70 30 485 40 38

36 39 100 97 41 1019 .that checks the last one.

CAPCOM Roger. 588.

SC 588.

CAPCOM And, Dave, we've got a bunch of things that are changed in the EVA checklist there. One, I would suggest that you take out the EVA checklist and also we want to add pages 17-32 and 33 of your systems checklist in there.

SC Okay. Stand by. Which spacecraft?

CAPCOM LM spacecraft.

SC For the LM. Okay, stand by.

SC Okay, Houston, go ahead with the EVA

checklist updates.

CAPCOM Okay. Place, page systems 17, after EVA 15, and systems 32 and 33 after EVA 19.

SC That's okay. I wasn't expecting any kind of an update. Go ahead, what's the next one? Systems 17 after EVA what's next?

CAPCOM Systems 32 and 33 after EVA 19.

SC Okay. Systems 17 after EVA 15 and Systems 32 and 33 after EVA 19.

CAPCOM Okay. Page EVA 17,

SC What other updates did you have?

CAPCOM Okay, what I was going to try to do, if you've got the checklist in front of you, I'll read it through here and let you mark them in the checklist as we go. We've got about 20 minutes until 40 with a couple of minutes in between LOS.

CAPCOM 9, Houston, are you with me again?

SC Roger. With you.

CAPCOM Okay. And to cover a lot of things here, Dave, if you want me to read it up and you copy it down or

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 6720, CST 0520a, 201/2

CAPCOM            else we'll just make the changes as we  
go right through the checklist.  
SC                Go ahead. I got the systems 17 after  
EVA 15, Systems 32 and 33 after EVA 19.  
CAPCOM            Okay, on page EVA 17, Delete the Ren-  
dezvous radar antenna positioning.  
SC                Okay, EVA 17, what do you want to do?  
CAPCOM            Delete the rendezvous radar antenna  
positioning.  
SC                Rog, it's deleted.  
CAPCOM            Okay, and EVA 17 the EVA prep delete step  
3 and step 4, lines 2 and 3. Okay, that's the entire step 3  
and step 4, just lines 2 and 3.  
SC                Okay, you want us to delete all of step 3  
and you want us to eliminate steps 2 and 3 of step 4.  
CAPCOM            Affirmative. Lines 2 and 3 of step 4.  
SC                Roger.  
CAPCOM            Okay on EVA 18 and 19, delete the PLSS  
comm check.  
SC                Okay, first comm check.  
CAPCOM            Okay, on system 32.  
SC                Go ahead, I'll have to write that down.  
CAPCOM            Perform at 71 plus 14 over Carnarvon.  
SC                Okay. System 32. You want to do it at  
71 14 over Carnarvon.  
CAPCOM            And on System 33. Perform at 71 plus 33  
over Mercury.  
SC                Roger. System 33 at 71 33 over Mercury.  
CAPCOM            Okay. System 33, in the lunar stage  
backup with relay, delete step 3 and add return to comm basic  
with LM two-way relay by setting range to tange, voice to voice,  
PLSS mode 5 then comm check with MFSN, in, mode load 3, E  
and UCTX -

END OF TAPE.

A/9, MISSION COMMENTARY, 3/6/69, GET 6730, CST 0530, 202/1

CAPCOM - flip mode 3, 8 and UCTA dump. Over.  
SC You got away from me Ron. Do you want  
to do the Lunar stage backup or do you want to delete step  
3 if you want to return to lm basis, then you want to go  
to 2-way relay?  
CAPCOM That's right. Return to LM basis with  
2-way relay.  
SC Okay, I don't have that system worked out  
right and I can make no change. What else did you say  
after that, just say it again fast and I'll see if I have  
to write it down.  
CAPCOM Okay. You return to 2-way relay by set-  
ting range to range, voice to voice. PLSS mode 5, then  
comchecks with MSFM, then PLSS mode 3, and then you have  
your rest and eat period.  
SC Okay. Let me see if I can decipher  
my writing here. You want a lunar stage backup with relay  
and then delete step 3. Return to LM basis with 2-way relay  
by going range to range, voice to voice and go to PLSS mode  
5, make an MSFN voice check, and return to mode 3 for the  
rest and eat .  
CAPCOM Affirmative. Okay, while thinking about it,  
S-band volume up at 36. Okay lets go to EVA page 20.  
SC Okay, go ahead.  
CAPCOM Okay, in the final prep, step 3 delete  
lines 2, 9, 10, 11, and 12.  
SC Okay. Delete 2, 9, 10, 11, and 12.  
CAPCOM Okay, on EVA 22, LM PGA check.  
SC Go.  
CAPCOM On step 1 delete lines 1, and 4 through  
7.  
SC Do you have the check list there?  
CAPCOM Yes.  
SC What's the first line, CB-16 ECS suit  
flow control?  
CAPCOM Affirmative, delete that.  
SC Okay, and what else.  
CAPCOM Okay, disconnect LMP O2 hoses, and then  
all the way down to installing the oxygen purge valve, delete  
that.  
SC Okay.  
CAPCOM Okay, your first sunrise time is 73 plus  
07.  
SC Okay.  
CAPCOM Okay, on EVA H1, just scratch it starting  
at the first sunrise.  
SC Okay. You want to scratch everything  
on first sunrise.

A/9, MISSION COMMENTARY, 3/6/69, GET 6730, CST 0530a, 202/2

CAPCOM All the way through EVA H3. Okay, go  
to the top of EVA H4.  
SC Okay, go ahead.  
CAPCOM Change plus 207 to plus 25.  
SC Okay. Plus 25.  
CAPCOM Delete lines 1, 2, 5, and 6.  
SC Opposite 207 ...  
CAPCOM Okay, on the change -  
SC Do you want me to delete 1, 2, 5, and 7  
on 207.  
CAPCOM That's affirmative. Okay on the plus  
215 or change plus 215 to 240.  
SC Okay, plus 240.  
CAPCOM Delete lines 1, 2, and 4.  
SC Okay.  
CAPCOM Okay, after-on down in there after flip  
02 off, it's about line 15.  
SC Flip 02 off, and what?  
CAPCOM Add LMP suit isolation to suit flow and  
flip pump and fan both off. Delete the next 2 lines that  
are concerning the out purge valve to depress the suit.  
CAPCOM Apollo 9, Houston.  
CAPCOM Apollo 9, Houston.  
CAPCOM Apollo 9, Houston through Madrid.  
CAPCOM Apollo 9, Houston through Madrid.  
CAPCOM Apollo 9, Houston.  
CAPCOM Apollo 9, Houston, all transmitting a  
blind on EVA H5 step 3 delete lines 2 and 3. Step 4 delete  
line 1. Step 4 delete line 1. Add LMP suit isolation to  
suit disconnect. Delete EVA 25 Alfa. Continue with post  
EVA procedures. We'll pick you up at Canarvon at 07.

END OF TAPE

CAPCOM                      This is Apollo Control. Apparently, we have had loss of signal in Madrid. The last several minutes of attempting to reach the crew through Madrid have been unsuccessful. Spacecraft Communicator, Ron Evans, was reading up some checklist changes to Dave Scott. These changes, likely, will be picked up and continued at Carnarvon at 7 minutes past the hour as the spacecraft comes over the hill at the Carnarvon station; and a continuous pass over Carnarvon and Honeysuckle. Well, they're not quite continuous. Actually, there's about a three minute drop-out between Carnarvon loss of signal and Honeysuckle acquisition of signal. At 67 hours, 41 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

A/9 Mission Commentary, 3/6/69, GET 6807, CST 0607, 204/1

PAO This is Apollo Control. 68 hours 7 minutes ground elapse time. Coming on through the Carnarvon tracking station, there goes a call lets listen in.

SC Go ahead Houston, Apollo 9.

CAP COM Roger. Did you get my comment there on EVA A85?

SC Stand by

SC Houston we only got part of it and then you cut out.

CAP COM OK. Are you ready to go with a little bit more there?

SC Roger.

CAP COM Ok. On EVA A85 step three delete lines 2 and 3. Step 4 delete line 1.

SC Roger.

CAP COM And add LMP suit isolation to suit disconnect. Ok then just continue with your post EVA procedures. Ok you might want to write some of these things down. These are in the terms of flight plan up date.

SC Ok. Are these going to be in the EVA check list now or in the flight plan there of.

CAP COM Well it's kind of both but I'll give you a time and you can convert them into your EVA checklist there. In fact we're going to power the LM down a little bit early, teen then that will give you time on a TV pass.

SC Ok, stand by here. Let me get something to copy these on. Ok go ahead Ron

CAP COM Ok. At 74 plus 57 close primary evap flow. And start your LM power down.

SC Close the primary evap down.

CAP COM Ok, start TV pass at 74 plus 57 through 75 plus 13.

SC Understand. TV pass 74 plus 57 through 75 plus 13 now let me copy that down here. Ok go ahead.

CAP COM Ok, while you're doing that Jim, he can start his transfer back through the tunnel at this time if you want to. Ok, while I'm thinking about it S band up at 14 for Honeysuckle.

SC Ok

CAP COM Ok. We want LMP remain on LM com to perform S band back up voice check mode 4 over ascension at 75 plus 25.

SC Ok, 75 plus 25 over the Ascension pass you want the LMP on the LM com to perform a voice backup check.

CAP COM Affirmative, S band voice backup mode 4.

PAO This is Apollo Control. We've apparently had loss of signal at Carnarvon. There is about a three minute drop out between Carnarvon and Honeysuckle until the orbital track comes down farther into these stations. Meanwhile

A/9 Mission Commentary, 3/6/69, GET 68:07, CST 0607, 204/2

CAPCOM we have a forecast from the spaceflight meteorology group here in mission control on the various landing zones for Apollo 9. We'll rejoin the conversation between spacecraft communicator Ron Evans and the Crew of Apollo 9 as they are acquired at Honeysuckle. The weather forecast indicates that all landing zones will have satisfactory conditions today. In the primary landing zone in the west Atlantic, centered about 800 miles east of Jacksonville. Partly cloudy skies are expected with northwesterly winds about 20 knots and seas 5 to 7 feet. Temperature near 60%. In the mid Pacific landing zone centered about 600 miles northwest of Honolulu, skies will be partly cloudy and winds southwesterly 12 to 16 knots. Seas 3 to 4 feet and temperatures 65 to 70 degrees are forecasted. In the west Pacific landing zone centered about 400 miles southeast of Tokyo partly cloudy skies and northwesterly winds at 15 knots are expected. Seas will be about 4 feet and temperature 52 degrees. In the east Atlantic landing zone, centered about 500 miles southwest of the Canary Islands partly cloudy skies are forecast. Southerly winds at 12 to 15 knots are expected with seas 3 to 4 feet and temperatures near 70 degrees. We should have acquired at Honeysuckle. We'll come back up with the circuit and monitor for any conversation.

CAPCOM

Apollo 9 Houston through Honeysuckle.

CAPCOM

Apollo 9 Houston through Honeysuckle.

SC

Okay, Houston, we got you again out

here somewhere.

CAPCOM

Okay, Dave. What we said so far looks like the major changes. Of course there may be a lot of optional changes in there in which you may or may not want to do - such as configuring the cameras, EVA gloves and moving the ISA and a few other things that are -

SC

Roger. This is Rusty. We'll try to figure that out as we go along on any of those. Say, I've got one thing I would like to check with you before we start the LM operation again and that was on the - something happened yesterday we neglected to report and I'd like to get a check on it.

CAPCOM

Okay. Go.

SC

Okay. During the cabin closeout - and

*powering*  
I can't find the systems checklist right at the moment, but one of the last steps in the cabin closeout when we are ~~powering~~ *powering* down the ECS one of the steps there is cabin repress from auto to close and when I moved the valve from auto to close we got a great big, loud bang and I immediately went back to auto and then recalled that LM 4 had a problem like that in the chamber - and I think the word weather came out okay - so I went to close and as I went from auto to close it went bang again and then stopped, but I'd like to

A/9 Mission Commentary, 3/6/69, GET 68:07, CST 0607

204/3

the normal behavior of the valve. get confirmation on that, but that is

CAPCOM

Okay. We'll check it for you.

CAPCOM

part of the EVA.

Okay, Dave. Got a few comments on your

SC

now.

Okay. Standby, he's not on the LM just

CAPCOM

Okay.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 68:17, CST 06:17a 205/1

CAP COM 9, Houston. What ... looks like here we can go ahead and initiate a command module power down at 76 plus 55.

SC Command module power down at 76 plus 55.

CAP COM Rog, that'll give you an extra hour to-night for a rest.

SC ...

CAP COM How about that?

SC We'll take it.

CAP COM Dave, you on?

SC Rog.

CAP COM Okay your EVA checklist is essentially the same. Go on up through opening the hatch. Now when you open the command module hatch, if you think you can retrieve that thermal sample by the hatch, do so. You know, if it looks like it's easy to reach and you can pull it back in there without crawling all the way out, but use your own judgement and whatever you think if you can get it back in.

SC Okay. We've gone through all that and told Houston the position ... with everything and I think I'll probably be able to do it but I'm not gonna stretch the hoses at all so we'll just take a look in real time to see what it seems like we can do.

CAP COM Okay, great. And your hatch closing will be at 73 plus 40.

SC 73 plus 40, okay.

CAP COM Roger, your com ... will be your CMC basic Simplex A receive B data except when the LMP is on the PLSS. When he's on there, you can figure Duplex A receive A only.

SC Okay, understand Simplex A - B data until we get on the PLSS and then Duplex A receive A only.

CAP COM Roger, and then you return back to basic again when he goes off the PLSS.

SC Roger, understand

CAP COM 9, Houston. Initial look at that valve looks like that's a normal condition that goes bang when you go from AUTO to CLOSE and we'll just watch checking on it.

SC Okay, it sure increased the heart rate yesterday.

CAP COM Rog, understand. That's built in there to keep you alert, Rusty. 9, Houston we'll pick you up Mercury at 26 and I'll have some block data for you at that time.

SC Roger, understand. Mercury at 26 with block data.

PAO This is Apollo Control. We have had loss of signal of Honeysuckle, we're 5 minutes out of the tracking ship Mercury. At that time, we'll bring the circuit back up

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 68:17, CST 06:17a 205/2

PAO and monitor that pass. At 68 hours 21 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 6826, CST 0626a, 206/1

This is Apollo Control 68 hours 26 minutes GET. We're coming up on acquisition of tracking ship Mercury for a 5-minute 42-second pass. 5-degree elevation angle to the south. We'll stand by for the continuing conversation between spacecraft communicator Ron Evans and the crew of Apollo 9. Apollo 9 is calling Houston. Let's listen in.

CAPCOM Rog. Apollo 9, Houston, we've got you through Mercury.

SC Good morning, Sluggo, how're you doing?  
CAPCOM Oh, real good. How are things in the wild blue?

SC Wild black. (Garble)  
CAPCOM Okay, and I've got block data number 8.. when you're ready to copy.

SC All set. Go ahead.  
CAPCOM Okay reading block data number 8. 045  
1 Baker plus 282 minus 06 29 070 12 33 43 54 046 1 Baker plus 332 minus 06 20 071 46 43 43 54 047 1 Baker plus 331 minus 06 20 073 20 28 43 54 048 1 Alpha plus 288 minus 06 40 074 54 09 43 54 049 4 Baker plus 32 0 minus 16 19 077 40 30 43 54 050 4 Baker plus 337 minus 16 20 079 14 13 43 54 and your SPS trim gimbals, Pitch minus 1.07, Yaw minus 1.11. End of the update.

SC Okay, I think the only thing I missed was the third digit on the SPS pitch trim.

CAPCOM Okay, that's 7 Pitch trim minus 1.07.  
SC Okay, You want to read back or have you got some others, too.

CAPCOM No, let's have the readback and you can go as fast as you like.

SC Okay, 45 1 Bravo plus 28.2 minus 0629 070 12 33 4354 461 Bravo plus 33.2 minus 62.0, 7146 43 435.4. Have you got them in the decimals in them or do you want me to read all digits?

CAPCOM The way you're reading them is fine. Just keep pressing.

SC 471 Bravo plus 33.1, minus 62.0 732028 435.4, 481 Alpha plus 28.8, minus 64.0, 745409, 435.4, 494 Bravo plus 32.0, minus 161.9, 774030, 435.4, 54 Bravo plus 33.7 minus 162.0, 791413, 435.4, Pitch trim minus 1.07, Yaw (Too much static in background)

CAPCOM Okay, I believe we lost you, we'll see you at Antigua at 52 if you can read me, and that was a good job. You were racing the clock.

PAO This is Apollo Control. Apparently, we have had LOS at the Mercury tracking station. At 52 minutes past the hour some 20 minutes from now, we will come up over the Antigua tracking station overlapping Bermuda, Vanguard, Canary Island and Madrid for a total time of some - oh it

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 6826, CST 0626a, 206/2

PAO looks like 23 minutes. At 68 hours 33 minutes GET, this is Apollo Control.

END OF TAPE.

*Drifting flight mode  
- no IMA power up*

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 6852 CST 0652 207/1

PAO This is Apollo Control at 68 hours 52 minutes ground elapsed time. We're just a few seconds away from acquisition at the Antigua tracking station of the Eastern Test Range and a continuous pass over Vanguard tracking ship, Canary Islands tracking station and Madrid. We're estimating the Change of Shift Press Conference for 7:30 Central Standard Time; participant will be Orange Team flight director Pete Frank. We are standing by now for spacecraft communicator Stu Roosa to put in a call to the crew of Apollo 9 through Antigua. Generally they wait a few seconds after actual acquisition for all of the antennas to lock on and data flow to start into the Mission Control Center before they begin the conversation. Here we go.

CAP COM Through Antigua, standing by.  
SC Okay, Houston. Apollo 9 here. We're purging the three fuel cells with O2.

CAP COM Rog, understand.  
SC And Houston, did you get the readback on all the block data.

CAP COM That was a beautiful job, Rusty. I got everything except the very last item. I'd like to verify the yaw trim as minus 1.11.

SC Roger, minus 1.11. Say, Houston, we have another question for you here. Looking over the day, we've come to the conclusion that there's no necessity for powering up the IMU and doing an alignment here in the command module that way we can avoid using any fuel and playing mickey mouse with gimbal lock every 10 minutes. We'd like to know if you concur?

CAP COM Rog, we copy. Stand by one. (pause)  
Apollo 9, Houston.

SC Go ahead.  
CAP COM Rog, that sounds like a pretty sterlin' idea, I guess - is your plan to manually point it in about the right attitude via the Sun and then go to a SCS hold there?

SC Well, we didn't see any particular need for anything other than drifting flight today since we won't be taking the EVA photographs.

CAP COM Okay. We're kicking this around and we'll have some more info for you. The consideration here, Rusty, is the Sun shafting on the command module hatch.

SC Ah, I got 'cha. Okay, we'll think about that one, too. Thank you.

CAP COM Rog.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 6902, CST 0702a, 208/1

SC Houston, are you still with us?  
CAPCOM That's affirmative, Apollo 9, we're going to have you here for awhile.

SC Okay, Dave - we were just talking this over Stu, and Dave says that if there is any constraint on the inside of the spacecraft, that is, not the sun on the hatch, and anyway there's none there, but if there's a constraint with the sun coming in impinging on the internal part of the spacecraft, he can maneuver manually to keep - to get the sun out of the way, release the B mags and attitude hold using SCS there, the two quads max dead band low rate.

CAPCOM Roger, Apollo 9, we copied that, and that's probably what we're going to come up with. You know, we had these discussions about - during drift and flight and covering up the instrument panel, and so forth, but this sounds like a good approach and that's probably what we're going to arrive at.

SC Okay, we're favorable to that.  
CAPCOM Okay, and I'll have you here for about another 10 minutes, and you can go ahead and bring up your S-band volume if you want, we'll be handing over to Madrid later on in this pass.

SC Okay.  
CAPCOM Apollo 9, Houston.  
SC Go ahead.  
CAPCOM Roger, another change here. We'd like to have the DFI ON from the time you start the EPS activation and checkout on EVA 6, and leave it on through your suit fan and water separation check on EVA 11.

SC Okay, DFI On EVA 6, and OFF on EVA 11.  
CAPCOM That's affirmative.  
SC Houston, Apollo 9.  
CAPCOM Go, APOLLO 9.  
SC Roger. You want that DFI OFF prior to the S-band and VHF activation, or following it on systems 11?  
CAPCOM Roger, you mean systems or EVA 11?  
SC Whoops, stand by, wrong book.  
CAPCOM We'd like to have it ON through the suit fan water separation - separator check on EVA 11.

SC Alright, stand by one.  
CAPCOM Roger.

END OF TAPE

A/9, MISSION COMMENTARY, 3/6/69, GET: 6912, CST: 0712, 209/1

CAPCOM Apollo 9, this is Houston. We're going to lose you here at Madrid in about another minute. We'll see you over Carnarvon at about 39.

SC Roger. Carnarvon at 39.

PAO This is Apollo Control at 69 hours 13 minutes into the mission. Madrid has LOS. The crew discussed during this pass and we are considering here on the ground the possibility of remaining in drifting flight throughout the day, since we will not be doing the EVA proper. Staying in drifting flight and in case attitude control is needed going to the SCS stabilization control system, the secondary control system on the spacecraft. This would save the necessities of powering up the inertial measurement unit, aligning the platform, and would be a propellant saving device, the SPS system uses body mounted attitude gyros instead of the inertial measurement unit - those are known in the trade as B mags and there was a reference to that in the conversation. The DFI reference is to Development Flight Instrumentation. This is a last-time instrumentation on this spacecraft - special instrumentation for engineering data and analysis on the LM will not be flown operationally, but strictly for the engineering test flight of this vehicle. Apollo 9 misses the Tananarive station in this 44th revolution. Next station will be Carnarvon at 69 hours, 39 minutes, the white team has come onboard with the exception of it's flight director Gene Kranz, because of the complexity of this mission, the flight directors have specialized in several areas, the EVA day specialist is Gerry Griffin, flight director of the gold team, so he is directing the white team today. Gene Kranz will be back leading the white team tomorrow; flight director Charles, Cliff Charlesworth will fill in for Gerry Griffin on the gold team shift tonight and then Gerry will go back on his regular team tomorrow. At 69 hours, 16 minutes, this is Mission Control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 69:55, CST 7:55 210/1

PAO This is Apollo Control at 69 hours 55 minutes. Apollo 9 just passed out of range of the Honeysuckle station. Acquired at Carnarvon just after the change of shift news conference started, practically no conversation during this entire Australian pass. Jim McDivitt came up right at the start of Carnarvon, reported the crew was running late and was scrambling to get caught up. He and Rusty Schweickart have not yet transferred into the Lunar Module. We have about 40, 45 seconds worth of tape on this entire Australian pass. Next station to acquire will be Mercury in about 3 and a half minutes. We'll play the tape for you now.

CAPCOM Apollo 9, this is Houston, through Carnarvon, standing by.

SC Roger, Houston, this is Apollo 9, and we are running way late again, so we're going to be scrambling to get caught up.

CAPCOM Roger, understand.

CAPCOM Apollo 9, HOuston, we're going to drop you, we'll pick you up Honeysuckle in about a minute with the S-band volume up, please.

SC Okay.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 69:59, CST 0759, 211/1

PAO This is Apollo Control at 69 hours, 59 minutes. Apollo 9 tagging up at the Mercury. We'll stand-by.

CAPCOM And Apollo 9, Houston. Don't bother to answer. We've got you through the Mercury for about the next 6 minutes.

SC

Okay.

CAPCOM Apollo 9, Houston. We'll see you over Texas at two-two.

PAO This is Apollo Control. We've had LOS at the Mercury. Went through this pass without any conversation with the crew as we didn't want to disturb them. They are behind time lines - they are trying to catch up and are very busy. Next station to acquire will be Texas at 70 hours and 22 minutes. This is Mission Control Houston.

END OF TAPE

clearing tunnel

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 70:22, CST 0822 212/1

PAO This is Apollo Control 70 hours 22 minutes, and Apollo 9 is being acquired by the Texas station.

PAO We have LM data which indicates at least one of the pilots, Rusty Schweickart, is in the LM.

CAPCOM Apollo 9, this is Houston through Texas, standing by.

CAPCOM Apollo 9, this is Houston, could you give us high bit in the Spider?

CAPCOM Apollo 9, Houston, how do you read?

CAPCOM Apollo 9, Houston, do you read?

SC Roger, Apollo 9 reading you, Houston.

CAPCOM Spider, please. Roger. We'd like to have high bit rate in

SC Okay. We are about where we can fill you in the COMM right now. We're on EVA 12 if you want to know where we are.

CAPCOM Thank you very much.

SC Say, this - it really takes a long time to get ready to start clearing the tunnel. Once we get working on the tunnel everything goes pretty fast, but up until then it sure takes a long time.

CAPCOM Roger, copy that, I think we need to talk about that in preparation for tomorrow, sometime today.

SC That's why I'm telling you now. We've got to get another plan, we have to get up earlier, and we also have to do a lot more reconfiguring at night. I cannot run too long before I do that.

SC We started configuring the tunnel today 15 minutes late.

SPIDER Gumdrop, Spider, how do you read?

GUMDROP Spider, Gumdrop, 5 by.

SPIDER Roger, we're supposed to be on B, how about switching to B and see if you are receiving me there.

GUMDROP Okay, how about B.

SPIDER Okay, Gumdrop, Spider on A.

SPIDER Roger, we're ready to proceed, Commander.

GUMDROP They would like to have you go to high bit rate high, please.

SPIDER Roger, I have that ready.

GUMDROP Okay and VHF B transfer to (garbled) and VHF B receiver OFF.

SPIDER Roger, go.

Gumdrop Don't you want a VHF antenna check here?

SPIDER Okay, that's still set up from yesterday okay.

GUMDROP Did you turn the tape off?

SPIDER Roger, tape off.

GUMDROPP (garbled)

SPIDER That's affirmative.

GUMDROP Okay, let me check a few other things

over there with you, and we'll be all set.

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 70:22, CST 0822 212/2

SPIDER Tell you what, how about getting me off  
the commander off these hoses and get them back through and  
then send them back over. I can't move here.

GUMDROP Okay.

SPIDER Do I turn my suit flow up?

SPIDER Okay, you can pull them back through.

GUMDROP Okay.

GUMDROP Houston, this is Apollo 9.

CAPCOM Go ahead Apollo 9, this is Houston.

GUMDROP We haven't got the water chlorinated  
this morning. We don't (garbled)

GUMDROP Say, Rusty, I'm going to go off the comm  
here and I'll be over there in a minute.

SPIDER Okay.

PAO Apollo Control. Cabin pressure in Spider  
holding 5 pounds per square inch, temperature 69 degrees F.  
Gumdrop showing 4.9 pounds per square inch and 67 degrees.

SPIDER Houston, Spider.

CAPCOM Spider, this is Houston.

SPIDER Roger, One of the things we noticed yesterday  
was the window heaters kept the windows very hot, and we're  
going to have the shades up for a good part of the day -

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 70:32, CST 0832, 213/1

SPIDER Get the windows very hot and we're going to have the shades up for a good part of the day. I wonder if we could have clearance to shut those window heaters OFF?  
CAPCOM Roger, Spider. We understand that. You can go ahead and turn them OFF.  
SPIDER Thank you.  
SPIDER Okay. We have got the three window heaters OFF.  
CAPCOM Roger. Copy. Three window heaters OFF.  
GUMDROP Five by, Spider.  
SPIDER Five by here.  
GUMDROP One more 5 by.  
SPIDER Okay, you have got your normal squeal, but other than that it's pretty good.  
GUMDROP (Garbled) still running right?  
SPIDER Sure is.  
PAO Jim McDivitt just joined Rusty Schweickart in Spider now.  
CAPCOM Spider, Houston.  
CAPCOM Spider, this is Houston.  
GUMDROP Houston - Gumdrop. Spider is reading you. Go ahead.  
CAPCOM Roger. We are showing battery 4 as higher than the other 3. We'd like to have him turn OFF battery 4 at this time and we will give him a call - we'll turn it back on prior to depress.  
GUMDROP Spider, Gumdrop. Did you copy?  
CAPCOM Hey, I'm sorry about that - it's lower than the other three just to end the confusion and we'll turn it OFF now and we'll get it back on prior to depress.  
SPIDER Okay.  
GUMDROP Okay, Houston. Spider copied and battery 4 is coming OFF.  
CAPCOM Roger.  
SPIDER Gumdrop, was that battery 4 OFF or 3 OFF?  
GUMDROP Battery 4, Spider, battery 4.  
SPIDER Roger. Battery 4 is OFF.  
CAPCOM Spider, Houston. I read your last transmission. If you read me, we'd like to know if Rusty is planning on being on the Commander's hoses and gum leaf?  
CAPCOM Spider, we'd like to have you go low bit rate and at this time we'll see you over Carnarvon at about one-four.  
CAPCOM And Gumdrop, I am not reading Spider if you will - relay that to him.  
PAO This is Apollo Control. Madrid has lost the signal and Gumdrop and Spider are moving down across the continent of Africa. Jim McDivitt reported crew is experiencing difficulty into sticking to the time lines in the

preparatory work leading up to clearing the tunnel. This morning they ran 50 minutes late getting the tunnel cleared. They said in the future it looked like they'll have to get up a little earlier and do more con-figuring before going to bed the night before. The flight planners are working on this problem here on the ground and to give the crew a little help in this task tomorrow for the rendezvous day. We have a little more information on the scheduled TV pass. Goldstone will acquire the spacecraft at 74 hours and 57 minutes and 25 seconds. There will be LOS at Goldstone at 75 hours, 5 minutes, 13 seconds. Mila will acquire at 75 hours, 5 minutes, 22 seconds and LOS at Mila - 75 hours, 13 minutes, 10 seconds. So there will be approximately 9 seconds, 9-10 second dropout between Goldstone and Mila. Coverage does not overlap there. But Goldstone acquisition will be 12:57:25 Central Standard Time. Carnarvon will acquire Gumdrop and Spider at 71 hours, 13 minutes. We'll come back up then. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 7113, CST 913 214/1

PAO This is Apollo Control at 71 hours 13 minutes into the Mission. And Apollo 9 is within range of the Carnarvon station. We will monitor through the Australian pass.

CAPCOM Apollo 9, Gumdrop and Spider, this is Houston through Carnarvon.

SPIDER Roger, this is Apollo - this is Spider, here.

GUMDROP And the Gumdrop.

CAPCOM Rog, copy you both. Spider, could you give us high bit rate?

CAPCOM Okay, we've got it, Spider.

SPIDER Finishing up the ascent battery checkup and we are going to start on EVA 17 here. We are going to be a little late for your 32, system 32.

CAPCOM Rog, we understand.

SPIDER And Houston, the EV batteries are 36.8, 37.5, respectively.

CAPCOM Rog, 36.8, 37.5, thank you.

SPIDER Roger. With the ascent batteries on, ascent battery 5 is drawing 16 amps and 6 is drawing 10.

CAPCOM Rog, copy.

GUMDROP And Houston, Gumdrop.

CAPCOM Go ahead, Gumdrop.

CAPCOM Okay. On the other side, we are just about up to the time line; the hatch is closed and the hatch - the tunnel hatch, and the tunnel hatch integrity check is complete.

CAPCOM Roger, copy, Gumdrop. If you've got about 30 seconds, I would like to talk to you a little bit about the attitude control on the rest of day, here.

GUMDROP That was my next question, go ahead.

CAPCOM Rog. I must be looking down your check-list. Okay, we would like to have you go with standard EVA configuration as far as quads A and - alpha and Bravo are concerned, in other words, OFF. We would like to turn off the roll jets in quad delta, leaving only quad charlie for roll control and when you start your attitude hold, we would like to do that with the limit cycle on. Now we may get some excessive firings. If we get just a series of small pulses, we would like to have you turn the limit cycle off.

GUMDROP Okay, understand quads A - alpha and bravo are OFF, delta roll OFF, and limit cycle at the attitude hold, and I tried that the other day when we were doing something, I don't remember what, but in a tight roll, with the LM in a tight deadband, SCS to limit cycle seemed to help quite a bit.

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 7113, CST 913 214/2

CAPCOM Rog, copy.  
GUMDROP Now, do you want to try to assume an attitude or do you just want to let it go until we think there may be a problem and then pick up an attitude.  
CAPCOM Gumdrop, this is Houston. We would like, if you could, to take just a gross cut at the proper attitude. Now if it's going to take you a lot to get there, why you might use your own judgment, but if you get somewhat near the right attitude and then, of course, the primary concern is just keep out of the cockpit.  
GUMDROP Okay, I'll give it a whirl.  
CAPCOM Okay.  
CAPCOM Spider, this is Houston. We show you have gone to low bit rate. We would like to leave it on high, please.  
SPIDER Going to high.  
CAPCOM Spider, this is Houston. When you get a chance, we would like to get an onboard readout of your supercritical helium and would like to remind you about the circuit breaker on panel 11, to get that reading. We are showing it a little lower than normal. And we would also like to have a comment on how you will be hooked up to the LM hoses. Will the CDR be on the LMP's hoses and common umbilical?  
SPIDER No, CDR will be on his own hoses.  
CAPCOM Understand. Copy the CDR will be on his own hoses.  
SPIDER You want me to read the supercrit pressure out, is that what you want?  
CAPCOM That is affirmative. That's when you get a chance.  
SPIDER Roger. Let's stand by a while.  
CAPCOM Roger, no sweat at all.  
GUMDROP Houston, Gumdrop. I just got a H2 one low pressure on the cyro pressure light. Do you want to do anything with that?  
CAPCOM Copy, Gumdrop. Stand by.  
CAPCOM And Gumdrop and Spider, we will have Honeysuckle in about a minute. Let's bring up our S-band volumes.  
GUMDROP Gumdrop.  
SPIDER Spider.  
CAPCOM Gumdrop, Spider, we are going to lose you at Honeysuckle here in about a minute. We will see you over the Mercury in about 6 minutes at 33.  
SPIDER Okay.  
GUMDROP Roger.

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 7113, CST 913a 214/3

PAO                    This is Apollo Control. Gumdrop and Spider are beyond the range of the Honeysuckle station. During this pass, we got a readout on the extravehicular batteries. We passed on the information to Dave Scott in Gumdrop that we wanted to configure the service module reaction control system the same way we had planned to for the regular EVA. Today he is using the secondary guidance system, SCS, stabilization and control system, for attitude control rather than the primary guidance and navigation system. We are able to save a considerable amount of propellant this way. In the configuration, he will be essentially drifting, using the SCS for gross attitude hold. He will have two quads completely turned off, quads A and B. The roll thruster in the D quad will be turned off, but he will have roll control through the C quad. Along toward the end of this pass, the guidance and navigation control officer, Neil Hutchinson, reported to Flight Director Jerry Griffin that the SCS was powered up. Mercury will acquire the spacecraft in about 3 and 1/2 minutes. We will be back up then. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, get 71:33, CST 0933 215/1

PAO This is Apollo Control at 71 hours 33 minutes, and the Mercury is about to acquire. We'll stand by.

CAPCOM And Gumdrops and Spider we've got you through the Mercury for about 6 minutes, standing by.

CAPCOM Spider and Gumdrops, this is Houston through the Mercury, standing by, we've got about another 4 minutes.

SPIDER Okay, Houston, this is Spider. How do you read?

CAPCOM I'm reading you loud and clear, Rusty.

SPIDER Okay, we're just completing the donning procedure at this time, so it will be a while before we can make any COMM check here.

CAPCOM Roger, understand.

GUMDROP Gumdrops with you.

CAPCOM Roger, Gumdrops.

PAO This is Apollo Control. Rusty Schweickart has reference to the PLSS, the Portable Life Support System when he talks about donning, he's putting that on now.

SPIDER Houston, do you read Spider?

CAPCOM That's affirmative, Spider, we read you, we'll have you for about another minute and a half.

SPIDER Okay, we're not going to have enough time to make that comm check.

CAPCOM No sweat, Spider, we -

SPIDER Go ahead.

CAPCOM No sweat on that, we've already scrubbed it.

SPIDER Okay. Hey, I've got a recommendation to make here.

CAPCOM Okay, go ahead.

SPIDER Why don't we hook up the OPS to the - to Rusty the same way we normally hook it up, take out all those things that you scratched this morning, put them back in.

CAPCOM Okay, we copy that, and we're going to lose you here in about a minute, let's see if we can give you a fast reading.

SPIDER Okay, he's feeling a lot better and he looks like - he's acting like he feels a little better. Maybe we can extend this a little bit.

CAPCOM Okay, that's your judgement there, and we say go ahead if you feel that way, Jim.

SPIDER Okay, let me - I'd like to configure that way and then we will see how things go.

CAPCOM Okay, very good, and we'll see you over Guaymas about 52.

SPIDER Okay.

PAO This is Apollo Control. Mercury has LOS and the Redstone will be the next station to acquire at 71 hours 49 and a half minutes. This is Mission Control Houston.  
END OF TAPE

PAO This is Apollo Control at 71 hours, 49 minutes. The Redstone has acquired. Very low elevation pass and the duration less than a minute.

PAO And Redstone has LOS already, but we will be at Guaymas in - very shortly - less than a minute we'll have acquisition at Guaymas.

CAPCOM Gumdrop and Spider, this is Houston through Guaymas. Standing by.

GUMDROP Gumdrop.

CAPCOM And I copy you, Gumdrop.

PAO This is Apollo Control. The GO/NO-GO decision for 63 revolutions will be made during this pass. We are in the 45th revolution now. We'll continue to stand by.

CAPCOM And Gumdrop and Spider, you are GO for 63 dash 1.

GUMDROP Roger. Gumdrop copies. Go for 63 dash 1.

CAPCOM Roger, Gumdrop.

SPIDER (Garbled.) Hey, Spider or Gumdrop, whatever your name is.

GUMDROP Roger. This is the Gumdrop.

SPIDER Configure for the normal EVA, Dave, we're going to skip all of these COMM checks. Just configure for your normal one-way down relay.

GUMDROP Okay. Good.

SPIDER SO2 Pressure Gage -

SPIDER Okay, perform COMM check for CDR, CMP and validate (garbled).

END OF TAPE

GUMDROP Okay, push/pull position 5. We're reading you okay. (garble) pitch mode position 3. (garble)

SPIDER Roger, Gumdrop.

SPIDER Go ahead Gumdrop; do you read Spider?

GUMDROP Roger, I'm reading you 5 by; I couldn't relay, I guess I lose you, let me try again.

SPIDER Okay, were you reading the ... stand by, Rusty. Just a second Gumdrop (garble) before you go anyplace.

GUMDROP Okay.

CAMCOM Spider, this is Houston. I hate to break in on that; I'm reading you; we need R and D, A and B circuit breakers ON and DFI ON.

GUMDROP Roger; I read you Spider; did you copy Houston? Have him give me another call; I think very weakly.

CC Spider, I was reading you real good just a second ago. Jim, we need R and D, A and B circuit breakers in and the DFI ON.

GUMDROP Okay, Smokie, this is Gumdrop. He got that; PLSS, the Gumdrop here, you are very weak, but readable. Still weak but readable. Whistling around.

SPIDER Okay, your helmet's on and locked. Finger in the gloves. Don't need your watch do you? Where did the checklist go? (static) Okay, here, we don't need this thing out of here. (garble) don't recognize that?

GUMDROP Spider, Gumdrop.

SPIDER Go ahead.

GUMDROP Let me give you a comm check on box on the other panel please.

SPIDER Okay. You gonna give me one?

GUMDROP Roger. I'd like to listen to ...

SPIDER Okay, go ahead.

GUMDROP Okay, Gumdrop on the box; how do you read?

SPIDER Loud and clear.

CAPCOM Roger, PLSS, you're loud and clear; very good on this panel. Yeah, it really sounds very good.

SPIDER PLSS, Gumdrop.

GUMDROP Roger. Go ahead.

SPIDER Okay, that sounds fine too. Now I'm relay and I'm on (garble) both of 'em.

GUMDROP Roger; understand you are in relay at this time.

SPIDER That's affirmative.

GUMDROP Roger; we are also I think in proper configuration right now.

GUMDROP Okay, Spider, how do you read me?

SPIDER I'm reading you Okay, Davey.

GUMDROP Okay, that's great.

SPIDER Man, have I got a bunch of bags over here.

SPIDER All the snaps are off them and the locks don't lock - all I need to do is have that float out.

GUMDROP            Okay, Jim, the only thing that we didn't  
get that we gotta get is the EVA tether out.

SPIDER             Yeah.

SPIDER             There's about 50 percent of the snaps in  
the spacecraft left on.

CC                  Spider and Gumdrops and PLSS, this is Houston,  
and we can read all 3 of you loud and clear.

SPIDER             Roger, very good.

PLSS                Roger Houston. This is PLSS; believe it  
or not, I read you.

CC                  Roger; you're coming through beautifully  
Rusty, loud and clear.

CC                  Gumdrops, this is Houston. Did you call?  
If you did, say again.

GUMDROP            Roger, this is Gumdrops. (garble) forward  
and 20 degrees to the (garble) in about 10 minutes.

CC                  Roger, understand. Copy; you came through  
loud and clear there at the last Gumdrops.

SPIDER             This is Spider here; just so everybody  
(static) familiar, I think we'll do one daylight pass out on  
the porch.

CC                  Roger, copy Spider, and we agree with that  
whole heartedly. Loud and clear.

SPIDER             Did you get that Dave?

SPIDER             Gumdrops?

SPIDER             (static) bypass out on the porch, okay?

GUMDROP            Spider, Gumdrops; go.

SPIDER             (garble) I say we are gonna do one daylight  
pass out on the porch.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 72:09, CST 1009 218/1

PAO This is Apollo Control. The crew is planning one daylight pass out on the LM porch.

GUMDROP Spider?

SPIDER I don't read you any more, Gumdrops.

GUMDROP Okay, how about now?

SPIDER Reading you loud and clear now.

GUMDROP How me?

GUMDROP Okay, Spider, Gumdrops, how do you read now?

SPIDER Read you loud and clear. How me?

GUMDROP Okay, you are 5 by. Did you catch the comment on the break lock?

SPIDER Negative.

GUMDROP Okay, seems like we break lock with the S-band, I get a lot of static unless I turn relay OFF, so I'll probably have to run the relay OFF to hear you. I can't even hear you with my relay on when we break lock.

SPIDER Okay.

SPIDER Okay, 56 minutes to go, egress.

SPIDER Hey, I want to see where I am. I want to suit up here, too.

GUMDROP Okay.

PAO Gumdrops and Spider are about a minute away from LOS at the Vanguard, the the Canaries have overlapping coverage.

SPIDER (garbled) food.

PAO And the GO/NO-GO decision -

SPIDER It keeps going out.

PAO The GO/NO-GO -

SPIDER (garbled) Yes, if it closed up it won't have anything in there.

CAPCOM Spider, this is Houston, we would like to have DFI off and battery 4 on.

SPIDER You want DFI powered off and battery 4 on?

CAPCOM That is affirmative, Spider.

SPIDER Okay.

CAPCOM And R&D circuit breaker open.

SPIDER Oh, okay. Battery 4 coming on.

SPIDER Oh, is that great. I guess I better get this (garbled) off. (garbled).

CAPCOM And Spider and Gumdrops you are GO for depress.

SPIDER Roger, Spider.

SPIDER I'll tell you what we'll do. You go on outside, (garbled) get accustomed to what you are doing and I'll take a couple of pictures of you, you look around, and (garbled) Gumdrops. When you look like you're stabilized and you think you can handle something I'll send the camera out to you.

SPIDER Roger.

APOLLO 9 MISSION COMMENTARY, 3/6/69 GET 72:09 CST 1009 218/2

SPIDER They cleverly put on that piece of rubber  
that we've never had on this before.  
SPIDER Take it off on this side. It (garbled) on  
first.  
SPIDER (garbled)  
SPIDER (garbled) to clean that out when we leave.  
SPIDER Throw that up here.  
SPIDER Okay, the camera is up there, put the  
handle on it.  
SPIDER Let's see, do we have the (garbled) camera  
circuit breaker in here?  
SPIDER (garbled)  
SPIDER I can't get that thing screwed in. Look  
at that.  
SPIDER (garbled) I can't get it out.  
SPIDER That's supposed to go in that bag over  
there. Stick that in that bag.  
CAPCOM Spider and Gumdrops, 1 minute LOS Canaries.  
We may talk to you over Tananarive at about 32 if not Carnarvon  
at 48, and Gumdrops you do have a GO for depress. I didn't  
hear you acknowledge it.  
GUMDROP Roger, Houston, Gumdrops copied the GO  
for depress.  
CAPCOM Roger, you are loud and clear on that one.  
GUMDROP Okay, thank you.  
SPIDER Let me check to see if everything is glued  
down.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 7219, CST 1019 219/1

SPIDER -- except to see if everything is glued down.

SPIDER (garble)

PAO Spider and Gumdrop still talking to each other as they go over the hill at Canaries. Both spacecraft received a GO for depressurization over the Canary station. Spider scheduled to depress the spacecraft over the Carnarvon station about 72 hours and 53 or 4 minutes, with Gumdrop depressing the spacecraft over Honeysuckle shortly after 73 hours. You heard the crew discussing a decision that Rusty will get out onto the LM porch for one daylight pass. We anticipate this will be the first daylight pass, which starts about midway through the Huntsville acquisition, about 73 hours and 8 or 9 minutes. I believe you could - some of the communication was clear, some was not, but I believe you could hear Jim McDivitt discussing with Rusty the fact that he wanted him to get out on the porch, get adjusted, take a look around, see how he felt, and if everything was going well, he would hand a camera out to him so that he could take some pictures. Tananarive will acquire at 72 hours 32 minutes. We may or may not have communication through this station. We will come back up and see. If we do not, the next station will be Carnarvon at 72 hours 48 minutes. This is Mission Control Houston at 72 hours 22 minutes.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 7232, CST 1032 220/1

PAO This is Apollo Control at 72 hours 32 minutes. Tananarive has LOS. We will stand by here.  
CAPCOM Spider and Gumdrop, this is Houston through Tananarive. Sunrise time is 08.  
COMM TECH Tananarive, Houston Comm Tech net 1.  
TAN Houston Comm Tech, Tananarive.  
COMM TECH Roger. Are you receiving anything down from the spacecraft at this time?  
TAN We were when they first came overhead, but we are not at the present time.  
COMM TECH All right, thank you.  
CAPCOM Spider and Gumdrop, Houston. Sunrise is at 08. We will see you over Carnarvon at 48.  
PAO This is Apollo Control 72 hours 39 minutes. Gumdrop and Spider are beyond Tananarive now. All that chatter in the latter part of that pass was cross talk, it was not between the spacecraft. Carnarvon will acquire at 72 hours 48 minutes. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control - 72 hours, 48  
minutes. We are at Carnarvon. The crew is having a discussion.  
GUMDROP Got that nice pump (garbled) though.  
SPIDER Nice pump what?  
GUMDROP I say its got that nice power assist  
pump down now.  
GUMDROP Rusty, how are you feeling?  
SPIDER Good.  
CAPCOM Spider and Gumdrops. We've got you through  
Carnarvon. Houston standing by.  
GUMDROP We're probably going to have to repress  
the cabin fairly slow.  
SPIDER First thing I pass you will be a (garbled)  
then I will pass you a (garbled) right after that.  
GUMDROP Early or after?  
SPIDER (Garbled) by then.  
GUMDROP Okay.  
SPIDER Pictures of (garbled). You take a  
couple and pass it back. I'll hand you the movie camera  
and I'll take some more pictures of (garbled).  
GUMDROP I'm already through with the EVA sample,  
too.  
SPIDER Right.  
GUMDROP (Garbled).  
SPIDER What time did I say it was when I turned  
it on?  
GUMDROP Forty-seven, wasn't it?  
SPIDER I think so. Forty-seven.  
GUMDROP Okay.  
PAO The LM cabin pressure reading zero.  
SPIDER We were on at 47 - it is now 49:35. Do  
you want anything?  
SPIDER Not cooling yet?  
GUMDROP No, I'm waiting for the tone to go OFF.  
GUMDROP That pressure? Okay, it's coming down  
to 0.1.  
SPIDER (Garbled.)  
GUMDROP The what?  
SPIDER The life line - your tether.  
GUMDROP Yes.  
GUMDROP You going to be sure you're all the  
way down?  
GUMDROP Okay, feed water is logged. Going to  
MAX cooling.  
GUMDROP Come on, Baby.  
GUMDROP All right.  
SPIDER Okay, it's now showing 250 and we've  
turned the cooling ON. It's cool and Rusty said he

feels the cooling coming.  
GUMDROP Okay, Spider - Gumdrop.  
SPIDER Go ahead.  
GUMDROP I'm all set to depress whenever you give  
the word.  
SPIDER Okay, we're all set over here, Dave.  
GUMDROP All right, did you hear? You are clear  
to depress.  
SPIDER Okay, and I just checked the - all the  
systems and everything's running like a clock.  
SPIDER Are you going back to intermediate  
(garbled)?  
GUMDROP Very good.  
SPIDER Okay, my antenna is released.  
GUMDROP Yes.  
SPIDER Okay, I've got -  
GUMDROP (Garbled) biomed (garbled).  
SPIDER The antenna is all bent out of shape,  
but it will - just a second.  
GUMDROP All out of shape? Do you want to come down.  
SPIDER No, it's all right now.  
SPIDER You'd better be careful the - flop on  
that door handle.  
GUMDROP Yes. I know. It's almost impossible  
not to wipe that off.  
SPIDER There. (Garbled) is back in.  
GUMDROP Say again.  
SPIDER I have a (garble) pull it again.  
GUMDROP Okay.  
GUMDROP There's the descent oxygen (garbled).  
SPIDER That ought to do it fine.  
GUMDROP Hey, that cabin pressure is still read-  
ing at a tenth, isn't it?  
SPIDER Yes.  
GUMDROP The next thing I've got to do is not  
get this doggoned tether tangled around my wrist. Okay, I  
got it the right way now.  
SPIDER Don't get it tangled around any of your  
knobs either on the way out.  
GUMDROP Yes.  
GUMDROP I've got a (garbled).  
SPIDER Okay.  
SPIDER About 10 minutes to sunrise.  
PAO We're reading -  
CAPCOM No need to answer. Sunrise zero 8.  
PAO Mean heart rates - McDivitt - 90, Scott -  
88, and Schweickart is up close to 100.

PAO G&C says propellant consumption, so far,  
is almost NIL.  
GUMDROP Hello, - Spider.  
GUMDROP Can you read, Spider?  
SPIDER And Honeysuckle, too, but Honeysuckle  
for S-band only.  
GUMDROP Yes, that's right.  
CAPCOM Spider and Gumdrop this is Houston through  
Honeysuckle. I'm reading the Spider loud and clear.  
SPIDER Listen this is Spider. Transmitting in the  
dark. If you read fine, if you don't you don't. It's  
72:57, we've had this (garbled) depressurized for about 12  
minutes.  
SPIDER It looks like it's going along fine.  
GUMDROP How?  
SPIDER Rusty's PLSS seems to be working all right.  
And Dave is in the process of depressurizing -  
GUMDROP They were calling in the middle while  
you were trying to talk, Jim.  
CAPCOM Roger. Spider this is Houston. I copy  
all of that. You are coming through loud and clear. I'm  
reading the PLSS loud and clear.  
PAO Gumdrop pressure down to 1 and one-half  
pounds now.

END OF TAPE

Hatch open

EVA

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 72:58 CST 1058 222/1

PAO Gumdrop pressure down to one and a half pounds now.  
GUMDROP Spider, Gumdrop.  
SPIDER Okay, all depressed and everything is looking good.  
SPIDER What are you going to do when you open the door?  
GUMDROP I haven't opened the door yet.  
SPIDER Okay. (garbled) when you do.  
GUMDROP Okay, I'll try.  
SPIDER We need a goal tender to keep everything in.  
GUMDROP Yes.  
SPIDER Okay, we're about - sort of between (garbled) at sunrise, Dave. You might go ahead and start the door.  
GUMDROP Okay, sure will.  
PAO Schweickart's heart rate in the mid 60's now.  
SPIDER (garbled)  
GUMDROP (garbled)  
SPIDER Any change?  
SPIDER Yes, it's much better now. I'll go back to data.  
SPIDER Okay.  
SPIDER Put that - I wasn't hearing any data for a long time, so I wasn't hearing any noise (garbled) and then about 5 minutes ago I started picking up a lot of harsh static. (garbled) and it sort of dribbled on down. I bet that's what that (garbled) was. We've cranked that up, it was just as clear as a bell. In fact, now it's not making as much as it was before you got (garbled)  
SPIDER Well, we've had a little problem with some of the (garbled), the transducers or the battery current things. Sometimes it will fall (garbled) and it makes a funny noise. That happened in Chamber A. It could be that same thing. Wait a little more and you will hear a different noise.  
SPIDER Oh, okay.  
SPIDER Come on (garbled)  
CAPCOM Roger, Spider and Gumdrop, we're going to lose you here at Honeysuckle, and you're showing 6 minutes to sunrise.  
SPIDER How are you feeling?  
SPIDER Good.  
GUMDROP Okay, Spider, Gumdrop, the hatch is open, no sweat. It just swings like it ought to swing.  
SPIDER Very good, let's hope it swings back again, though.

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 72:58, CST 1058 222/2

GUMDROP Well, it stayed just where I wanted it.  
SPIDER (garbled)  
CAPCOM Gumdrops and Spider, Houston, sunrise will  
be in about 5 minutes 40 seconds, we're going to lose you at  
Honeysuckle.  
PAO They're LOS at Honeysuckle. Huntsville will  
be coming up in about 1 minute.  
PAO Both spacecraft are depressurized, the  
hatches are open in both Gumdrops and Spider.  
PAO We're up at the Huntsville now.  
GEMDROP I can see Rusty's foot.  
SPIDER Very good. Do you have a camera set up,  
do you?  
GUMDROP He (garbled)  
SPIDER (garbled)  
RED ROVER Can you see me wiggling my toes?  
GUMDROP Sure can.  
GUMDROP If Jim looks out the top window he can  
see me. (garbled)  
SPIDER Let's all continue, Dave.  
GUMDROP Jim, you're going to have to try and be  
a little more careful about that VOX (garbled)  
RED ROVER Oh, gee I'm glad we stopped here.  
RED ROVER I pulled down my visors.  
RED ROVER Okay, I've got the EVVA down.  
SPIDER Okay - very good.  
SPIDER Look here, I'm going to reset. The PVT  
here and go on up.  
GUMDROP Didn't see that Blue bag.  
SPIDER What?  
SPIDER The Blue bag.  
SPIDER Yes.  
RED ROVER Yes, you really can see at night can't you?  
SPIDER Affirmative.  
GUMDROP Okay (garbled) is going to be just about  
over your left shoulder. How's that?  
RED ROVER While standing in the slippers?  
SPIDER Right.  
SPIDER Okay  
SPIDER Pretty good over there, Dave, why don't you  
hold deadband another cycle?  
GUMDROP Yes, I had to turn the eleven cycle off.  
It was just banging too much.  
SPIDER I think that oughta about do it, hadn't it?  
GUMDROP Well, looks like it.  
SPIDER Mr. Schweickart, proceed on 4.  
SPIDER (garbled) your camera on there, CMP?  
Gumdrops That's right.  
SPIDER Okay.

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 72:58, CST 1058 222/3

RED ROVER Proceeding on out.  
RED ROVER I see a little bag 4 on (garbled)  
SPIDER Floating away?  
RED ROVER Yes, I missed that one.  
SPIDER It has a red dot on it. It was probably  
mine.  
GUMDROP Jim had that one.  
RED ROVER Okay, here we go in the slippers.  
RED ROVER Hold it.  
SPIDER Ho, there, that looks comfortable.  
RED ROVER Boy, oh boy, what a view.  
SPIDER isn't that spectacular?  
RED ROVER It really is.  
RED ROVER There's the moon right over there.  
SPIDER Okay, Rusty (garbled) you can take a picture of  
Dave.  
RED ROVER Okay.  
GUMDROP Do you want the -  
SPIDER Why don't you just stow it (garbled)  
SPIDER Okay, just take it easy for a while.  
RED ROVER There a big depression off the  
(garbled)  
RED ROVER (garbled) I'll never get it opened again.  
GUMDROP Very good, how do you read?  
SPIDER 5 square. How me?  
GUMDROP Okay - read you just fine (garbled)  
RED ROVER Thats right.  
GUMDROP Very good.  
SPIDER Why don't you (garbled) say hello to the camera  
or something?  
SPIDER Hello there camera, Boy, is this great.  
PAO And that's LOS at Huntsville. Rusty  
Schweickart out in the golden slippers on the front porch  
of the LM. We copied a few unofficial times here. We'll  
refine those later, but Jim McDivitt reported at 7257 that  
the lunar module had been depressed for 12 minutes. We copied  
CSM depress at 7259, we copied the start of the egress,  
when Rusty started out the hatch as 730737, and he reported  
being in the slippers at 730808. You may have heard a  
reference - Rusty reported that he could see the bull's eye  
very well. Astronaut Dick Gordon, who is in the Control  
Room right now, says that's a reference to the star called  
Deborah, which is familiar to navigators. Old friends of  
old Deborah call it the bulls eye. We'll be back up at the  
Redstone at 73 hours 19 minutes - 19 and a half minutes.  
This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control, 73 hours, 19 minutes and we'll be at the Redstone within a few seconds. We'll stand by.

PLSS The sequence cameras... ah heck, let me take one of the radar camera; haven't taken one of that.

CC Spider and Gumdrop; we have you through Redstone and we've been copying you loud and clear.

GUMDROP Very good Houston. Everything's going along fine up here.

CC Roger; we copied you all across Carnarvon and Huntsville real well; we've been following you and it sounds great.

PLSS Okay; do you have anything special that you want done in this pass?

CC No, unless you want to poke the TV camera out there.

PLSS I'm not sure we can get that configured out that quickly.

CC Roger. Understand.

PLSS Like to take us some more movies?

GUMDROP I will as soon as he passes the camera out to you.

SPIDER Are you ready for this camera?

PLSS Yeah. Okay.

SPIDER Okay, alright.

GUMDROP (garble)

SPIDER Dave, you ought to get a picture of this relay here. Ah, it's too late.

PLSS I'm taking it.

SPIDER Okay.

PLSS Little more. Right in.

CC Spider and Gumdrop this is Houston. You are clear to do anything - go as far as you want.

GUMDROP Houston, you cut up on that one; say that again.

CC Roger. Just let you know that it sounds great and you are clear to go as far as you want to as far as we're concerned.

GUMDROP Okay, what about the time limit? How are you feeling Rusty?

PLSS I'm feeling fine.

SPIDER Houston, do you want to go ahead and try the thing for two day passes and the one night pass? Looks like we might be able to do that for you.

CC Jim, that's your decision - it's up to you; it's all GO with us.

SPIDER Okay, the thing that bothers me is if it does, we may have to reconsider how we're gonna do the rendezvous tomorrow. We're gonna have to get some sleep here sometime.

CC Roger; we copy.  
 SPIDER Well think it over and see what you decide.  
 CC Okay.  
 GUMDROP And Houston, Gumdrops.  
 GUMDROP Houston, Gumdrops.  
 GUMDROP Houston, Gumdrops calling. How do you read?  
 CC Go Gumdrops.  
 GUMDROP Now we do. But I can't really tell when  
 the jets are firing and it's sorta hard for me to tell on the  
 quantity.  
 SPIDER Okay, Rusty, why don't you start hauling it  
 back out again?  
 PLSS Okay. Coming out.  
 SPIDER Hey, how about giving Houston a call and  
 asking them about that?  
 PLSS Okay. Hey Houston, how do you read the PLSS?  
 CC PLSS, you are coming through loud and clear.  
 SPIDER He has to help the cable come out a little.  
 PLSS Let me get up closer.  
 SPIDER Just a minute.  
 PLSS Never mind; I got it. I'll just come up  
 closer here. Okay, I got it now.  
 CC Gumdrops, this is Houston. You are using  
 very little (garble) propellant; looks real good.  
 GUMDROP Okay, Houston; thank you. Just wanted to  
 make sure.  
 CC And Spider, this is Houston; we are re-  
 commending that you terminate at the end of this daylight pass.  
 SPIDER Okay, I sorta felt that way too. I don't  
 think we ought to try that transfer for sure.  
 GUMDROP Alright, we'll terminate here.  
 SPIDER Okay, Davey, come on out.  
 PLSS Okay. I'm gonna let the camera run here.  
 SPIDER Dave, come on out, wherever you are.  
 PLSS Stand by; let me get away my little push  
 button. Now we're all taking pictures of everybody taking  
 pictures.  
 SPIDER Yeah, you want to retrieve a sample?  
 PLSS Roger. That's a good idea.  
 CC And Gumdrops, you'll be getting a warning  
 on your H2 tank -  
 PLSS Why don't you lean over here again; I'd  
 sure like to get a picture of that whole scene.  
 SPIDER Okay; to maneuver.  
 CC Gumdrops, you'll be getting a warning in about  
 4 minutes on your H2 tank. No sweat.  
 GUMDROP About those window marks were over there.  
 SPIDER Yeah.  
 CC Gumdrops, this is Houston. You may obtain  
 a warning on your H2 tank; no problem.

SPIDER Hey, you ready for your thermal samples?  
 PLSS Okay. You ready? Ready.  
 SPIDER Samples here?  
 PLSS Ready.  
 SPIDER Okay, Dave, let me get around here where  
 I can get a picture too.  
 CC Gumdrops, Houston.  
 SPIDER All these marks all over these windows;  
 shoot oh dear..  
 CC Gumdrops, Houston.  
 GUMDROP Go.  
 PLSS Are you ready?  
 SPIDER Hey, use your head when you're out there;  
 you know this isn't a contest between you and that sample.  
 PLSS Roger.  
 CC Gumdrops, Houston. Anticipate a  
 warning very soon on your M2 tank.  
 PLSS Okay, and you want to hook it in the solid  
 ring David, Rather than that wire.  
 GUMDROP Okay.  
 SPIDER Gumdrops.  
 GUMDROP Hey.  
 GUMDROP - wouldn't even close on itself.  
 SPIDER Now you gotta pull over to spare; there's  
 one more (garble) Okay, now, next one - oops - (garble)  
 GUMDROP How about that.  
 PLSS That's the thermal set.  
 SPIDER Yeah, you're getting in wrapped up around  
 your neck.  
 GUMDROP (garble) Houston.  
 SPIDER Okay.  
 CC Gumdrops, do you read Houston?  
 GUMDROP We do read Houston.  
 SPIDER PLSS?  
 CC Gumdrops, do you read Houston?  
 PLSS Oh, there's Baja, California. Oh, very pretty.  
 Wonder if I gotta any film left; oh yeah, got more film here  
 going across Baja here.  
 PAO Schweickart's heart rate is 77.  
 SPIDER One place that's not too hard to recognize.  
 PLSS Yeah.  
 PLSS It's set right, isn't it? F 11?  
 SPIDER F 11, it's not set at infinity.  
 SPIDER Oh no, he's got it on a 60th though.  
 SPIDER It wasn't when it went out there.  
 PLSS Okay, you got it now.  
 CC Spider, do you read Houston?  
 SPIDER I wonder if I ought to keep it there.  
 PLSS I don't know. The other ones were taken  
 at 250; it depends on what got knocked over.

PLSS Got knocked over when you ... when it was going out.

SPIDER Why not leave it there.

PLSS This is the camera (garble) we used this morning when I took pictures inside the tunnel with the wide angle lense on it at a 60th Jim.

PLSS (garble)

PLSS Did you know there is a washer between the two panes of our overhead window?

SPIDER Hey (garble)

SPIDER (garble)

CC Gumdrop, this is Houston, do you read?

GUMDROP Houston, go ahead. do you read me?

CC Pass the word to Gumdrop that if he just got a master alarm; it's the H2 tank; no problem.

GUMDROP The lights are off (garble) this was not scheduled.

CC Gumdrop, Houston.

SPIDER It's 24 minutes through the run, we've got about another 15 minutes and we should start thinking about getting back in.

PLSS Must be an (garble); the water's all dirty.

PLSS Gumdrop?

SPIDER Hay, you asleep?

SPIDER Hey David, things are still falling out up there; what are you doing, throwing everything overboard?

SPIDER (garble)

PLSS Yeah, yeah.

SPIDER The border sticks out, but the City doesn't.

SPIDER (Laughter) Yeah, the winds look pretty strong.

PLSS Lot of clouds.

SPIDER (garble)

PLSS (garble) That's right. They're red, white and blue for from up here.

RED ROVER Houston, how are you reading Red Rover here?

CC Roger. Reading you loud and clear here, Houston; how do you read me?

RED ROVER Wonder why they're not talking to us.

CC Spider, Gumdrop, this is Houston; how do you read me?

PLSS Spider, are you reading Houston?

SPIDER No, I haven't heard them say anything either.

SPIDER This is Spider. Do you read?

CC Roger, Spider, this is Houston. Spider, this is Houston, how do you read?

SPIDER Houston, Spider. Do you read?

CC Roger Spider, this is Houston.  
 CC Spider, this is Houston, how do you read?  
 CC That's affirmative Spider, this is Houston  
 reading you loud and clear.  
 SPIDER Okay, Rusty, why don't you pass the  
 camera back in here; and work on the rails for just a minute.  
 RED ROVER Can you stand by one?  
 RED ROVER Gotta change film packs here.  
 SPIDER Okay, here comes another one; just a minute,  
 let me get this other one zipped in.  
 SPIDER Take it easy out there; don't want you  
 getting ..  
 RED ROVER Okay.  
 SPIDER Rusty?  
 RED ROVER Yes sir.  
 SPIDER Stand by.  
 RED ROVER Oh I'm not gonna throw you anything; I'm  
 gonna pass this camera back in. Take your time.  
 RED ROVER Ooh, the sun is really bright.  
 RED ROVER Houston, this is Red Rover; if you read  
 me I'm just gonna follow up the line here, the suit is very  
 comfortable - I'm on min cooling and I haven't had any  
 problem at all - the only thing that is warm at all are my  
 hands and they are just very warm -

END OF TAPE

RED ROVER -- the only thing that's warm at all are my hands; and they are just very warm, they are not very hot at all.

CAPCOM Rog, Red Rover. This is Houston. We are reading you loud and clear. We are copying all transmissions.

RED ROVER Hang it on that tether. It's a good way of getting things in and out, but they are sort of out of control.

SPIDER Why? Won't they get inside?

RED ROVER It's just getting it through the last part of the door there. It ricocheted off everything on the door.

SPIDER Oh, yeah.

RED ROVER You know, the one thing I didn't take a picture of was the hatch.

SPIDER Hey, you want the camera back again?

RED ROVER No, that's all right.

CAPCOM Red Rover, this is Houston. Can you read?

SPIDER You can have 2 more minutes out there, and then you ought to start coming back in.

RED ROVER Okay.

SPIDER I want us to be in while it's still light outside.

RED ROVER Oh, we just passed over Florida or somewhere. It looks like maybe Jacksonville.

CAPCOM Red Rover, Houston. How are you reading now?

RED ROVER It's all cloudy. I guess the Cape is all clouded over.

RED ROVER Let me see if I can see any islands down there. No, I can't tell how far north we are, but we came up fairly far south of the Baja, so --

SPIDER Here, I'll chunk it out there and we will make a satellite.

SPIDER It's right between your legs. It's gone up, now it's on your knee.

RED ROVER My heavens. It's an antifog wipe.

GUMDROP I tell you, the toughest part of the whole thing is trying to change the film magazine.

SPIDER Yes, I figured it would be, Dave.

GUMDROP It's a mundane task.

SPIDER Matter of fact, Rusty, why don't you get out there a move around a little bit and - there goes the camera, Dave.

GUMDROP No, it's tethered. I learned that from a friend of mine named Mike.

SPIDER Yeah. Rusty, why don't you exercise the handrails just a little bit just to see how they work and don't go very far up and if Dave gets the picture, fine, and if he doesn't, well that's just too bad.

RED ROVER Okay.

SPIDER I think it's going to go 90 degrees to that way, Dave.

GUMDROP Yeah.

CAPCOM Red Rover, Houston. Do you read?  
(GARBLE)

RED ROVER I can't see it very good.

SPIDER ... Don't know what to expect (laughter).

RED ROVER Say again.

SPIDER ... Dave?

GUMDROP It's the somebody effect.

SPIDER There you go.

RED ROVER Got it.

SPIDER A friend of mine named Gene.

GUMDROP Yeah.

RED ROVER Hey, check the various and sundry settings.

GUMDROP Okay, as soon as you get that done, turn it on, and I'll be going here.

SPIDER Why don't you come over and get the thermal sample and get it in so we won't have to mess around with it.

GUMDROP Good idea, coming up. Hey, let me have my hose back.

RED ROVER Oh, shoot.

GUMDROP Wait a second.

SPIDER This poor movie camera. If it ever runs again, it will be a miracle.

RED ROVER Was it kind of warm when it came in?

SPIDER No, it just got bashed around. The hook doesn't hook onto it right, it slides up and down the wire and it's got that stretched cable on it, so every time the tension come out, the stretch cable slams it into something.

GUMDROP Okay, go ahead, pull it.

RED ROVER Okay, I'm coming.

CAPCOM Red Rover, Houston. Do you read?

GUMDROP Okay ... Okay, Hook it on down there and lock it. Dave, have you taken any pictures yet?

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GUMDROP No, I can't get it to run now, would you believe.

RED ROVER Okay, the heck with it, then.

SPIDER His camera got smashed around a little bit too. I think these cameras are good for one strobe pack and that's about it when you are doing work like this with them.

CAPCOM Red Rover, Houston. Do you read?

RED ROVER Let me turn around here and get some stills.

GUMDROP Okay, stand by just one here.

CAPCOM Gumdrop, Houston. Do you read? Hey, anybody up there read me? This is Houston.

RED ROVER Oops, there goes a nut.

GUMDROP Okay. What, are you talking about me again?

RED ROVER (laughter).

GUMDROP Okay, fall in. One each thermal sample coming in.

CAPCOM Spider, Houston. Do you read?

RED ROVER Okay. Can you take them up there and let me get that hook back?

SPIDER Yes, if you - just hang on a second.

RED ROVER Okay. I tell you what. I don't need the hook just to go part of the way up and back down again. Okay -

SPIDER Oh goodness. Get down in there, food.

RED ROVER Do you want me to start, Jim?

SPIDER Yeah, Rusty.

RED ROVER Okay, here I go.

SPIDER Rusty, I want you to evaluate those handles and when you get through with that, I want a conclusion from you on whether it's a practical way of doing it, like we've already said it is.

RED ROVER Okay.

SPIDER Stay away from the radar antenna.

RED ROVER Rog. Oh yeah, this is very good.

SPIDER Yes. Hey, let me get that camera out.

RED ROVER Okay.

SPIDER Anything left of that one.

RED ROVER Oh, running very good. This is no problem at all.

SPIDER Good. Be right there. Smile.

RED ROVER Hello, there. This is no problem at all.

SPIDER Okay, go on back down it again. Hey, Dave, did you get your movie camera running yet?

GUMDROP Not yet, but I would like to try it, if you will give me a minute.

SPIDER Well, you've got 4 minutes. When the 4 minutes are over, we are going to have to come back in, with or without the movies. If we get them, fine.

RED ROVER Yes, there are almost no disturbing torques, I mean I don't have any problem at all just maintaining myself wherever I want.

SPIDER Come around the window here. Can you?

RED ROVER Yeah, Hold on, I'll just push out a little bit. Wait, let me come up this way. How's that? I'm in the shade though.

SPIDER That's okay.

RED ROVER Aw now, you got to get a some good picture.

SPIDER If I get any good pictures, it will take a while.

RED ROVER Yes. Then, too, maybe it will change the setting a little too?

RED ROVER How's that.

SPIDER Pretty good.

RED ROVER Yeah, I don't want to touch your quad though.

SPIDER Good idea. Don't touch the quad.

RED ROVER Yeah.

SPIDER Yeah, the trouble is I've got this latch I'll try to take pictures around that. I'm not sure I'm succeeding. Okay, Dave, you ought to take some pictures. I can turn around and - Rusty, why don't you go up and down the thing. Go back down to the shoes and get back out there again and (static)

CAPCOM Spider, this is Houston. We are copying all transmissions loud and clear.

RED ROVER That's a very pretty scene.

CAPCOM Spider, this is Houston, or Gumdrops, or Red Rover. Do you read? Hello, Gumdrops, this is Houston. How do you read?

SPIDER Okay, Dave, do you have it running yet?

GUMDROP Just about.

SPIDER What?

GUMDROP Just about.

SPIDER Want to set it on 24 frames a second.

GUMDROP Yeah, and --

END OF TAPE

SPIDER 24 frames a second.  
SPIDER You had to hand hold it then.  
SPIDER (garbled)  
SPIDER Is it working?  
GUMDROP I can't tell. Just a minute.  
SPIDER I could feel it when mine was going.  
GUMDROP (garbled)  
SPIDER I'm afraid, amigo, the camera has failed.  
SPIDER Okay, okay.  
SPIDER Okay, Rusty, why don't you start coming  
in?  
RED ROVER Right, coming in.  
SPIDER Oh, shoot.  
RED ROVER Okay, Jim, do you want to pull in the  
tether a little?  
SPIDER I'd sure like to.  
RED ROVER I believe the door finally got itself  
closed and stuck. It's open now again.  
SPIDER Okay, now, I'll get it all the way in.  
I'll do my best to stay out of your way. The only trouble  
is my hoses are kind of out where you are liable to hit  
them.  
RED ROVER Okay.  
SPIDER Okay, I'm out of your way.  
SPIDER Okay (garbled)  
PAO We're between the Vanguard and the Canaries,  
Canary should acquire right now.  
PAO AT the time Jim McDivitt said, "You'd  
better start getting in now," Rusty Schweickart had been  
out for 37 and a half minutes.  
SPIDER It's going to take me awhile to get down  
there and get that thing closed. I just wanted to make sure  
you got back inside.  
SPIDER I'm having trouble with the hatch. Everytime  
it works closed (garbled)  
SPIDER We ought to close that thing so I can  
see the hatch before I try to lock it.  
SPIDER There we are.  
RED ROVER Okay. Okay now. Okay.  
SPIDER Let me get across the top here, maybe  
I can get out of your way.  
RED ROVER That isn't going to work.  
SPIDER Let me get back in the corner.  
SPIDER No, I think it's okay.  
Red Rover Looks like it's alright the way it is.  
SPIDER The best that you can do, if you can, is  
to gather this goop up here, sort of keep it up off the  
floor.  
SPIDER Okay, Dave, you ought to start getting  
your hatch closed.  
GUMDROP Say again.

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SPIDER Better start getting your hatch closed if you aren't already doing it.

GUMDROP Okay.

CAPCOM Spider, this is Houston, do you read?

Sounds like you have your hatch closed.

SPIDER Not quite, it closed, it's not locked

CAPCOM Roger, understand.

GUMDROP Houston, Gumdrop.

CAPCOM Gumdrop, Houston. Go ahead.

GUMDROP Gumdrop's hatch is closed and locked.

CAPCOM Roger, understand hatch closed and locked.

Good show. And I couldn't get up to you, but you, all three of you were coming in loud and clear. Sounded like Red Rover had quite a time.

SPIDER (garbled) Well, I hate to do it, but I've got to get my head. in front of your legs, instead of behind them.

RED ROVER (garbled) There, that's good.

SPIDER Oh, it's closed, and locked.

RED ROVER Is it locked?

(GARBLED)

CAPCOM And Spider and Gumdrop, if we lose you over Canaries here in a couple of minutes we'll see you over Tananarive about 06.

SPIDER Okay. (garbled)

SPIDER Okay, I got it. (garbled) Do you?

SPIDER Everything is (garbled).

SPIDER Rusty, what are the stunts after that?

SPIDER (garbled)

SPIDER That's 4.4 psi.

SPIDER And we'll go to 46 (garbled)

SPIDER It will? Got them?

SPIDER How about that, it's not repressing.

SPIDER What's that? Oh yes.

SPIDER Flow control closed.

SPIDER There we go.

SPIDER How are your ears?

SPIDER How are your ears, Rusty?

SPIDER Okay.

SPIDER Okay, we're at 2 PSI.

SPIDER 2.6.

PAO This is Apollo Control. Lm cabin pressure up over 2 pounds at LOS Canaries, and you heard it here live, first hand, the adventures of Red Rober and his friends, Gumdrop and Spider. We copied the CSM hatch closed and locked from Dave Scott's report at 73 hours 49 minutes 24 seconds. The LM hatch locked 73 hours 49 minutes 57 seconds. This, we're getting heart rates now from the Flight Surgeon. Red Rover's heart rate varied from 61 to 88 throughout this entire EVA period. A very good EVA, Dave Scott even poked his head

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PAO out of the Gumdrop hatch and retrieved the thermal sample there. Red Rover, alias Rusty Schweickart, got the thermal sample from the lunar module, spent most of his time in the golden slippers, but he did get out, evaluated the handrail to some extent, reported he was comfortable in his suit, had the portable life support set for minimum cooling, felt very comfortable. His hands he said were warm, but not hot. He gave a fair travel log coming over the United States and out over the Bahamas, in that area, saw Jacksonville, Florida. He reported he had no problem maintaining himself where he wanted to, once he got out of the slippers and started exercising the handrail, and as they passed over the Houston area Jim McDivitt said it looked red, white, and blue over Nassau Bay again, this is a reference to the American flags being flown in that community. All three of these crewmen live in Nassau Bay, and there are hundred and hundreds of American flags being flown there. This EVA was terminated after 1 daylight pass in the interest of staying on the time lines, letting the crew get some rest so that they will be in good shape for the rendezvous day tomorrow, rendezvous the most important part of this mission. Tananarive will acquire at 74 hours 5 minutes 41 seconds. We haven't had too good a comm at Tananarive, but we'll come back up then and see how it goes. At 73 hours 56 minutes, this is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 74 hours, 5 minutes and Apollo 9 is at Tananarive. We'll standby.

CAPCOM Spider, Gumdrop - Houston through Tananarive.

CAPCOM Spider, Gumdrop - Houston through Tananarive. Receiving no transmission. You all standby and talk to you over Carnarvon at two-two.

CAPCOM Spider, Gumdrop - Houston through Tananarive. How do you read?

CAPCOM Tananarive M&O - Houston check COMM. Do you read?

TANANARIVE Tananarive.

CAPCOM Roger. Am I going up to the spacecraft?

TANANARIVE Say again.

CAPCOM Roger. Are you hearing anything from the spacecraft?

TANANARIVE Negative. Downlink on the spacecraft, but you are going out though.

CAPCOM Okay. Thank you.

PAO This is Apollo Control. Apollo 9 is beyond the range of the Tananarive station now. Carnarvon will acquire at 74 hours, 22 minutes. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 74 hours, 22 minutes and Carnarvon has acquired.

SPIDER Go ahead, Gumdrops.

GUMDROP How are you doing over there?

SPIDER Okay. We are trying to get -

GUMDROP Okay, everything squared away over here.

We are back up to 5.1 (garbled).

CAP COM And Spider and Gumdrops this is Houston through Carnarvon. Reading you loud and clear - reading you loud and clear.

GUMDROP And Houston, this is Gumdrops. Back up to 5.1 - everything is nominal.

CAPCOM Roger. Copy, Gumdrops.

SPIDER Hey, Houston. This is Spider.

CAPCOM Go ahead, Spider.

SPIDER Spider here Houston. What time was TV pass?

CAPCOM Seven-four.

CAPCOM Roger, Spider. It's 74 plus 57 and will last until 75 plus 13.

SPIDER Can't read him. See if you can get him.

GUMDROP Roger. Understand, Houston. Seven-four plus 57 to 75 plus 13, is that correct?

CAPCOM That's affirmative, Gumdrops.

GUMDROP Okay, you copy, Spider?

SPIDER Yes, we got it.

GUMDROP He copies.

CAPCOM And Spider and Gumdrops, we are going to lose you here at Carnarvon in about a minute. We'll see you over Huntsville about three-seven.

GUMDROP Roger. Huntsville three-seven.

PAO This is Apollo Control at 74 hours, 30 minutes. Apollo 9 passing over from Carnarvon acquisition to Honeysuckle acquisition. We don't intend to call the crew during these next couple of passes. They are busy getting squared away after the EVA and getting prepared for this long stateside pass which will include television, so we'll just stand by and await any calls from them. We are at Honeysuckle now.

PAO This is Apollo Control at 74 hours, 33 minutes. Honeysuckle has LOS of signal. The Huntsville will acquire in about 2 and one-half minutes. We'll come back then. This is Mission Control Houston.

END OF TAPE

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PAO                    This is Apollo Control 74 hours 36 minutes and Huntsville has acquired.

CAPCOM                And Spider, Gumdrop, Houston through the Huntsville, standing by.

CAPCOM                Spider and Gumdrop, this is Houston through the Huntsville. How do you read me?

CAPCOM                And Gumdrop and Spider, if you read, we will see you over Hawaii in about 4 minutes.

PAO                    Huntsville has loss of signal. Hawaii will acquire at 74 hour 47-1/2 minutes. This is Mission Control Houston.

END OF TAPE

2nd T.V.

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 7447, CST 1247 229/1

PAO This is Apollo Control 74 hours 47 minutes and Hawaii has acquired.

SPIDER Hello, Houston. This is Spider.

CAPCOM Rog, Spider. Reading you loud and clear.

SPIDER Okay, on this TV pass, all you want is a TV on. You don't want a whole bunch of context, do you?

CAPCOM That is affirmative. We would just like to look at some nice, pretty pictures of you all.

SPIDER We don't have any up here.

CAPCOM (laughter)

SPIDER Okay, be advised we will be in basic comm, with the exception that the S-band will be in module 8 and we will have a TV breaker pushed in.

CAPCOM Roger. Copy you will be basic comm, S-band FM, and you will be having a circuit breaker shortly before 57. Firm?

SPIDER That is affirmative and we are in FM now and we will come over the hill, at 5-5 we will put the TV breaker closed.

CAPCOM Okay, at 5-5 you will be closing the breaker.

SPIDER Right.

CAPCOM Spider, this is Houston. I'm not trying to hurry you at all, just at your convenience, we would like to have an onboard readout of your supercritical helium.

SPIDER Roger, in work.

SPIDER For your information, the onboard readout of the O2 quantity is 57 percent, and be advised we repressed the command module for about 2 psi, to about 4.5

CAPCOM Rog, copy.

SPIDER Houston, it looks like it is about 750.

CAPCOM Rog, copy 750. And that verifies our reading and just for your info, we feel this is either a leak upstream of the --

SPIDER Houston, are you still there?

CAPCOM Rog, Spider. How do you read Houston?

CAPCOM Hello, Spider, this is Houston. Do you read?

CAPCOM Hello, Gumdrop, do you read Houston? I heard you over Hawaii, here.

CAPCOM Hello, Spider, Houston. How do you read?

PAO This is Apollo Control. We are about 1/2 minute away from LOS with Hawaii. We already have overlapping coverage from the Redstone, then we will go into the Goldstone station at 745725, for the TV pass.

END OF TAPE

CAPCOM Spider, Gumdrop - Houston. How do you read through the Redstone?

CAPCOM Hello, Spider, Gumdrop. This is Houston through the Redstone. How do you read?

CAPCOM Spider. Gumdrop. Houston. How do you read?

CAPCOM Spider - Gumdrop. How do you read?  
Houston.

PAO We do not have a picture yet and we're having voice communications difficulties here. There's a picture coming in now.

CAPCOM Okay, Spider. This is Houston. We do have a TV picture. We are receiving no voice.

SPIDER Roger. Understand you are receiving no voice.

CAPCOM Oh, that's it. You are coming through loud and clear, Rusty.

SPIDER Oh, crazy. You're reading voice now.

SPIDER Okay, we are in the process of recharging the PLSS. We have recharged it with oxygen and we've just in the water and we are going to vent now.

CAPCOM Roger. Your picture is good. We can see you loud and clear going down the checklist there like a good pilot.

SPIDER Right.

CAPCOM And Spider, this is Houston. Do we still have you in voice here.

SPIDER Sure do.

SPIDER Just kind of busy here. That's why we are not talking.

CAPCOM Okay. Understand.

SPIDER (Garbled). We are recharging the PLSS - and I'm eating my lunch.

SPIDER Yes, and the Commander is talking while he is eating. He's not suppose to do that.

SPIDER Okay, Houston. It's done.

CAPCOM Oh, very good. Hey, it's a tremendous picture, Spider.

SPIDER Great.

SPIDER How much longer do we have on this picture - ten minutes?

CAPCOM Yes. We've got it for about another 13 minutes, Spider. We can watch your whole lunch there - count your bites.

SPIDER Thanks.

CAPCOM You are welcome.

CAPCOM And Spider, were you reading me back over Redstone and Hawaii?

SPIDER I read you the first time, but that was only one time.

CAPCOM Okay. Understand.

SPIDER - just barely -

SPIDER Houston, Spider.

CAPCOM Go ahead, Spider.

SPIDER We wondered - going over the stateside there - the EVA. Did you read us all the way? We noticed that you didn't say anything, even when we asked questions.

CAPCOM We were reading everything - all of you - loud and clear and we just weren't getting up to you, but the COMM from you was terrific. We read all your conversations - sounded like you were really having a ball.

SPIDER Yes, pretty good view from out there.

SPIDER That's what you call a view from the top of the stairs - one stairs, that is.

SPIDER Have you got any words of wisdom on tomorrows flight plan yet, Smokey?

CAPCOM Roger. We'll cover that with you later if you want. We'll settle down - Have you got anything that you can give us along the line about clearing the tunnel. It sounds like that goes pretty well.

SPIDER Yes. The tunnel doesn't take long at all. It's getting ready to clear the tunnel.

CAPCOM Okay. And hey, Red Rover, we've - how about a big smile for the folks at home here. Let us know if you are feeling pretty good after that show.

SPIDER Yes. We're feeling great as a matter of fact.

SPIDER McDivitt doesn't look so good, but he feels all right.

CAPCOM Well, that was a typical friendly CDR smile.

SPIDER Great. You'll like it because I have got a better beard than they do.

SPIDER Straight teeth, but a crooked smile.

CAPCOM All right. I don't like you because you've got a better view than I do.

SPIDER That's okay. We just don't like you.

CAPCOM Okay, we are coming up on a keyhole now. We'll probably have a dropout for about a minute and 55 seconds or so and pick you back up again.

SPIDER Okay. Okay, do you want the TV to stay ON.

CAPCOM That's affirmative. Leave it just like it is. We'll just have a little blizzard for the folks at home and pick you back up again.

SPIDER Okay.

PAO Should be getting a picture momentarily.  
CAPCOM Okay, Spider. We've lost your picture here now. We'll be able to pick it back up shortly. I am curious, if we get the picture back, if you could show us a view out of the overhead window of the Command Module. Would that be possible?  
SPIDER Roger.  
CAPCOM Out the window and up around the tunnel area if you could and we are showing about 8 minutes left in the pass.  
SPIDER Okay. I'll show you a picture of Davey over in the Gumdrop. Wait a minute.  
CAPCOM Okay. We do not have your TV picture at this time. I'll let you know when we get it.  
PAO Here's the picture back now.  
CAPCOM Spider, we've got the picture back again now.  
SPIDER I'd show you a picture of the LM, but I don't think you could see much back there.  
CAPCOM Okay and just a word, Jim. We'd like to have you hold the camera - oh about a minute or so in each position to let the light compensate right. Maybe the picture will come in a little clearer.  
SPIDER Okay, I'll show you the one out of the top first - to make sure we get it.  
CAPCOM Okay.  
CAPCOM Yes, we can see it out - yes, it's a good view, Spider.  
CAPCOM Hey, that's terrific. Dave, how about waving to the folks at home.  
CAPCOM Hey, that's really great Spider and Gumdrop. It is really beautiful and we can see you waving, Dave.  
CAPCOM Hey, that's really a terrific shot.  
SPIDER Tell you what I'll do. While it is still light out there, maybe I can give you a view out of the top window of the LM down at the light.  
CAPCOM All right. Yes, let's do that and we've got about 6 minutes left. That's really great.  
SPIDER Well, I can't see much out there. I'll show you one of our quad.  
CAPCOM Hey, that's a terrific shot. You know that camera picks up pretty well, even when you are moving it fast and that's a beautiful shot of the quad now, Jim.  
SPIDER Okay. Now I'll show them right straight down the minus X axis, and as close as I can get it and you can just see the legs sticking out down there.  
CAPCOM Okay. The picture is pretty good, Spider. It's real clear. I'm not sure I can stick out the leg right

there at this time. We'll take a look out here.

SPIDER That's okay. Neither can I.

SPIDER You don't see very much of it, Smokey.

CAPCOM Okay. Well, I don't feel so bad then.

SPIDER Okay, just a minute.

SPIDER Let me show you a little more of the outside of the Command Module. I'll show you the side window and you can see the EVA light sticking out out there on a pole. And also part of the LM radar antenna.

CAPCOM Jim, can you move the camera a little closer to the window?

SPIDER It's right up against the window now.

CAPCOM Okay.

SPIDER I'm not sure that you can really see it that well.

SPIDER Here's a picture of the radiation meter. So far we haven't detected any radiation.

CAPCOM Oh, very good. Hey, that's a real good picture.

SPIDER It also might be interesting to look at the front of the LM and instrument panel.

CAPCOM Yes, that would be real great if you could show us a couple of views of that and maybe one of up in the tunnel so we can see how you get in and out of there on your way to work each morning.

SPIDER Okay, this is the inner storage assembly that we are looking at right. Instrument panel is right behind it. For an EVA we put all of our equipment in that big bag. You can see the telescope sticking out right above that with all the wires wrapped around it.

CAPCOM Okay, Jim. We can see where it is. It's just a little dark to show the AOP up real good, but we've got a real clear picture of your storage bag.

SPIDER Okay. Maybe I can take a diagonal picture of the instrument panel here.

SPIDER There's a docking target up there, why don't you try that.

SPIDER Okay.

SPIDER Smokey, can you see this picture?

CAPCOM Okay, we can see the cognizant warning panel with a couple or three light lit up, but it is just a little dark on the panel itself.

SPIDER Okay. We'll go back and I'll show you the docking target. It is green and yellow, too bad we don't have - green and red - that we don't have color TV and it is in the Command Module window now.

CAPCOM Okay. That will be a good shot if we can get to that.

CAPCOM All right, hey, that picture is fantastic,  
Dave - I mean Jim. Let's just hold it right there for awhile.  
CAPCOM That's really a terrific shot, Jim. We  
are getting the earth in the background and the clearness  
of the Command Module is outstanding.

SPIDER It's a clear Command Module.

CAPCOM Roger.

CAPCOM I guess I could say the Gumdrops look  
loud and clear.

CAPCOM Okay, Jim. We've got about a minute and  
a half left. That picture is beautiful.

SPIDER Okay.

CAPCOM And could we give it a try up the tunnel?  
Although it's probably pretty dark, but we'd like to see  
how it comes in.

SPIDER Hey, I'm not sure - say Dave is the tun-  
nel pressurized or not?

GUMDROP Yes. It's pressurized.

SPIDER Okay. We still don't have the tunnel  
and we can't get it open very far because we still have  
the OPS's on the back wall

CAPCOM Roger, we understand.

SPIDER Okay, there's a picture of the drogue  
sticking down into the tunnel with the probe stuck in the  
end of it and you can see the upper hatch of the LM is  
open.

CAPCOM Now hold the camera right there, Jim.  
It's real clear. It's a beautiful picture.

GUMDROP Stand by and I'll pull the hatch up.

CAPCOM Okay. It's really a clear picture,

Jim.

GUMDROP Hey, the picture we really ought to  
have for you are those six black hoses in the LM. In the  
Command Module snaking around three people who are trying  
to do something.

CAPCOM Roger, understand. We're going to lose  
you here, too, Dave, to delay the taking out the hatch.  
We're just about to drop you

SPIDER I think it's out now. I don't think I  
can see anything.

CAPCOM No, we've lost the picture. That's  
the end of the pass. Right on schedule

SPIDER It works.

CAPCOM Hey, we sure appreciate your taking  
that time out, Jim. That was great.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 75:10, CST 310 231/1

PAO This is Apollo Control at 75 hours 13 minutes. We're in acquisition at Antigua and will continue on through Vanguard. We will stay up live.

CAPCOM Apollo 9, this is Houston, excuse me, spider/Gumdrop, this is Houston. We should still have comm with you, how do you read?

SPIDER Spider loud and clear.

GUMDROP Gumdrop 5 by.

CAPCOM Okay, roger. We've got you for about another 5 minutes before we fall off the Vanguard, and we'd like a few comments from you how we're to shape up for tomorrow's work. What is - is it just getting on the suits and hoses and everything that's giving you the delay in the morning?

SPIDER Yes, the problem is that although we've got 3 people in there we can't have all 3 guys working at the same time, and once you get your suit on you become so useless, and everybody has to eat, we have to get the suits on, we have to power up the spacecraft, probably have to take them through a P52 or P51, and by the time you get through doing all those things it just takes 2 or 3 hours.

CAPCOM Roger, understand. We're starting the rest period tonight at 77:30, right about that, which is an hour and a half early, and as far as tomorrow morning goes, do you agree with getting up an hour and a half before the scheduled time? Is that going to give you enough time?

SPIDER I think maybe if we did some more work tonight we might be able to get up something like an hour before hand tomorrow. The trouble is we were up pretty late last night trying to start out all the things, you know we transferred the checklist back and forth and flight plans back and forth, it's really kind of a mess. Here's the thing that we can plan on doing is getting up something like an hour - checklist squared away and then we'll be ISA up for tomorrow morning tonight. I just hope we can get it all done in an extra hour. I tell you what, I have to look at tomorrow morning's flight plan before I can tell you, let you know exactly what we are going to do.

CAPCOM Roger, Spider, do you still read me?

GUMDROP Houston, Gumdrop's still with you.

CAPCOM Okay, Gumdrop. Spider sort of faded out there. We agree with that. We're going to do everything we can to get you turned in as soon as possible tonight, and we agree with the hour in the morning for getting up earlier, and guess we can discuss it more later, but we sure concur with all those.

GUMDROP Okay, very good, and we'll take a look at the flight plan later on, too, and get it all squared away.

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 75:10, CST 1310 231/2

CAPCOM                    Alright, fine.  
GUMDROP                   Spider, Gumdrop.  
SPIDER                    Go ahead.  
GUMDROP                   They copied, they agree with all that.  
SPIDER                    Okay.  
SPIDER                    Gumdrop.  
GUMDROP                   Go ahead.  
SPIDER                    Wonder what we ought to do with the  
super lock, whether we leave it here or bring it back.  
GUMDROP                   Okay, stand by.  
PAO                        This is Apollo Control, and the Vanguard  
has loss of signal. During this pass you heard Spacecraft  
Jim McDivitt explain why it takes so long to prepare for  
transfer into the lunar module.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 7520, CST 1320 232/1

PAO                      During this pass you heard spacecraft commander Jim McDivitt explain why it takes so long for transfer into the lunar module. When all three pilots are suited, it's very difficult for all of them to move around at the same time, doing what they are supposed to be doing. And as you heard, we will start the rest period today at 77 hours 30 minutes, that's 3:30 central standard time. And we are looking toward awakening the crew perhaps an hour early, an hour earlier than scheduled in the flight plan tomorrow, scheduled was to awaken them at approximately 87 hours elapsed time. We are looking toward getting them up about 86 hours now. The total duration of that television pass was 12 minutes 43 seconds. The station at Ascension Island will acquire Apollo 9 at 75 hours 25 minutes, about 4 minutes from now. This is Mission Control Houston.

END OF TAPE

APOLLO 9 COMMENTARY, 3/6/69, GET: 75:25 (1325)

233/1

PAO This is Apollo Control at 75 hours, 25 minutes  
and Apollo 9 is tagging up with Ascension; we'll stand by.

CC Gumdrop, Spider, this is Houston through  
Ascension and we are deleting this backup voice check.

GUMDROP Roger.

SPIDER Houston, this is Spider, as soon as we  
get the tunnel clear - we're going to be transferring back  
and drawing out (the trouble meter.) ? - - -

CC Roger. We agree with that. We'll just  
be standing by.

CC We'll see you over Tananarive at 42.

PAO This is Apollo Control, Ascension has LOS.  
Tananarive will acquire in about 10 minutes. This is Mission  
Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 7541, CST 1341 234/1

PAO This is Apollo Control at 75 hours 41 minutes. And Apollo 9 is coming up on the tracking station at Tananarive. We will stand by.

CAPCOM Spider, Gumdrop, Houston through Tananarive, standing by. We will have you for about 4 minutes. See you at Carnarvon at 56.

SPIDER Spider.

PAO This is Apollo Control 75 hours 46 minutes. And Gumdrop and Spider have completed the pass at Tananarive. Carnarvon will acquire at 75 hours and 55 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 7555, CST 1355 235/1

PAO This is Apollo Control at 75 hours 55 minutes. Carnarvon has acquisition.

CAPCOM Spider, Gumdrops, Houston through Carnarvon, standing by.

SPIDER Roger, Houston. Spider here. We've started to dry out.

CAPCOM Rog, understand.

CAPCOM And Rusty, could you give us a time on when you started?

SPIDER Roger. On my mark, we started 6 minutes and 40 seconds ago. 3, 2, 1, mark, 6 minutes and 40 seconds into the dryout.

CAPCOM Very good, thank you, Rusty.

SPIDER Roger.

PAO This is Apollo Control. That dryout refers to the LM sublimator, or waterboiler. They dry it out each time before they power down the LM so it that it won't freeze up.

CAPCOM Spider, Houston.

SPIDER Roger, go ahead, Houston.

CAPCOM Rog. Just to verify our TM here, Rusty. Several times we've noticed connects and disconnects of the suit isolation valve, suit isolation valve going from connect to disconnect. Could you clarify that?

SPIDER The commander just went off and we disconnected his.

CAPCOM No, I mean this was during the day.

SPIDER Yes, I guess we did it about four or five times today.

CAPCOM Okay, and are you connected now?

SPIDER That is affirmative. The LMP is connected and flowing and the commander is not.

CAPCOM Okay, that solves our problem then. Thank you, Rusty.

CAPCOM Spider, Houston.

SPIDER Go ahead.

CAPCOM Rog. We're recommending that you be off of the LM ECS hoses by 76 + 10. That's about 8 minutes from now, if you can make it. We would also like the time at which you go off. It's about 1 minute to LOS here at Carnarvon. And I'll probably see you around Hawaii around 21.

SPIDER Okay, I'll be on the command module hoses by that time.

CAPCOM And Spider, one more question. Could you - would you have time to tell me whether the suit isolation disconnect circuit breaker is in or out?

SPIDER Suit full control circuit is closed. I believe that's what you want.

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 7555, CST 1355 235/2

CAPCOM                    That's what I wanted, Rusty, thank you.  
It's closed.

SPIDER                    Roger.

PAO                        And Carnarvon has LOS. There is a very  
low elevation pass at the Huntsville. We miss Honeysuckle  
this time. We may or may not have air to ground at Huntsville.  
It is a low elevation pass. Acquisition there at 76 hours  
12-1/2 minutes. We will come back up then, in case there is  
air to ground. This is Mission Control Houston.

END OF TAPE

PAO                    This is Apollo Control, at 76 hours, 12 minutes. We are coming within range of the Huntsville now, we'll stand by.

CC                    Huntsville (garble)

CC                    Gumdrop, Spider, this is Houston through the Huntsville; I'll have you in about 2 and a half minutes. And Gumdrop, do you read?

SPIDER                This is Spider here; go ahead.

CC                    Okay, could you pass the word to Gumdrop there that we will pick him up; we'll pick ya'll up over Hawaii in about 8 minutes and 21 and the first item will be some block data that we would like to get out of the way and then we'll have some questions on the optics and on the cryo plan for tonight.

SPIDER                Roger. When did you say you were gonna do that?

CC                    We'll do that over Hawaii - coming across the states; we'll have Hawaii at 21 and we would like to have him have the block data pads out.

SPIDER                Okay, Houston;; we'll be all set.

CC                    Okay. And Gumdrop, we're trying to do some comm trouble shooting here; this will be VHF only at Hawaii, if we can make it, and I'd like to insure that you VHF the setup.

SPIDER                Okay, I'll set VHF only.

CC                    Okay.

PAO                    This is Apollo Control, Apollo 9 beyond the range at Huntsville now. Hawaii will acquire at 76 hours, 21 minutes. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 76 hours, 21 minutes.  
 Apollo 9 is at Hawaii now. We'll stand by.

CC Hello Spider, Gumdrop, Houston through  
 Hawaii.

GUMDROP Roger, Houston. Gumdrop, Spider.  
 CC Gumdrop, do you read Houston?  
 GUMDROP (garble) Houston (garble)  
 CC Roger; copy. Stand by.  
 GUMDROP Houston, Apollo 9.  
 CC Roger Apollo 9, this is Houston. I think  
 I've got you a little better now. How do you read me?  
 SC I'm picking you up 5 square; go ahead block  
 data.

CC Okay, reading block data. 0514A plus 307,  
 minus 1619, 080491046510523B plus 33 8 plus 14 85 0 82 12 23  
 47 10 0 53 3A plus 31 6 plus 14 85 0 83 46 06 46 63 0 54 3B  
 plus 25 9 plus 14 50 0 85 19 30 46 01 0 55 CC minus 21 0 minus  
 16 20 0 87 11 08 44 75 - and the last one - 0 56 AC plus 0 14  
 minus 0 24 0 0 87 47 06 45 80 and your SPS trim pitch minus  
 1.07 yaw minus 1.11 - end of update.  
 GUMDROP Roger; I missed the first 2 lines of the  
 third one.

CC Okay, the first two lines of the third one.  
 0 53 3A plus 31 6.

GUMDROP Okay, coming back at you. Ready?  
 CC Go ahead.  
 GUMDROP 0514A plus 307 minus 1619 084910 4651,  
 0523B plus 338 plus 1435 0821223 4710. 0533A plus 316 plus  
 1485 0834606 4663 0543B plus 259 plus 1450 0851930 4601, 055CC.  
 Minus 210 minus 1620 0871108 4475 056AC plus 014 minus 0240  
 0874706 4580.

CC Roger. Your readback correct; your trim  
 minus 1.07 and minus 1.11.

GUMDROP Roger. Minus 1.07 and minus 1.11.  
 CC Okay, and while I've got you in a writing  
 mood, let me pass you a nav check that will be for a state  
 vector we are going to load to you coming across the States  
 here.

GUMDROP Okay Houston, you faded; stand by one.  
 CC Roger.  
 CC We'll see you in about 30 seconds if you  
 read Gumdrop.

PAO This is Apollo Control. Hawaii's handing  
 over to Redstone here and there is a slight break.

CC Okay, Gumdrop, Houston again. Do you  
 read me now?

GUMDROP (garble) Houston.  
 CC Gumdrop, this is Houston. I think you  
 answered me. Try me again; see if I can read you.

GUMDROP Okay, how about now?  
CC Okay, you're loud and clear. Are you  
ready to copy a nav check?  
GUMDROP Roger. Go with the nav check.  
CC Alright. 0 77 all zeroes, all zeroes.  
minus 07 35 minus 02 499 12 72.  
GUMDROP Roger. 077 all zeroes, minus 07 35 minus  
024 and I didn't catch the rest. 1272.  
CC Roger. The longitude is minus 0 24 99.  
GUMDROP Minus 024 99.  
CC That is affirmative and Dave, if you've  
got time, there's a couple of questions I'd like to ask you  
about the optics.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 76:31, CST 1431 238/1

CAPCOM Gumdrop, this is Houston, could you give us crew in ACCEPT, please, we're going to uplink you a state vector.

CAPCOM Hello, Gumdrop, this is Houston, how do you read me now?

CAPCOM Okay, Gumdrop, I think we've got you again now. How do you read?

GUMDROP (garbled)

CAPCOM Okay, Gumdrop, Houston trying again. Do you read?

GUMDROP Okay, I read you again, how me?

CAPCOM Oh, boy, you are loud and clear now. I don't know what our comm troubles are, but we've got them. I'd like to talk to you a little bit about the cryo plan for tonight.

GUMDROP Okay, go.

CAPCOM Okay, we'd like this to be done just before you go to sleep, and you are going to have to allow about 30 minutes, and what we'd like to have you do is bring both H2 tanks up to 270 PSI, using manual operation of both heaters and fans in both tanks, and at 270 PSI in tank 02 should correspond to the caution and warning shift limit, so you should get a light on that. Then after you've got the pressure up we'd like to have you turn fans OFF, and place heaters in AUTO.

GUMDROP Okay, copied that. You want both H2 up to 270 with both the heaters and the fans, and then when we get the fans OFF and the heaters to AUTO, and expect a caution warning light on tank 02 at 270.

CAPCOM That's right, and this should be done right before your sleep period and you should allow about 30 minutes for this.

GUMDROP Okay, understand.

CAPCOM And Dave, can you answer a couple of questions about your optics?

GUMDROP Go ahead.

CAPCOM Okay, this is in regards to the problem you stated the other day about the telescope sticking in 64 degrees and manual drive?

GUMDROP Roger.

CAPCOM Okay, is that shaft counter permanently frozen at 64, or when you get it past 64 does it count again?

GUMDROP No, the mechanical counter is permanently frozen.

CAPCOM Okay, it is frozen, and the way we copied it you went to AUTO OPTICS to get past 64, is that correct?

GUMDROP Yes, that's one way, it was a sort of transient kind of thing. The feedback readout froze the day

GUMDROP before, but we didn't notice any slowing up, then on the morning when I realigned, when I came - just before I gave you the comments I got stuck in 64 one time but got it past and haven't had any trouble since.

CAPCOM Okay, understand that you do not have any trouble with it now with the exception of the counter being at 64 degrees.

GUMDROP That's affirmative and I've done 2 more alignments since then and I've run back and forth across about the 60 degree point and it doesn't seem to hang up any more.

CAPCOM Okay, that's real good, we were really scratching our heads on that one, so it sounds like you are squared away for tomorrow then on it.

GUMDROP Yes, I believe it's working alright, and the CMC autodrive seems to work fine, too.

CAPCOM Okay, real fine, that helps us out, and at this time I would remind you of the waste water dump, which we are showing down here at about 77:30, and we're showing your rest period starting right after, about 77:40.

GUMDROP Alright, thanks for the reminder. We'll even try to chlorinate the water before we go to bed.

CAPCOM Okay, very good. And Gumdrops also like to remind you sometime we would like to get a dosimeter reading.

GUMDROP Okay, we'll get that.

CAPCOM And Gumdrops, we're through with the computer, it's yours.

GUMDROP Roger.

GUMDROP Houston, Gumdrops, I've got the dosimeter readings if you want them.

CAPCOM Alright, go ahead.

GUMDROP Okay, 3112 6112 8012 for the CERT and P&LMP.

CAPCOM Roger, I copy those, Gumdrops. Thank you very much.

GUMDROP Roger.

CAPCOM And Gumdrops, is Rusty still over in the LM?

GUMDROP Roger, we're sort of cleaning things up and fixing chow with some good water in it.

CAPCOM Okay, real good. I'll get with him later, then. There is a note I want to give about the checklist here, a malfunction procedure.

GUMDROP Okay, he ought to be back over in about a half hour or so.

CAPCOM Okay.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 7641, CST 1441 239/1

CAPCOM - and no need to answer, Gumdrops. This is Houston. Just like to remind you, you are still in accept. We would like to have you go back to block whenever you get around to it.

GUMDROP Okay, thank you.

CAPCOM Roger.

SC Hello, Houston, Apollo 9.

CAPCOM Go ahead, Apollo 9.

SC I've got a question for tomorrow. When we finish up with the LM, we are collecting a tremendous amount of garbage and stuff in the command module here and we have to bring a bunch of books and things like that back from the LM. I'd like to take one of these great big temporary storage bags, fill it with a whole lot of garbage, and leave it in the LM. This means that the doctors aren't going to be able to figure out when we eat, because all the white spots, and red spots, and blue spots of the food bags are going to be over there in the LM. We've been intermixing bags and stuff here just in an attempt to get something to eat whenever we can, so that data is sort of gone down the tubes anyway.

CAPCOM Roger, Apollo 9. We copy that.

SC Okay, could you let us know, so we can drop off a couple of big bags of junk over there.

CAPCOM Roger. Why don't you go ahead and do it?

SC That'll settle my plan too, Stu.

CAPCOM Say again, Apollo 9.

SC I said, that will settle my plan, too.

CAPCOM Rog. Now, let's take your word. We'd just like to caution you. Could you sort of fasten it down with one of the restraints or something.

SC Yeah, we'll have it fixed so it doesn't float around. But we've just got to get rid of some of this junk.

CAPCOM That sounds like a great idea.

SC We just haven't had much time for playing housekeeping and it's really building up.

CAPCOM We appreciate that. You all are doing a magnificent job and we're really pulling for you.

SC As a matter of fact, right now we are filling for water from the LM because that water tastes better.

CAPCOM Roger. Understand the water in the LM is much, much better than that in the command module.

SC Yeah, it doesn't have any bubbles and you can drink it without blowing up like a balloon.

CAPCOM Hey, that sounds great.

SC                    Yeah, but you ought to see where they go when they ask for a soda.

CAPCOM                Of course, I guess it's a little inconvenient to always pull that LM around just so you will have some good water to drink, isn't it?

SC                    Yes, it's sort of going to be in the way after tomorrow.

CAPCOM                Roger.

SC                    Besides of which I'm getting tired of looking at the top of it through the command module windows. It sort of blocks the view.

CAPCOM                Yes, I guess that cuts down on your geography viewing, there.

SC                    Man, I haven't even had time to look at the ground yet.

CAPCOM                Yeah, I bet I got more view of the ground today from your TV show than you have so far.

SC                    Very good view. I think I'd rather have it when I did the docked DPS burn when we went across the States, face down. That was really very pretty.

CAPCOM                Yeah, that docked DPS burn was a beautiful thing. It was really great.

CAPCOM                Apollo 9, Houston. One other question.

SC                    Go ahead.

CAPCOM                Roger. We would like to verify that the heaters on the LM windows were off all day.

SC                    Roger, that affirmative. They were off all day.

CAPCOM                Okay, thank you.

CAPCOM                And Apollo 9, we are going to lose you here at Antigua. We will see you over Ascension at about 59.

SC                    Roger. Hey Houston, it looks like we all dried out the waterboiler, what do you think?

CAPCOM                Stand by, Apollo 9.

CAPCOM                That's negative. We don't think it's dry yet, Apollo 9. We will try to get you a hack here on our estimate.

SC                    Okay.

CAPCOM                Apollo 9, Houston. About 5 more minutes. If you read me, you can shut down the water boiler, I mean it will be dried up.

PAO                    This is Apollo Control. We have LOS at Antigua. Jim McDivitt is back in the command module. Rusty Schweickart is still in the LM and it looks like he has drawn the role of chief cook for the crew for this mission. As you heard, Rusty is preparing the meals for all three

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 7641, CST 1441 239/3

crewmembers, using the LM water supply. The water in the command module is that produced by the fuel cells, whereas the water in the LM was loaded prior to launch and is tastier. So they like to prepare their food with the better tasting water. Ascension will be the next station to acquire at 76 hours 58 minutes. This is Mission Control Houston.

END OF TAPE

CAPCOM Okay, very good.  
PAO This is Apollo Control at 76 hours, 57 minutes, GET. The spacecraft is approaching the Ascension Island tracking station. We have had - we are in the process, rather, of having a shift change here at the present time with the Gold team replacing the white. However, the Flight Director will not be Gerald Griffin, but rather Clif Charlesworth, who is replacing him for this shift. We expect acquisition in a few more seconds. In the mean time, a administrative announcement. We are estimating that the change of shift press conference involving the white team will take place in Houston at 3:30, that is 3:30 Central Standard Time. Mean while, let's standby for the Ascension acquisition.

CAPCOM Apollo 9, Houston.  
CAPCOM Apollo 9, Houston through Ascension.  
SC This is Apollo 9.  
CAPCOM Apollo 9, this is Houston through Ascension. We've got a question on that sequence camera, Dave. Did we report - record that yours broke today?  
SC Yes (garble) trouble shooting (garble).  
CAPCOM Roger, understanding that you were trouble shooting, and then you faded out. We will try you again in a little bit.  
SC I said I put in a spare fuse (garble), and now it works fine.  
CAPCOM Roger, understand. Tremendous. And Apollo 9, what we were considering to make sure we got the pictures of the undocking and so forth, is that maybe you would like to swap that one with the one in the LM.  
SC (garble). Houston, this is Apollo 9.  
CAPCOM Go ahead.  
SC I have sort of a climax on the summary of what we did today. I think that the procedures that we have worked out for the EVA transfer from one spacecraft to another is no problem what so ever. The procedures are good and I think we can plan on using them henceforth if they are needed.  
CAPCOM Roger Apollo 9, we copy and agree with that. From (garble) in your conversation, it did sound like they were real good. It sounded like the getting in and out of the hatch was quite easy and I heard Rusty's comments on the handrail, sound like they were pretty good.  
SC Yes, everything seems to work.  
CAPCOM Apollo 9, we are ready to shut down, it looks like the water boiler is dried up.  
SC Roger, very good.  
SC Houston, here comes a TM count.  
CAPCOM Apollo 9, this is Houston. Say again.  
SC Here comes a TM count.

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 7657, CST 1457 240/2

CAPCOM Okay, thank you.

PAO We have had loss of signal at the  
Ascension tracking station. The spacecraft will again be  
acquired at Tananarive at 17 after the hour. At 77 hours,  
6 minutes, ground elapse time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 7716, CST 1516 241/1

PAO                    This is Apollo Control at 77 hours, 16 minutes into the mission. The spacecraft at the present time is on its 49th revolution around Earth. It will be acquired by the tracking site at Tananarive in about 34 seconds or so. We've been advised that the comm through Tananarive all today has been - all during the day - has been marginal, however, we will stand by to listen to any conversation between the crew and the CAPCOM here in Houston, who for a few moments at least, is going to be Astronaut Al Worden.

PAO                    We have an indication that the spacecraft has moved beyond the range of the tracking site at Tananarive and evidently there was no requirement for transmitting information for the crew on that pass. The next station to acquire will be the Carnarvon tracking station at 7730, about 10 minutes from now. At 77 hours, 20 minutes Ground Elapsed Time, this is Mission Control in Houston.

END OF TAPE

CAPCOM This is Apollo Control at 78 hours, 17 minutes into the flight. During the press conference, which concluded just a while ago, we had recorded some conversation between the crew and the ground here and are now prepared to play that back for you.

CAPCOM Apollo 9, Houston.

SC Roger, Houston, Apollo 9.

CAPCOM Roger. Rusty, got a message for you if you're ready to copy.

SC Roger, stand by, let me get a book.

CAPCOM Okay, it's just a message on the malfunction procedures, you don't need to copy.

SC Okay, go ahead.

CAPCOM Okay, the message is, we've reviewed the electrical emergency procedure that you and Al came up with prelaunch and LMS and the emergency procedure in the back of the rendezvous check list. In the light of this review, we recommend that you do not use either of the procedures and use instead the existing malfunction procedures.

SC On the electrical system?

CAPCOM AFFIRM

SC Okay. Hey, Stu, how are you?

CAPCOM Fine, Jimmy.

CAPCOM Apollo 9, Houston.

SC Go ahead Houston, Apollo 9.

CAPCOM Roger. I'm ready to copy the LM batteries, if you've got them there.

SC Roger. Bat 1, 2, 3, and 4 all 31 volts. Bat 5 and 6 are 37. CDR and SC bus is 31, ED Bat A 36.5 and ED Bat B 37.3.

CAPCOM Roger, copy. Bat 1, 2, 3, and 4 are 31, Bat 5 and 6 were 37, CDR and SC bus is 31, ED Bat A 36.5 and ED Bat B 37.3.

SC Roger.

CAPCOM If you are at that point now, we can go ahead and copy the systems stuff from Gumdrops.

GUMDROP I don't think we've generated that yet.

CAPCOM Okay.

GUMDROP The flight plan a little bit.

GUMDROP It's already 77:33 here and according to our other scheme, we're were going to be to bed in an hour or something like that. It looks like we're going to make it about 39 hours, just like another regular flight plan here.

CAPCOM Roger.  
GUMDROP Early tomorrow.  
CAPCOM Going to get up early tomorrow?  
GUMDROP Roger. We were supposed to get up  
over Ascension about 86:30, but I recommend we get up over  
Guam at about 85:40.  
CAPCOM Roger. Get the plans to get you up  
about 85:30 to 40.  
GUMDROP Okay, fine. We'll try to organize the  
spacecraft so we're in better shape tonight before we go  
to bed so we'll be able to get over there, but I don't  
want to stay up all night doing it either.  
CAPCOM Roger, understand. Are you going to  
stow away any of your stuff to put in the LM for tomorrow?  
SC Roger. We're still putting the spacecraft  
back together, putting the drogue, the probe and stuff  
like that back in the tunnel and rearranging the other  
stuff.  
CAPCOM Okay, you're going to get a chance to  
get the spacecraft batteries and RCS readout for us?  
SC I'll get that for you in just a  
minute.  
CAPCOM Okay.  
CAPCOM Apollo 9, Houston.  
SC Go ahead, Houston.  
CAPCOM You can go auto on the heaters now  
and turn the fans off.  
SC Okay, I autoed the heaters and turned  
the fans off.  
CAPCOM Yes, I need two things.  
SC Roger, H2 heaters.  
CAPCOM Roger, Apollo 9, Houston, we're going  
to lose you here for a minute and we'll pick you up at  
Guam for the systems stuff. That'll be about 41.  
SC Okay, fine.  
CAPCOM Apollo 9, Houston.  
CAPCOM Apollo 9, Houston.  
CAPCOM Apollo 9, Houston, at Guam  
SC Houston, Apollo 9, go ahead.  
CAPCOM Roger, Apollo 9, Houston, we've got a  
couple of questions to ask you about the LM IMU heater. Do  
you recall placing an IMU standby circuit breaker in?  
SC The IMU standby circuit breaker has never  
been out to my knowledge.  
CAPCOM Roger. I also have a question on opening  
the translunar bus type circuit breaker. Did you open those  
before you got out?

SC I believe not. I believe they are closed.  
CAPCOM Roger. we might have some work on  
that in a minute.

SC Roger.  
CAPCOM Apollo 9, Houston.  
SC Go ahead, Houston.  
CAPCOM Roger. The problem with IMU heater  
is that we're not seeing it crackling down here and  
apparently with the translunar bus type circuit breakers  
in, you get a ground return path and they don't see the  
total load going into the LM. So, they are investigating  
right now a little further to see if they can discern some  
cycling on the IMU.

SC Roger, understand. When do you think  
we'll have some word?

CAPCOM We should have it here very shortly  
for you. In the meantime, we can copy that systems stuff  
if you have it ready, Dave.

SC Dave is still closing out the tunnel,  
that's why we'd like to know. He's stopped work right  
now.

CAPCOM Roger, understand.

SC It's already all closed. I beg your  
pardon.

CAPCOM Apollo 9, Houston.

SC Go ahead, Houston.

CAPCOM Roger. We're taking a look at all  
of the bus currents down here now, Rusty, and we won't  
have a good story for you until you get to Hawaii whether  
the thing is okay for tonight or not.

SC Okay.

CAPCOM The initial interpretation down here  
right now is that the IMU is cycling and they are seeing  
some variations in the currents now. It looks initially  
like it's probably okay.

SC Okay, thank you.

SC Houston, Apollo 9.

CAPCOM Apollo 9, Houston. Go.

SC Okay, ready to copy the systems yet?

CAPCOM Roger, Go.

SC Okay. Quad quantities, A, B, C and  
D, 75777172, Bat B 37.0, Power A and B 37.1. The rear  
module quad temperatures all are off scale high except  
6 Charley which is 4.6.

CAPCOM Roger, copy. Quantities A, B, C and D, 75777172, Bat C 37.0, Power A 37.1, Power B 37.1, and injector temperatures all off scale high except 6 Charley, which is 4.6.

SC Roger.

CAPCOM Apollo 9, Houston. We'd like for you to confirm that your're all in comm basic on the audio centers.

SC I can't tell what Dave is .....

SC We have one man off the (garbled) if that's what you wonder.

CAPCOM Roger. That answers that question. Like to talk for a minute about this IMU heater. Looks like all the currents they are reading down here are about the same as they were reading last night. However, with the translunar bus power closed, if there is anything else pulling current in the LM, it won't show up on their monitoring down here to the extent they can tell what's going on. So we're trying to come to a decision now whether to recommend going back up in there and opening up those circuit breakers or not.

sc Okay.

CAPCOM Apollo 9, Houston.

SC Go ahead.

CAPCOM Roger, Apollo 9. We'd like to get some sort of feeling from you how long you think it would throw you back in the cycle - your sleep cycle - to go back up in there and open the translunar bus ties. We're still working on the data down here and we can't get any good answer probably until you get to the states. Maybe we could save some time if you just went ahead and did that.

END OF TAPE

SC Houston, Apollo 9.  
CAPCOM Apollo 9, Houston.  
SC Roger, you called just as you had broke  
lock last time. Why was it you called now?  
CAPCOM Okay, we're discussing this LM on your  
heater problem and they're still massaging the data down  
here to see whether we're okay for the night or not. In the  
meantime we wanted to get a feeling from you as to how much  
that would cut into your sleep cycle if you just went ahead  
and got in the LM and pulled those circuit breakers. I think  
that the problem is that we really can't give you a good  
feeling for what you've got with those circuit breakers in.  
We don't know what other systems are powered up and we don't  
have a good way of monitoring what's going on.  
SC Houston, Apollo 9.  
CAPCOM Apollo 9, Houston. Go.  
SC Houston, do you read Apollo 9?  
CAPCOM Roger, read you loud and clear. We'll  
have an answer for you on these circuit breakers in just a  
minute, Apollo 9.  
SC Okay, fine.  
CAPCOM Apollo 9, Houston.  
SC Go ahead, Houston. Apollo 9.  
CAPCOM Roge, Dave. How long would it take you  
to get back up there and pull those circuit breakers?  
SC It's going to take about 30 minutes to  
clear the tunnel and go back up there to pull the circuit  
breakers out and get back to here. That's if we go like  
mad.  
CAPCOM Roge. Okay, the problem down here, Jim,  
is that we don't know what else is on the line right now  
and we don't have a good way of monitoring it with those  
circuit breakers in. They're able to catch the IMU heater  
cycling and most of the systems seem to be okay for the night,  
but we - there's an uncertainty as to what the configuration  
is and what's pulling the power at this point.  
SC I don't - what's the uncertainty about  
what the configuration is? Houston, I don't understand what  
the uncertainty is.  
CAPCOM Roge, Apollo 9, Houston. Stand by one.  
CAPCOM Apollo 9, Houston. The problem is that  
they're monitoring the command module loads and they don't  
know whether the loads that they are reading are command  
module only or some LM loads which we don't know about at  
this time.  
SC Okay, I don't think there's any doubt

that the IMU standby circuit breaker is in, if that's what they're wondering about.

CAPCOM Yes, roger. And -

SC I'll tell you, if we're going to do it we ought to get going on it and not keep talking about it all night.

CAPCOM Yes, that's firm. Let's do it. Stand by one, Apollo 9.

CAPCOM Apollo 9, the decision down here is for you to go pull the circuit breakers.

SC Okay, what are we going to do about the rendezvous tomorrow?

CAPCOM Apollo 9, Houston. I guess we need to know what you want to do about that. We can press along as planned and it will mean you'll get a half an hour less sleep.

SC Yes, minus the other hour we subtracted from it.

CAPCOM Roge.

SC Add all this up and see what it comes to.

CAPCOM Say again, please, Apollo 9.

SC Roger, let me add up sleep times that we're going to have before tomorrow and see what it comes to.

CAPCOM Roger, copy.

SC If we went to bed right now, we'd need 7 hours and 30 minutes. We're not going to be in bed for another hour and a half at least.

CAPCOM Apollo 9, Houston.

SC Go ahead, Houston.

CAPCOM Roge. It looks like we can probably slip the rendezvous one rev tomorrow morning to make up for the sleep time. We might have some problems with communications with the sites that we have available but we can work that out through the night.

SC Well, I don't want to do that. We've got enough problems. If we have any problems during that rev we're going to need that extra rev to recover from it.

CAPCOM Roger, understand.

SC I don't want to change - I don't want to slip the site ... around and we need all the ... we can get on this thing and we need to have that extra rev in there in case something goes wrong. Also, it's going to jeopardize the APS burn and depletion too.

CAPCOM Roger, understand.

SC Let's get started so we can get this thing done,

CAPCOM Roger.

- By the way, can he tell you how much

they've got left?

CAPCOM Apollo 9, Houston.

SC Houston, Apollo 9.

CAPCOM Okay, just a couple more things before we turn you loose for the night here, Jim. When you get the circuit breakers open in the LM you can perform the system test to verify that everything is okay and if you're ready to copy I'll give that to you.

SC We already had those circuit breakers open, Houston. What else do you want now?

CAPCOM Okay, check system test meter on position 4 Delta and you should read .5 for 26 seconds, then 2.0 for 5 seconds, and if that looks okay, why, we'll skip that one. The second thing is to remind you of the waste water dump down to 25 percent before you turn in for the night.

SC Okay, Houston, and we've already checked 4 Delta and waste water dump is running properly.

CAPCOM Roger, and we'll see you in the morning.

SC Okay, adios.

CAPCOM Adios.

PAO As you heard, if you were monitoring that conversation, we requested that the crew go back into the LM to check those circuit breakers that are associated with the current going into the IMU. This is not a major problem nor will it in any way compromise the rendezvous activity for tomorrow. However, what it does is that it cuts into the astronaut's sleep cycle or rest cycle for about some 20 to perhaps 30 minutes and the tail end of the conversation indicated that they would - the astronaut's when they accomplished their task, would settle down for their rest cycle. At 78 hours, 34 minutes, with the spacecraft now over the Atlantic Ocean, it will be acquired next by Tananarive, this is Apollo Control.

END OF TAPE

PAO This is Apollo Control at 78 hours, 54 minutes into the flight. Spacecraft is currently - has been acquired by the Tananarive station at the present time. And, the crew before we lost our last transmissions, we found from the crew that they were able to quickly get into the LM. As a matter of fact, it took them about less than 11 minutes, and configure the circuit breakers properly. And that later was checked out between the ground and the spacecraft and everything looked okay. All of the telemetry checked out between the two units. Present time the crew is in its rest cycle. I should point out that this would have not impacted the rendezvous or tomorrows activities. Again as I said earlier it would - it did however, cut into their rest cycle. Indicated however, they could remove the mechanism to get into the LM without too much difficulty. With reference to the circuit or the potential circuit breaker problem, it could have impacted on the primary Guidance and Navigation System in the LM. So, that was the reason that the ground here asked that the crew check it, so that they could check to see that they were properly, the breakers were properly configured, so an excessive load would not have been placed on the Command Module LM interface. If they would have gotten more deeply into the rest cycle, it probably would have been impossible to monitor - it could have been impossible to monitor on the ground the LM CSM electrical interface, or as least it would have been more difficult. Therefore, to ascertain that the - those heater circuits were being - were in the proper configuration so that current could be supplied. And also, so that no unwanted loads would have entered or could have entered through that interface between the LM and CSM, that electrical interface. As it is, the circuit breakers were checked, configured properly, spacecraft personnel returned back to the Command Service Module and closed out the hatch, and they are now in their rest cycle, and it is the desire of the ground here not to disturb them anymore for the evening, for the balance of their rest cycle, so they can get their proper rest in preparation for tomorrow's extensive activities involving rendezvous. At 78 hours and 58 minutes into the flight of Apollo 9, this is Apollo Control.

END OF TAPE

PAO This is Apollo Control at 79 hours 30 minutes into the flight. The spacecraft at the present time is approaching the tracking station at Hawaii we would expect acquisition there in about another 10 minutes or so. However we don't think that there will be any conversation with the crew since they are well into their rest cycle at this time. In the process apparently of bedding down. Going back to the earlier activity where one of the crew men had returned to the LM for a quick trip to check circuit breakers. The total evolution there back into the LM required about 11 minutes or so of crew time. We're here on the ground we're not certain who made the quick trip back into the LM but the flight surgeon on the basis of the mean heart rate that they were monitoring at the time, believes that it was the LM pilot, astronaut Schweickart. He reconfigured the circuit breakers from the closed position, which they were in, to the open position. Two circuit breakers were involved in this case, they are identified as the translunar bus tie circuitbreakers and their function is to, is to select a separate electrical ground path from which load current can be monitored, that is monitored here on the ground as well as in the command module. Those circuit breakers are located, one on either side of the panel, so one on either of the side panels. That is one on the right side panel on the commander's side and one on the left side panel or ... belay that, one on the right side panel on the LM pilot side and one on the left side panel, the commander's side. At approximately 78 hours and 9 minutes those circuit breakers were opened and the normal currents were obtained at that particular time. Right now all the systems are reading normally and as the spacecraft passes over Hawaii at 79 hours and 33 minutes this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 79:54, CST 1754 246/1

PAO                      This is Apollo Control at 79 hours, 54 minutes, ground elapsed time. The spacecraft at the present time is in the 50th rev. It is currently approaching the West Coast of South America, and everything seemed to look okay during the last pass over the tracking stations at Guaymas and Texas, when they were acquired by those two sites. The current orbital altitudes of the spacecraft at this time are 122.9 nautical miles, at the low point or perigee by 128 miles at the high point or apogee. The crew evidently has settled down in its rest cycle at the present time. No communications were maintained with the crew over the stations that were acquired. Systems are looking okay in the spacecraft, at 79 hours, 55 minutes, this is Mission Control.

END OF TAPE

PAO                    This is Apollo Control at 80 hours 50 minutes ground elapsed time. The spacecraft presently is in the West Pacific area. Hawaii acquisition will be coming up in a matter of oh about some 14 minutes. Present time the crew is in its rest cycle, the flight surgeon, Doctor John F. Zieglschmid reported a little earlier that on our last pass we were unable to receive any biomedical data on the crew and he indicated that this was probably due to the fact that the crew was still in the manner of housekeeping, stowing things, that sort of thing and they hadn't yet settled down for a, a period of rest. The countdown clock has now been activitated, that is the clock that tells them when they are going to be awakened again. And at this time they still have some 4 hours and 48 minutes of rest time left having consumed about 1 hour and almost 52 minutes of their rest cycle. We would expect according to the physician, flight surgeon here that on the pass coming up over Hawaii we will get some biomedical information on the status of the crew which could permit us to give some kind of an analysis on their, the nature of their rest. Meanwhile we will stand by, maintain a minimum of com with the crew, in order that they can get more rest. At 80 hours 52 minutes into the flight this is Apollo Control.

END OF TAPE

PAO This is Apollo Control at 81 hours, 52 minutes into the flight, and at the present time the spacecraft is approaching the tip of Africa. We had some medical information, some biomedical parameters transmitted to the ground here, from the pass over Hawaii at about 42 minutes ago. At that time the Commander's heart rate was in the low 60's, and his respiration was about 12 per minute. The Command Module Pilot's heart rate was in the low 40's, with a respiration rate of about 14. This lead the Flight Surgeon to report to the Flight Director, that he thought both of the Astronauts, that would be McDivitt and Dave Scott, were in a sound sleep at that time. A little bit ago, we had the scribe plotter in front of us here at Mission Control, that is the 10 foot by 20 foot rectangular viewing device on which the ground tracks are plotted. That was down - the display was down for about 1/2 hour or so. We had some difficulty with the characters. They were not printing out properly, there was no difficulty with the spacecraft or the tracking; but some of the characters, the numbers and the figures were not scribing out properly. The problem probably was in the character generator in the back, which caused these to be displayed improperly. The scribe plotter is back up at the present time and everything looks to be normal on the board. As far as spacecraft systems are concerned, the last pass that we had indicated that all systems were functioning well while the spacecraft was in its powered down configuration. At 81 hours, and 55 minutes, GET, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/6/69, GET 82:50, CST 2050 249/1

PAO This is Apollo Control at 82 hours, 51 minutes into the flight. The spacecraft has just passed beyond the Hawaii tracking station a few moments ago. At 82 hours and 46 minutes into the flight, the CAPCOM here, Astronaut Worden, called the Apollo 9 crew for purposes of a check on heaters and fans and we have that 25 or so seconds of recorded conversation which we will play to you at the present time.

CAPCOM Apollo 9, Houston.  
CAPCOM Apollo 9, Houston.  
SC Houston, this is Apollo 9.  
CAPCOM Roger, Apollo 9, Houston.

Pressure in your H2 tanks is dropping a little faster than we had anticipated. Sorry to disturb you but we'd like you to go manual heaters and fans until the pressure goes to 260 and go heaters auto and fans off so that you won't get a master alarm.

SC Okay, you want us to go manual heaters and fans on H2 number 1 until it gets to 265 and go heaters manual and fans off.

CAPCOM Roger, go to 260, Jim, and then heaters to auto and fans to off and that's H2 tanks 1 and 2.

SC Okay, fine.

PAO That was a sleepy Commander McDivitt, Commander Jim McDivitt, that you heard, the spacecraft Commander. Immediately after that little exercise the Surgeon reported that the Commander's heart rate returned back down to in the 60's. His mean heart rate returned back down into the 60's, indicating that he did the little operation required and went back to sleep almost immediately. In the meantime the command module pilot slept peacefully, evidently, through all of it, for his heart rate remained at the average, 40 average level. At 82 hours, 53 minutes into the flight of Apollo 9, this is Apollo Control.

END OF TAPE

PAO This is Apollo Control at 83 hours, 50 minutes ground elapsed time. We have about an hour and 49 minutes of the rest cycle left before the Apollo 9 crew will be awakened to start what promises to be a very busy day. Astronauts Jim McDivitt and Rusty Schweikart again will transfer into the LM and start checking out the systems leading to the LM-CSM docking - or undocking exercise and follow on rendezvous. Formation flying LM inspection will follow the checkout and then next a small thrust with the CSM, or as it will be called frequently, the Gumdrop reaction control system thrusters. After separation from the LM will place that command service module in an orbit or maneuver for a small scale rendezvous. This has been defined as the mini-football. The maximum distance between the spacecraft during this time is something on the order of 3 nautical miles. About one and a half revolutions after the separation Spider, that's what the LM will be called frequently, Spider's descent engine is ignited to place the LM in an orbit ranging 11 to 12 nautical miles above and below the Gumdrop orbit. After one and a quarter revolutions it's fired again, a second time, and this places LM in an orbit about 11 nautical miles above the command service module. At the same time the distance between the two spacecraft will be opening. The LM descent stage a little bit later will be jettisoned and then the LM upper or Spider's upper stage, reaction control thrusters will be fired and this will lower the perigee, the LM spacecraft perigee, to about 10 miles below the CSM orbit. What it does, it sets up conditions for you might call circularization. The maximum Spider to Gumdrop range will be on the order of 95 nautical miles during this sequence. That will be the greatest distance - the greatest distance the two will achieve. Next circularization of the upper stage orbit at 10 nautical miles - sorry about that - belay that -- the ascent stage orbit at about 10 nautical miles below the CSM and the closing range will be affected. This, of course, will be the first duty in the mission for the 3,500 pound thrust upper stage engine. As that upper stage approaches to some nautical, some 20 nautical miles, behind and about 10 nautical miles below the command service module, the commander will thrust along the line of sight, that will be the LM commander, Jim McDivitt, will thrust along the line of sight toward the CSM using the upper stage RCS thrusters. He'll make necessary mid-course corrections and braking maneuvers until

PAO rendezvous phase is completed. After the two vehicles dock, the two astronauts will remove certain items out of the LM and into the command service module and then the ascent or upper stage will be prepared for what they call an APS burn to depletion, as that propulsion system burn to depletion of the propellants. The CSM will maneuver away a safe distance, something on the order of half mile. After the final separation and undocking the three crewmen, of course, will have been back - moved back into the CSM, it will move away and this ascent engine then of the LM will be fired in what will be the final maneuver using that vehicle and we suspect will be placed in an orbit with an estimated apogee of something on the order of 3,000 to 3300 nautical miles and with a perigee of something on the order of 131 nautical - 130, a very highly elliptical or egg-shaped orbit. That will conclude a busy day for the crew. At the present time they're still in their rest cycle. Spacecraft is approaching the Westpack area, the surgeon reports his last downlink communication of bio-medical information data, revealed that the astronauts were again sleeping rather soundly. The spacecraft systems during this phase of powered-down flight, all are functioning well. So, at 83 hours, 58 minutes, ground elapsed time, this is mission control in Houston.

END OF TAPE

PAO                    This is Apollo Control at 84 hours 47 minutes ground elapsed time. The spacecraft at the present time is over the Atlantic Ocean, heading toward the ascension island tracking station. We recently had reports from some of the engineers in Mission Control center here on the spacecraft's operation. The electrical environmental communications engineer noted that all of his systems were functioning very well, and shortly thereafter the CSM guidance navigation and control engineer, Mr. Larry Cannon said all parameters are fine, stable on his console. The surgeon had received some information, some down link information on the biomedical parameters, on the two astronauts that are, that are instrumented, currently instrumented. He noted that Jim McDivitt, was reading his heart rate, was reading in the low 50's while the Command Module pilot, Dave Scott his average heartrate was in the low 40's, and of course with those parameters the surgeon concluded that both of the men still were sleeping very soundly. This was about 40, 45 minutes ago and at the present time they are about 50 minutes from the time when they will be awakened, to begin those activities which will lead up to a rather busy day including the rendezvous, the undocking exercise, the rendezvous with the LM and the subsequent, rerendezvous or subsequent redocking. There is a shift change underway here at mission control center with the members of the white team coming on and the members of the gold team taking off. So at 84 hours 50 minutes into the flight this is mission control in Houston.

END OF TAPE

WAKE UP

A/9 Mission Commentary, 3/6/69, GET 8536, CST 2336, 252/1

PAO This is Apollo Control at 85 hours 36 minutes ground elapsed time. The countdown clock for awakening the crew of Apollo 9 now shows some 3 minutes 49 seconds remaining in the rest period. Meanwhile here in Mission Control Center while we're waiting for spacecraft communicator Ron Evans to place his initial call to the crew to wake them up and act as an alarm clock. Orange team flight director Pete Frank is polling the various console positions to determine the status of the various systems. Now what the opinions are of the flight controllers on the readiness to continue with today's rendezvous sequence. Decision was made just a few moments ago actually to transfer both of the men, that is lunar module pilot Rusty Schweickart and commander Jim McDivitt through the tunnel to the lunar module without their helmets gloves or umbilicals. During the earlier trip by one of the crewmen back to the lunar module to open a circuit breaker that inadvertently had been left closed in the powerdown check list. The man did go through the tunnel in a similar situation. We are continuing to stand by. We do have acquisition over the tracking ship, over the tracking station at Guam. We're standing by for the call. We actually still have something over 2 minutes in the rest period left. There will be about a 12 minute gap between loss of signal at Guam and acquisition at Mercury, tracking ship Mercury in the South Pacific. It is felt by omitting the complete suiting up of the two crewmen that a considerable amount of time can be saved in the powering up of the LM. They'll be able to move through the tunnel faster without being restrained or restricted by the umbilical and since the LM is pressurized at this time the ah and the tunnel there is no real reason why the men would have to be in ah complete suit. Naturally they will put on their helmets and gloves prior to undocking. We're still monitoring the circuit here for the initial call we're now less than a minute away from the end of wake up time. We're beginning to get data through from the Guam station. E com just reported to flight director that the data was beginning to show up on his displays at his console. Surgeon reported that McDivitt appears to be asleep but Scott has changed seats and apparently is awake. One of the first items after waking up will be of course to eat breakfast. Following their breakfast they'll have flight plan and consumables up date passed up to them by spacecraft communicator Ron Evans. And immediat... here goes the call now.

CAP COM Good morning

SC Good morning

CAP COM A real short night.

CAP COM 9 Houston. About 30 seconds to LOS. I'll

pick you up Mercury at 53 and I'll probably have some flight plan update for you there.

A/9 Mission Commentary, 3/6/69, GET 8536, CST 2336, 252/2

PAO                      Apparently we have had loss of signal at the tracking station at Guam. As Ron Evans mentioned just before his LOS call, he did say that there will be flight plan update during the pass at Mercury. This pass is some 5 minutes long and it is likely that only the first portion or the beginning of the flight plan update will be likely during this brief 5 minute pass. However, later on in Ascension at the beginning of the next revolution there appears to be something like 7 minutes of tracking and communication and then back to Guam again but during this period the crew of course will be eating breakfast. At 85 hours 42 minutes ground elapsed time this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 8553, CST 2353, 253/1

PAO This is Apollo Control at 85 hours 53 minutes GET. Apollo 9 is within a few seconds of being picked up at the tracking ship Mercury. We'll wait until spacecraft communicator, Ron Evans, begins talking to the crew. During the Guam pass, Dave Scott was apparently awake at the time Evans made the call. He mentioned that there might be the beginning at least of the flight plan update during this pass over Mercury. We're some 30 seconds into acquisition here. Generally, the CAPCOM waits for a good solid lockon before making his call. As mentioned earlier, the commander and lunar module pilot will not be fully suited for the transfer into the lunar module. They will have on their pressure garments, but without the helmets and gloves or the long umbilicals. There goes the call now.

SC Apollo 9, go ahead.

CAPCOM Roger, Dave, You're on your H2 tanks today. After you've completed the H2 fan cycle, lock tank 1 heater in AUTO and tank 2 heater OFF.

SC Okay. Tank 1 heater at AUTO and tank 2 heater OFF and you want us to run through the cycle again, is that right?

CAPCOM Yeah, that's after you've completed the fan cycle on.

SC Okay, what else do you have?

CAPCOM Okay, that's the flight plan update there, and are you ready to copy?

SC Let's go ahead.

CAPCOM Okay, page rendezvous 1 transfer sequence camera that malfunctioned during EVA to LM, leave best camera in command module. Over.

SC Rog. I understand transfer the malfunction sequence camera to LM and leave the good one in the command module.

CAPCOM Roger.

CAPCOM Okay, and rendezvous 38, add transfer the extra sequence camera fuse from LM to command module. Fuse is in LM data card kit.

SC Okay, transfer the camera fuse from the LM to the command module and the LM data card kit.

CAPCOM Roger.

CAPCOM And at time 104 plus 00 waste water dump.

SC 104 plus 00 waste water dump.

CAPCOM Okay, and then you might note that the LM must be in high bit rate to update the ACQ state vector from PGNCS.

CAPCOM And, 9, Houston.

SC Rog. we hear, I guess we learned that one the other day.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 8553, CST 2353, 253/2

CAPCOM Yeah.  
SC I'm not sure.  
CAPCOM Okay, just making sure. And we've been talking it over down here and you have a go for transfer to the LM without being connected to the command module umbilicals. That is, you can make the transfer with your helmets and gloves off, if you so desire. Might save a little time, there.

SC Okay, thank you. We'll do that.  
CAPCOM Okay.  
CAPCOM 9, Houston, we noticed the AUTO cut the switch over to rev 2 and we've like you to go back to number 1.

SC Well, that's very observant of you. We will do that.

CAPCOM Okay.  
CAPCOM And, we're just about LOS ascension at 27 and you might be thinking about it, we can view the run-down on the crew health, sleep, and pills taken in the last couple of days, if you can give it to us there.

SC Okay. Let me ask you a question with the radiators down. Do you think we have a problem or what?  
CAPCOM We don't know yet at this time, but I don't think so.

SC Okay, it's manually and - no, it's not a manual radiator operation, but the automatic switch is in radiator 1 now. Okay.

CAPCOM Okay.  
PAO And this is Apollo Control. Apparently we have had LOS at the Mercury, however, the conversation did continue past the advertised time of LOS. During that pass the command module pilot, Dave Scott, discussed with spacecraft communicator, Ron Evans, here in Mission Control some of the procedures to be followed in preparations for the rendezvous. Some troubleshooting on the malfunction sequence camera involving retrieving camera fuse in the LM and on taking it back to the CSM, and also the crew optional go for transferring to the lunar module without helmet and gloves or umbilical was passed up and accepted rather enthusiastically by command module pilot, Dave Scott. At 86 hours GET, this is Apollo Control.

END OF TAPE.

# Med, Sleep & Food

Report

A/9 Mission Commentary, 3/7/69, GET 8627, CST 0027, 254/1

PAO This is Apollo Control at 86 hours 27 minutes ground elapse time. Coming up on the Ascension Island tracking station in the South Atlantic, during this pass is anticipated that the crew of Apollo 9 will give a food and medical report and perhaps a continuation of the flight plan update will be passed to the crew by the mission control center here. We're standing by for the first call. Here we go.

CAP COM Apollo 9, Houston through Ascension and I have a consumables update.

SC Roger Houston stand by

CAP COM Roger.

SC Ok Houston, go over the controls.

CAP COM Roger. GET 086 70 21 69 27 72 29 67 29  
450 36 37 34 39 100 97 26 0820 588 over.

CAP COM Apollo 9 Houston. Did you copy?

SC No roger, I missed the 3rd and 4th from the bottom. The percent RCSB and descent pounds 02.

CAP COM Roger. Percent RCS systems B remaining 97, 02 is 26.

SC Roger. Coming back are you ready?

CAP COM Roger (garble)

SC 086 70 21 6 9 27 72 29niner 67 29  
67 29niner 450 36 37 34 39 100 97 26 0820 588.

CAP COM 9 Houston, you read back correct. On that radiator flow control we'd like to go back to auto now and see if it stays in 1.

SC Ok, it did. Houston 938

CAP COM Affirmative. You say you went to auto?

SC That's affirm and we're still in one.

CAP COM Roger. We copy. And 9 Houston did you get my request there on the, your crew status when you get a chance?

SC Roger. Ok I myself feel fine. Been eating good, no pills and got about oh 5 hours sleep last night.

CAP COM Roger. Dave I guess we missed the sleep here night before also think you can remember that?

SC Houston, 9 are you still with us?

CAP COM 9 go Roger.

SC Ok. Night before last I got about 7 hours sleep.

CAP COM Roger. Ok. I've got yours now.

SC Ok. Did you get everybody?

CAP COM Negative. I just got yours and thats all.

SC Oh really? Ok, I guess I'll let Jim give you a run down on Rusty again.

-CMP

A/9 Mission Commentary, 3/7/69, GET 8627, CST 0027, 254/2

CAP COM OK... If you'r talking Jim I'm not reading you.

SC Are you reading us now Houston?

CAP COM I read you Dave.

SC Ok. Let me check my friends here.

SC Houston, how do you read?

CAP COM I got you now Dave, or Jim, about 40 seconds to LOS in ah Guam at 08.

SC Ok. I took a actifed and two APC before I went to bed last night and the night before. I got 7 hours sleep the night before last and 5 hours last night. Rusty took the seconal last night nothing the night before and he got 7 hours and 5 hours.

CAP COM Ok, thank you.

PAO And this is Apollo Control. We've had loss of signal at the Ascension Island tracking station. During that pass we had apparently minor communications problem aboard the spacecraft where McDivitt could not get through in talking to the ground until the last few seconds before LOS and he crammed into those few seconds the medical and sleep reports on himself and Schweickart. Scott reported that he had 5 hours sleep last night, 7 hours the night before, is eating well and is taking no medication. McDivitt when he did come on the line reported that he had taken 1 actifed, and 2 APC's and had 7 hours sleep last night, 5 hours the night before. Schweickart took 1 seconal and had 7 hours sleep last night, 5 hours the night before. Apollo 9 will next be acquired by the tracking station at Guam. At 8 minutes past the hour for an 8 minute pass actually 7 minutes 46 seconds according to the table fairly high elevation I hope. Following that it'll go almost directly over head actually within 3/10ths of a degree of directly over head of Mercury in the South Pacific. At 86 hours 37 minutes ground elapsed time this is Apollo Control.

END OF TAPE

} MCD

}

A/9, MISSION COMMENTARY, 3/7/69, GET 87:08, CST 0108, 255/1

PAO This is Apollo Control 87 hours 8 minutes GET. A few seconds away from acquisition at the Guam tracking station in the West Pacific. We'll have almost continuous coverage here over the Guam, Huntsville, the tracking ship Huntsville, and tracking ship Mercury, with a few seconds drop-out between each station. Standing by here for acquisition and the subsequent conversation between Ron Evans here at Mission Control, and the crew of Apollo 9. There goes the call now.

CAPCCM Apollo 9.

SC Rog, Houston. Apollo 9 Go.

CAPCOM Roger Dave and tell Rusty we've got another new set of go/no go limits for rendezvous radar check after RCS set. Do you want to copy down?

SC Okay, stand by.

CAPCOM Apollo 9, Houston. While your digging out books there, I've got some block data for you also.

SC Okay, give me the task first.

CAPCOM Okay on verb 83 verses verb 62, rendezvous radar check after RCS set. Page 2 and LMP and CDR, rendezvous procedures. Change limits. R plus or minus .27 nautical miles, R dot plus or minus 6.0 feet per second. Over.

SC Roger, understand. Verb 83 verses verb 62, rendezvous radar check, page 2 and LMP and CDR, rendezvous. Change limits, R plus or minus .27 nautical miles, R dot plus or minus 6.0 feet per second.

CAPCOM Roger. These are the ones we had before flight and we didn't get a change to stick in your book there, so you can use your own ideas on them.

SC Okay, fine. What next?

CAPCOM Okay, I've got the block data, but before we go into that, it looks like your primary radiator outlet temperature was up to 51 degrees, so it was a valid switch to slow propulsion number 2, and we're still checking it to see what causes it, other than that.

SC Okay, fine. Looks like it's up to about 47 or so degrees now.

CAPCOM Okay.

SC Thank you. Do you have block data now?

CAPCOM Affirmative if you're ready.

SC Okay, give me 10 seconds.

SC Okay Ron, go ahead.

CAPCOM Okay. Area 057 Alpha Charlie plus 115 minus 0319 089 1918 4094, 058 2 Alpha plus 263 minus 0270 090 5537 4094 059 Alpha Charlie plus 322 minus 0279 0922925 4094 060 1 Alpha plus 294 minus 0629 093 5538 4094 061 1 Bravo plus 335 minus 0629 095 2925 4094 0621 Bravo plus 327 minu 0625 097 0312 4094 0631 Alpha plus 272 minus 0630 098 3715 4094. Pitch trend minus 1.07 yaw minus 1.12 and this reflects

A/9, MISSION COMMENTARY, 3/7/69, GET 8708, CST 0108, 255/2

CAPCOM - no, I say again no rendezvous maneuvers.  
CAPCOM Apollo 9, Houston. About 20 seconds LOS  
Huntsville at 17.  
SC Okay. I'll read it back to you when we  
get there, Okay.

CAPCOM Oh sure.  
SC I think I've got them all and understand  
reflects no rendezvous maneuvers.

CAPCOM Roger.  
PAO This is Apollo Control. We've had loss  
of signal at Guam, we have a 32 second gap between Guam  
loss of signal and Huntsville acquisition of signal. During  
that pass, the crew was passed up some different numbers  
for the check out of the rendezvous radar, after the separation  
burn of the command module for the start of the mini football,  
and the first of several maneuvers in the rendezvous sequence.  
Also block data for the several planned landing areas, so that  
the crew would have on board the necessary information for  
contingency landing in the next several revolutions if  
necessary. These are routinely passed to the crew from time to  
time. It appears that we've have had acquisition again with  
the Apollo 9 spacecraft through the tracking ship Huntsville.  
We'll stand by for continuation of the conversation. Space-  
craft communicator Ron Evans is leaning over flight director  
Pete Frank's console discussing a point prior to resuming  
conversation.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 87:18, CST 0118 256/1

PAO Frank's console' discussing a point prior to resuming conversation. Flight director and the spacecraft communicator are still discussing some point that they plan to pass up to the crew over Huntsville. Although we have had acquisition, the discussion has not resumed. Standing by to come up with the conversation when it does begin. Spacecraft communicator is jotting down notes from his discussion with the flight director prior to continuing the conversation with Apollo 9 through Huntsville, anticipating momentarily the familiar beep-beep as the spacecraft communicator keys his microphone.

CAP COM Houston over Huntsville.

... Houston, Huntsville lost (garble) temporarily.

... Huntsville LOS.

... Huntsville Mila two way

PAO We're still about a minute and a half from loss of signal at Huntsville. Here we go again.

CAP COM Looks like we got about one and a half minutes LOS, we'll pick you up at Mercury at 26.

SC Roger, Mercury at 26 and you want me to readback from block data.

CAP COM Rog, I can read you good enough. Go ahead. I'll get what I can.

SC Okay, 57 Alpha Charlie plus 115 minus  
0319 0... 891918 0094 0582 Alpha plus 263 minus 0270 090 55  
37 0094 0541 Alpha Charlie plus 322 minus 0279 092  
29 25 0094 060 one Alpha plus 294 minus 4629 093 55 38  
(garble)

...

CAP COM Ah Houston.

SC (garble)

CAP COM Roger, I got 'cha right now but we're just about to get 'cha, about 30 seconds yet so why - we'll catch the rest of them over Mercury.

SC Rog, ... LOS.

PAO And we have had loss of signal at the tracking ship Huntsville with a dropout of some 36 seconds here before picking up at Mercury again. The pass over Mercury will be then 3 degrees of directly overhead or our zenith pass and because of the mechanical considerations of the antenna onboard the Mercury as it reaches the zenith, it'll be a few seconds dropout as they swivel the antenna around and relock with Apollo 9. On a lower elevation angle this would not be necessary, but apparently the antenna's gimbaling system is built in such a manner that the antenna must be rotated around on our zenith pass. We show Mercury acquisition at - should take place at about now. We are standing by for resumption of the conversation.

CAP COM Houston through Mercury.

SC Roger, Houston, where'd we dropout.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 87:18, CST 0118 256/2

CAP COM            Okay, start with area 61.  
SC                    Okay 061 one Bravo plus 335 minus 0629  
095 29 25 4094, 062 one Bravo plus 327 minus 0625 097 03 12  
4094, 063 one Alpha plus 272 minus 0630 098 37 15 4094, pitch  
trim minus 1.07, yaw trim minus 1.11 and no rendezvous maneu-  
ver.

CAP COM            Roger, Rusty. Your yaw trim there was  
minus 1.12 and this reflects no rendezvous maneuvers.  
SC                    I got 'cha.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 87:28, CST 0128, 257/1

CAPCOM - reflects no rendezvous maneuvers.  
SC I got you. Does that reflect the set  
burn at all?  
CAPCOM That's negative.  
SC Negative on the set burn also, right?  
CAPCOM Say, you're sounding pretty chipper this  
morning.  
SC Oh, yeah man, we were hustling  
SC Houston, Apollo 9.  
CAPCOM Houston, go.  
SC Roger, if we can get into the LM a little  
early, I'd like to do it. Would you check to see what the  
D set battery power is right now, and see if we've got the  
margin to get in there a little early?  
CAPCOM Rog. We'll check it and let you know.  
CAPCOM Apollo 9, Houston. Roger, there's no  
problem on D set batteries.  
SC Okay, thank you.  
CAPCOM Apollo 9, Houston, about 30 seconds LOS.  
We'll pick you up Ascension at 02 - uh, 03.  
SC Roger.  
SC Okay.  
PAO This is Apollo Control We've had LOS  
at the tracking ship, Mercury. The next station to acquire  
spacecraft Apollo 9 will be the Ascension tracking station,  
at 2 minutes 55 seconds past the hour, Apollo 9 is over the  
South Central Pacific nearing the end of the 55th revolution.  
At 87 hours 34 minutes, this is Apollo Control.

END OF TAPE.

A/9 Mission Commentary, 3/7/69, GET 8802, CST 0202, 258/1

PAO                    This is Apollo Control. 88 hours 2 minutes ground-elapsed time. Coming into acquisition at the tracking station at Ascension Island in the South Atlantic. This will be a very low elevation angle pass. 1.9 degrees on a total time of 3 minutes 45 seconds. It's unlikely that a whole lot of conversation will take place over this tracking station however we will monitor and break in live for any possible conversation. The crew at this time are probably suiting up for a transfer to the lunar module. As mentioned earlier they will not wear the gloves and helmets nor use the long umbilicals for transferring to the lunar module.

SC                    Send through Ascension standing by.

CAPCOM               Rog.

PAO                    This is Apollo Control. Not a very informative pass. Mostly line noise. One brief exchange between spacecraft communicator Ron Evans and the crew of Apollo 9. We'll continue to monitor for the less than 1 minute remaining in this pass.

SC                    ... about 25 seconds to LOS Guam at 44... static.

PAO                    This is Apollo Control. Although we have not yet had loss of signal, some 20 seconds of remaining doesn't seem very feasible to remain with the circuit open with all of that background noise. Apollo 9 will be picked up next over the tracking station at Guam at 43 minutes past the hour. At 88 hours 6 minutes ground elapsed time this is Apollo Control.

end of tape

A/9, MISSION COMMENTARY, 3/7/69, GET 8843, CST 0243, 259/1

PAO This is Apollo Control 88 hours 43 GET. Apollo 9 approaching a sequence of passes over tracking stations Guam, Huntsville, tracking ship Huntsville and the ship Mercury. This will be the last pass of the evening over Guam and Huntsville, however we have about 3 more over Mercury before the orbital track moves out away from the Mercury. There will be some 3 minutes laps between Guam and Huntsville, and some 2 minutes between Huntsville and Mercury. We'll stand by for communications over Guam. It's a fairly low elevation angle pass, some 3 degrees, or a total time of 4 minutes 59 seconds. Standing by for that first call from spacecraft communicator Ron Evans to Apollo 9. Flight director Pete Frank has been advised that data is coming in, here goes the call.

SC Roger. Houston, Apollo 9.  
CAPCOM Roger. Loud and clear.  
SC Houston, how do you feel about the Gumdrip today putting the evap secondary water flow control to auto.  
CAPCOM Roger. We copy, stand by.  
SC Houston, Apollo 9.  
CAPCOM Houston, Go.  
SC Roger. In case you wonder where we are, we're on page 10, rendezvous 10 of the check list. It looks like we're running about an hour ahead of schedule.  
CAPCOM Rog. Good.  
CAPCOM Spider, Houston, high bit rate.  
CAPCOM Apollo 9, Houston.  
SC Go ahead.  
CAPCOM Apollo 9, Houston.  
SC Go ahead Houston, Apollo 9.  
CAPCOM Roger. We concur with the evap water control to auto, for Gumdrip.  
SC Okay, did you concur.  
CAPCOM Affirmative.  
SC Okay, thank you.  
CAPCOM Spider and Gumdrip, 30 seconds LOS.  
Huntsville at 52 and low bit rate for Spider.

PAO This is Apollo Control. Apparently we have had loss of signal at the tracking station Guam. During the brief exchange over that station, spacecraft commander Jim McDivitt reported that he and Schweickart were approximately an hour ahead in the lunar module rendezvous check list. We're less than 3 minutes away from acquisition at the tracking station, tracking ship Huntsville. We'll keep the circuit up until we do have acquisition and rejoin the conversation over that station, and the subsequent pass over tracking ship Mercury. During the earlier shift, prior to this one here in Mission Control, a large box of sandwiches was brought in, courtesy of the Naussau Bay Baptist Church. The

A/9, MISSION COMMENTARY, 3/7/69, GET 88:43, CST 0243, 259/2

PAO - mission commentator exercised a certain amount of manners by eating the last of the sandwiches. We're expecting acquisition at Huntsville at 51 minutes 50 seconds past the hour, about a minute away. The flight dynamics people here at Mission Control are busy generating maneuver tables for the series of maneuvers in the rendezvous sequence. It is not expected, at least from the displays here that the rendezvous will differ to greatly from the pre-mission flight plans, however the times and thrust values will be changed somewhat. About 20 seconds out of Huntsville now, standing by for the first call. We hear some conversation down in the mud so to speak. Sounds like Gumdrops and Spider are talking. Let's listen in although Ron Evans has not called the spacecraft.

SPIDER Hang on.

CUMDROP Go ahead anyway.

GUMDROP Loud and clear.

SPIDER Hey, try mine to, will you?

GUMDROP Okay. Okay, we can figure both radio's

over here.

END OF TAPE

A/9 Mission Commentary, 3/7/69, GET 88:53, CST 0253, 260/1

SC Loud and clear. How now?  
CAP COM Loud and clear.  
SPIDER Ok, it looks like a good word Jim.  
GUM DROP Clear (garble) I wonder what makes something  
like that fail?  
SPIDER I don't know. It's weird isn't it.  
GUM DROP Maybe Houston will have something to adjust  
it.  
SPIDER Let's get back on the vox.  
GUM DROP Ok, (garble)  
CAP COM Apollo 9 Houston. Through Huntsville  
we caught you there but we don't know what you're having  
trouble with.  
SC Ok Houston, this is Apollo 9. Apparently  
both the push to talk button on the LMP side of the LM have  
failed. The one on the cable and also the one on the air  
control failed and the only amount of transmission that he  
had was voxed.  
CAP COM Roger. We'll call and see if we can't  
do some trouble shooting for you.  
SC Ok, we checked out the CDR's side and it  
seems to work Ok.  
CAP COM Roger, copy, Spider.  
SC Read you loud and clear... Roger stand  
by on 8. I'll be trying to ...Ok... Ok...  
CAP COM Apollo 9, Houston 1 minute to LOS, Mercury  
at 00.  
SC Roger. It appears that the intercom ...  
are not triggered and yet the tape recorder does not go off.  
It looks like there's something funny in there, too. Rog, I'm  
sorry. I'm on vox and on vox the intercom button should  
not be triggered except when I'm talking and if the tape  
recorder does not go off. ... Roger data ...  
PAO This is Apollo Control. We're in a  
gap between the tracking ship Huntsville and the ship Mercury.  
Approximately 2 minutes gap. We'll stand by until the conversation  
n resumes over the Mercury. During the Huntsville pass it  
was reported that by the crew that the lunar module pilot  
was having some difficulty with his intercom buttons. The  
push to talk buttons on the hand controller and he could  
only speak with the so called vox mode that is voice actuated  
microphone. They're doing some trouble shooting here to,  
in the mission control to see how best to help out the crew.  
Here goes air to ground again.  
CAP COM Rog, are you ready to accept?  
SC Manned spider is on also Houston.  
CAP COM Now roger, got you spider.  
SPIDER Houston, Spider.  
CAP COM Spider, Houston go.  
SPIDER Roger. For your information the commander  
is ah OPS is 5600 PSI. I'm checking them out right now so

A/9 Mission Commentary, 3/7/69, GET 88:53, CST 0253, 260/2

SPIDER I'll read you some of the stuff.  
CAP COM Ok, go.  
CAP COM Spider, Houston.  
SPIDER Roger, go ahead.  
CAP COM Rog, we'd like your CSM to LM power trans-  
fer time.  
SPIDER Roger. I think Gumdrop can probably  
give that to you a little bit better.  
CAP COM Roger  
GUM DROP An hour ahead Houston. That's pretty  
good. That's within 5 minutes.  
CAP COM Ok, we'll take that. That's a good number.  
and I have you're rendezvous pass down there for spider

END OF TAPE

CM - LMP Weight

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 8903, CST 0303a, 261/1

CAPCOM and I have your rendezvous pass down there for the Spider and Gumdrop, if you're ready to copy.

GUMDROP Gumdrop to Spider, stand by.

SPIDER What is it you want to give us, Houston?

CAPCOM Your rendezvous pad for your DAP data load.

SPIDER Stand by, this is Spider to Gumdrop. Let me know when you're ready.

GUMDROP Okay.

SPIDER Okay, Spider is ready to copy anything you've got there, Houston.

CAPCOM Okay, Spider ready. Gumdrop are you ready?

GUMDROP Houston, before we start on this, what is this you're going to give us?

CAPCOM Roger, this is your rendezvous pad for your DAP data load, CSM weight, and gimbal angles.

GUMDROP Okay, Gumdrop's ready.

CAPCOM Roger, I'll go. CSM weight: 27 009, LM weight: 22 145, for Spider GDA drive angles R1 pitch 00428, Roll 00730, CSM trim angles: Pitch minus 1.00, Yaw minus 1.10, Delta VC 16.1. Over.

CAPCOM That's - I'm sorry, that's SPS tail-off instead of Delta VC.

GUMDROP And, Houston, would you repeat the CSM weight for me.

CAPCOM CSM weight: 27 009.

SPIDER Okay, readback on the LM weight.

CAPCOM Rog.

SPIDER LM weight 22 145, CSM weight 27 009, Spider trim angles are plus 00428, 00730.

CAPCOM Houston, Roger.

GUMDROP And for the Gumdrop, I have pitch trim of minus 1.00, Yaw trim of minus 1.10, Delta V tail-off at 16.1.

CAPCOM Roger, and Spider you might make sure your LMP audio control switches are in normal.

SPIDER Did you get that, Gumdrop?

GUMDROP Negative. He faded on me, too.

SPIDER Okay.

CAPCOM Spider, Houston, low bit rate.

PAO And this is Apollo Control. Apparently, we have had LOS at Mercury. During that pass over tracking ship Mercury, it was reported by spacecraft commander, Jim McDivitt, that the transfer power from the CSM umbilical to the lunar module power source was approximately 1 hour earlier than called for in the flight plan. Apollo 9 is nearing the end of 56th revolution. The next station to acquire Apollo 9

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 8903, CST 0303, 261/2

PAO will be Canary Islands station, at  
39 minutes past the hour, some thirty-one minutes from this  
point. At 89 hours 08 minutes GET, this is Apollo Control.

END OF TAPE.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 89:39, CST 0339, 262/1

PAO This is Apollo Control, 89 hours 39 minutes GET. Apollo 9 is now over the mid-Atlantic approaching the Canary Islands tracking station in a few seconds. This pass over Canary overlaps the lower edge of the Madrid station the first time today, for a total pass of the two stations of some 9 minutes duration. We'll stand by for a call by spacecraft communicator, Stu Roosa, apparently who's sitting at the console with Ron Evans. We should have had Canary's acquisition at this time. We have data coming in. Here goes Roosa's call. At least he has his button punched for air-to-ground. There he goes.

CAPCOM through the Canaries.  
SPIDER Hold on, Houston, this is Spider reading you loud and clear.

GUMDROP Gumdrop.  
CAPCOM Rog. I copy both you and Gumdrop, we want to update your Y PIPA and, if we cut the REFSMMAT in there we'll just have to punch it in manually. Do you want me to give you the address or do you want us to do it?

GUMDROP Rog. I'm working on the tunnel, why don't you all do it, Okay?

CAPCOM Say again, Gumdrop.  
GUMDROP I said, I'm working on the tunnel, why don't you all go ahead and do it?

CAPCOM I think that's a sterlin' idea. We'll -  
GUMDROP You've got Stu in accept.

CAPCOM Rog. Thank you Gumdrop.

GUMDROP Houston, Gumdrop.

CAPCOM Go, Gumdrop.

GUMDROP Spider's calling you.

CAPCOM Spider, this is Houston, say again, I'm not reading you at all.

SPIDER Do you read, now?

CAPCOM Rog. I'm reading you loud and clear, now, Jim.

SPIDER Okay. I'd like to report that the heater indicator on my OPS does not come on. I'm planning on using Rusty's until we get the major contingency transferred. We've just got an AGS caution warning light on. I don't know how long it's been up there. I just centered up and turned around here.

CAPCOM Rog. Spider. I copy both those and we see the AGS warning light. We'll give you some words on it.

SPIDER Okay. Roger, Stu, the AGS light did not light off an answer alarm except when I turn the AGS on. My guess is that the AGS light came on and stayed on when I activated the AGS, but there's no way I can be sure of that.

CAPCOM Rog. Spidar, copy.

SPIDER So for your information, Houston, we're

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 89:39, CST 0339, 262/2

SPIDER                    doing the pressure integrity check, we're  
just trying the pressure integrity check, right now.  
CAPCOM                    Rog, Spider, copy.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 89:45, CST 0345 263/1

SC light came on and stayed on when I activated the AGS but there's no way I can be sure of that.

CAP COM Rog, ... copy.

SC For your information, Henson, we're doing the pressure integrity check, we're just starting the pressure integrity check right now.

CAP COM Rog, Spider, copied. (pause) Gumdrop, this is Houston. We're through with the ... has been updated and the computer is yours.

SC Roger, thank you.

CAP COM Spider, Gumdrop, bring up your S-band for Madrid. (pause) Gumdrop, this is Houston. Do you read? (pause) Spider, Houston. If you read, Rusty check your suit isolation valve we're showing it disconnect.

PAO This is Apollo Control. Apparently we've had loss of signal at Madrid without any response from the crew over Madrid station. They may not have turned up their S-band volume. This particular station is one of several with the S-band capability and requires that the receiver for that particular mode of communication be turned up. Likewise at Honeysuckle Creek in Australia. The next station to acquire Apollo 9 will be the tracking ship Mercury at 35 minutes past the hour which will be approximately 45 minutes from now. About half a revolution without any contact with the spacecraft. At the present time the crew in the lunar module are conducting a pressure integrity checks of the pressure garments, or spacesuits. At 89 hours 50 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

A/9 Mission Commentary, 3/7/69, GET: 90:35, CST 0435, 264/1

PAO This is Apollo Control. 90 hours 35 minutes ground elapse time. We're within seconds of acquisition at the tracking ship Mercury in the South Pacific. It will be a pass of about 5 minutes duration. Standing by for the initial call by spacecraft communicator Stu Roosa.

SPIDER hold is no longer required and any time you get a chance 0620 and ah...

GUMDROP Roger. 321 mark.

SPIDER Give us another 321 mark.

GUMDROP B ...

SPIDER Ok, now read out.

GUMDROP Ok, 14735 28980 34653

SPIDER Now let me see if I got those. 14735

28980 34653.

GUMDROP That's correct.

SPIDER Ok, thank you.

GUMDROP Roger

CAP COM That is Spider and Gumdrops, this is

Houston through the Mercury, have you about 4 minutes and I copied the CSM angles.

SC Ok, are you ready for the LM angles?

CAP COM Go ahead.

SC I'm going into the high series for you first.

LM angle 15476 01 niner 07 01305.

CAP COM Rog, I'll read those back in just a second.

We'd like to have a E memory dump. We're standing by any time on your mark.

SC Ok, Stand by just one minute. Let us

finish up the stop liner procedure and we'll be right with you.

CAP COM Ok, reading back your angles CSM 14735 28 niner 80 34653. The LM 15 476 01 niner 07 01 305.

SC That's Charlie.

CAP COM Ok, we'll go to work on some angles.

GUMDROP Houston, Gumdrops.

GUMDROP Still Gum Drop.

GUMDROP I have my gyro torquing angles if you're ready.

CAP COM I'm ready.

GUMDROP Roger. GET 90 31 30 plus 01 097 minus

00 363 plus 00 193.

CAP COM Roger, Gumdrops I copy.

GUMDROP Ok, here we come with the E memory dump

if your ready Houston.

CAP COM We're rocking on ready

GUMDROP Roger 321 mark E memory dump.

SPIDER Houston, Spider.

CAP COM Go ahead Spider.

A/9 Mission Commentary, 3/7/69, GET 90:35, CST 0435, 264/2

SPIDER Roger. I just noticed that we don't have R and D instrumentation closed or we did not have it closed for that E memory dump. Do you want to re-do that?

CAP COM We'd like to have the E memory dump again. We had a drop out of telemetry and stand by.

CAP COM Disregard the circuit breaker, let's have the E memory dump.

SPIDER Ok, I understand. Negative on the R and D B and ah another E memory dump. 3

CAP COM Ok, Spider this is Houston. We're not goin to get it here. Well see ya over Antigua at about drill 3 and Spider give us low bit rate if you read.

SPIDER Will do ... over Antigua.

CAP COM That's affirmative Spider. And Gumdrops this is Houston, if you still read me we didn't give you a NAV checkup but we pulled a vector compare, it's real good we're going to disregard it.

SPIDER Gumdrops, Roger understand.

CAP COM Gumdrops, Houston we'd recommend AC row

PAO This is Apollo Control. Apparently Apollo 9 went over the hill at the tracking ship Mercury without being able to acknowledge the last transmission from spacecraft communicator Stu Roosa. We will be coming up on the tracking station Antigua overlapping tracking ship Vanguard, Canary Island tracking station and Madrid with first acquisition at Antigua. At 2 minutes 40 seconds past the hour with continuous coverage across the before mentioned stations leaving Madrid at 23 minutes past the hour. We're approximately 21 minutes total pass over these 4 stations. At 90 hours 41 minutes ground elapsedtime this is Apollo Control.

END OF TAPE

A/9, MISSION COMMENTARY, 3/7/69, GET 91:02, CST 0502, 265/1

PAO This is Apollo Control 91 hours 02 minutes GET. Some 40 seconds away from acquisition at the Antigua tracking station. For the beginning of about a 20 minute pass, Antigua, tracking ship Vanguard, Canary Islands, and Madrid. We'll stand by here until the spacecraft communicator Stu Roosa makes the initial call. There likely will be a great deal of exchange during this 20 minute pass and getting all of the details sorted out. Information exchange between ground and the crew in preparation for the undocking, and the subsequent rendezvous sequence. We've had an indication of acquisition of signal at Antigua. There goes.

CAPCOM Gumdrop, Houston through Antigua. Do you read me?

GUMDROP Gumdrop 5 square.

CAPCOM Rog, Gumdrop. Do I have Spider with me and as soon as we get data here, we're going to have

that E-memory dump again Spider.

GUMDROP Spider, Gumdrop. Houston's on the line and they say as soon as they get data we're going to do the E-memory dump again.

SPIDER Roger, we're ready.

GUMDROP Okay, Spider, do you read Houston?

SPIDER Spider, Houston. We read you now.

CAPCOM Okay, while we're waiting on that

E-memory dump, let me give you torquing angles.

SPIDER Roger, ready to copy.

CAPCOM Rog. Torquing angles minus 00370 minus 00790 minus 00310.

SPIDER Roger. Read back, 00370 minus 00790 minus 00310.

CAPCOM Rog, copy, and we'd like to have high bit rate.

SPIDER Roger. High bit rate. Houston, did you ever find out anything about that AGS warning light yet?

CAPCOM Rog. We're working on that, and we'll probably have a procedure for you that might solve the problem, probably be able to turn it off and back on again, but we'll pass you the details later.

SPIDER Okay.

GUMDROP Report 42.

SPIDER Houston say again.

CAPCOM Spider this is Houston. We are getting CSM data, we are getting no data from you, you might check the switches please.

SPIDER Roger, everything's checked out. We're in telemetry high.

GUMDROP Houston, Our DS instrumentation B circuit breaker coming in now.

CAPCOM Okay, thank you.

A/9, MISSION COMMENTARY, 3/7/69, GET 91:02, CST 0502, 255/2

CAPCOM Okay, we've got our data. Spider, we're ready for E-memory dump on your mark.

SPIDER Roger, 3, 2, 1, mark. And Houston, be advised that once again (static) -

CAPCOM I'm sorry Jim, I couldn't read that, say again.

SPIDER Roger. Super critical pressure gage is not seem to be working for the descent propulsion system.

CAPCOM Rog, copy. Spider, we're reading 704 on the super crit.

SPIDER Okay.

CAPCOM Okay Spider, Houston. The dump is complete, we're ready to up link your state vector just MATT.

SPIDER Roger. Okay go ahead.

CAPCOM Okay, it's on its way.

SPIDER Houston, Spider. We're ready to copy the NAV check if you have it.

CAPCOM Rog. Reading the NAV check, 092 0000 minus 2799 plus 14631 1245. Spider, Houston. Did you copy the NAV check?

CAPCOM Spider, this is Houston. Try me again.

SPIDER Okay, Houston. Spider's back on with you now. I got the time and that's all.

CAPCOM Rog. Reading you have the time, minus 2799 plus 14631 1245.

CAPCOM Gumdrop. Do you read Houston?

GUMDROP Spider, Gumdrop. Houston's picking up on me too.

SPIDER Okay.

CAPCOM Okay, Spider. We've got you now. Try your read back.

SPIDER Okay, I didn't get it, your bring up pretty badly, Houston. I get minus 027 so say again would you please.

CAPCOM Okay, Starting with the time, 092 0000 minus 2799 plus 14631 1245.

SPIDER Roger, 92 0000 minus 2799 plus 14631 1245.

CAPCOM That's affirmative, Spider. Houston confirms the update.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 91:12, CST 05:12a 266/1

CAP COM            Okay, Spider, Gumdrops, I've probably got you solid now, how do you read me?  
SPIDER             Better now, Houston.  
GUMDROP            Almost five by.  
CAP COM            Ah, very good. (pause) Okay, Spider, this is Houston. We've got the state vector in, we have Verb 66ed it and we're gonna hand over here within a few seconds and then we'll put in the REFSMMAT.  
SPIDER             Okay, Roger.  
GUMDROP            Spider, Gumdrops. I have a good transfer now.  
SPIDER             Very good. Just a couple of minutes we're gonna find out if we have a good radar. (pause) Okay Houston let us know when you're ready for the gimbal drive and throttle.  
CAP COM            Okay, Spider, the computer is yours we are ready for your gimbal drive and throttle checks. Press ahead.  
SPIDER             Roger. It works. (pause) Okay Houston I'm gonna start the drive now.  
CAP COM            Rog. Go ahead Spider, we're ready.  
SPIDER             ... (pause) Okay are you ready for the throttle check?  
CAP COM            That's affirmative, Spider. Go ahead.  
SPIDER             Roger. LMP throttle is minimum, coming up to the soft stop, soft stop is 53 percent, STP is off scale high DEARCPA light back down to the soft stop to idle.  
CAP COM            Rog, Spider, we copied. Go ahead.  
SPIDER             Okay here comes the commander's throttle..  
CAP COM            Okay, press ahead Jim, the LMP's throttle looked good.  
SPIDER             We're up to soft stop, full throttle, back down to (cut-off)  
CAP COM            Rog, it looked good let's press and this time both vehicles can bring up their S-band.  
SPIDER             Roger.  
CAP COM            Spider, this is Houston. You're GO on your gimbals and the throttle checks we're standing by for the hot fire.  
SPIDER             Roger. Okay, Gumdrops. We're gonna be doing our hot fire check here.  
GUMDROP            Rog, Go at three.  
SPIDER             Here comes the (fade)  
CAP COM            Rog, very weak but we're getting good data. Press ahead, Spider.  
SPIDER             Okay, complete. Okay we're gonna do the high level check now.  
CAP COM            Okay, Spider. We're getting data.  
SPIDER             Complete.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 91:12, CST 0512 266/2

CAP COM Okay, Gumdrops can you read me?  
SPIDER ...  
GUMDROP Rog.  
CAP COM Okay, Spider's very weak. Data is good  
however let me - and I'd like to remind you that B-3 still  
enabled ...  
GUMDROP Rog. Spider, Gumdrops. They say you're  
still good.  
SPIDER Roger, we read 'em and we're gonna start the  
PGNCS check here in just a minute. We just did the AGS Trans-  
-ration and control check.  
CAP COM Rog, now you're loud and clear, Spider.  
We're working through Madrid now.  
SPIDER Okay, here comes the PGNCS and TTCA's  
CAP COM Okay.  
SPIDER It's complete.  
CAP COM Roger, Spider.  
SPIDER Houston how do you read Spider.  
CAP COM You're loud and clear, Spider.  
SPIDER Okay. What's the trouble with out comm  
here?  
CAP COM I don't know. You got real weak on me, but  
good data across on you there. And then it came in good when  
we handed off to Madrid. Okay, and we're probably gonna lose  
Madrid shortly and we'll see you over Carnarvon at 51. The  
first look at your checks look real good, Spider.  
SPIDER Okay, Houston, say again the time.  
CAP COM Rog. We'll see you at Carnarvon about  
51.  
GUMDROP Roger, Carnarvon 51 and Spider he said  
your tests look good.  
CAP COM And Spider give me low bit rate.  
SPIDER Okay, low bit rate.  
CAP COM And we just about used it up that time,  
troops.  
SPIDER Yeah, I sure would appreciate if we had  
better comm.  
CAP COM So would I. Gumdrops, this is Houston --

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 91:12, CST 0522, 267/1

CAPCOM Roger. This is Houston. Did you get a  
CMW right at the end there?

SPIDER Negative.

CAPCOM Okay, thank you.

SPIDER Should I have?

CAPCOM No. the H2 heater cycle works here  
whether you got it or not.

SPIDER Okay.

PAO This is Apollo Control. We're within a  
few seconds of LOS time here on the displays at the Madrid  
stations. The next station to acquire Apollo 9 will be  
Carnarvon, Australia. Tracking station for the first pass  
of the morning. At 50 minutes 14 seconds past the hour for  
slightly over 5 minutes tracking time, there will be no doubt  
additional conversation there, as the crew continues to go  
through the various systems checks in preparation for the  
undocking, and rendezvous sequence of the day. At 91 hours  
24 minutes GET, this is Apollo Control.

END OF TAPE.

A/9 Mission Commentary, 3/7/69, GET 9150, CST 0550, 268/1

PAO This is Apollo Control. Let's join the conversation in progress over Carnarvon.

SPIDER Houston, this is Spider here. We just finished our landing radar test. We got the rendezvous radar test one time and it ran pretty good. We could do it again for you if you like. We're getting the ag cal data for you right now.

CAP COM All right, understand and we'd like to have high bit rate and leave it on from now on.

SPIDER Ok, high bit rate from now on. How bout that R & D B. You want that on from now on?

CAP COM That's affirmative Spider. Ok?

SPIDER Ok Houston. If you don't have any higher priority area the ag cal data.

CAP COM That's number 1 on our list. Spider go.

SPIDER Ok, before the cal, the bias were respectably 00 and minus also.

CAP COM All right, copy.

SPIDER The drift coefficient for plus 407 plus 30 is 28 and plus all zeros.

CAP COM Ok, copy.

SPIDER ... The bias coefficient for plus 0 plus 0's plus 0's minus all 7.

CAP COM Copy.

SPIDER The Coefficient for plus 0019 plus 0013 and 0001.

CAP COM Rog, I copy those, Spider. Thank you very much.

SPIDER Ok, I've got a question for you.

CAP COM Go ahead.

SPIDER Here we notice in updating the ags that the computer activity line was on for a very long while. I wonder if maybe you updated our C vector more than a rev ahead and then by doing a verb 47 we intergrated it backward too far. I wonder if you could have someone look at that. Did you get that one?

CAP COM We copy, yes I understand.

SPIDER Ok, is this a question of whether verb 47 hurts us when we do that?

CAP COM Rog, we can verify our state vector was not more than a rev ahead and we copied your question on the verb 47.

SPIDER Ok, as long as it was not more than a rev ahead when you updated us there should be no sweat.

cap com Rog, copy.

GUMDROP Houston, Gumdrop.

CAP COM Go Gumdrop.

GUMDROP My fuel cell 2 condensor exhaust temperature is at pan high. What's it look like to you?

CAP COM Rog, Gumdrop. We've been checking that. It is running a little high. We think it's going to hold

A/9 Mission Commentary, 3/7/69, GET 91:50, CST 0550, 268/2

CAP COM Ok through the rendezvous.  
GUMDROP Ok, fine. It hasn't changed much during  
the last 30 minutes. I just wanted to make sure of it.  
CAP COM Rog. It's been cycling with the night  
day cycle. We even think it ... their radiator.  
GUMDROP Ok  
SPIDER Houston, this is Spider. Do you want  
either the landing radar or the rendezvous radar test performed  
again over the tape?  
CAP COM That's a negative Spider.  
SPIDER Ok, great.  
CAP COM Stop your clear to turn your transformer  
on a bit.  
SPIDER Rog, and I also expect (garble)  
CAP COM Ok, fine  
SPIDER We'll configure the same way, will be  
receiving and transmitting.  
SPIDER Ok, the ... power is on.  
CAP COM Ok Gumdrops are you ready to support a  
lighting check?  
GUMDROP Ready to support.  
GUMDROP Ok, we're going to turn our tracking  
light on now, see if you can see it.  
SPIDER Oh, I don't see any flashing, do you?  
GUMDROP Look down at the porch, Jim.  
GUMDROP I don't see anything either.  
SPIDER I don't see it either, Dave.  
GUMDROP Just a minute.  
SPIDER Houston, are you with us yet?  
CAP COM Roger, Spider. Do you read?  
GUMDROP Houston, Gumdrops.  
CAP COM Houston here. Go ahead.  
SPIDER Okay. It didn't look like our tracking light  
was on. I think I might see it right now though. Yes, Dave,  
I think I see it flashing.  
CAP COM Roger. Copy. And we'd like to have  
your S-band volumes up at about five-seven. We'll be at  
Honeysuckle in about a couple of minutes.  
GUMDROP Okay.  
SPIDER It's your reflection on one of the quads  
out here, but I think it is flashing.  
GUMDROP Yes, I've got (garbled) by the porch now.  
SPIDER Boy, it's sure not very bright, is it?  
GUMDROP No, it doesn't seem to be.  
SPIDER Hey, go into a docking wave.  
GUMDROP Okay. I've got one of them on the right.  
SPIDER Okay. That's good enough. We'll leave  
the docking lights on for you.  
GUMDROP Okay.  
SPIDER Okay, why don't you give me your lights?  
GUMDROP All right. Here comes my docking  
lights.  
SPIDER I don't see anything.

A/9 Mission Commentary, 3/7/69, GET 91:50, CST 0550, 268/3

PAO We have passed the scheduled time for LOS of signal at Carnarvon tracking station. We have a dropout here - some two minutes between Carnarvon and the Honeysuckle station in the eastern part of Australia. Some of the initial times that are being generated here for the rendezvous sequence are beginning to show up on displays as the Lunar Module, alias Spider, will begin to spin a web around Gumdrop for the next several hours and come back to redock to complete the rendezvous sequence. The display shows the separation burn, which will be done by the Command Module - just a very small burn at 5 feet per second radially downward. That's taking place at 93 hours, 2 minutes, 53 seconds Ground Elapsed Time. This small burn will put the Command Module in an equal period orbit where the maximum separation from the Lunar Module of some 2.8 miles. We've got Honeysuckle now. Let's listen in.

GUMDROP What did you say?  
SPIDER I said give me a rag.  
GUMDROP All right, there's not much difference

between them.

SPIDER All right then Dave. When we come back and try to dock. You are really going to have to keep an eye on me. As a matter of fact (garbled) yesterday, I think.

GUMDROP Not too much.

SPIDER All right (garbled) pointed in the right direction. Looks like I'm getting dangerous. I'll just attitude hold a bit.

GUMDROP Okay.

CAP COM Spider - Gumdrop. Houston through Honeysuckle. I have your phasing pad when you are ready copy.

GUMDROP Roger, Houston. Standby, I'll get out the pencil and pad.

CAP COM Standing by.

SPIDER Hey, Dave, (garbled) find any work at all.

GUMDROP No, how you?

SPIDER (Garbled.)

GUMDROP (Garbled) ...phasing pad. You ready to copy?

SPIDER I can't hear ...

GUMDROP S-band, S-band. We're on S-band.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 92:00, CST 0600, 269/1

CAPCOM Gumdrop, Houston. How do you read?  
GUMDROP (Garble) I have my volume up right.  
SPIDER Spider agrees.  
CAPCOM Spider/Gumdrop reading phasing pad.  
093 47 34 00 plus 00 009 all DETs minus 00 907 00 907 000  
286 plus 00020 all DETs minus 00907 your sep time 093025300  
TPI 0 094575300. End of update.  
SPIDER Roger. On the readback we've got 093 47  
34 00 plus 000 09 all DETs minus 00 907 00 907 all DETs 286  
plus 00020 all DETs minus 00907, TPI0945753.  
CAPCOM Okay, Rusty, read me your sep time again.  
We dropped it there.  
SPIDER Roger, Sep 930253.  
CAPCOM That's right, Houston confirms the pass.  
It looks good.  
GUMDROP And Gumdrop (garble)  
SPIDER Can you do the sep time, Dave?  
GUMDROP (garbled)  
SPIDER Okay, are you transmitting Dave?  
GUMDROP Negative.  
SPIDER Okay, we've got a change in our comm,  
since we reconfigured here, I was just trying to figure out  
why.  
GUMDROP Okay, I'm changing (garbled)  
GUMDROP No? Is that right?  
CAPCOM And, we're about a minute off Honeysuckle,  
here, so we'll see you over the Mercury about 10.  
... Gumdrop.  
... (garbled)  
PAO This is Apollo Control. We've apparently  
had LOS at the tracking station at Honeysuckle, Australia.  
During that pass, the maneuver updates were read to the crew  
for the separation of the lunar module from the command module.  
That time is 93 hours 02 minutes 53 seconds GET. The time for  
the phasing maneuver, which will take place half way through  
what would be called the mini football, where they're out about  
3 nautical miles away and checking the rendezvous radar, they  
go into the second larger football rendezvous portion. The  
time of that maneuver is 93 hours 47 minutes 34 seconds, and  
the Delta V, or velocity, will be 90.7 feet per second. This  
is a radially upward burn which places the lunar module in an  
orbit that can be described as an equal period. The separation  
during this particular maneuver will not exceed - stand by one.  
During the maneuver after the phasing burn, the separation will  
be some 45 nautical miles in trailing distance, as the command  
module being in a lower orbit, proceeds out ahead of the lunar  
module. The tracking ship, Mercury, is upcoming next, at 9  
minutes 36 seconds past the hour, some 3 minutes away. At 92  
hours 6 minutes GET, this is Apollo Control.

END OF TAPE.

PAO This is Apollo Control, 92 hours 09 minutes ground elapsed time. Should be coming up on the tracking ship Mercury within about 30 seconds, however, if the Carnarvon pass was any indication, we may be a few seconds earlier than that in eavesdropping on the conversation between Gumdrops and Spider as they continue in their pre- rendezvous checklist and systems test. We're standing by for any traffic on the air-ground circuit.

CAP COM Through Mercury.

SPIDER Houston, Spider. How do you read?

CAP COM Read you loud and clear, Spider. This is Houston. You are GO for undocking, you are GO for 78 dash 1, your AGS is GO you can just unscrew the bulb if that light bothers you and would like to inform you that during the phasing burn and probably also during breaking, you can anticipate a heater CAUTION light coming on. This will be from the RCS and this is after looking at the data that we've got here. There'll be "no sweat".

SPIDER Okay, thank you.

GUMDROP Houston, Gumdrops. Spider, Gumdrops.

SPIDER Go ahead, Gumdrops, Spider.

GUMDROP I'll give you a mark at 51 10, okay?

SPIDER Okay.

GUMDROP One - mark.

SPIDER Okay, we're off by about a second.

GUMDROP Okay.

SPIDER Hey, you sure sound funny all of a sudden say something again.

GUMDROP Okay, something again, new switch to the other (static)

SPIDER Oh, alright, you sound sort of garbled.

... Spider (static)

SPIDER Houston, Spider. Do you read?

CAP COM Spider, this is Houston. I'm reading you loud and clear.

SPIDER Roger. Gumdrops's trying to call you.

CAP COM Gumdrops, this is Houston. How do you read?

GUMDROP ...

CAP COM Oh you're breaking up slightly and way down Gumdrops.

GUMDROP Ah, roger, that's ... and (static) and I've got a fuel cell two light. Just thought I'd let you know.

CAP COM Rog, understand fuel cell two light and that's in the TCE?

GUMDROP That's affirmative.

CAP COM Okay. And you're loud and clear now Gumdrops.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 92:09, CST 0609 270/2

GUMDROP Okay.  
SPIDER You're still a little garbled to me,  
Gumdrop. Whatever you did in the last few minutes, it sure  
changed the character of your radio.  
GUMDROP Lemme go back the other way.  
SPIDER Gumdrop it wasn't that, it was when you  
switched to the rendezvous configuration, I believe.  
GUMDROP Rog, lemme try it the other way. ...  
SPIDER It's about the same.  
GUMDROP Okay.  
SPIDER Now it changed.  
CAP COM Gumdrop, Houston.  
GUMDROP Houston, Gumdrop. Go.  
CAP COM Okay, that PCE's hanging right on the  
ragged edge, Dave, on that caution and warning trip and we'll  
be keeping an eye on it for you but it might trip off here a  
couple of times during the rendezvous.  
GUMDROP Okay, very well. Thank you.  
CAP COM Rog. And troops, I'm gonna lose you here  
we'll see you over the sunny Grand Bahamas at about 36.  
GUMDROP Roger. Gumdrop.  
PAO And this is Apollo Control. We've now  
had loss of signal at the tracking ship Mercury. During that  
pass the crew of Apollo 9 were given the GO for undocking  
which will take place shortly after they begin this next pass  
over the Eastern Test Range; Grand Bahama, Antigua and the  
tracking ship Vanguard and on over to Canary Islands and  
Madrid. Some 27 minutes altogether overlapping passes over  
those stations. They were also given a routine GO for rev-  
olution 78 and landing area 1. The maneuver pad for phasing  
was read up to them. The undocking will take place, as men-  
tioned earlier, just after acquisition at the Antigua track-  
ing station and that will begin many hours of very complicated  
maneuvers by both the spacecraft and an Earth orbit simulation  
of the type of job that will have to be done in lunar orbit  
on the subsequent lunar orbital and lunar landing missions.  
Acquisition time at Grand Bahamas is 35 minutes 27 seconds  
past the hour to begin the aforementioned 27 minute continuous  
pass. At 92 hours 17 minutes ground elapsed time, this is  
Apollo Control.

END OF TAPE

A/9, MISSION COMMENTARY, 3/7/69, GET 92:34, CST 0634, 271/1

PAO This is Apollo Control at 92 hours 34 minutes GET. We're some 1 minute 20 seconds away from acquisition at Grand Bahama Islands on continuous pass across the lower part of the eastern test range on over to the tracking ship Vanguard, Canary Islands, and Madrid. One of the first items to take place during this pass will be the undocking of the command module from the lunar module. This is done when the command module pilot Dave Scott will trip a switch in the cockpit to extend the docking probe and this in turn deactivates the 12 latches that hold the two docking collars together, and provides a general nudge to the lunar module, to move it away at probably a foot per second away from the command module. Before there are any further separation, the command module pilot will take a sequence of still and motion pictures of the lunar module. First a fairly closeup range of about 10 feet of some of the RCS quads on the lunar module, then they'll move out to 45 to 50 feet while the lunar module does a sort of pirouette for inspection photographs at all angles, including a pitch over where the pictures can be made of the descent stage. Here comes the transmission now through the Grand Bahamas.

CAPCOM Rog, Gumdrops. If you've got time now, we'd like for you to go except so during this busy period we can ship you a state vector. We'll not give you a NAV check, we'll do a vector compare.

GUMDROP Rog. Going to descent now.

CAPCOM Rog. Thank you.

SPIDER Houston, this is Spider, we're reading you also now.

CAPCOM Very good, you're loud and clear. Standing by for your undock.

SPIDER Roger.

GUMDROP We get it.

SPIDER Roger, we're ready.

GUMDROP Ready.

SPIDER Roger.

GUMDROP 10.

GUMDROP 3, 2, 1, undock.

SPIDER UHOH. We didn't release.

GUMDROP Hang on set.

GUMDROP We have a short probe backwards.

SPIDER Say again.

GUMDROP I said would you hang on a second, I'm going to pull back a little.

SPIDER Okay.

GUMDROP Okay, we're nice and stable with respect to you. Okay, we seem to be hanging; if you let the probes out, the capture latches haven't released.

SPIDER Yeah, that's what it looks like.

SPIDER We're pretty stable here; wonder what's wrong with it.  
GUMDROP Houston, got any suggestions?  
CC We're copying all that Gumdrop and Spider.  
Stand by.  
GUMDROP Okay, you're free.  
SPIDER I'm free?  
GUMDROP Roger.  
SPIDER What did you do?  
GUMDROP Oh, went back to the old memory and put a cycle on the switch and you look like you're free.  
SPIDER Okay, great.  
GUMDROP Okay, we're gonna start U around now. Hold off.  
SPIDER What?  
GUMDROP Wait a minute.  
SPIDER I can't hear you.  
GUMDROP Hold. Wait a minute till I get clear.  
SPIDER Okay.  
GUMDROP Now you're clear.  
SPIDER Okay.  
SPIDER Okay, our attitudes are a little screwed up now Dave, so we may have a little problem with that.  
GUMDROP Roger. I noticed.  
SPIDER Okay, I'm position keeping on you now so no sweat.  
P Okay. Spider, I'm gonna stay in plane and just follow you with the pitch.  
SPIDER Okay, fine. How am I drifting away from you?  
GUMDROP Eliptic out of plane. To your rear.  
SPIDER Okay, well, I can't notice that. My range looks good except my yaw is going about 1 degree per second.  
GUMDROP Are you yawing now?  
SPIDER That's right; I'm yawing right now. I'm doing my 120 degree yaw. When I get over here Dave, why don't I just stop the yaw and roll my roll so that I'm up, rightside up on the bellyband, then it'll get back to maybe about the right attitude - at least in plane.  
GUMDROP Good idea.  
SPIDER Okay, Dave, I'm gonna roll up in plane now. Okay, Dave, I'm gonna come rightside up here now and when I get there I'll just stop and you can position yourself.  
GUMDROP Okay. (garble) underneath.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 92:44, CST 06:44a, 272/1

GUMDROP (garble) just a 90-degree pitch up here.  
SPIDER Okay, good idea.  
SPIDER I think it would be alright if we just get  
some relative attitudes because I'm going to maneuver to the  
proper attitude for the sep and you can line up with me there.  
GUMDROP Right, okay. Okay, I'm going to do the  
pitch around maneuver and I'm going to pitch 90 degrees only.  
SPIDER Okay, fine.  
GUMDROP Okay, I'm going to start now.  
SPIDER You're clear.  
SPIDER Looking good.  
GUMDROP Okay.  
GUMDROP That's a nice looking machine.  
SPIDER So is yours.  
GUMDROP That's about all it looks like though, is  
some sort of machine.  
SPIDER Okay, Dave, when I get about perpendicular  
to you, I'm going to stop and start my yaw to the left.  
GUMDROP Okay.  
SPIDER Okay, I'm going to start my yaw right now.  
GUMDROP Okay.  
GUMDROP Go ahead.  
GUMDROP I think we're in good shape attitude wise.  
SPIDER Yeah, we only got off about 20 or 30 degrees,  
there, Dave.  
GUMDROP Yeah.  
GUMDROP The power down locks look good so far.  
SPIDER That's very good.  
CAPCOM Spider and Gumdrops, Houston, sometime  
within the next 4 minutes let's get - be sure your S-band  
volume is up. We'll be going over to Madrid.  
SPIDER Roger, Spider.  
GUMDROP Gumdrops.  
GUMDROP Okay, I've got 13 minutes before the  
sep burn.  
SPIDER Would you believe it, but I think my  
COAS went out.  
GUMDROP (garbled) okay.  
GUMDROP Is it okay?  
GUMDROP Taking a look at your engine down here,  
and it looks pretty clean.  
SPIDER Good.  
SPIDER I can't see much except your nose, so  
right now I can't even see that.  
GUMDROP I see your skip rutter when I back off  
just a bit.  
SPIDER Roger.  
SPIDER Okay, Dave, we can take over the station  
keeping here.  
GUMDROP Okay.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 92:44, CST 0644 272/2

GUMDROP	I've got a slight up movement on you.
SPIDER	(garbled)
GUMDROP	You've got the station keeping.
SPIDER	I've got the station keeping.
GUMDROP	Did you say your COAS was out?
SPIDER	It's working, it's so dim I just can't
see it.	
GUMDROP	(garbled)

END OF TAPE

PAO Apollo Control here some 3 minutes away from loss of signal at Madrid. While Spider does some maneuvers out some 50 feet away from the command module, the command module pilot Dave Scott is making sequence and still photographs of the lunar module at the various attitudes including looking directly down the nozzle of the large engine bell of the descent stage. We'll continue to monitor the circuit as the two spacecraft drift on toward the time for the separation burn which will begin the mini-football. (pause) This is Apollo Control. Apparently both spacecraft and their crews are busy with their cameras at this time taking pictures of each other. We've had no communications lately between the two spacecraft or with the ground. We'll leave the circuit up until Madrid loss of signal, which is about a minute away.

CAP COM Okay, Spider Gumdrops, we're gonna lose you here within a minute at Madrid. We'll see you over Carnarvon around 23.

GUMDROP Rog, Gumdrops copy. Carnarvon at 23.

CAP COM That's affirmative.

GUMDROP Hey, Spider on (static)

CAP COM And Gumdrops you're vector is good. We've looked at it, the computer is yours of course and you can go block anytime.

PAO This is Apollo Control. Apparently we have had loss of signal at the Madrid, Spain tracking station. As the two spacecraft came across Grand Bahamas and on into Antigua tracking station tracking range, they were docked but the time I copied of actual undocking was 92:39:30 ground elapsed time. There was some difficulty in getting the capture latches of the docking collar to release properly and it took two attempts by command module pilot Dave Scott to get the probe fully extended to where the latches would release the lunar module. McDivitt and Schweikart in the lunar module proceeded to maneuver out; first at a short distance of about 10 feet for photographs of the RCS thruster quads on the LM, then moved further out to 45 to 50 feet for a turn around while facing the command module for a photography sequence, pitch over for a photograph of the descent stage and the descent engine bell. Some of the comments during that period of photography in inspection included one by Scott saying, you have a nice looking machine there. McDivitt responded so's yours. The command module rendezvous radar transponder was scheduled to be turned on shortly after the undocking. The lunar module rendezvous radar will be turned on after the separation burn, which is coming up at 2 minutes past the hour. This will be a radially down burn using the command module RCS thrusters to place the command module in a equal period orbit which will produce a separation distance for a

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 92:54, CST 06:54a 273/2

PAO mini-football of less than 3 nautical miles. The phasing burn which is a burn by the descent propulsion system of the lunar module of some 90.7 feet-per-second will be radially up. This again is scheduled at 93 hours 47 minutes 34 seconds and it will take place over the tracking ship Mercury. Just at acquisition, there will be a Mission Control Center GO-NO GO for this phasing burn. The earlier separation burn for the mini-football will take place at 93 hours 02 minutes 53 seconds and will be out of contact with any ground tracking stations. Probably as the large wall map shows, over the Red Sea and the Arabian peninsula. At 93 hours ground elapsed time, this is Apollo Control.

END OF TAPE

PAO This is Apollo Control 93 hours 14 minutes ground elapsed time. Apollo 9 is now over the Indian Ocean, coming on the time for the separation maneuver. There not be a change of shift briefing this morning for the Orange Team because of the intense amount of activity in this rendezvous sequence. Flight Director Pete Frank prefers to stay here in the Control Center to follow through on the activities begun during his shift, when the crew was awakened about an hour earlier than had been scheduled before, so that they could continue - or pick up the LM manning and power up. This took place about 85 hours 40 minutes ground elapsed time when the crew awakened. Actually, Scott was awake when they came over the hill at the Guam tracking station. During the subsequent pass over Ascension Island, the crew made a medical information report on how they felt, how many pills they had taken, and so on, and also, how well they were eating, and their sleep report. They began the transfer to the lunar module at approximately 87 hours 40 minutes. The decision had been made earlier not to don helmets and gloves or use the CSM umbilicals to transfer to the lunar module. During their subsequent pass over Ascension, the next revolution, there was considerably worse communications than had been encountered over that station earlier and most of it was pretty much unreadable. At just before 89 hours ground elapsed time over the tracking ship Huntsville, the lunar module pilot had some trouble with his intercom microphone. The push to talk control had failed, apparently, and he had to talk in the voice actuated or VOX mode. Later, this was cleared up. The transfer of power to from the CSM umbilical power to the lunar module power took place about an hour earlier than scheduled, which would have made that at about 8820 ground elapsed time. The crew continued the extensive checklists of powering up the lunar module, aligning the IMU, the RCS cold fire, and at 91 hours 5 minutes, as they came across the lower end of the eastern test range, the gimbal drive for the descent propulsion engine was checked out and also the throttle checks were run. The reaction control thrusters were fired hot, brief blips of the engine. During the pass over the tracking station at Roneysuckle, Australia, they were given the maneuver information for the phasing maneuver and over Mercury, just after that, they were given a GO for undocking over the States. The undocking took place at 92 hours 39 minutes 30 seconds. The lunar module maneuvered out in front of the command module for a sequence of photographs, both still and motion picture. It's rotating around in sort of a pirouette for the photography

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 9314, CST 0714 274/2

sequence. The separation burn by the command module had been scheduled for 93 hours 2 minutes 53 seconds, which would have been out of acquisition. This was approximately 16 minutes ago. We will learn how it went as we come up on the Carnarvon station with acquisition at 22 minutes past the hour. That in effect, summarizes the past 8 hours of the activity here in the Mission Control Center. The hand-over is taking place between the Orange Team and the White Team of flight controllers, headed up by Gene F. Kranz. At 93 hours 19 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 93:22, CST 0722 275/1

PAO This is Apollo Control at 93 hours 22 minutes. We're standing by for acquisition at Carnarvon where we will await confirmation of the separation burn, this burn taking place in the band between Canaries and Carnarvon. Pete Frank and the orange team have handed over to Flight Director Gene Kranz and the white team. We should be acquiring at Carnarvon very shortly. We'll stand by.

CAPCOM Spider, Gumdrop, Houston through Carnarvon standing by.

GUMDROP Gumdrop, Roger.

CAPCOM Roger, Gumdrop, confirm the sep burn.

GUMDROP Roger, sep burn on time, good burn, and everything's looking good.

CAPCOM Thank you.

SPIDER (garbled) we finished marking our series and we're on the fourth (garbled).

CAPCOM Roger, Spider, you are loud and clear.

SPIDER Would you believe 5 zeros?

CAPCOM Roger, Spider.

PAO That's 5 zeros that Rusty Schweickart had reference -

CAPCOM Mighty pretty, Spider.

SPIDER Thank you.

PAO He's referring to the readout on his platform alignment, all zeros.

GUMDROP Spider, Gumdrop. I can see your jets firing just as clear as a bell.

SPIDER Roger, I'm watching it light down there.

GUMDROP You just gave a big burst, didn't you.

SPIDER Roger.

GUMDROP It lights up the whole sky.

CAPCOM Gumdrop, this is Houston. Did you do a P52?

GUMDROP Roger, and stand by and I'll give you the angles.

CAPCOM Roger.

GUMDROP It will be about 5 minutes.

CAPCOM Okay.

CAPCOM Okay, Spider and Gumdrop, this is Houston, and I'll lose you at Carnarvon in about a minute, and bring up your S-band volumes about that time and we'll have you at Honeysuckle.

SPIDER Okay.

GUMDROP Gumdrop.

SPIDER Are you firing a lot up there?

GUMDROP Yes, I'm just - yes, Roger.

SPIDER That's going to put you right on it. I can't even see it.

GUMDROP (garbled)

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 93:22, CST 0722 275/2

CAPCOM Spider, Gumdrop, this is Houston. We've got you through Honeysuckle.  
GUMDROP Gumdrop monitors.  
SPIDER (garbled)  
GUMDROP (garbled)  
CAPCOM And Spider, when you've got a moment, I want to pass on a little bit on info.  
SPIDER Say you want to pass, Houston?  
CAPCOM Roger, I want to update your red lines on the DPS your oxidizer to fuel red line is 25 versus the 12 showing on your checklist.  
SPIDER Roger, understand 25 percent on the red line for oxidizer.  
CAPCOM No, it's a DELTA-P or 25 psi oxidizer to fuel.  
SPIDER Okay, 25 DELTA-P oxidizer to fuel.  
CAPCOM Roger, on the DPS.  
SPIDER (garbled) the line.  
CAPCOM Roger, that's affirmative. In other words, they are both 25 now.  
SPIDER Roger, I've got you.  
GUMDROP Houston, Gumdrop, I can give you those angles now.  
CAPCOM Go ahead.  
GUMDROP Roger, GET at 931400 plus 00117 plus 00035 minus 00109.  
CAPCOM Roger, Thank you, Gumdrop.'  
GUMDROP Roger.  
CAPCOM And Spider and Gumdrop, this is Houston, you are GO for phasing.  
SPIDER Houston, understand we are GO for phasing.  
GUMDROP Gumdrop copies.  
CAPCOM And Gumdrop, you might anticipate a master alarm on your H2 tank pressure.  
GUMDROP Roger.  
GUMDROP Spider, Gumdrop.  
SPIDER Go ahead.  
GUMDROP May I have this cross in link?  
SPIDER Okay.  
SPIDER When your thrusters fire it just puts out a great big large cloud I can see way back here.  
GUMDROP (garbled)  
SPIDER Roger. We're confused on what the feet per second rate (garbled) after it.  
CAPCOM Spider and Gumdrop, we are going to lose you at Honeysuckle within a minute, and we'll see you over the Mercury at 43.  
SPIDER Roger.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 93:22, CST 0722 275/3

PAO                      This is Apollo Control. WE have had LOS at Honeysuckle. Mercury will acquire in about 4 minutes. During this Australian pass Dave Scott confirmed a good, on-time separation maneuver by Gumdrops. The relative motion of the two vehicles, Gumdrops and Spider, is now in the equal period, small equal period orbit known as the mini football. About midway through the Mercury pass, Spider will perform the phasing maneuver, which puts them into the football proper. The Descent Propulsion System burn, under the AGS, or Abort Guidance System Control, this is the backup guidance system to the primary, and this is the only burn during this series of maneuvers in which AGS is the prime control mode during the burn. We're now about 2 minutes away from Mercury, we'll come back up at acquisition there.

END OF TAPE

CONTI -

BOOK 2

~~CONFIDENTIAL FROM BOOK #1~~

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 9342, CST 742 276/1

PAO This is Apollo Control at 93 hours 42 minutes. Coming up on the Mercury now and the phasing maneuver is 4 minutes 33 seconds away.

CAPCOM Spider and Gumdrops, this is Houston through the Mercury, standing by for your burn.

SPIDER Rog, stand by.

CAPCOM And I'm reading you.

SPIDER Roger, Houston. This is Spider. How do you read?

CAPCOM I'm reading you loud and clear, Spider.

SPIDER Roger, I'm right with you on horizontal crossing. Okay?

PAO DPS is armed. The descent propulsion system is armed and Control says he is at the low throttle point. Two minutes 20 seconds away from the burn.

SPIDER It will be 2 minutes on my mark, Gumdrops. Mark.

GUMDROP Affirmative.

PAO 45 seconds.

SPIDER 35 seconds, Gumdrops.

GUMDROP Roger.

SPIDER 10 seconds.

PAO Burning at 40 percent. It looks good. Engine off.

SPIDER It was a good burn, Gumdrops.

GUMDROP Okay, good.

SPIDER It got a little rough there when we throttled up.

GUMDROP Well, you didn't have the Gumdrops with you.

SPIDER Houston, the call coming on?

SPIDER Houston, Spider.

CAPCOM Go, Spider, Houston.

SPIDER Roger. The burn was a good one and we are giving you call.

CAPCOM Rog, thank you.

SPIDER At 500, 501, and 502, after trimming the PGNCs we are reading 00 and -1.

CAPCOM Rog, good work.

SPIDER Dave, landing radar open.

GUMDROP Okay.

SPIDER Dave, engine gimbal to enable.

CAPCOM Everything looks good here, Spider. It was a good burn.

SPIDER Okay. It was a little rough. It got a little rough and shaky, around 20 percent as I was throttling up. I waited for it and then throttled up --

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 9342, CST 742 276/2

CAPCOM Roger. We're losing you at the Mercury  
and we will see you over Texas about 05.  
SPIDER Okay and you can debrief the burn.  
GUMDROP Okay, go it?  
SPIDER Yes.  
GUMDROP Okay.  
SPIDER Do you want to pitch now on the -  
SPIDER Yes.  
PAO This is Apollo Control and Mercury has  
loss of signal. As you heard, Spider performed that burn  
very well, just as expected. We had weak signal strength  
during this pass and we lost data just prior to ignition,  
got it back after ignition had started, then lost it again  
a little bit later. This burn started at 10 percent throttle  
settings and then moved up to 40 percent to complete the  
burn and it was very successful. So Spider is now in the  
large football again and equal period orbit to the command  
module. He will stay in this orbit for 1 and 1/4 earth  
revolutions. At that time he will perform the insertion ma-  
neuver. That maneuver coming approximately 95 hours and 40  
minutes. We will be passing a pad up to Spider with a spe-  
cific time a little later on. This is the maneuver that will  
put Spider at a constant height above Gumdrops. Because he  
is higher, he will in effect be going slower and it will  
cause him to pull away, increase the range from Gumdrops. In  
the equal period orbit at present, maximum range will be  
approximately 48 nautical miles. This will come at the hor-  
izontal crossing point. The next station to acquire will be  
Texas at 94 hours and 4 minutes, almost 5 minutes. This is  
Mission Control Houston at 93 hours 53 minutes.

END OF TAPE

PAO This is Apollo Control at 94 hours, 04 minutes. We are ready to acquire at Texas. This pass will continue through the Madrid station. Along toward the end of this pass we will be giving a GO/NO-GO decision.

CAPCOM Gumdrop, Houston through Texas. Standing by.

PAO We will be getting a GO/NO-GO decision to go past TPI zero point. TPI zero - Terminal Phase Initiate, and the zero signifying it's in the football phase. There is a point approximately at perigee. In this large football, were if it were necessary, we could perform a Terminal Phase maneuver and return to the Command Module. Nominally everything is going all right. We'll go beyond this point and go up to approximately apogee again to perform the insertion maneuver.

CAPCOM ...standing by.

GUMDROP Hello there, Houston through Texas standing by, how are you?

CAPCOM Oh, we're doing fine. Looks like you are doing great up there also.

GUMDROP Okay. Where are we over the ground?

CAPCOM Oh, you're just coming into Central America down here.

GUMDROP Ah, okay.

SPIDER I'll tell you one thing, this is really an ungainly V for that descent stage with the - where you kind of punt laterally.

CAPCOM Roger. Copy.

CAPCOM Gumdrop - Houston. Like to verify H2 tank 1 heater is AUTO.

GUMDROP That is verified. H2 tank 1 heater is AUTO, and I have the trial light ON.

CAPCOM Understand.

GUMDROP ...but the fuel cell light is OFF.

CAPCOM Gumdrop - Houston. We'd like to have H2 tank 2 heater to AUTO.

GUMDROP H2 tank 2 heater AUTO now.

CAPCOM Understand.

SPIDER Hey, Gumdrop. We'll be having our first solution here in a few seconds.

GUMDROP Okay. I've already got mine and I've got an elevation of 211.49.

SPIDER Hey, Dave. You were plotting our relative position to you. Man, we're right on the nominal.

GUMDROP Hey, that's great.

GUMDROP We are out at 26 miles right now, if you are interested.

SPIDER And we got 30.59 for our first elevation  
angle.  
SPIDER What did you get for yours, Dave?  
GUMDROP Well, in your language it would be 31.10.  
SPIDER Oh, I didn't hear - I heard - I thought  
you said 2114 -  
GUMDROP - Wait a minute 21149.  
SPIDER Okay, fine.  
GUMDROP Right now I have you at 26.27 and 150.4.  
SPIDER Okay, I've got 26.27 and I'm at 155.5 -  
that's on my radar. It's probably five feet off. Matter of  
fact it didn't agree with the tapes' record by a couple of  
feet per second.  
CAPCOM Gumdrops, Houston.  
GUMDROP This is Gumdrops. Go.  
CAPCOM Roger. We noticed you've gone to a 4  
jet roll authority - unless you've got a good reason we are  
recommending Baker Dog roll OFF.  
GUMDROP Roger. I'm running the gap.  
GUMDROP And you can check (garbled).  
CAPCOM Reger, Gumdrops. Copy.  
GUMDROP That's BD roll OFF.  
CAPCOM Copy.

END OF TAPE

CAPCOM Spider, Houston.  
SPIDER Go ahead, Houston, Spider.  
CAPCOM Rog. We would like to have the DFI off  
at this time and we would like to have you verify the CO2  
sensor circuit breaker on panel 16 is in.  
SPIDER Stand by. Roger, it's closed.  
CAPCOM Roger, understand it's closed. And if  
you've got a minute, I want to give you an update on some  
bio time.  
SPIDER Okay, Houston, Spider. Be with you in  
just a second.  
CAPCOM Rog, no sweat.  
SPIDER Rog, you read all right now? Everything  
the same?  
GUMDROP Go.  
SPIDER No, I didn't need it.  
SPIDER Okay, go ahead, Houston.  
CAPCOM Rog. This is an update in your P32  
program. The TPI bias has changed from 3 minutes to 4 min-  
utes. We want you to add 4 minutes on the TPI bias in your  
CSI P32 program.  
SPIDER Roger. The CDH bias still 1 + 45.  
CAPCOM That is affirmative. The CDH bias is  
1 + 45. We are only changing the TPI bias.  
SPIDER Roger.  
PAO Range is 40 miles now.  
SPIDER Did you get that?  
GUMDROP Roger, I copied.  
SPIDER Good time for procedural changes here.  
CAPCOM Spider. Spider, Houston.  
SPIDER Go ahead.  
CAPCOM Roger. I - you've probably figured out  
this is due to the change in the orbit. We've got a little  
more conricity than we planned on. And we are showing  
your orbit as 122 by 127.  
SPIDER Okay.  
PAO Coming up on 42 mile range.  
PAO Range rate, 124 feet per second.  
CAPCOM Spider, Gumdrop, Houston. I have a  
TPI zero pad.  
SPIDER Spider ready.  
GUMDROP Gumdrop's ready.  
CAPCOM Rog. Reading TPI 0094575300 - 202 +  
004 - 015203, N slash A, N slash A, 3090 - 1511 aft 168,  
right 003, up 113, end of update.  
SPIDER Okay, this is Spider. I missed the  
first digit in the aft.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 9415, CST 815 278/2

CAPCOM Rog, reading aft 168.  
SPIDER NOUN 42.  
CAPCOM And NOUN 42, I have no data, N slash A,  
here.  
GUMDROP Rog, Spider. I got the whole thing.  
You want to read something back.  
SPIDER I don't know if Houston is reading me  
or not.  
CAPCOM I'm reading you, Spider. Go ahead with  
the readback.  
SPIDER Okay, what's the last digit in the NOUN  
42?  
CAPCOM Okay, are you asking for the last - say  
again what digit it is, Rusty.  
SPIDER Roger. The last digit in NOUN 42, delta  
VR.  
CAPCOM Rog. Delta VR is 203.  
SPIDER Rog, and what is aft component, please.  
CAPCOM Roger. The aft component is 168.  
SPIDER Readback. 94575300 - 202 + 004 - 015  
203, NA, NA, 3090 - 1511, aft 168, right 003, up 113.  
CAPCOM That is affirmative, Spider. Houston  
confirms that update.  
GUMDROP And Gumdrop copies.  
CAPCOM Roger, Gumdrop.  
PAO Range 46 miles.  
SPIDER This is Spider here. No ... on that one.  
GUMDROP What do you need?  
SPIDER Nothing. I just wanted to tell you we  
got another solution on an elevation angle of 25.  
GUMDROP Okay, I've got another one with elevation  
angle of 27.26. Okay?  
SPIDER Beautiful. Let's stick together.  
GUMDROP I'm with you.  
PAO Range rate, 91 feet per second now.  
If it's necessary to perform TPI zero it will be done at  
94 hours 57 minutes 53 seconds. Delta V will be 20.3 feet  
per second.  
PAO However, the way this rendezvous is going  
now, that maneuver will not be performed, but we will get a  
GO/NO-GO to go past that point very shortly.  
CAPCOM Spider and Gumdrop, you are GO to go  
beyond TPI zero.  
SPIDER Roger, Spider here. Understand we're  
GO past TPI zero.  
GUMDROP Gumdrop copies.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 9415, CST 815 278/3

CAPCOM Roger, Roger.  
PAO Range 47 miles, range rate 82 feet per  
second.  
PAO Range 48 and 1/2 miles, range rate 63  
feet per second.  
PAO Spider's orbit now is 136 by 111 nautical  
miles, following that phasing maneuver.  
PAO Gumdrops orbit is 127 by 122. And the  
range is now 49 miles, range rate 53 feet per second.  
SPIDER It's 49 miles and we can still see you.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 94:28, CST 0828 279/1

PAO And the range is now 49 miles, range  
rate 53 feet per second.  
SPIDER It's 49 miles and we can still see you.  
GUMDROP Okay, that's pretty good.  
CAPCOM Spider/Gumdrop, do you want our guesstimate  
at your point of closest approach?  
SPIDER Roger, we'd like that.  
CAPCOM Roger, it will be 2.7 and the time is  
95 plus 17.  
SPIDER Roger, 9517.  
CAPCOM That's affirmative, and I'll be losing  
you here shortly off Canaries, and we'll see you over  
Carnarvon at 57.  
SPIDER Roger.  
GUMDROP Gumdrop.  
PAO This is Apollo Control at 94 hours 30  
minutes, and we have LOS at Canaries. As we lost signal  
we were showing a range of 49 and a half miles, and a range  
rate of 43 feet per second. You heard CAPCOM Stu Roosa  
inform the crew that in this football that Spider is now in,  
the point of closest approach to Gumdrop will be 2.7 nautical  
miles. This will occur at an elapsed time of 95 hours 17 minutes.  
Spider does have a GO to proceed beyond TPI zero, we're in  
a nominal rendezvous, and the next maneuver we're looking  
toward is the insertion burn. We'll send up the maneuver  
information for this burn over Honeysuckle on this pass.  
It will take place shortly after acquisition at Guaymas  
on this pass, Approximately 95 hours 40 minutes. Next station  
to acquire will be Carnarvon at 94 hours 57 minutes. We'll  
come back up then. This is Mission Control, Houston.

END OF TAPE

CC Spider, Gumdrop, this is Houston through  
Carnarvon standing by and I have an insertion pad whenever you  
are ready to copy.

GUMDROP Roger. Gumdrop will be with you in about  
20 seconds.

CC Roger, no problem. This is a 7 minute pass  
and we will have Honeysuckle shortly thereafter.

GUMDROP Roger.

END OF TAPE

PAO This is Apollo Control at 94 hours, 56 minutes  
and here is acquisition at Carnarvon.  
CC Roger; no problem, this is a 7 minute pass  
and we'll have Honeysuckle shortly thereafter.  
GUMDROP Roger.  
SPIDER We're not reading you. We are in the middle  
of our alinement. One minute.  
CC Roger, Spider, copy.  
GUMDROP Gumdrops is ready anytime.  
CC Roger; I would like to hold it Gumdrops.  
Spider is in the middle of their alignment.  
GUMDROP Roger. I'll wait for them. I'm ready when-  
ever they are.  
CC Very good.  
GUMDROP In the meantime, I can give you gyro tor-  
queing angles if you like.  
CC Okay, you cut me off by a few seconds; that  
was my next question; go.  
GUMDROP Okay. GET 94:57:00 plus 00083 plus 00008  
minus 00034.  
CC Roger Gumdrops; Houston copies.  
GUMDROP Okay.  
CC And Spider, this is Houston; I copy the  
angle.  
SPIDER Roger. Spider.  
CC Roger; looks like things are going well and  
you might bring up your S band volume; we'll be going over the  
Honeysuckle in about 2 minutes.  
GUMDROP Gumdrops.  
SPIDER Hello this is Spider.  
SPIDER (garble)  
SPIDER Ready to copy the update.  
CC Okay, we're gonna hand off to Honeysuckle;  
let's - we'll have about a 30 second break out and it'll pick  
you back up again.  
SPIDER We will standby for the update.  
CC Spider, Gumdrops, Houston through Honeysuckle;  
how do you read?  
CC Okay, Spider, Gumdrops, I believe I've got  
you through Honeysuckle; if you are ready to copy.  
SPIDER Okay, Spider ready to copy.  
CC Gumdrops, are you with me?  
SPIDER Gumdrops, you go S band.  
GUMDROP Okay.  
CC How do you read Gumdrops?  
SPIDER He doesn't have you locked up yet Houston.  
CC Okay, I'll give you about another 30 seconds  
to a minute and I'll read it.  
SPIDER Okay

APOLLO 9 COMMENTARY, 3/7/69, GET: 94:56 CST: 0856

281/2

CC Hello Spider; with your insertion pad and  
Gumdrop, if you can read.  
SPIDER Gumdrop, are you reading Houston yet?  
CC Rusty, I am going ahead and give it to you.  
SPIDER Okay, go ahead.  
CC Roger. Reading insertion. 095 39 07 00  
plus 00 431 all zips plus 00 008 00 431 000 104 plus 00431  
all zips plus 00012 end of update.  
SPIDER Roger. Readback, and Gumdrop, you might  
get this. 095 39 0700 plus 00 431 all zips plus 00008 00431  
all zips 104 plus 00431 all zips plus 00012.  
CC Okay, Spider, your readback is correct.  
SPIDER Gumdrop, did you copy?  
GUMDROP STATIC

END OF TAPE

GUMDROP Is that a VERB 80, Jim?  
SPIDER Gumdrop, do you read spider?  
CAPCOM Spider, Gumdrop, we will probably lose you at Honeysuckle in about a minute and we will see you over the Mercury at 17.

SPIDER Roger, Houston. This is Spider. Gumdrop, do you read that? Gumdrop, we can hear you transmitting, but your voice doesn't come through.

SPIDER And Gumdrop, if you've got the pad, how about just giving a blip-blip on your microphone there.

SPIDER Gumdrop, how do you read Spider? Reading you loud and clear, Dave. We really lost track of you before. Were you reading us at all?

GUMDROP I was reading you but I wasn't reading Houston and I missed the inversion pad.

SPIDER Okay, we copied. I'll have Rusty read it to you.

PAO This is Apollo Control at 95 hours 12 minutes. We've had loss of signal at Honeysuckle. Mercury will acquire at 95 hours 17 minutes. And as Gumdrop and Spider went over the hill at Honeysuckle showing a range just over 6 nautical miles, closing at about 100 feet per second. Their closest approach will be 2.7 miles. And then at elapsed time 95 hours 39 minutes 7 seconds over the Guaymas, Mexico station, Spider will perform the insertion maneuver, posigrade burn with the descent propulsion. 43.1 feet per second delta V. This maneuver will put them in a circular orbit with a - we are shooting for a constant delta height above the Gumdrop orbit of approximately 11 miles, and then Spider will start opening the gap, the distance between the LM vehicle and the CSM. We will come up with the GO/NO-GO decision on the insertion burn over the Mercury. We should be acquiring there in about a minute and a half.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 95:17, CST 0917 283/1

PAO This is Apollo Control at 95 hours 16 minutes and we're at Mercury.

GUMDROP to do a verb BV again.

SPIDER You're hot.

GUMDROP Was a minus (garbled)

CAPCOM Spider/Gumdrop, we have you through the Mercury, you should be right at your point of closest approach, 1.9.

PAO FIDO has just updated that closest approach to 1.9.

SPIDER Houston, how do you read Spider?

CAPCOM Spider, I read you loud and clear. Did you copy my last transmission?

SPIDER All I heard you say was we were at the point of closest approach, that was all. What else did you have to say?

CAPCOM That was it, and 1.9 miles, and Gumdrop do you read Houston?

GUMDROP Roger, Houston, I read you 5 by.

CAPCOM And you are 5 square, Gumdrop.

GUMDROP Alright, I never got a lockup over the Honeysuckle.

CAPCOM Roger.

SPIDER Houston, Spider here. Our closest approach was 16 000 feet on the radar.

CAPCOM Roger, copy, and as you went over the hill at Honeysuckle I heard you reading the pass to Gumdrop. You got it, didn't you, Dave?

GUMDROP Roger, all squared away, thank you.

CAPCOM Roger.

SPIDER And Houston, did you get our torquing angles on that last alinement?

CAPCOM That is affirmative. We copied them.

SPIDER Okay, fine.

CAPCOM Looks like things are going well.

SPIDER Yep.

SPIDER And Gumdrop, let us know when you want the track aline back.

GUMDROP Okay, stand by.

SPIDER Houston, Spider, when are we going to get the GO for insertion?

CAPCOM Roger, you ought to have it within the next minute or two. We're taking a look at the data. Everything's looking real good.

SPIDER Okay, fine. How are we doing on the RCS red line?

CAPCOM You're real good. The LM is right on the predicted plot, and Gumdrop is in good shape.

SPIDER Okay.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 95:17, CST 0917 283/2

CAPCOM                   And Spider and Gumdrops, this is Houston,  
you are GO for insertion.

SPIDER                   Spider

GUMDROP                  Gumdrops

GUMDROP                  Okay, Spider, you can put your light  
back on. Thanks.

SPIDER                   Roger.

SPIDER                   (garbled)

GUMDROP                  Okay.

CAPCOM                   Spider, this is Houston. After insertion  
we would like to leave the DFI ON for approximately 5 minutes.  
We'll give you a call when to turn it OFF.

SPIDER                   Okay.

CAPCOM                   Spider, Gumdrops, about 30 seconds LOS  
Mercury. We may see you over Redstone around 31, if not,  
Guaymas at 35.

SPIDER                   Okay.

GUMDROP                  Gumdrops.

PAO                       This is Apollo Control, 95 hours 24 minutes.  
And as Spider and Gumdrops move out of range at the Mercury,  
the LM rendezvous radar showing a range of 5 and a half miles,  
a range rate of 99 feet per second. The radar at closest  
approach confirmed the Flight Dynamic Officer's first pro-  
jection of 2.7 nautical miles. All of the consumables on  
both spacecraft are in good shape, propellant quantities,  
cryogenic quantities, all systems performing well. Redstone  
will acquire at 95 hours 31 minutes and shortly thereafter  
over Guaymas at 95:39:07, we will have the insertion maneuver.  
This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 95 hours, 31 minutes. Gumdrop and Spider coming up on the Redstone now. Stand by.

CAPCOM Spider, Gumdrop - Houston. Now we have you through the Redstone. Standing by.

SPIDER Right.

SPIDER This LM DAP is really a nice flight control system, Houston.

CAPCOM Roger. Copy, Spider.

PAO That was Jim McDivitt talking about the Digital Auto Pilot.

CAPCOM Spider, Gumdrop. We got good solid lock, good data. Standing by.

SPIDER Spider.

GUMDROP Gumdrop.

PAO The engine is armed and at low throttle point.

GUMDROP Gumdrop - on my mark. It'll be 3 minutes.

SPIDER Okay. Roger. Right with you. Okay?

SPIDER One minute mark.

GUMDROP Roger. Right with you and ready to support.

SPIDER Okay.

SPIDER Twenty seconds.

GUMDROP Roger.

PAO We've got ignition -

SPIDER Right.

PAO The burn looks good.

GUMDROP (Garbled.)

SPIDER It's a good burn, Dave.

GUMDROP Oh, very good. Thank you.

SPIDER Houston, I'll give you R&D telemetry cal now (garbled).

CAPCOM Roger, Spider. We'll do that and we copied your burn. Looks great and saw you trimming the bell.

SPIDER Roger. (Garbled.) We're going to cal now.

CAPCOM And Spider, Gumdrop. Whenever you are ready I have your CSI PAD.

GUMDROP Gumdrop, standby.

GUMDROP CAL is OFF.

CAPCOM Roger. Copy. CAL is OFF.

CAPCOM Gumdrop - Houston. We're still showing all entry batteries on the line.

GUMDROP Roger. I haven't got to it yet. Thank you.

CAPCOM Roger.

GUMDROP How's that?

CAPCOM Hey, that's pretty good.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 95:31, CST 0931, 284/2

GUMDROP I've got to take care of the left side  
before I get the right side.

CAPCOM Roger. I didn't know I was rushing you,  
Dave. I just wanted to remind you.

GUMDROP Okay. I like those reminders.

CAPCOM Roger.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 9543, CST 943 285/1

PAO Range 34 miles, range rate 121 feet per second.

CAPCOM Gumdrop, Houston. At your convenience, if you want to before you start your marks here, just turn on the fan in H2 tank 2.

GUMDROP Roger, H2 tank 2 fans on.

CAPCOM Rog, thank you.

GUMDROP Thank you.

GUMDROP Spider, Gumdrop. B20 has you right down the barrel.

SPIDER Sure does. I won't be able to do a visual lockon on you this time, Dave, but the range, or the signal strength on the radar went on.

GUMDROP Okay, good.

PAO Range 39 miles, range rate 124 feet per second.

SPIDER - where we can get out of range ....

Good thing for the ... stability.

GUMDROP Yeah, I bet it is.

SPIDER There's one nice thing to be said about optics, you can look through them and see if you reall --

GUMDROP Yeah, sure can. You're still within range. I can see your four feet.

SPIDER Oh, you know the two parallel lines in the spectrum.

GUMDROP Yes.

SPIDER They are still there right now.

GUMDROP Those are the ones.

SPIDER No, not those, not the two little specks inside, the one in the center of the reticle.

CAPCOM Spider, Houston. DFI off. And we are watching your DSKY, wondering when you are going to VERB 93 it.

SPIDER Houston, if you are reading Spider, we would sure appreciate it again the (garble).

CAPCOM Spider, this is Houston. Say again, please.

SPIDER Roger. We would appreciate again the CSI time and also where we are going (garble) final crossing over.

CAPCOM Okay, Spider. You are coming in real weak. I have your whole CSI pad, if you wish it. Your CSI time is 096160300.

SPIDER Spider is reading, waiting for the whole pad.

CAPCOM Roger, Spider. How do you read Houston?

GUMDROP Houston, Gumdrop is waiting for the whole pad. I believe Spider is reading you. Aren't you, Spider?

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 9543, CST 943 285/2

SPIDER I was, I just broke watch on the S-band,  
I don't know if I'm getting him on VHF or not.

CAPCOM Spider, I'm reading you okay. Can you  
read me?

SPIDER Roger, I read you that time.

CAPCOM Okay, going with the CSI pad. 0961603  
00097562300 - 393, all zips, 136 - 392 - 007 and I want to  
remind you again of the change in the TPI bias. It is now  
4 minutes.

SPIDER Roger, Smoky. Sorry about that, but you  
broke up completely there. You are coming in very clear  
when you come in, but you're just broken. Go ahead and read  
through real fast now.

CAPCOM Rog. 096160300097562300 - 393, all  
zips, 136 - 392 - 007 and a reminder that the TPI bias is  
now 4 minutes.

SPIDER Roger. Are you still with us, Houston?

CAPCOM That is affirmative, Spider. We've got  
you now.

SPIDER Okay, I'll read it back here. You are  
not coming through too well any more. 096160300097562300 -  
393, all zips, 136 - 392 - 007 and 4 minutes on the bias.

CAPCOM That is affirmative, Spider. Your read-  
back is correct. And our comm will pick up shortly. We  
will be going to Canaries.

SPIDER Roger.

GUMDROP Gumdrop copies.

END OF TAPE

CC Spider, Houston, we'd like to have descent batteries 1 and 3 off the line.

SPIDER Houston, are you still reading Spider?

CC That's affirmative Spider; we should have you here for about another 8 minutes.

SPIDER Roger; did you hear my request on the apsidal crossing? Please.

CC That is negative Spider; I did not copy.

SPIDER Roger. We would like your recommendation on first or second apsidal crossing.

CC Roger; we copy Spider. Stand by.

CC Spider, Houston.

SPIDER Go Houston.

CC Roger; I'm reading you very weak, but we want the second apsidal crossing.

SPIDER Understand. Second apsidal crossing.

CC That affirm.

PAO The apsidal crossing refers to the line of apsides which is the line straight line from apogee to perigee in an orbit.

CC And Spider this is Houston; everything looks good for staging.

SPIDER Roger here. This is Spider here; everything looks good onboard.

CC Roger; copy.

CC Go ahead.

PAO We still have contact through the Canaries for about another 4 minutes.

PAO Range is 54 nautical miles; range rate 127 per second.

GUMDROP Spider, Gumdrop.

SPIDER Go ahead.

GUMDROP I get you .4 feet per second, out of plane (garble)

SPIDER Okay, fine, thank you.

CC And Spider, and Gumdrop, this is Houston. We have an update to your PSI pad; it is the Delta VY component is now reading plus 006.

SPIDER Roger, Delta VY understand plus 0006, is that affirmative?

CC That is affirmative Spider.

CC Okay, Spider and Gumdrop, we'll lose you in about a minute and a half off Canary; if you want to talk to me anytime within the next 10 minutes, tell ARIA 5 to go remote.

GUMDROP Okay, we'll do it. Gumdrop.

CC And we'll see you over Tananarive at 16.

GUMDROP Roger.

CC Spider - (garble)  
 SPIDER Houston, did you want Spider?  
 CC Disregard Spider.  
 SPIDER Okay.  
 PAO This is Apollo Control and Canaries has  
 LOS. During this long pass we very successfully performed the  
 insertion maneuver - the last in the series of burns to sep-  
 erate Gumdrop and Spider. Back in Gemini, we launched two  
 vehicles on - separate launch vehicles and they were separated  
 to begin with and we rendezvoused them that way. However, these  
 vehicles started joined, and we've gone through this series of  
 maneuvers to separate them. The maneuvers that remain will be  
 a realistic simulation of the lunar mission rendezvous problems.  
 We have a time for this CSI or coeliptic sequence initiation.  
 of 96 hours, 16 minutes, 3 seconds. It will be performed over  
 the Tananarive Station in about 11 minutes, 15 seconds. This  
 will be a retrograde maneuver, using the reaction control system  
 thrusters on the Lunar Module. And Spider will be staged just  
 after thrusting begins. We will jettison the descent stage  
 of the Lunar Module during this burn. The Delta V of 39.3 feet  
 per second. We passed up a pad on this maneuver to the crew but  
 from here on out, the crew will be using onboard solutions.  
 Unless their own solutions vary greatly from the pad passed up  
 from the ground. This pad is passed up as a backup, but the  
 remaining maneuvers in the rendezvous sequence will be performed  
 from onboard solutions. And Gumdrop will be prepared to per-  
 form a mirror image maneuver 1 minute after the LM should have  
 burned, if for some reason Spider cannot burn. We may get  
 an ARIA call in here; we have an ARIA aircraft in this area  
 that we can communicate through if we -  
 PAO If we do call through the ARIA -  
 CC ARIA 5, this is Houston capcom, go remote.  
 CC Hello Spider, this is Houston. Do you  
 read?  
 GUMDROP Spider, Gumdrop. Did you have anything out  
 of plane?  
 CC Gumdrop, Houston, how do you read?

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 96:03, CST 1003 287/1

PAO This is Apollo Control. We're showing Spider's orbit now 134 by 139 following the insertion burn. This CSI burn is designed to change the orbit, will keep the apogee essentially at 139, bring perigee down to 10 or 11 miles below the Gumdrops orbit. When we get - when Spider gets to the 10 nautical mile point below he will perform another maneuver to circularize that orbit, make it a constant DELTA high -

CAPCOM

ARIA 5, this is Houston, go local.

PAO

We've asked the ARIA to go back local, so apparently we won't try to communicate through the ARIA. But through the constant DELTA height maneuver that will come after the CSI burn, we will start catching up - Spider will start catching up to Gumdrops. It's a reverse of the situation after he performed the insertion maneuver. That put him higher, he fell behind. After the CDH maneuver he will be lower and will start catching up, and this CSI maneuver, which is coming up over Tananarive, is designed to change the orbit and get the perigee down to where Spider will be able to perform the CDH burn. Spider has a GO for the burn and for staging, everything on the ground and onboard looks good for the maneuver. Tananarive will acquire about 96 hours 15 and a half minutes, that's approximately 4 minutes from now.

CAPCOM

ARIA 5 do you read? ARIA 5, this

is Houston CAPCOM, go REMOTE

CAPCOM

ARIA 5, Houston CAPCOM. Go REMOTE.

END OF TAPE

CAPCOM Spider, Gumdrops. This is Houston. How do you read?

PAO This is Apollo Control. We are not having any luck through the ARIA, but we're coming up on Tananarive very shortly now. Duration of the CSI burn will be about 30 seconds.

PAO Ten seconds from the burn.

PAO We are going to have to wait till we establish lockon to find out how this burn goes.

CAPCOM Spider, this is Houston. Did you burn?

CAPCOM Tananarive M&O this is Houston CAPCOM. Do you read?

TANANARIVE Houston CAPCOM - Tananarive. Roger.

CAPCOM Okay. Have you heard any transmission from the spacecraft?

TANANARIVE That's a negative.

CAPCOM Are you locked on?

TANANARIVE That's affirmative.

CAPCOM Spider - Gumdrops. Houston through Tananarive.

GUMDROP Houston?

CAPCOM Spider - Gumdrops. Houston. Do you read?

CAPCOM Tananarive M&O Houston CAPCOM. Go manual key procedure.

TANANARIVE Roger.

CAPCOM And Spider - Spider. This is Houston.

How do you read?

CAPCOM Gumdrops - Gumdrops. This is Houston. How do you read?

CAPCOM And Tananarive M&O - Houston CAPCOM. Let me know of any transmission you hear between the two spacecrafts.

TANANARIVE Roger.

PAO Flight Dynamics is tracking. Looks like the burn was done on time. We do have tracking at Tananarive, but we've had consistently bad communications throughout this mission at Tananarive. It is not an S-band station. The radar data indicates the burn was done on time. We'll have to confirm that - probably over Carnarvon when we can talk to the crew.

CAPCOM Tananarive M&O Houston CAPCOM. I think someone there has an open mike.

TANANARIVE Houston CAPCOM - Tananarive.

CAPCOM Go ahead.

TANANARIVE Roger. We heard one transmission from the spacecraft which said, "Go ahead."

CAPCOM Okay. Thank You.

CAPCOM And Spider. Spider, this is Houston. We'll see you over Carnarvon at three-two.

PAO                    This is Apollo Control at 96 hours, 22 minutes. Gumdrop and Spider are beyond the station at Tananarive now. No success in establishing communications through Tananarive, however, Flight Dynamics Officer Dave Reed says that radar tracking indicates the burn was performed on time and properly. We'll have to wait until we get to Carnarvon to verify this with the crew. We're about 45 minutes away from the next maneuver - the CDH burn or Constant Delta Height Burn. This is the maneuver that will allow Spider to start closing the range with Gumdrop. It will put Spider on the trajectory from which he will do his Terminal Phase Initiation to rendezvous. Acquisition at Carnarvon at 96 hours, 31 and one-half minutes - about seven minutes from now. We'll come back up then. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 96 hours 31 minutes. Spider and Gumdrop approaching Carnarvon. We will find out here how that burn went. We will go then to the Honeysuckle pass and we will be sending up a backup CCH pad to the crew over Honeysuckle. We will stand by for acquisition at Carnarvon.

CAPCOM Hello, Spider.

PAO Tel comm confirms staging.

CAPCOM How did it go?

SPIDER Houston, this is Spider. How do you read?

CAPCOM I'm reading you 5 square, Spider.

SPIDER Hey, let me give you the CDH time. It is 965814.

CAPCOM Roger, copy 9658 + 14, and that is a bias time, affirmative?

SPIDER Affirmative. That's the actual time we will perform CDH.

CAPCOM Rog, copy.

SPIDER Houston, this is Spider. How do you read me?

CAPCOM I'm reading you loud and clear, Jim.

SPIDER Okay. The staging went okay. We staged; however, Gumdrop can't find us in his optics any longer and we may have not got a tracking light.

CAPCOM Rog, Spider, copy.

SPIDER Before we could see it flashing out our quads out here and I don't see it flashing although the flash may have been reflected off something on the descent stage.

CAPCOM Rog, understand, Spider.

SPIDER Okay, and Houston, this is Spider. I forgot what I was going to ask you.

SPIDER Houston, I know what I want to tell you. That burn we made was 40 feet per second. 40.0, in case you are interested.

CAPCOM Rog, Spider. Could you give me TIG and delta VY?

SPIDER Roger, the TIG of the burn was the TIG that you passed us on the pad for CSI and delta VY was 0.

CAPCOM Rog, Spider. Thank you very much.

SPIDER Roger, and our first solution after CDH we have a 4 second early TPI.

CAPCOM Copy, Spider.

GUMDROP Houston, Gumdrop is reading you, but very weak.

CAPCOM You are coming loud and clear to me,  
Gumdrop.  
GUMDROP Okay.  
CAPCOM And Spider, this is Houston. The first  
cut at it your CDH time looks real good and could you give  
me an onboard RCS quantity?  
SPIDER Roger, onboard RCS is reading 85 and 77.  
CAPCOM Rog, 85, 77, thank you.  
SPIDER Hey, Gumdrop, Spider.  
GUMDROP Go.  
SPIDER Roger. Our staging works better than  
your undocking.  
GUMDROP Ah ha. You're one up on me.  
CAPCOM Spider, you had better wait until you  
get back before you start that.  
SPIDER You haven't heard me say anything.  
PAO That was Rusty Schweickart taking a lit-  
tle dig at Gumdrop.  
PAO Showing a range of 98-1/2 nautical miles  
and a range rate of 30 feet per second.  
CAPCOM Okay, Spider, Gumdrop. We are about  
30 seconds LOS Carnarvon. There will be about a 2 minute  
break. We will see you over Honeysuckle with your S-band  
volumes up.  
SPIDER Roger.  
GUMDROP Gumdrop.  
PAO This is Apollo Control. Carnarvon has  
LOS; Honeysuckle will acquire in a minute or two. The crew's,  
Spider's crew, has come up with a solution that the CDH ma-  
neuver should be performed.  
GUMDROP Spider, Gumdrop. How about a range  
rate (garble).  
SPIDER Okay, we are at 98.5 miles at 10 feet  
per second.  
GUMDROP That's pretty good.  
SPIDER Yeah, you can just see me, huh?  
GUMDROP Oh, about 10 minutes before the burn.  
About 10 or 12 minutes before the burn. You can hold off  
if you want, but I would like your solution as soon as you  
can give it to me.  
SPIDER Well, don't hold off (garble).  
GUMDROP Oh, don't worry.  
GUMDROP Spider, Gumdrop. Ten minutes is a lit-  
tle late. I've got to make a 140 degree maneuver at that  
time.  
SPIDER Okay, Dave. Go when you have too.  
GUMDROP Okay.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 9631, CST 1031 289/3

SPIDER Did you get that CDH time?  
GUMDROP Rog, I copied, but I haven't received  
any pad yet. Have you?  
SPIDER Negative.  
GUMDROP Okay.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 9641, CST 1041 290/1

SPIDER Did you get our CDH time?  
GUMDROP Rog, I have the time but I haven't re-  
ceived any pad yet, have you?  
SPIDER Negative.  
GUMDROP Okay.  
GUMDROP They just said that they thought the  
time looked pretty good.  
SPIDER Okay.  
CAPCOM Spider, Gumdrops, Houston. We're working  
on the pad. We've got about 4 minutes LOS here. We'll try  
to have it.  
GUMDROP You probably didn't hear him but he said  
he's working on it and they'll probably have it before the  
LOS in 4 minutes.  
SPIDER Roger, we're not reading him.  
GUMDROP Okay, I'll pick it up for you. I might  
as well do something. I can have him do a lot of good tracking  
when it gets daylight. Ah, but that's what we're built for.  
GUMDROP Gumdrops, Spider.  
SPIDER Go ahead.  
GUMDROP Roger, in case I can't hear him on S-band  
SPIDER you might copy down the whole pad this time. It's only three  
more lines passed what you normally get.  
GUMDROP Okay, I've been doing that all the way  
anyway.  
SPIDER Okay, thank you.  
GUMDROP Roger.  
CAPCOM Spider, Gumdrops, Houston. We're about  
a minute from LOS so we'll try to pick up our pad over the  
Huntsville at around 47.  
GUMDROP Roger, Houston. Gumdrops copies. Pad  
over Huntsville at 47 and can you transmit to Gumdrops (garbled).  
CAPCOM Gumdrops, transmit to Gumdrops how?  
PAO And we had LOS at the Honeysuckle. The  
little bit of tracking we've been able to do on Spider since  
that CSI burn shows the Spider orbit at 138 by 113 nautical  
miles. As you heard the CSI burn went well, performed at  
the time of the ground's pad at 96 hours, 16 minutes, 3 sec-  
onds, 40 feet per second. The LM staged perfectly, however,

there is a suspicion that during the staging the tracking light may have been knocked out. Gumdrops reports he cannot see Spider through his optics, at this range. We got onboard quantity readings for the two reaction control systems on Spider. Doing very well there; 85 percent remaining in this A system, 77 percent in the B system. The Control Officer here in the Mission Control room, and Control is the name for the LM Guidance, Navigation and Control Officer. It's called a GNC for the CSM and his counterpart for the LM is Control. He reports that the ascent engine looks in good shape for this next burn, the CDH burn. It will be performed by the APS, or the Ascent Propulsion System, and will be the first burn for this engine. It will be a short one, and Spider has come up with a solution on board showing an ignition time of 96 hours, 58 minutes, 14 seconds. That's in close enough agreement to the ground's, that we'll probably allow them to burn at this time. We'll pass up a pad at the Huntsville. We have acquisition at the Huntsville now. We have not yet put in a call nor have we heard any air-to-air conversation. If we burn at that time we'll be out of contact. That burn would come between the Huntsville and the Redstone out over the middle of the Pacific Ocean. We'll stand by for -

SPIDER OK, here at the burn, minus 39.2 plus .1 and minus 13. (garbled)

GUMDROP Roger, minus 39.2 plus .1 and minus 13.7.

SPIDER That's Charlie.

CAPCOM Spider, this is Houston. Do you read me?

SPIDER Roger, Houston. Spider copies.

CAPCOM Rog, I just copied your solution. I have one that's pretty close to it, if you'd like to copy a CDH pad.

SPIDER Roger, go.

GUMDROP Go, Gumdrops.

CAPCOM Rog, and roger, Gumdrops. 096 58 1400 minus 382 minus 009 minus 151 305 minus 381 minus 153. End of update.

SPIDER Roger, 096 58 1400 minus 382 minus 009 minus 151 305 minus 381 minus 153.

CAPCOM Spider, that is affirmative. Your read-back is correct.

GUMDROP Spider, Gumdrops here. I did not copy the update.

SPIDER That's affirmative. (garbled)

GUMDROP            Okay, I've got the ground pad now by  
... signal. He said one minute late.  
SPIDER             Okay, very good. Do you have  
all of our solution here, Dave?  
GUMDROP            The burn is 13.7.  
SPIDER             Okay, that's plus .1.  
GUMDROP            .1.  
SPIDER             All righty.  
CAPCOM             Spider, Gumdrops, we'll see you over the  
Redstone at about 03.  
GUMDROP            Rog, Gumdrops copies. Redstone, 03.  
PAO                 This is Apollo Control, 96 hours, 53 min-  
utes. Redstone has LOS. This CDH burn, 4 minutes, 55 sec-  
onds away from it now. We will not be in touch with Spider  
or with Gumdrops when Spider performs this maneuver. We'll  
have to wait until we get to Redstone to find out how it  
went. The ground solution agreed very closely to the onboard  
solution for this upcoming burn. Time was the same. Total  
DELTA V in the ground solution, 38.2 feet per second. The  
onboard solution came up 39.2. The crew will very probably  
burn their own solution. After this burn the Spider will  
start catching up to Gumdrops, so that they will be able to  
perform the terminal phase of this rendezvous. Redstone due  
to acquire 97 hours, 2 and a half minutes. We'll come back  
up then. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 97 hours, 2 minutes and we are standing by to acquire at the Redstone; find out how this CDH burn has gone. There is supposed to be another retrograde burn using the ascent propulsion system for the first time. We should be acquiring momentarily; we'll stand by.

SPIDER At a boy. Remember that beer we were talking about the other night?

GUMDROP I'll buy you one of those.

CC Spider, Gumdrop, Houston standing by; how did it go?

SPIDER Well, it's sorta a kick in the fanny in comparison to the DIP, but it went alright. Good friend over there in the Gumdrop can see me again; I'm off at daylight.

CC Very good. Understand. Spider, Houston, we are still showing the APS arm, can you verify that?

GUMDROP (garble)

SPIDER Yep. Thank you very much; thank you Houston.

CC Roger. You're welcome.

PAO That was Jim McDivitt describing that APS burn.

CC Spider, this is HOUSTON. Did you burn the solution that I heard you pass to Gumdrop?

SPIDER I burned a PNG solution which is the one that I passed to Gumdrop.

CC Very good; understand you find it and on the time.

SPIDER That's affirmative.

GUMDROP (garble)

SPIDER Uh, Gumdrop, why don't you give me your message and we will relay it to them. Okay.

PAO Showing range 75 and a half miles closing at 107 feet per second.

PAO These range/range/rate readings are off the Spider's rendezvous radar.

SPIDER Gumdrop, Spider, anytime you want to check your range or range/rate, just let us know.

GUMDROP Okay, stand by.

END OF TAPE

SPIDER Houston, Spider.  
CAPCOM Go, Spider. This is Houston.  
SPIDER Okay. Onboard RCS E2 and 75.  
CAPCOM Roger. Copy. Thank you very much.  
GUMDROP Spider, Gumdrops.  
SPIDER Go ahead, Gumdrops.  
GUMDROP I've got 67 miles in 112 feet per second.  
SPIDER Okay. We have 67 miles and 107 feet per  
second.  
GUMDROP How about that.  
SPIDER It's terrific and you're still 5 feet  
per second off. You're going to have to shape that up.  
GUMDROP Well, let me take some more marks and  
I'll get it squared away.  
SPIDER Right.  
PAO Spider has a radar. Dave Scott in Gum-  
drop is coming up with his range rate information optically  
through the sextant.  
PAO And Spider is in the next to the last  
portion of what the flight controllers call the bubble or  
the ashcan. It's so named because of its appearance on a  
relative motion plot. We've had the mini football, the foot-  
ball - we're in the bubble now.  
PAO This is Apollo Control. Gumdrops orbit  
has not changed since the separation maneuver which he per-  
formed. He is still in a 127 by 122 nautical mile orbit.  
SPIDER Gumdrops, Spider. For your information  
we've got a TPI timed. It's one minute late right now.  
GUMDROP Okay, I've got a couple of solutions and  
I've got 9803 and 9804.  
SPIDER Roger. 9757 P3.  
GUMDROP Nine 7 57 P3. Okay.  
CAPCOM And Spider - Gumdrops. This is Houston.  
I have a ground solution when you are ready to copy.  
SPIDER Spider here. Just a moment.  
CAPCOM Roger. We're going to have you in con-  
tact for about another 12 minutes.  
SPIDER Okay. Spider is here. Ready to copy.  
CAPCOM Roger, Spider. Can you take it now, Gum-  
drop?  
GUMDROP Roger. All set. Go ahead.  
CAPCOM Roger. Reading TPI 097 57 45 00 plus  
196 plus 001 minus 105 223 no roll or pitch 26 70 minus  
1010 forward 22 3 all zips up 003 end of update.  
SPIDER Roger. Understand. 0975745 00 plus 196  
plus 001 minus 105 223 zips and zips 2670 minus 1010 forward  
223 zips and up 003. And did you count the R DSKY on our  
last recycle?

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 97:12, CST 1112, 292/2

CAPCOM                    That is affirmative, Spider. Looks like  
we're shaping up.                    Looks that way.  
SPIDER                    Gumdrops copy.  
GUMDROP                    Roger, Gumdrops.  
CAPCOM                    Range 55 miles, range rate 107 per sec-  
PAO                        ond.  
CAPCOM                    And Spider and Gumdrops. That was our  
last update. We are going to GO with that PAD.  
SPIDER                    Spider here. Roger.  
GUMDROP                    Gumdrops - Roger.  
SPIDER                    Hey, Smokey, is Dave Reed smiling?  
CAPCOM                    Well - yes, he's pretty happy, but he's  
not going to relax until you've finished burning.  
SPIDER                    Better not.

END OF TAPE

SPIDER Gumdrop, Spider.  
GUMDROP Go ahead.  
SPIDER Roger, as soon as we get into the dark, give me a look-see. If you don't see any tracking light, which I guess you won't, we'll put the docking lights ON and you might be able to get a mark on those.  
GUMDROP Okay, might be able to do that at that range.  
SPIDER Right. At that range with that big eye ball you've got.  
GUMDROP Roger.  
PAO That conversation was between Rusty Schweickart and Dave Scott. Dave Reed is the Flight Dynamics Officer on the white team.  
SPIDER Houston, this is Spider.  
CAPCOM Go, Spider, Houston here.  
SPIDER Roger. Concerning the episode we had coming off the probe and some little VTO's we had after we get back up there, I think it might be wise to go ahead and dock when we get there without waiting until almost dark.  
CAPCOM Roger, Spider, we copy, and sounds like a pretty good idea.  
SPIDER Why don't you go through those VTO's and see if there is any thing that's really important there, and if so we'll try to get it for you, but otherwise I think we might see if that probe is going to work.  
CAPCOM Roger, understand, we've got that in work.  
GUMDROP Spider, Gumdrop.  
SPIDER Go ahead, Gumdrop, Spider.  
GUMDROP Okay, (garbled) conversion now, got 9758 (garbled)  
SPIDER Very good, very good. Ours is (garbled) within about 3.7 seconds of the ground's. (garbled) 5741 I think.  
GUMDROP I've got 975819.  
SPIDER Okay, very good. Sounds like we'll all be together then.  
GUMDROP Roger.  
CAPCOM Spider/Gumdrop, this is Houston. We're about a minute or so LOS from Canaries. There is an ARIA if you need it up to about 42, and we'll see you at Carnarvon at 06, and Dave Reed is smiling now. And we might catch you at Tananarive at 49, but we haven't had much luck yet.  
GUMDROP Okay.  
CAPCOM And Spider, this is Houston. Did you - did either vehicle read over Tananarive the last pass when we were calling.  
SPIDER Houston, this is Spider. I don't remember. We've been over so many stations so many time, I couldn't tell you.

CAPCOM                    Okay, it was at around CSI, right after  
your CSI burn.

SPIDER                    I read you twice, but it was pretty bad.  
We called the TPI down to you too, but didn't get any reply.

CAPCOM                    Okay, thank you.

GUMDROP                   Gumdrop doesn't remember whether he heard  
you or not.

CAPCOM                    Okay.

PAO                        This is Apollo Control 97 hours 36 min-  
utes. We've had LOS at Canaries. Long pass there, in which  
we got the word that the CDH maneuver went very well. Gum-  
drop has reacquired Spider visually. We got an onboard read-  
ing from the reaction control system, 82 percent in system A,  
75 percent in system B. And as we lost signal at Canaries,  
we were showing the range at 46-1/2 miles, range rate of 105 feet  
per second and closing. Jim McDivitt and Rusty Schweickart  
continuing to feed radar information into the Spider computer,  
continuing to update their solutions for the terminal phase  
initiation of this rendezvous. And as they progress on this,  
they are coming closer and closer to the ground solution.  
We passed up a pad for TPI, showing time of ignition 97 hours  
57 minutes 45 seconds. At that time the onboard solution was  
reading 975733, just prior to LOS. They called out a new  
solution showing 975741. This was in conversation between -  
air-to-air conversation between the two vehicles. The ground  
pad delta V 22.3, the last solution onboard 21.7 feet per  
second. Spider will continue to update the solution until  
shortly before he burns. We probably won't know which solu-  
tion he went with until after the burn, but it looks like  
they're both going to be - that the onboard solution is going  
to agree very closely to the ground solution. This TPI burn,  
the times both ground-based and onboard, place the burn just  
after loss of signal at Tananarive. That is the next sta-  
tion to acquire. Whether we will be able to get good commun-  
ications through Tananarive is doubtful, but we will come up  
and stand by. Throughout this rendezvous, the flight sur-  
geons have been monitoring just one pilot, and that's the -  
stand by just a minute.

END OF TAPE



PAO This is Apollo Control at 97 hours 46 minutes and we are picking up some air to air conversation between Gumdrops and Spider through this ARIA. We will come up with that now and then go on into the Tananarive pass.

GUMDROP Okay, Spider, I still have you against the earth background.

SPIDER Great.

GUMDROP This thing is really tracking.

SPIDER Do you have a light?

GUMDROP No. It's still daylight to me, you're -

SPIDER No black spots?

GUMDROP And I'm talking a light background.

SPIDER Okay, we've got about 1425 now.

GUMDROP Okay.

SPIDER Okay, Gumdrops, this is Spider. Our time, ready to copy?

GUMDROP Yes.

SPIDER Gumdrops, are you ready?

GUMDROP Rog, standing by. Go ahead.

SPIDER Okay, 975779.

GUMDROP Okay, good. My last time was 975808.

SPIDER Roger.

GUMDROP That's great. Really staying in there. ... my mode for a 40 - for a 304 read. I want it for a plus point (garble).

SPIDER Okay, it's 301.9, 32, 34.9.

GUMDROP All right.

SPIDER Hey, we're right on the plot.

SPIDER Seven -

GUMDROP I don't know. AV1 and - unless you crawl into them.

SPIDER Dave, here are our delta V's.

GUMDROP Good. I'm ready to copy.

SPIDER Roger. + 19.4 + 0.4 - 9.7.

GUMDROP Roger. + 19.4 + 0.4 - 9.7.

SPIDER Roger, that's it.

GUMDROP Make a pair yet?

SPIDER 24, I got 19.6.

GUMDROP Hello, Spider, Gumdrops.

SPIDER Go ahead, Gumdrops.

GUMDROP You got a ... right ...

CAPCOM Spider and Gumdrops, Houston through Tananarive, standing by. I did copy your final solution. Sounds great.

SPIDER Roger.

CAPCOM Spider, Houston. The only one I wasn't sure of was your delta VX. I read it as 197.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 9746, CST 1146 295/2

CAPCOM Spider, Gumdrops, this is Houston. We  
will see you over Carnarvon at 06.

END OF TAPE

PAO                      This is Apollo Control. 97 hours, 56 minutes. We have LOS at Tananarive and we're less than a minute away from the burn. The final onboard solution - ignition time 97:57:59 - about 21 and one-half feet per second. We'll find out at Carnarvon about this burn. This is the Terminal Phase Initiation - the one that will put us on a course to intercept the Command Module. There are two points following this burn at which we - at which Spider can make midcourse corrections if needed. One at 11 minutes after the burn - the other one about 22 minutes after the burn. We expect Carnarvon acquisition at 98 hours, 5 minutes. We'll come back up then and find out how the TPI went. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 98 hours, 4 minutes and Gumdrop and Spider are coming up on the Carnarvon station. It's been 6 minutes, 40 seconds since TPI time. The two spacecrafts should rendezvous approximately 30 minutes after TPI, so we're in the order of 23 minutes away now. It's coming up on 7 minutes since TPI. We'll find out how that burn went when we get to Carnarvon. We have picked up very brief bits of air-to-air conversation even now before Carnarvon acquisition. We'll come on up now and give that to you and then stand by for Carnarvon.

SPIDER Okay.  
GUMDROP I want to get out of that (garbled).  
SPIDER Rog.  
SPIDER Okay, Dave, we're calling for our first midcourse.

PAO Carnarvon has acquired now.  
SPIDER Okay, Dave, I've got our DELTA V's for you.

GUMDROP Go ahead.  
SPIDER X is minus 1.0, Y is 0 - minus 0.3, and Z is plus 0.9.

GUMDROP Well you can't hardly argue with that.  
SPIDER No, I think I'll go ahead and burn with these here.

PAO They're discussing the first midcourse correction.

PAO Apollo Control, and as you heard, that was a very small correction for that first midcourse, and we thought we heard Jim McDivitt say that he was going to go ahead and burn those out.

SPIDER Did you (garbled) midcourse was complete?  
GUMDROP Roger.  
PAO Range is 12 miles; range rate, 96 feet per second.

PAO Range 8 and a half miles, range rate 77 feet per second and closing.

CAPCOM Spider, Gumdrop, Houston. We're about one minute LOS Carnarvon. We'll see you over the Huntsville in about 8 minutes.

SPIDER Okay, Houston. What have you decided about that post - or after I get up there. Should I go ahead and dock or not?

CAPCOM Okay, Jim, we're looking through here

and there are a couple of things we really would like to have and that's some pictures taken of the ascent engine area and we would like to get the rendezvous radar corona test.

SPIDER Okay, depends on when I break out of sunlight what I can do for you.

CAPCOM Okay, very good.

SPIDER And (garbled) is wondering how we're going to get the probe fixed.

CAPCOM Okay, we understand, and have you talked this over with Dave? We haven't heard his comments on the probe.

SPIDER Dave, can you hear him?

GUMDROP Rog, you say you copy, Gumdrops.

CAPCOM We're got Gumdrops here, but I'm going to lose you in just a few seconds. We'd like to have your comments on the probe too over Huntsville up here.

GUMDROP Okay, and be ready to give me a go for the pyro arm there too, please.

CAPCOM Okay, very good.

PAO And this is Apollo Control at 98 hours, 13 minutes. Carnarvon has LOS. We'll miss the Honeysuckle on this revolution, this 62nd revolution. The next station to acquire will be Huntsville at 98 hours, 19 and a half minutes. You heard during this pass the RCS propellant quantities remaining; system A, 74 percent, system B, 66 percent. The crew in Spider has done the first midcourse, very small corrections. And you heard a discussion pertaining to the request from Jim McDivitt to dock very shortly after rendezvous, because of possibility of a problem in the drogue - probe, rather. We do want to get some photography on Spider particularly the ascent engine section and the area in which staging took place. And Jim indicated that he would try to do as much as he could depending on how much time he had available. He does not want to wait too long toward darkness before he tries to dock, however. It's now been 17 minutes and 5 seconds since TPI and we're looking for a rendezvous very close to 30 minutes after TPI. We do not have a precise time yet. It'll be right at 30 minutes. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 98 hours, 19 minutes and Gumdrops and Spider are coming up on the Huntsville now.

SPIDER Go ahead.

SPIDER Okay about 15 seconds to go, Dave.

GUMDROP Roger.

SPIDER (Garbled.)

SPIDER (Garbled.)

GUMDROP Okay.

GUMDROP What kind of range rate do you have?

SPIDER I now have 42 feet per second.

GUMDROP All right, I've got 3.0 miles at 43 feet per second.

SPIDER Okay.

GUMDROP What's your pitch angle?

SPIDER It's about 86 degrees - something like that.

GUMDROP Okay.

PAO The Spider was doing the second and last midcourse as we acquired there.

SPIDER (Garbled.)

SPIDER Dave, did you ever really want to get some pictures of the ascent engine area.

GUMDROP Roger. I got that. Thank you.

SPIDER Okay.

GUMDROP Oh, I see you out there coming in the sunlight.

SPIDER Great.

GUMDROP You're the biggest friendliest funniest looking spider I've ever seen.

CAPCOM And Spider - Gumdrops. Houston. We are copying you through the Huntsville for the next five minutes.

SPIDER Okay.

CAPCOM And Gumdrops, in regards to your last request, we have no TM here at the Huntsville in regards to that power arm.

GUMDROP That's interesting.

GUMDROP Houston - Gumdrops.

CAPCOM Go, Gumdrops. Houston.

GUMDROP Roger. We've got a minute here. The only thing I could think of on that probe is that my fingers slipped off of the switch before it got all the way out. Other than that I just can't think of a thing.

CAPCOM Roger. That's about the only thing we can come up here with - that you didn't hold the switch long enough, Dave. I guess - how do you feel about it. You think it's anything - any problems.

GUMDROP No, I really don't. I went back to see if they (garbled) a way out to retract and I had the barber poles which said they had extended all the way. Then I went up to

extend again and it dropped all off.  
CAPCOM Roger, Gumdrops. Copy.  
SPIDER Dave, I think what we'll do is I'll come  
on up and stop out front there. Pitch over so you can look  
at our ascent engine.  
GUMDROP Okay. I agree. We ought to get on with  
it.  
SPIDER Yes.  
GUMDROP What kind of range do you have now?  
SPIDER I have 9,800 feet and our range rate is  
32 and one-half feet per second.  
GUMDROP Thank you.  
SPIDER I have just a little bit of (garbled)  
up.  
GUMDROP Roger. I have just about 9,000 feet and  
33.  
SPIDER Okay.  
SPIDER Okay, I'll turn on my range/range rate now,  
Dave.  
GUMDROP Okay.  
SPIDER Okay, I just went to 6,000 feet at 30  
feet per second.  
GUMDROP Okay.  
PAO Six thousand feet is the first breaking  
gate.  
CAPCOM Okay. We copy you - right on the break-  
ing schedule, Spider. And we'll see you over Hawaii in  
about three minutes.  
PAO This is Apollo Control at 98 hours, 27  
minutes. Huntsville has LOS. And Spider right on the flight  
plan numbers at that first breaking gate - which called for  
30 feet per second at 6,000 feet, and that's exactly what  
he called out as showing on his rendezvous radar. As you  
heard discussion on the probe during this pass, Dave Scott  
has come to the conclusion that maybe he didn't hold the  
switch in long enough during the undocking. He has tried  
it since that time and it appears to work properly. We'll  
come back up at Hawaii at 98 hours, 30 and one-half minutes.  
This is Mission Control Houston at 98 hours, 29 minutes.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 9830 CST 1230 299/1

PAO This is Apollo Control 98 hours 30 minutes.  
We'll stand by now for Hawaii acquisition. Maybe we'll pick  
up some air-to-air prior to acquisition as we have on another  
site or two. We're 32 and a half minutes away from the TPI  
burn now.  
SPIDER -- the dock was co-ax by now.  
GUMDROP Okay, I'm at 550 feet, 10 feet per  
second.  
SPIDER Okay, sounds pretty good.  
CAPCOM Spider/Gumdrop, we've got you through  
Hawaii now good and solid, and I copied your last transmission,  
sounds great.  
GUMDROP Okay.  
GUMDROP Your fronts are just little yellow dots.  
SPIDER Yes, they're really pulling a lot of stuff  
off.  
SPIDER Okay, we're 5 feet per second, about  
610 feet.  
GUMDROP Okay.  
GUMDROP But you are up-side-down, again.  
SPIDER Yes, I was just thinking, one of us  
isn't right side up.  
GUMDROP Boy, you've got contraptions hanging out  
all over.  
SPIDER (garbled)  
SPIDER Okay, I have us about 340 feet.  
GUMDROP Okay, looks closer than that.  
SPIDER Doesn't it, though?  
SPIDER Okay, got your camera out so you can  
take a picture of my bottom half?  
GUMDROP Roger, why don't you come all the way in  
and stop and then pitch over.  
SPIDER Yes, that's what we're doing, we come on  
in and stop and then you going to take over station keeping  
and I'll pitch around.  
PAO 35 minutes since TPI.  
GUMDROP Give me a mark next time you turn your  
thrusters on.  
SPIDER Okay, 3, 2, 1 MARK.  
GUMDROP Thank you.  
CAPCOM How does that sports car handle, Jim?  
SPIDER Pretty nice.  
SPIDER Okay, Davey, it says 100 feet on the radar  
tape. It looks a little closer to that to me, but what do you  
say we stop here?  
GUMDROP Okay, that's a good idea.  
SPIDER Okay, I'll get a STOP and stabilize and  
then give it to you.  
GUMDROP Okay, that looks pretty good to me.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 98:30 CST 1230 299/2

SPIDER Okay, good.  
SPIDER Let me take a couple of pictures of your  
nose, then I'll start pitching around.  
GUMDROP Alright.  
GUMDROP Okay, you tell me while I guide it, okay?  
SPIDER Okay, Dave, you've got it now.  
GUMDROP Alright, I've got it.  
SPIDER I don't even see you in there, David.  
GUMDROP Oh, I'm here.  
GUMDROP I've been waiting for you to bring that  
good water back.  
SPIDER Okay, Dave, we're going to start up on  
AUTO MANEUVER here, and we're going to pitch up and then you  
can take a picture of our bottom.  
GUMDROP Alright, here we go.  
SPIDER 2 degrees per second. (garbled) degrees  
per second.  
GUMDROP That's a little better.  
GUMDROP (GARBLED)  
SPIDER (garbled)  
GUMDROP Looks like a big black hole where an  
engine used to fire.  
SPIDER Okay, get a picture of that again.  
GUMDROP I've got a couple, why don't you just  
keep going the way you're going.  
SPIDER Okay.  
GUMDROP You've got another 20 degrees to go.  
GUMDROP Okay, I can see injector, as a matter of  
fact. I can even see the chamber right now.  
SPIDER Okay, fine. Let's take another picture  
and we're going to maneuver back around.  
SPIDER Okay, this will be degrees per second.  
GUMDROP Okay, go ahead, I've got the pictures.  
GUMDROP How fast you doing to do this one?  
SPIDER 2 degrees per second.  
GUMDROP Okay.

END OF TAPE

GUMDROP Say a mark before you start, will you?  
SPIDER Okay.  
SPIDER I'll maneuver now, Dave. You ready?  
GUMDROP Go.  
SPIDER Houston, for your information we could  
never get the radar to unlock, so we couldn't (garbled).  
CAPCOM Roger, understand. The rendezvous radar  
stayed locked.  
GUMDROP Okay, I guess the next order of business  
is to get set up.  
SPIDER Roger, get set up and let's get on with  
the docking.  
GUMDROP Okay, do you want to stationkeep on me?  
SPIDER I've got it.  
GUMDROP You've got it.  
CAPCOM Gumdrops, Houston. We're standing by for  
your logic and power on.  
GUMDROP Rog, Houston. Thank you. Logic on my  
mark, 3, 2, whoops. Stand by. Okay, 3, 2, 1, mark.  
CAPCOM Rog, copy.  
CAPCOM And Gumdrops, Houston. You are go for  
power on.  
GUMDROP Roger, understand. Go for power on.  
Pyros arming up.  
GUMDROP Okay, Houston, this is Gumdrops here. I've  
got the full extend retract switch in retract. I've got two  
barber poles. Should have a couple of grey, I believe.  
CAPCOM Rog, Gumdrops. We copy.  
SPIDER When did they go on barber pole, Dave?  
GUMDROP Well, when I checked them for full exten-  
sion before they were barber pole.  
SPIDER Rog, maybe that's right, huh? Okay, now  
I went, now I cycled again out to extend and now back to re-  
tract and I've got two grey.  
GUMDROP Okay.  
SPIDER So I think we're all right now.  
GUMDROP Yes, let's get on with it and see if we  
really are.  
SPIDER Okay, do you want to try automatic retract?  
GUMDROP Let's try automatic retract just like we'd  
talked about it.  
SPIDER Okay.

SPIDER Why don't you do your roll? When you  
do that then I'm - how's the sun? Would you be able to  
dock on top of me if I can't see you?  
GUMDROP I'm in good shape sun-wise.  
SPIDER Okay, fine.  
GUMDROP Maybe we ought to not try automatic  
retract, because what if I - There's something sort of wor-  
rying me if I hit the retract now, it might go.  
SPIDER Okay, fine. That's a good idea. Excel-  
lent idea. Let's leave it where it is and when I punch in,  
you pull me in.  
CAPCOM Spider, Houston.  
SPIDER Go ahead.  
CAPCOM Rog, would you verify your DAP load prior  
to this docking?  
SPIDER Roger, the DAP's 4 balls 2.  
CAPCOM Okay, thank you very much.  
GUMDROP Houston, Gumdrop.  
CAPCOM Go, Gumdrop.  
GUMDROP I think we're okay on the probe now,  
do you concur?  
CAPCOM Rog, it sounds like it's okay now, Dave.  
Yes, we concur.  
GUMDROP Okay. Okay, Spider, I'll do station-  
keeping when you turn around.  
SPIDER Why don't you do your roll first, Dave?  
GUMDROP Fine, here we go.  
SPIDER Got window over on the other side.  
GUMDROP Rolling around 60.  
SPIDER Roger.  
GUMDROP Okay, I'm holding now 60 degree left  
roll. Could you stand by one second while I turn the docking  
light on, please?  
SPIDER Sure.  
SPIDER Okay, I've got it, Dave, very faintly.  
GUMDROP Stand by.  
GUMDROP Okay, now all set, tighten the bands  
and the whole works.  
SPIDER Okay, Dave, now you stationkeep and I'm  
going to pitch over.  
GUMDROP Okay.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 98:40, CST 1241 300/3

GUMDROP Hey, you've still got the target.  
SPIDER Good.  
GUMDROP And the drogue.  
GUMDROP Right there looks pretty good, okay.  
Okay, you've got it, huh?  
SPIDER Not yet.  
GUMDROP Okay.  
SPIDER Okay, I can't see my COAS against you  
right now; let me get up closer.  
GUMDROP All right. Okay, you've got the station-  
keeping, right?  
SPIDER I've got it.  
GUMDROP All right.  
SPIDER I've got to look through the top of my  
helmet and am I beaded up?  
GUMDROP You've got to come back quite a ways,  
to your rear. Easy does it. Whoops, too far.  
SPIDER Yeh, I know.

END OF TAPE

GUMDROP - that's too far.  
SPIDER Yeah, I know.  
GUMDROP It looks like a sporty little machine.  
SPIDER (garble)  
CAPCOM It's 9915, Gumdrops.  
GUMDROP Okay, we've got about 25 minutes.  
CAPCOM That's affirmative.  
SPIDER I just can't see the COAS, Dave. I don't  
know exactly where you are with the ...  
GUMDROP Okay, do you want me to do it?  
SPIDER No, let me work my way in here a little  
closer.  
SPIDER Dave, I just can't see it. Let me get  
in a little closer.  
GUMDROP You're coming fine. Just coming easy  
like that, looks like you are coming from an angle, but you  
are coming in with the right attitude. You ought to go for-  
ward and to your right a little bit, relative to your body.  
GUMDROP You're fine. Right there.  
SPIDER I doesn't look it to me.  
GUMDROP You are going to come in from an angle  
anyway, you're doing good. Your yaw is off about 2 degrees.  
SPIDER I just can't see the darn COAS. I can't  
see what my attitude is.  
GUMDROP Yeah.  
SPIDER Okay, I'm lined up in translation, but  
I can't tell what my attitude is, Dave. Somehow, oh, I see  
it, there it is, there.  
GUMDROP Now you're coming in. That's looking  
better. There you go. I think you've got a handle on it  
now.  
SPIDER It keeps disappearing.  
GUMDROP Okay, now you're looking pretty good.  
GUMDROP Okay, you're moving into the boundary.  
You're inside the capture mounting now. You're okay. Look-  
ing good.  
SPIDER Okay, I can see it now.  
SPIDER That's really sporty.  
GUMDROP Sure is, I can tell. You are looking  
good.  
GUMDROP Keep coming. Almost there. Okay, you  
are about there.  
GUMDROP I have capture.  
SPIDER Very good.  
gumdrop Okay, let's get her lined up.  
SPIDER Okay, why don't you do it. I can't tell  
where it is. We're free now.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 9850, CST 1250 301/2

CAPCOM Good show, Spider.  
SPIDER Roger. Onboard fuel reading 6565, make  
it 55 and 55.  
CAPCOM Rog, reading 5555. Thank you, Rusty.  
SPIDER Did you get to watch it?  
GUMDROP Hang on. (garble) S-band.  
SPIDER Whew. I haven't heard a song like that  
in a long time.  
GUMDROP That was a very nice docking.  
SPIDER Dave, that wasn't a docking, that was  
an eye test. Okay, Houston. We're locked up.  
CAPCOM Sounds like you passed the 2010. That  
sounded real beautiful. Good show.  
GUMDROP Okay, Spider. I'm in free and you're  
in free and at that you may proceed into the tunnel here  
when I get squared away.  
SPIDER Okay, Dave. We will start getting ready  
for the ... adapter.  
GUMDROP Okay. Why don't you take a break for  
a while?  
SPIDER No, we've still got a lot to do.  
SPIDER Man, when I take a break, I'm going to  
bed for 3 days.  
GUMDROP Rog.  
SPIDER Houston, did you get that?  
CAPCOM Rog, Spider, Houston copies. We concur,  
3 days off.  
SPIDER When's that? Saturday, Sunday, and  
Christmas?  
PAO That was Jim McDivitt.  
CAPCOM Hard day's work again. It looks real  
good, troops.  
SPIDER Thank you, Smoky. Smoky, are you still  
there?  
CAPCOM Yes, Jim. We've still got you for about  
another minute here.  
SPIDER Okay, listen. I hope the whole world  
is listening, but I tell you, I think we've got the greatest  
set of flight controllers that anybody could find. I would  
like to thank you all. I'm sure the rest of the guys up  
here would too.  
CAPCOM Rog, Spider, we copy. Thank you very  
much.

END OF TAPE

PAO This is Apollo Control at 99 hours, 2 minutes and there are a number of cigars being broken out in the control room right now - after that docking. Jim McDivitt's problem - there, the COAS he kept referring to is Crew Optical Alinement Sight - it's in his window and it has a lighted reticle in it but the background light was so bright that it washed out the reticle in his sight and he had very difficult time seeing through the sight and alining because of that reason. We have some unofficial times here, for rendezvous and docking. The rendezvous times that we will give you are plus times from TPI. The TPI time was 97 hours, 57 minutes, 59 seconds. 36 minutes, 42 seconds from that time, Jim McDivitt said, "It looks pretty good to me", indicating that the relative motion between the two vehicles was nulled. At 37 minutes even from TPI, Dave Scott in Gumdrop took over the station keeping task. As they were breaking and coming in, Dave Scott remarked that the LM thrusters were throwing a lots of stuff out - and he also said, "You have contraptions hanging out all over you." We don't know precisely to what he was referring - whether there was something hanging down from the staging or whether he was referring to all of the antennas that are on the ascent stage of the Lunar Module. Capcom Stu Roosa asked Jim McDivitt "How does that sportscar handle Jim?" and the response was, "Pretty nice." The ascent stage alone is a pretty zippy little vehicle and handles somewhat like a sportscar apparently. We marked the report of auto capture during the docking at 98 hours, 58 minutes, 41 seconds. We marked the report that they were locked up at 98 hours, 59 minutes, 38 seconds. And you heard Rusty Schweickart report the onboard RCS propellant remaining, 55 percent in both systems. So we have completed this crucial rendezvous and docking - very tiring day for the crew and I think you heard their conversation there - they are ready for a rest - however, they still have a fair amount of work to do before they can take a rest today. They'll be cleaning up the Lunar Module and reconfiguring it for the unmanned ascent propulsion system burn to depletion. Which will take place about 102 hours, about 3 hours from now. So Gumdrop and Spider are back together. McDivitt and Schweickart still in the LM, preparing it for the long burn of the ascent propulsion system. We will be coming up at Ascension - here we are now.

CC Okay, ARIA, you can go local. I guess we aren't going to get them; we'll try them through Ascension; thank you.

SPIDER Go ahead Houston, you just came in.

CC Oh Roger, Spider - we are curious about the option on the AOT star alinement - are you going to do that?

SPIDER Houston, I don't know - garble

CC Stand by.

SPIDER I've got my flight plan special (garble)  
 CC Thank you.  
 SPIDER And anytime you've got it, we'll take the  
 update on the P30 for the APS burn.  
 CC Roger. Hold it out. Spider, Houston.  
 SPIDER Go ahead.  
 CC Roger The first send up to you we feel  
 we can make is about 102 hours; it's 101.52.  
 SPIDER Okay, I'm just wondering about our difficulty  
 in trying to clean up big messes when we're moving things back  
 and forth and if we take too much time out, I was concerned  
 about getting the thing ready. We'll see how things go here,  
 okay?  
 CC Okay - there is - first opportunity is  
 a little over an hour from now and I didn't even want to pass  
 that on to you - it's your decision - but I don't think you  
 can make that one.  
 SPIDER Yeah, I kinda doubt it too.  
 CC Okay; we concur not even two for that one,  
 and we're looking now at 10152. Gumdrop, do you read Houston?  
 GUMDROP Houston, did you call Gumdrop?  
 CC Roger, if we are going to do the AOP star  
 alinement, I guess it'll depend on how things go but I have some  
 gimbal angles you'll need for that and I can give them to you  
 anytime you want, if you want them at all.  
 GUMDROP Why don't you give them to me - let me get  
 a piece of paper here and we'll have them if we can use them.  
 CC Okay.  
 GUMDROP Gumdrop is ready to copy.  
 CC Roger. For star 15, row 35 36 32 81 365.  
 And star 25, 34 74 26 61 35 97.  
 GUMDROP Roger; copy. For star 15, 35363281 365.  
 For star 25, 347426613597.  
 CC Roger. That is confirmed Gumdrop - and one  
 fast question - did you ever see the tracking light on Spider?  
 GUMDROP No, it was out when he got here.  
 CC Understand.  
 gumdrop But the way this navigation works in here,  
 you hardly need a nightside pass.  
 CC Gumdrop, Houston copies. Sounds great.  
 GUMDROP The next -

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 99:12 CST 1312 303/1

GUMDROP            Go the next slide.  
CAPCOM            Spider, Houston.  
CAPCOM            Spider, Houston.  
GUMDROP            This is Gumdrops, go.  
CAPCOM            Gumdrops, would you relay to Spider that  
we would sure like to have him check that OPS heater again  
before he stows the OPS that failed, and I'm going to lose you  
here and we'll try to talk to you over Tananarive at around  
25.

GUMDROP            Roger, understand, and Spider they want  
you to check the OPS heater, the one that failed, before you  
put it away.

SPIDER            Okay.

GUMDROP            they got it, Houston.  
CAPCOM            Roger, Gumdrops, copy, and I copied prior  
to this.

PAO                This is Apollo Control at 99 hours 18  
minutes. Ascension has LOS. We have a very short pass at  
Tananarive this time, we'll come back up at 99 hours 24 and  
a half minutes, and see how the communications are through  
Tananarive. This is Mission Control Houston at 99 hours  
19 minutes.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 99:24, CST 1324, 304/1

PAO This is Apollo Control at 99 hours, 24 minutes, and we are acquiring at Tananarive. We'll stand by.  
CAPCOM Spider, Gumdrops. This is Houston through Tananarive. Standing by.

SPIDER Hey, Gumdrops, are we in any kind of -  
SPIDER I found out what, Dave. Hey, right now we are in the right kind of attitude.

SPIDER Hey, listen. Maybe if you aren't too free and we took control here, we could just jockey around and do it.

SPIDER We have it.

GUMDROP Also.

CAPCOM Spider - Gumdrops. Houston through Tananarive.

CAPCOM Spider - Gumdrops, this is Houston transmitting in the blind. I'm not picking you up. We would like to recommend you use the LM RCS just as much as possible. We used just a little more Command Module CSM RCS there than we predicted on the rendezvous.

SPIDER Okay, Houston. This is Spider here. We're using (garbled) thrusters.

CAPCOM Okay. Real good.

PAO This is Apollo Control at 99 hours, 30 minutes. We've had LOS at Tananarive. The next station to acquire will be Carnarvon in approximately 8 and one-half minutes. During this pass over Tananarive we asked that Spider start - take over the attitude - the control job to conserve RCS propellant in the Command Service Modules. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 99:40 CST 2340 305/1

PAO This is Apello Control at 99 hours 40 minutes, and Carnarvon has acquisition of Gumdrops and Spider. And Spider/Gumdrops, this is Houston through Carnarvon.

GUMDROP Roger, Gumdrops.  
CAPCOM And Spider, do you read Houston? Gumdrops if they're too busy to answer let me know.  
GUMDROP Go ahead, Houston, Gumdrops.  
CAPCOM Roger. Do you know if Spider's reading me, or is just too busy, can't answer me.  
SPIDER We were reading you, we were kind of busy, Stu.

CAPCOM Gumdrops, at a convenient time would like for you to pass to them this - we want to do a couple of steps on that AGS system, trouble shoot that warning light prior to them doing the AGS align and update.  
GUMDROP Okay, we'll do that.  
CAPCOM Okay.  
CAPCOM Gumdrops, Houston, we're noticing your purge tank down a little.  
GUMDROP Well, just could be from the total pressure.  
CAPCOM Roger.  
GUMDROP Boy, it is down a little, isn't it?  
CAPCOM Roger.  
GUMDROP Okay, Spider, Gumdrops.  
SPIDER Go ahead.  
GUMDROP Hey, listen, we're dropping off quite a bit on our surge tank, and I think it might be either the tunnel or you. The latches look good, I think we've got a good seal. How are you doing over there?  
GUMDROP Go ahead, Houston, Gumdrops.  
SPIDER Okay, we got a cabin pressure way up to 5.9, I think we're going to relieve in a minute here.  
GUMDROP Okay, listen, maybe you ought to open that door. The surge tank is down to 400, and we ought to do something here pretty quick.  
CAPCOM Gumdrops, Houston, could you check your cabin air return valve?  
GUMDROP Gumdrops (garbled)  
SPIDER Is the tunnel okay, Dave? I'll open up the door.  
GUMDROP Yes, I've got the probe out.  
SPIDER Okay open -

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 99:40, CST 1340 305/2

GUMDROP Houston, here's your dock alinement. Do  
you have the star angle difference?  
CAPCOM Stand by, Spider, just one.  
SPIDER Okay, it's 5 zeros -  
SPIDER (garbled) Dave.  
SPIDER Are you ready to copy torqueing angles?  
CAPCOM Okay, I have them now.  
SPIDER Okay, understand you've got the torqueing  
angles.  
CAPCOM Affirmative, Spider, I have the torqueing  
angles.  
SPIDER Okay.  
CAPCOM And that's pretty good on that star  
angle difference. That's the way to work, big team.  
SPIDER Yes, crazy, huh? It's a little longer.  
CAPCOM Yes, it's real swinging, and we're about  
to lose you at Carnarvon in 30 seconds, and we'll see you  
over Hawaii at 04.  
SPIDER Roger, will you have a pad by that time?  
CAPCOM That's affirmative, I have the pad in my  
hand right now.  
SPIDER Okay, we'll see you at Hawaii with it.  
CAPCOM Roger.  
PAO This is Apollo Control at 99 hours 46  
minutes, Carnarvon has LOS. This revolution goes right  
between the acquisition zones of Huntsville and Guam, so we  
won't be back in touch with Gumdrops and Spider until we get  
to Hawaii at 100 hours 04. This is Mission Control Houston  
at 99 hours 47 minutes.

END OF TAPE

PAO This is Apollo Control at 100 hours,  
5 minutes and Hawaii has acquired Gumdrops and Spider.  
CAPCOM Spider - Gumdrops. This is Houston through  
Hawaii.  
GUMDROP Ahoy, Gumdrops. We're making progress.  
CAPCOM Roger. Understand and whenever you all  
are ready I have your APS depletion PAD and your LM jettison  
attitude.  
GUMDROP Standby.  
CAPCOM Roger.  
CAPCOM Spider, Houston. We'd like to uplink your  
state vector. I notice you are in POO now. We can GO if you  
will give us permission.  
GUMDROP Is that for Spider or Gumdrops?  
CAPCOM That was for Spider.  
SPIDER Roger, Houston. Say again. This is  
Spider.  
CAPCOM Roger, Spider. If you are in POO we'd  
like to uplink you a state vector.  
SPIDER Okay. Go ahead.  
SPIDER Okay. Go ahead. I am ready to copy  
your PAD.  
CAPCOM Okay. And are you ready - Okay, here is  
the APS depletion - 101 52 44 00 plus 52 356 minus 52682  
plus 00520 74275 314023 guess you really didn't need  
those, did you? Okay, plus 48549 minus 52675 plus 19626  
that's the end of the APS depletion PAD and your LM weight  
9549.  
SPIDER Okay, on the readback I got 101 52 44 00  
plus 52 356 minus 52 682 plus 00520 74275 314023 plus 48549  
minus 52675 plus 19626 and LM weight 9549.  
CAPCOM Roger. And for the jettison attitude  
I have angles for either the CSM or the LM if you wanted to  
maneuver with the LM - save a little Command Module CSM RCS  
fuel.  
SPIDER Okay. Go ahead with them. I don't know  
which one of them we will do.  
CAPCOM Okay. Reading the angles for the LM  
roll 314, pitch 023, yaw 011 and the CSM angle 318 decimal  
5 282 decimal 0 044 decimal 7 and we are through with the  
computer.  
SPIDER Roger. I understand that you are through  
with the computer. Be advised our docking range angle now  
has changed and therefore, I think, probably the CSM angles  
will have to be modified to a certain extent. Docking range  
angle is now minus 0.2.  
CAPCOM Roger. Understand docking range is minus  
0.2. How come you were so sloppy in roll there?  
SPIDER I don't think I'll say anything to that.

CAPCOM (Laughter.)  
CAPCOM Okay. And Rusty we've got a little trouble shooting here on the AGS we'd like to do on that warning light. We don't know if you want to take the time or not.

CAPCOM Spider, this is Houston. Do I still have you?

SPIDER All right. Go ahead, Houston.

CAPCOM Roger. We've got a procedure here that we'd like to do concerning the AGS and it's that caution light. We'd like to have you do this procedure prior to the AGS update in your checklist.

SPIDER Roger.

SPIDER Roger.

CAPCOM Are you ready to copy?

SPIDER Standby. How long is it?

CAPCOM Oh, it's about 5 steps.

SPIDER Okay. Standby.

SPIDER Okay. Go ahead.

SPIDER Houston, go ahead.

CAPCOM Roger. Step 1 is to form normal turnoff procedure. Verify the AGS caution light goes out. Open, then close the caution CWEA circuit breaker. Perform the normal turnon procedure and then after you have done this reset the AGS time and update and align as a normal checklist.

SPIDER Okay. You want a normal AGS turnoff. You want to verify the AGS caution light out. Open and close CWEA breaker, perform a normal turnon and update and align the AGS.

CAPCOM That is affirmative, Spider.

SPIDER Hey, Jim. Are you going to do that checklist - Okay, seems to me there's one more thing I have got to get (low transmission).

CAPCOM Spider. Houston. We have you through the Redstone now.

SPIDER (Garbled.)

CAPCOM Yes. Okay.

SPIDER (Garbled.)

CAPCOM Roger, Rusty. We also would like to request that you bring the LM COAS back into the CSM.

SPIDER Roger. Do you have data at the Redstone here, Houston.

CAPCOM That's affirmative.

CAPCOM That's affirmative.

SPIDER Roger. Do you want me to go through that procedure right now?

CAPCOM On the AGS? Yes, let's do.

SPIDER Coming up.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 100:05, CST 1405, 306/3

GUMDROP Houston, Gumdrops.  
CAPCOM Go ahead, Gumdrops.  
GUMDROP Do you have any suggestions on anything  
else we might need on the LM to lighten up the command  
module?

CAPCOM We copy that. Stand by, we'll put that  
in work. We'd like to have you turn off the fan in 82  
tank suit.

GUMDROP Clear.  
SPIDER The point is still on. The pressure  
light came on when I went to stand by on the power up  
again and it stayed on after pushing in the 80A breaker  
and going to operate.

CAPCOM Roger. We copy. Okay, we have no  
more questions, Rusty. If we could get you to cycle the  
track light on and off, we've got data now. Could you  
do that for us?

SPIDER Spider, light track on.

END OF TAPE

CAPCOM That's affirmative.  
SPIDER Roger. Do you want me to go through that procedure right now?  
CAPCOM On the AGS? Yes, let's do.  
CAPCOM And Spider, one other thing. We would like to - this is on rendezvous 42, step 5. Do not ascent feed system A. Leave system A in normal and system B to ascent feed interconnect.  
SPIDER Understand do not ascent interconnect system. Gumdrops, did you get that?  
GUMDROP Yes, he didn't want one of them ascent interconnect, but I don't know whether it was A or B.  
CAPCOM Spider, it is do not connect - interconnect system alpha. Interconnect system baker only.  
SPIDER Roger, bravo -  
CAPCOM Okay, Rusty, one other thing. We want you to leave the track circuit breaker open.  
CAPCOM We've got data now. Could you do that for us?  
SPIDER Is that the track light circuit breaker?  
CAPCOM That is affirmative. Your track light circuit breaker is rendezvous 43, step 3. We would like that open.  
SPIDER It's open now.  
CAPCOM Very good, thank you.  
SPIDER - okay, Jim.  
CAPCOM Thank you very much and one other change to your checklist and the closeout here. We want you to -  
GUMDROP Commander.  
SPIDER Roger, do you read?  
GUMDROP Roger, now I do.  
SPIDER Commander's suit isolation with suit disconnect, connect the LM hoses and stow, CDR transfer to the CSM with the ISA and the CDR rendezvous checklist. I've done that. We've got the index and we've got the PLSS over -- PLSS cartridge over here. And do you have PLSS stowed now?  
GUMDROP Roger, go ahead. I have stowed on the floor. Go ahead and read it.  
SPIDER Okay, LM switch closeout for jettison, ORDEAL lighting off.  
GUMDROP Lighting off. -- off interconnect.  
CAPCOM Very good, thank you.  
SPIDER Master arm off.  
GUMDROP Master arm off?  
SPIDER On, I mean. Master arm on.  
GUMDROP On. Okay.  
SPIDER Audio, Commander. S-band TL off.

GUMDROP Off.  
 SPIDER Relay off.  
 GUMDROP Relay off?  
 SPIDER Roger. S-band TL off, relay off.  
 GUMDROP Roger.  
 SPIDER Next step. Guide and control PGNCs.  
 GUMDROP Guide and control PGNCs.  
 SPIDER Guide and control AUTO.  
 GUMDROP Mode control.  
 SPIDER Negative. Throttle control up.  
 GUMDROP Throttle control AUTO.  
 SPIDER Manual throttle Commander.  
 GUMDROP Manual throttle commander.  
 SPIDER Engine arm off.  
 GUMDROP Engine arm off.  
 SPIDER Ascent helium regs 1 and 2 talks back  
 gray.  
 GUMDROP Ascent helium regs 1 and 2 talks back  
 gray.  
 SPIDER - abort stage flush and guarded.  
 GUMDROP Roger. Your first word is cut out every  
 time. Abort and abort stage flush and guarded.  
 SPIDER I'm using the mike -- I'm using the mike  
 button. Can you hear me now? Okay, next step. System A  
 and B ascent fuel and ascent oxidizer 4 talks back barber  
 pole.  
 GUMDROP - barber pole.  
 SPIDER System A and B quad 1, 2, 3, 4. A talks  
 back gray.  
 GUMDROP I can't verify it.  
 SPIDER Quad B talks back barber pole.  
 GUMDROP Quad B talks back barber pole.  
 SPIDER System A and B main shutoff valve talks  
 back gray.  
 GUMDROP A and B shutoff, gray.  
 SPIDER Attitude monitor to AGS.  
 GUMDROP Attitude monitor to AGS.  
 SPIDER Think that must be your ball, huh?  
 GUMDROP Yes, it's on the LMP side.  
 SPIDER Glycol to pump 1.  
 GUMDROP Glycol to pump 1.  
 SPIDER O2, H2O quantity monitor caution and  
 warning reset.  
 GUMDROP - reset.  
 SPIDER Next step. Attitude control, free to  
 mode control.  
 GUMDROP Mode control

SPIDER Mode control at hold.  
GUMDROP Mode control at hold.  
SPIDER RCS system A/B 2, quad 1, 2, 3, 4 AUTO.  
GUMDROP AUTO.  
SPIDER Exterior lighting off, they have here.  
Where do they want it, track or off?  
GUMDROP Off.  
SPIDER ACS 4 jet to enable.  
GUMDROP Roger, enabled.  
SPIDER Inhalation to enable.  
GUMDROP Inhalation to enable.  
SPIDER Converter to number 2.  
GUMDROP Converter is on 2.  
SPIDER Pad 5 and 6 backup feed 2 9, talk back  
grey.  
GUMDROP Backup feeds on, talk back grey.  
SPIDER Pad 5 and 6 normal feed 2, off reset,  
talk back barber pole.  
GUMDROP Off reset, talk back -  
GUMDROP Off reset, talk back barber pole.  
SPIDER Oh oh, here's something I can't read.  
Audio -  
CAPCOM Jim, that's audio LMP.  
SPIDER Thanks. Audio LMP, S-band TR off.  
GUMDROP S-band TR bye bye, Houston, off.  
SPIDER Relay off.  
GUMDROP Relay off.  
SPIDER S-band PM prime prime, off. PCM range  
off high.  
GUMDROP Got it.  
SPIDER Tape off, talk back barber pole. Hey,  
we didn't get (garbled).  
GUMDROP Okay, I'll get it.  
SPIDER Did you get the tape off of there?  
GUMDROP I'll get it.  
SPIDER Okay, why don't you get it and throw it  
in here now so that we won't forget it.  
GUMDROP S-band off.  
SPIDER Forward 1.  
CAPCOM That was a change. We want that on num-  
ber 2 off.  
SPIDER Okay, S-band 2 off.  
GUMDROP Jim, you'll have to say that one again.  
I missed it after we talked about the tape recorder. You  
bypassed me there.  
SPIDER Okay, S-band number 2 off.  
GUMDROP Roger, got it.

SPIDER Next (garbled) diverters go to egress.  
GUMDROP (garbled) diverters, fully egressed.  
SPIDER Cabin repress closed.  
GUMDROP Cabin repress is in close.  
SPIDER (garbled) closed.  
GUMDROP (garbled) closed.  
SPIDER Descent 02 closed.  
GUMDROP Is that descent, Jim?  
SPIDER Descent, descent 02 closed.  
GUMDROP Roger, got you.  
SPIDER Ascent number 1 02 closed.  
GUMDROP I think that was ascent number 1 02  
closed. I don't know why you're cutting out but the first  
words are cutting out, Jim.  
SPIDER Just a second. Let me check some of  
the switches.  
SPIDER Yes, these are the same kind I've always  
used. Let me check another lead here.  
CAPCOM Rusty, how do you read Houston?  
SPIDER You're five square, Houston.  
CAPCOM Do you want me to read the list?  
SPIDER No, that's okay.  
CAPCOM Okay.  
SPIDER Houston, how do you read me?  
CAPCOM I read you loud and clear, Jim.  
SPIDER Okay, I guess we're incompatible up here.  
SPIDER Okay, that's ascent number 1 02 closed.  
GUMDROP Roger, ascent number 1 02 closed.  
SPIDER Ascent number 2 02 open.  
GUMDROP Ascent number 2 02 open.  
SPIDER Suit isolation Commander suit disconnect.  
GUMDROP Suit disconnect.  
SPIDER Suit circuit relief auto.  
GUMDROP Circuit relief auto.  
SPIDER Cabin gas return to egress.  
GUMDROP Cabin gas return going egress.  
SPIDER Cabin relief at dump 2 to Auto.  
GUMDROP Cabin relief at dump, the forward is  
auto, and I'll put the upper in auto.  
SPIDER Okay. DFI primary on, secondary off.  
GUMDROP DFI, DFI primary on, secondary off.  
SPIDER Okay, LMP transfer to the CSM - umbilicals  
We'll send him down to you in just a minute.  
GUMDROP Okay.  
CAPCOM Hey, Rusty, Houston. I want to remind  
you again that you're going to have to put new time in the  
AGS. That procedure we gave you wiped the time out of the  
AGS.

END OF TAPE

CC ...new time in the AGS - that procedure  
 that we gave you; wipe the time out of the AGS.  
 GUMDROP Roger, Houston; read you.  
 CC And Rusty, want to remind you again of the  
 new LM weight we -  
 GUMDROP Roger, understand.  
 SPIDER Hey Rusty, are you still up there?  
 GUMDROP Yeah.  
 SPIDER Okay, are you switched over to the umbilical  
 yet?  
 GUMDROP No, I'm loading the AGS here Jim; just a  
 sec.  
 SPIDER Okay. Want me to transfer over now?  
 GUMDROP (garble)  
 GUMDROP Are you still on LM comm, or on our comm?  
 SPIDER I'm on LM comm.  
 GUMDROP Okay.  
 SPIDER Stand by. I'll switch over.  
 GUMDROP Switch over umbilicals and when you do that,  
 turn your suits all on, turn your auto power on OFF so we can  
 switch over to it.  
 SPIDER Okay. Dave?  
 SPIDER Boy, sure getting a bunch of noise.  
 SPIDER Dave?  
 GUMDROP Okay, you can turn on my suit flow Jim.  
 SPIDER Okay.  
 GUMDROP Okay, suit flow is on.  
 SPIDER Okay, and I'm gonna be disconnecting the  
 comm here and give me about a minute and you can connect up there  
 GUMDROP Okay, just a minute.  
 CC And Gumdrops, this is Houston. AT any  
 convenient time, stand by one Gumdrops; disregard that.  
 GUMDROP Okay, we will disregard your message.  
 CC Roger. Understand.  
 CC Okay, Gumdrops, Houston. If you've got one  
 of the troops in there with a spare hand to write, I could give  
 you your block data now; that would be one thing out of the way  
 now for the night.  
 GUMDROP Okay, just a minute.  
 CC Roger.  
 SPIDER Houston, this is Spider I guess.  
 CC Roger Spider I guess, this is Houston  
I know.  
 SPIDER Okay. If you can see the DSKY right now,  
 you'll notice that the angles are (garble) does not correspond  
 with what you passed me on the data.  
 CC Okay, Rusty, that's something that I was wanting  
 to get to you - the angles that I passed you were FDAI angles.

APOLLO 9 COMMENTARY, 3/7/69, GET 100:25, CST 1425 308/2

SPIDER Roger, that's what I'm looking at, FDAI angles. However, YAW is not constrained and it's a possibility that if we went to a right YAW angle that the pitch and roll would come in.

CAPCOM Roger, we agree with that and we're having guidance reconfirm these angles now, Spider.

GUMDROP Houston, go ahead with the block data if you like.

CAPCOM Okay, I've got about a minute here, I'll start reading. 0654 baker plus 338 minus 1699 and Spider, we're saying if you do go to those angles to YAW to that 011, that we will have the right angles.

SPIDER Okay.

CAPCOM And I'm going to lose you here, Gumdrop. I'll finish up this block data over Ascension and we'll hit Ascension at 42.

GUMDROP Understand, 42.

PAO This is Apollo Control at 100 hours, 35 minutes into the mission. Antigua has lost the signal. During this pass you heard Jim McDivitt reading off a checklist to Rusty Schweickart, Jim back in the command module. Rusty still on the LM powering it down configuring it for this ascent propulsion system burn to depletion. We passed up a pad for that burn. Time of ignition, 101 hours, 52 minutes 44 seconds. DELTA V of 7,427.5 feet per second. This is about twice as much as we actually expect to get programming the computer for that much to insure that we will get a burn to fuel depletion. One of the last things that Rusty Schweickart will do before transferring back to the command module is to activate the ascent feed system to the LM RCS. This is the device that enables the RCS system to draw propellant from the ascent engine fuel tank. As you heard, we will only activate that system, the ascent feed, for RCS system A, not for System B. Ascension will acquire at 100 hours 42 minutes. We'll come back up then. This is mission control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 100:42, CST 1442 309/1

PAO This is Apollo Control at 100 hours,  
42 minutes, and Ascension Island has acquisition.

CAPCOM Apollo 9, Houston. Apollo 9, Houston.

CAPCOM Apollo 9, Houston through Ascension.

SC Hello, Houston. This is Apollo 9. The  
Gumdrop (garbled) right now and we seem to not have the right  
angles on our (garbled).

CAPCOM Apollo 9, this is Houston. You sort of  
dropped out on me. We're showing the right angles on the  
LM DSKY. Are you saying your angles are not correct in the  
command module?

CAPCOM Apollo 9, Houston.

CAPCOM Apollo 9, Houston. If you read us we  
are showing both vehicles in the proper attitude, proper  
angles.

SPIDER Hey, Houston, this is Spider.

CAPCOM Go, Spider.

SPIDER Roger, I want to notify you that on the  
AGS all day long, 407 has been jumping to a plus 1. I'm  
going to set it back to zero here but the reason (garbled)  
it's going to stay there until the burn time.

CAPCOM Rog, copy, understand.

GUMDROP And Houston, this is Gumdrop here. Do  
you want us to be in the middle of the deadband to hold this  
thing here.

CAPCOM Stand by, Gumdrop.

CAPCOM Gumdrop, Houston. Gumdrop, this is  
Houston. If you read, we recommend in the CSM and then  
deadband.

GUMDROP Okay.

CAPCOM And Spider, Gumdrop, we'll see you over  
Carnarvon at 14, if you read.

GUMDROP 14.

PAO This is Apollo Control at 100 hours,  
49 minutes. Ascension - hang on.

PAO We had LOS there but we thought we were  
trying to get something from Spider just after nominal LOS  
time, but apparently not. Tananarive will acquire very  
briefly on this revolution. We may or may not be able to  
establish communications. About a minute and a half pass  
there. At 101 hours, 1 minute, if we're not successful there,  
Carnarvon will be up at 101 hours, 14 minutes. And the  
White Team is in the process of handing over to Jerry Griffin  
and the Gold Team. However, Gene Kranz, the Flight Director,  
and most of this White Team will remain here through the

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 100:42, CST 1442 309/2

ascent propulsion system burn. We're estimating the change of shift news conference for 4:30 PM Central Standard Time. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY 3/7/69 GET 101:13:00, CST 15:13 310/1

PAO This is Apollo Control at 101 hours 15 minutes ground elapsed time. We expect to have acquisition at Carnarvon in just a few seconds. Meantime we've had a shift change here at Mission Control. The Gold team has replaced the White. The voice of Capcom during this APS to depletion burn will be that of Ron Evans, astronaut Ron Evans. One other bit of general information to pass on to you and that is that the astronaut, the Apollo 9 crew wives, Mrs. McDivitt, Mrs. Schweickart and Mrs. Scott, are in the viewing room at the present time here to observe this maneuver.

SC Before that do you have a separation attitude for us?

CAPCOM Affirmative, sep attitude roll, 1 3 7.4 pitch 092.5. Yaw 021.9 and note your tig is 101 +32 +44.

SC Okay 137.4 092.5 021.9 at a tig of 101 32 44. Your right there today.

CAPCOM Yea, Roger.

SC Okay what's our jettison to get off the LM?

SC In Houston we're ready to....

CAPCOM Okay we're standing by for you Roger.

SC Alright Roger Bus ... at this time.

CAPCOM And Apollo 9 Houston you have a go for power alarm.

SC Roger.

SC And Houston, one other question, what time do you want us to jettison the LM, what time do you want us to get off the LM, do you have any preference?

CAPCOM Roger, 10 minutes prior to your second maneuver or at 22.

SC Okay understand 22.

PAUSE

SC Houston, Apollo 9.

CAPCOM Houston, go.

SC Roger just to clarify one thing, in the procedure there in anchoring the LM. We left the ascent interconnects on system Alpha closed and on Bravo Open. We also ran the same configuration on the main shut out valve, that is we closed the main shut off valve in system Bravo and left it open in Alpha, hopefully that's what you wanted.

CAPCOM 9 Houston affirmative, that's good.

SC Okay thank you.

CAPCOM 9 Houston 30 seconds on the LOS Guam at 2 5 and looking good.

SC Okay fine thank you.

CAPCOM 9 Houston just as a reminder we didn't see your pyros on yet.

SC Okay I'll get them on in just another  
minute or two.

PAO We have passed out of the range of the  
Carnarvon tracking station at the present time. Right now  
we're about 33 minutes away from the propellant depletion burn  
of the Lunar Module upperstage which of course has been identified  
in the air-to-ground communications as the aps burn to depletion  
meaning the ascent propulsion system burn to depletion. To  
review again that burn will take place at approximately 101  
hours 52 minutes 44 seconds into the flight, and this maneuver  
will move the unmanned upperstage of the LM out of the vicinity  
of the command module. During the burn the ground will be  
shooting for a Delta-V of 7427.5 feet per second and the duration  
is planned for approximately 6 minutes. Now the burn really  
is deliberately programed for longer burning time than there  
is fuel available. It's a posigrade or forward burn that's  
planned and the apogee is going to end up to be rather high.  
LM stage probably will be in some type of an elliptical or  
egg shaped orbit with an apogee estimated at about 32 hundred  
nautical miles and a perigee at about a hundred and 30 nautical  
miles. Of course the burn will be in control by the on board  
computer but the ground of course will be the ones who send  
the commands. Prior to the upper stage burn while acquired  
by the tracking station at Guam, the crew will go through  
the disconnect from the LM and execute a separation maneuver  
getting away from it. What this little maneuver will consist  
of is about a 3 foot per second Delta-V slight out of plane,  
which initially sees the CSM arching a little below, behind  
and then above and all the time of course opening the distance  
between the two spacecraft. Later when that upperstage lights  
up the crew will be behind by probably about a half mile, to  
observe, to observe that depletion burn. On the box up here  
we have two types of ignitions, we're counting down the two  
types of ignitions at the present time we're about 10 minutes  
from the separation maneuver or the evasive maneuver as they  
sometimes call it, and we're about 30 minutes, a little over  
30 minutes from that aps burn ignition. At 101 hours 22 minutes  
ground elapse time, this is Mission Control in Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 101:24, CST 1524 311/1

PAO This is Apollo Control at 101 hours, 24 minutes, ground elapsed time. We approaching the tracking site at Guam and we expect to have some communication from air to ground between the Apollo 9 crew and mission control center here when we acquire. That should be in another 4 or 5 seconds. Meanwhile, let's monitor for any conversations.

CAPCOM Apollo 9, Houn, to Hawaii and back.

CAPCOM Apollo 9, Houston.  
SC Please stand by, Houston.

CAPCOM Roger.

CAPCOM It could be that the astronauts are rather busy in this time of preparation prior to the APS burn. Meanwhile, we'll continue to stand by and monitor any type of conversation.

CAPCOM Apollo 9, Houston, 30 seconds LOS, Hawaii in about 39.

SC Roger.

CAPCOM Apollo 9, Houston. Recommend limit cycle off..

SC Say it again.

CAPCOM Recommend limit cycle off.

PAO Well, we went over the hill at the Guam tracking station just about time we had an indication or at least on the countdown clock here that they were to start their evasive maneuver. We will be back up at the Hawaii tracking site at 101 hours, 39 minutes or in another 6 or so minutes. This particular time, we'll again hear more on this APS depletion burn maneuver that is under way at the present time. At 101 hours, 33 minutes, this is mission control.

END OF TAPE

PAO This is Apollo Control at 101 hours, 39 minutes. We have a few seconds before we have the acquisition at Hawaii, and at that time we should hear then if the evasive maneuver did indeed take place. It was scheduled just - scheduled to take place just as we lost acquisition at Guam, at the tracking site at Guam. So let's stand by now to monitor the conversations between the ground and the Apollo 9 crew.

CAPCOM Apollo 9, Houston through Hawaii.

SC Hello, Houston. This is Apollo 9. We were able to get that sep maneuver off in the direction that we had intended. We put an automatic maneuver in the PGNCs that was very carefully placed in gimbal lock so we ... it out to the side of it and we have it in sight and we're all clear.

CAPCOM Roger, understand you are well clear and we have a go then for the LM maneuver.

SC Affirmative.

CAPCOM Roger.

SC Houston, Apollo 9.

CAPCOM Houston, go.

SC Roger, could you refresh us on the burn time.

CAPCOM Roger, the burn time is at 52 plus 44.

SC Thank you.

CAPCOM 9, Houston. The burn time is really 53 plus 14. I can give you a clock time here at 11 minutes or do you want -

SC Okay.

CAPCOM 15 seconds to 11 minutes.

SC Okay.

CAPCOM 4, 3, 2, 1, mark 11 minutes.

SC Roger.

CAPCOM 9, Houston. The LGC is all set up and the engine is armed.

SC Roger, very good.

PAO We've had an indication that the tracking station at Hawaii has lost the signal. We will pick up the Apollo 9 crew again in a little less than a minute at the - over the Redstone. We know that the separation maneuver took place well, and we heard the Commander say that he was off to the side. We would expect during the coming passes that we'll get a report on his separation, his distance, at the present time from the unmanned LM. Meanwhile, we will just continue to stand by here for we should have acquisition again in a matter of less than a minute.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 101:39, CST 1539 312/2

PAO                    We're about 5 minutes, 15 seconds from  
the burn and still standing by for any conversation between  
the ground and the crew.

END OF TAPE

PAO The digitals which we have posted here indicate that the separation maneuver took place, the evasive maneuver took place well, adequately and in the general course of things at the present time the command service module is opening up the range between it and the unmanned lem, unmanned LM. And we're about 3 minutes and 37 seconds away from the ignition of that unmanned vehicle at this time. Meantime we'll stand by and continue to monitor any conversation which would be transmitted up to the crew.

CAPCOM Houston, about 2 minutes to go, do you still feel comfortable in your position?

SC Oh yes, we're well clear.

CAPCOM Roger,

PAO Less than a minute from ignition now of the LM and everything here at Mission Control looks go as they say, all systems are, on the LM are reported to be active and we're standing by for that burn which is now 40 seconds away.

PAO Had an indication of ullage. Pause. That would have been a maneuver to settle the propellants in the LM. Pause. And we have an indication of ignition. Pause. Ullage off.

SC Like .... to Houston, looks real nice.

CAPCOM Very good its looking good down here.

SC .... it's really moving out.

PAO Velocity's going up, apogee is going up. Pause. Every thing looks good at the present time.

SC ... Houston everything's still going away like mad.

CAPCOM Very good. We've got about 5 and a half more minutes and it looks like about the only thing we got is a very slight pitch oscillation.

PAO Apogee at the present time is about 496 nautical miles and the speed is something on the order of 26 thousand feet per second. Going up now to 600 nautical miles. Pause.

SC We can still see him out there Houston. He's really a long ways a way.

CAPCOM Okay.

SC I hope I didn't forget anything I boarded.

CAPCOM We do too. Did you get the LMP?

SC No I didn't forget him I left him there on purpose.

CAPCOM Okay.

PAO Apogee at the present time is something on the order of 8 hundred and 78 miles.

SC Garbled.

CAPCOM Roger.

APOLLO 9 MISSION COMMENTARY 3/7/69 GET 101:49, CST 1549, 313/2

SC ...C E Houston.  
CAPCOM Roger and it looks like condenser exhaust.  
SC Yea.  
CAPCOM Roger, is this the same thing we've

been seeing all day?

PAO In excess of 11 hundred and 70 nautical miles, Velocity in excess of 27 thousand feet per second. The LM is up to 14 hundred and 83 nautical miles. Apogee now is up to 1667 nautical miles, velocity in excess of 27 thousand 700. We have an indication now that the apogee is in excess of 2 thousand nautical miles and the velocity or speed is 28 thousand 100 feet per second. Apogee 28 hundred plus nautical miles and velocity is 28 thousand 8 hundred plus feet per second at this time. Above 34 hundred nautical miles and still burning.

END OF TAPE

PAO .3400 nautical miles and still burning..  
SC Hey, Houston, do you read, Apollo 9.  
CAPCOM Houston, Roger. We've got about 45  
seconds yet, would you say it's shut down?  
SC Roger, he put out a big cloud of white  
stuff.  
CAPCOM Roger, copy.  
SC He's sure a long ways away.  
PAO The preliminary figures indicate that  
the apogee was some 3700 plus nautical miles and the  
perigee will be about 124.  
SC What time do you expect to give us  
the block data.  
CAPCOM Roger, I'll give it over Mila at 57.  
SC Okay. 10257.  
CAPCOM Roger. Negative. 10157. Wait a  
minute, I've got the wrong data here. Be at Mila at 22.  
SC Roger, 22.  
PAO Apparently, they have momentarily  
passed out of range of the tracking stations. They should  
be back shortly. According to the preliminary information  
we are reading here, the apogee of the unmanned LM is  
3,579 nautical miles and the perigee is 124 and the  
indications are that the LM reached 29,401 feet per  
second. At 102 hours and 2 minutes into the flight, this  
is mission control.

END OF TAPE

PAO This is Apollo Control at 102 hours, 16 minutes into the flight. The spacecraft is presently out of range of any of the tracking stations, however, just as it passed off the edge of the Antigua site we were able to record a few seconds of conversation and we're prepared to play that back for you now.

CAPCOM Apollo 9, Houston through Antigua.

CAPCOM Apollo 9, Houston through Antigua.

CAPCOM Apollo 9, Houston through Antigua.

SC Houston, Apollo 9.

CAPCOM 9, Houston. I'll give you a couple of block datas here and then we'll recompute them and give you everything but block data 12.

SC Okay. You're free to read them.

CAPCOM Okay, 0654 Bravo plus 338 minus 1699  
1025623 4825; 0663 Alpha plus 312 plus 1446 1042028 4824.

PAO Well, LM is in its orbit now, its preliminary orbit of 100 - or 300 - 3759 nautical miles by about 124 nautical miles at the low point. We'll continue to track that unmanned vehicle until its battery power runs out. That's anticipated perhaps 3 to 6 hours from now. Incidentally, the FIDO was able to compute the burn duration and we had 5 minutes and 42 seconds of burn time with some tail off following that. One other interesting bit of information is that because of the high altitude the LM is flying at now, for example, a station at Ascension will acquire it - acquire it and be able to track it for some 55 minutes. And Tananarive likewise will acquire and track it for about 74, 75 minutes. At 102 hours, 19 minutes this is Mission Control.

END OF TAPE

APOLLO 9, MISSION COMMENTARY, 3/7/69, GET 103:32, CST 1732 316/1

PAO This is Apollo Control at 103 hours, 32 minutes into the flight. The spacecraft at the present time has just moved out of the range of the tracking station at Texas, heading and it will cross eventually, South America. During that rather lengthy press conference that was just concluded, we have recorded the transmissions the air-to-ground from the Apollo 9 crew to the mission control center here in Houston. We are now ready to play that tape back to you. It's about 18 minutes long.

CAPCOM Apollo 9, Houston, through Tananarive.  
SC Houston, Apollo 9, what do we read?  
CAPCOM Oh, not too bad, same thing from Tananarive. We'll try it though.  
SC We've got a couple of questions for

you.

CAPCOM Roger, go.  
SC Okay, fuel cell 2 seems to be slipping down the power curve there, we're about 2 AMPS low on it, and the TCE is still running high, and kicking on the master alarm every once in a while. And the other question is H2 pressures, tank 1 is now registering about 261 or so and (garble) 275. Tank 1 is about 262 and tank 2 is about 275.

CAPCOM Okay, I think that last thing you were talking about was H2 tank pressures and if it's gone up above 260, go ahead and turn them off. We plan to pump them up again tonight and let them decay while you are sleeping.

SC Roger, We cut the heaters off on the H2 tank.

CAPCOM Apollo 9, Houston, are you still with me?

SC (Garble).. we've got the H2 heaters off at the present time.

CAPCOM Roger, copy. We'll delete Bat A charge tonight. Apollo 9, Houston, through Guam.

SC Roger, hello Houston, go ahead.

CAPCOM Roger, we have your state vector, we request two and accept.

SC Okay, you have two and accept.

CAPCOM Roger.

SC We didn't copy much over Pretoria and Tananarive. You want to say again what you were talking about - the fuel cells and the cryo?

CAPCOM Okay, I think you turned the H2 heaters off there, I hope.

SC That's affirmed.

CAPCOM And when you turned them off, did you go from the on position, or from the auto position to off.  
SC We went from auto to off.  
CAPCOM Okay, afraid of that.  
SC Didn't like that, eh?  
CAPCOM No.  
SC Pressures are getting up pretty high, do you want to go to on now?  
CAPCOM Okay, let me tell you our plans now and what we'd like to do is take them on up to 275, 270, sorry, by your manual cycle and then heaters and fans off. We'd like to do that just as late as we can prior to your rest cycle.  
SC Okay, we'll run them up to 270, then turn them off and leave the heaters and fans off, too, is that right?  
CAPCOM Yes, for the night and we're hoping we can get a 12 hour decay there before we hit the master alarm again.  
SC Okay, but you want to leave everything off over night, is that right.  
CAPCOM That is affirmative.  
SC Okay.  
CAPCOM Hey, you might tell Jim his Papa Alpha Tango and about three little ones here really proud of today's operations.  
SC What did you say there?  
CAPCOM I said we've got Papa Alpha Tango back there in the back room and three little ones and they are really proud of today's operations.  
SC Say hello to those four, would you please?  
CAPCOM Will do.  
SC I think I'll say hello. Hello, there.  
CAPCOM Okay, Apollo 9, we'd like to release the bat A charge.  
SC Very well.  
CAPCOM Okay, for retro's needs down here, he would like to know - we'd like to get a list of the non-checklist items that you left in the LM and also the non-checklist items that you might have brought back from the LM.  
SC Okay, stand by 1.  
SC And while you're standing by, how about the fuel cell, what do you think about that?

CAPCOM On the fuel cell, what we're hoping is that as soon as we power down the exhaust temperature, it should come down and also it ought to even up the load again.

SC Okay.

CAPCOM We're not too hot about doing an H2 purge because what it uses is a little bit of hydrogen there.

SC Yes, that's true. Do you want to do any O2 purges tonight.

CAPCOM Why don't we go on the flight plan?

SC Okay, we'll do an O2 purge.

SC We left a great big bag - temporary storage bag - it's about 3 feet long and a foot wide over on the LM and we're still it (garble) garbage. Food wrappers and things like that. It didn't weight very much, but it must have weighed ten pounds or so. We didn't bring anything significant back with us, in the way of weight, We do have a (garble) hydroxide canister out of the pit and that's probably the heaviest item that we have and we haven't found a place to store it yet. We'll probably move it down somewhere in the north pit.

CAPCOM Okay, we copy that. Apollo 9, Houston, how about the COAS, LM COAS, did it come back?

SC Reger, I got the LM COAS.

CAPCOM Very good.

SC (Garble) I tell you what we'll have to do. We brought the books back. We got all the checklist stuff back with us, but we didn't have time to sort out the numbers. That helps a lot, that probably weighs another 5 or 8 pounds.

CAPCOM Okay, we understand that.

SC We'll have to rearrange some of the things on the spacecraft and we'll let retro know where we put them. Okay?

CAPCOM Good idea.

CAPCOM 9, Houston, you've got it up there and we've checked and compared, so I 've got an OPS check, but I don't think you'll need it.

SC Oh, if you say it's a good one, it's a good one. We'll take what we got.

CAPCOM Reger. Jim a question to you. Did you do another OPS check, and if so, any results?

SC I checked the OPS again and the light still didn't come on.

CAPCOM Roger, copy.

*CONFIDENTIAL*

SC Yesterday, Roger checked it and said the light didn't come on. I went over and checked it again and it came on fine - as a matter of fact, they came on four or five times. Then I went ahead and left it there, didn't say anything about it, I just thought we hadn't done it right. Went back over there today and they didn't work at all, for either one of us.

CAPCOM Okay. 9, Houston, check your metal gimbal.

SC (Garlbe)

CAPCOM Okay. Apollo 9, Houston, through Hawaii.

SC Roger Houston, Apollo 9, go.

CAPCOM Roge, got you loud and clear now. Dave, while I've got you there, we haven't had any EKG on you all day, so when you - you might do a little trouble shooting here this evening sometime.

SC I'll tell you one reason you don't have it right now, is that I'm not plugged in.

CAPCOM Yes, but we didn't have any all day long on you. Just on the EKG part of it. We had the respiration.

SC Let's square away the block data, first.

CAPCOM Okay, we're working on the block data. We should have it before we leave here.

SC Okay, I'll be all set.

CAP COM By the way, our LOS of Texas is about 30.

SC Okay.

CAPCOM We're curious if you might have any additional comments on the LM jettison in there.

SC No. It went off pretty clean, we had a bang like a regular pyro, and pushed us back with a ... I guess something like 4 tenths of a foot per second. It's hard to tell, but that's what it felt like, it was supposed to be, and it looked like a clean separation, the docking ring looked clean, and we couldn't see too much of it because it went away pretty fast. And we must have been a mile and a half away when it finally burned.

CAPCOM Okay.

SC The maneuver to the separation attitude didn't work out so good. I guess we never tried it in a simulator. We sort of slipped into Gimbal lock position.

CAPCOM Okay.

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 203:32, CST 1732 316/5

CAPCOM And by the way, the LM is in an orbit  
about 3750 miles by 125.

SC Oh, really.

CAPCOM Yes, 9, Houston, we could also use  
some dosimeter readings.

SC I thought you'd probably ask for that.

CAPCOM Roger.

SC Okay, Rusty's was 8012 and mine and  
Jim's are packed way down on the bottom somewhere.

CAPCOM I understand. 8012. Your waste water  
is up to about 90 percent now, so you may be wanting to  
dump that a little bit early.

SC Okay. We were going to do it at 104,  
but I guess we can do it in a jiffy. Thank you.

end of tape

APOLLO 9 MISSION COMMENTARY 3/7/69, GET103:43, CST 1743, 317/1

SC Okay we were going to do that at 104, but I guess we'll start it here in a jiffy, thank you.

CAPCOM 9, Houston, you might tell Jim that his guest can hear him now, she didn't hear him before.

CAPCOM Apollo 9 Houston, I have your block data when you're ready to copy.

SC ... Apollo 9.

CAPCOM 9, Houston, are you ready to go for block data on rev 66?

SC Roger, you read.

CAPCOM Roger, I have you now.

SC I guess you didn't read me for a minute there. Okay go ahead I'm ready.

CAPCOM Okay 066 3Alpha, +312, +1446 10420 28  
48 24 0673Bravo +338 +1485 105 54 57 4816 0683Alpha +317  
+1446 107 27 50 4789 069 Charley Charley +268 +1390 109  
00 44 4768 070 Charley Charley -231 -1600 110 53 53 4540  
071 Charley Charley -313 -1600 1122757 4310 072Alpha Charley  
+133 -0330 11303 29 4748 0732Alpha +261 -0310 1143906 4827  
074 Alpha Charley +322 -0320 116 1255 4859 van SPS trim  
PITCH -.89 YAW -1.12 Over.

SC Roger I missed the first two lines of the the one that came after area 069 Charley Charley, the next area.

CAPCOM Okay area 070 Charley Charley Latitude -231.

SC And the longitude.

CAPCOM Longitude -1600.

SC Okay you ready to have them come back?

CAPCOM Roger, go.

SC 0663Alpha +312 +1446 10420 28 48 24  
0673Bravo +338 +1485 1055457 4816 0683 Alpha +317 +1446  
107 2750 4789 069 Charley Charley +268 +1390 10900044 47 68  
070 Charley Charley -231 -1600 11005353 4540 071 Charley Charley  
-313 -1600 1122757 4310 072 Alpha Charley +133 -0330 1130329  
4748 0732Alpha +261 -0310 11439 06 4827 074 Alpha Charley  
+322 -0320 1161255 and 485.9 with a Pitch trim of -.89  
and a YAW trim -1.12.

CAPCOM Hey, good job.

SC You guys are getting more of these every day.

CAPCOM That's a good long one there.

SC You must think we're going to stay up here forever. Hey speaking of staying up here forever, what time are you going to wake us up in the morning?

CAPCOM That's just what we're talking about here

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 103:43 CST 1743, 317/2

CAPCOM We're just thinking maybe we'll let you know and we'll give you a call.

SC That sounds like a good idea.

CAPCOM Okay, that's all we'll do. We'll just let you sleep and we'll give you a call or you give us a call whenever you want to, if we don't call you.

SC Garbled...

CAPCOM Okay. By that time for sure. And just out of curiosity here, seeming you all sound pretty chipper up there. How you doing?

SC We're pretty good. As a matter of fact none of us had anything to eat all day long except for the breakfast we had which was like 30 hours ago I think, but we're all in pretty good shape. I think Rusty and I had an advantage over Dave because the water in the LM tastes better than the water in the Command Module.

CAPCOM Roger, and I guess no medication is on the thing, we've got about 30 seconds here, 10 seconds LOS and if you can a .... through Tananarive fine otherwise forget it.

PAO The guests referred to earlier in this transmission were the commanders wife and children. Astronaut McDivitt's wife and children, who remained at MCC until the loss of signal from the Texas station. While we have that tape playing for you, the flight controllers here estimated the systems life time on the unmanned LM, and they read something like this. The battery supplying the BUS at the commanders station is estimated now to be out of power at about 107 hours and 55 minutes and the single batteries are supplying power to the LM pilots station is estimated to be down at about 113 hours and 54 or 55 minutes. The water will be exhausted at around 110 hours and we would expect then that significant equipment degradation would occur some 3 or 4 hours after the water has exhausted. Meanwhile the command service module is approaching, approaching the Tananarive station and the LM is in the vicinity of well the far East at the present time. At 103 hours and 54 minutes this is mission control in Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY 3/7/69, GET 104:06, CST 1806 318/1

PAO This is Apollo Control at 104 hours 6 minutes into the flight. The spacecraft, the Apollo 9 spacecraft, is at the present time approaching the tracking station at Tananarive, and we would think that there may be some conversation between the crew and the ground here in Houston. Probably the last conversation, if we have any for the night, because the crew I know are ready for a well deserved rest. We'll be standing by to monitor any conversation between the, the crew and the ground.

CAPCOM Apollo 9 Houston, through Tananarive.

CAPCOM Apollo 9 Houston.

SC Apollo 9.

CAPCOM Roger, Dave, we showed a CMC restart between our last state vector update and the Redstone pass. Did you power it down and then back up?

SC Yea, we had it in stand by and we had our gimbal lock on which had our peep sight on and we decided to go back to power everything up so we could get the IV course alined out of gimbaled lock so we wouldn't have our lights on during the night. Did we bomb you?

CAPCOM Roger we're satisfied now with the restart then.

SC Okay, we did get our restart right though.

CAPCOM Roger, normal it just adds our counter down here when you fire up.

SC Oh yea, that's right you have our reading on, okay.

CAPCOM On the H2 pressures if it looks like it's going to trigger the master alarm we'll wake you up for a manual repress and then you can go back to sleep. We don't expect it though.

CAPCOM Apollo 9 Houston, congratulations from the Gold team it was a very fine day, we'll see you in the morning.

SC Oh thank you very much Gold team. You guys did a very fine job too.

CAPCOM Roge.

SC Somebody else wants to make a comment.

Hello Houston.

CAPCOM Houston, go. Apollo 9, Houston, go.

SC That was a great job you all did today.

CAPCOM Thank you.

SC I thought the higher ground tape was about as good as anything I've ever seen or ever hope to see. I want to congratulate you all.

CAPCOM Roger thank you very much.

APOLLO 9 MISSION COMMENTARY 3/7/69, GET 104:06:00, CST 18:06, 318/2

PAO                      Apparently the spacecraft has moved out of range of the tracking station at Tananarive and there will be no more air-to-ground. At 104 hours and 15 minutes ground elapsed time this is Mission Control.

END OF TAPE

*APOLLO 9 MISSION COMMENTARY  
3/7/69  
104:50  
CST 1850  
319/1*

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 104:50, CST 1850 319/1

PAO This is Apollo Control at 104 hours, 50 minutes ground elapsed time. The crew is in the rest period, as the spacecraft is on the 66th revolution. It's acquired by the tracking station at the present time. The spacecraft presently is flying at the following orbital parameters: 128.1 nautical miles at apogee and 121.9 nautical miles at perigee or the low point. It's time to complete an orbit is 89 minutes and 7 seconds. Spacecraft orbital weight at the present time is 27,100 pounds. The flight surgeon here at mission control reports that they have, the flight surgeon has not yet recieved any significant downlink data from the tracking station at Hawaii and the indication is that the crew is probably still closing out the spacecraft, doing final housekeeping duties in preparation for their rest cycle. At 104 hours, 52 minutes, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION CONTROL, 3/7/69, GET 105:55, CST 1951 320/1

PAO                      This is Apollo Control at 105 hours, 51 minutes ground elapsed time. Spacecraft recently moved out of range of the Tananarive tracking station, having passed over that site about 8 or 9 minutes ago. Meanwhile, we're still tracking the LM upper stage. It was acquired by the Ascension station about 40 minutes ago. It still is in acquisition of Ascension, which indicates that it's very high altitude. As a matter of fact, orbital parameters at this time read 3747 nautical miles at apogee for the LM and 125.6 nautical miles at perigee. While the command service module was over Tananarive, we observed that the CSM's systems were functioning normally; however, we had no communication with the crew. They are in their rest cycle and so we'll keep the conversations with them to a minimum. They had a busy day today and are deserving of rest. So, at 105 hours, 52 minutes ground elapsed time, this is mission control.

END OF TAPE

*McDivitt  
106:51  
3/7/69*

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 106:51, CST 2051 321/1

PAO                      This is Apollo Control at 106 hours, 51 minutes ground elapsed time. About 10, 12 minutes ago, the spacecraft was over the Hawaii tracking station on this, the 67th revolution, and at that time the surgeon, the flight surgeon here, received some bio-medical data which he interpreted was on the commander, Astronaut Jim McDivitt. The data included the mean heart rate which registered out in the average range of the 80s - 88 per minute. That lead the surgeon to conclude that while the astronaut was resting, he was still not sleeping. We did not receive any data on respiration on that particular pass nor did we receive any data on the command module pilot or on Astronaut Schweickart. The cabin temperature in the spacecraft has remained stable at a comfortable 69 degrees Fahrenheit. The cabin pressure has remained at 4.9 pounds per square inch. Meanwhile the lunar module is still being tracked by mission control here, and it is presently over the Indian Ocean. At 106 hours, 53 minutes, ground elapsed time, all the spacecraft systems are functioning normal on the CSM. This is Mission Control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY 3/7/69, GET 107:54, CST 2154, 322/1

PAO                    This is Apollo control at 107 hours 54 minutes ground elapsed time. Some 25 minutes ago the ground acquired the LM upperstage and got some data on it through the tracking station at Guam, and the flight controllers here reported that the primary guidance, navigation and control system on that upper stage now is ~~inoperative~~, that system received ~~it's~~ power from the battery supplying the bus at the, at the commander's station, and earlier it was predicted that, that particular battery's life time would end at about 107 hours thereabouts GET. Guam data also confirmed that the unmanned LM upperstage now is sort of tumbling. The upperstage reached its perigee or low point of about 126 nautical miles near Guam, and now the LM is heading back up toward apogee. Antigua will acquire this unmanned vehicle for a short time in 2 or 3 minutes and after that the station at Ascension should acquire and it will have the LM for more than an hour. Meanwhile command service module with the resting Apollo 9 crew will come into range of the Hawaii station in another four or five minutes. At 107 hours 56 minutes this is Mission Control, Houston.

END OF TAPE

McDivitt  
14 007 07 07 06 300

A/9 Mission Commentary, 3/7/69, GET 108:06, CST 2206, 323/1

PAO                    This is Apollo Control at 108 hours 6 minutes ground elapsed time. During that short pass in which the station was acquired by the Hawaii tracking are in which the Apollo 9 spacecraft was acquired by the Hawaii tracking site. The ground here in Houston received some information on astronaut Jim McDivitt. His mean heart rate was in the 60 beats per minute range. Leading Dr. John F. Zeiglschmid who is the flight surgeon on this ship, to observe quote, "It looks like he's powering down his own platform. There was no biomedical data received on either Dave Scott or Rusty Schweickart. However the systems data that was transmitted down looked Ok and so the spacecraft is, seems to be functioning normally. AT 108 hours 7 minutes with the spacecraft over the Pacific Ocean this is Apollo Control.

END OF TAPE

No call made

APOLLO 9 MISSION COMMENTARY, 3/7/69, GET 109:08, CST 2308, 324/1

PAO This is Apollo Control, 109 hours 18 minutes GET. Apollo 9 command and service module is approaching the tracking station at Guam with about 40 seconds left until acquisition. Because of some needs to balance the electrical loading in the various buses in the command module, there will be a brief call made to the crew to wake up at least one of them to change some switch positions in the spacecraft and also to adjust the computer into another mode so that the electrical load will be balanced. Just now the Flight Dynamics Officer, Ed Davelka, came up and informed the mission commentator that the auxiliary computing room in the mission control center here had run some numbers out on the expected lifetime of the ascent stage of the lunar module and the lifetime predicted is 6904 days 23 hours and 41 minutes, which computes to be something in the neighborhood of 19 years. We're standing by here for the call by spacecraft communicator, Al Worden, on changing these switch positions in the cockpit, and hopefully after this brief interruption, the crew will get back to a much deserved rest. Apparently, we've run through an antenna keyhole here and a little delay in getting data from through the Guam station. Still standing by for the initial call to Apollo 9 through Guam. We've had solid lockon at Guam, standing by for the call. While we're waiting here for Al Worden's call to Apollo 9 we'll review the present status of the LM which is dying rather slowly. During these long passes over the station by the Lunar Module because of the high apogee which is about 37 hundred 45 miles. The various systems still appear to be percolating along, particularly the electrical system is still showing a peak voltage or normal voltage reading. To go back over the estimate of Lunar Module ascent stage lifetime as was run out by the auxiliary computing room here in mission control 6 thousand 904 days 23 hours 41 minutes, which is an excess of 19 years. The electrical and environmental and communications officer is still working up the plan for changing the switch positions to pass on to the spacecraft communicator. Before the call is made. Still standing by, it may be decided to postpone the call until a few minutes later either over Huntsville or over Mercury. There is only 40, as you were, 20 seconds remaining in the Guam acquisition and there has been no call yet. Apparently the call to the crew will be postponed until a later tracking station. At 109 hours 24 minutes ground elapsed time this is Apollo Control.

END OF TAPE

A/9 Mission Commentary, 3/7/69, GET 109:50, CST 2350, 325/1

PAO                      This is Apollo Control. 109 hours 50 minutes ground elapsed time. Apollo 9 presently is on the tail end of the 69th as you were 70th revolution in the South Pacific. Coming up on Ascension Island tracking station at 10 minutes past the hour. The wake up call discussed earlier has been scrubbed in the discussions here in the control center. It was decided to just let the switch positions stay as they are and if the situation on board warrants the caution and warning system will come on and wake up the crew any how and as it was described by Pete Frank at ah flight director would be rather like waking up a patient in the hospital so he could take his sleeping pill. At 109 hours 51 minutes ground elapsed time this is Apollo Control.

END OF TAPE

*Wake up -  
Call to Scott  
re: sleep power*

A/9 Mission Commentary, 3/8/69, GET 110:21:00, CST 0021, 326/1

PAO This is Apollo Control. 110 hours 21 minutes ground elapsed time. Apollo 9 presently is over the African continent at the beginning of the 70th revolution. During the just completed pass over the Ascension Island tracking station in the South Atlantic there was a brief conversation between the spacecraft communicator Al Worden here in mission control and command module pilot Dave Scott in discussing the electrical power loading switch settings and the standby mode of the command module computer, all of which had effects on the resulting amperage load on the spacecraft electrical system. Dave Scott responded in rather low tones to avoid waking his crew mates. We have accumulated about 3 minutes of tape of that conversation. Lets play that tape back now.

SCOTT Houston, Apollo 9.

CAP COM Rog. Did you just get waken up there Dave? Apollo 9 Houston. I understand you got, a, looks like we're seeing a master alarm down here. You've got a condenser exhaust temperature low down here low on fuel cell 2 and we've got some recommended switching for you.

SCOTT Ok. I've been watching that, go ahead.

CAP COM Ok Dave, what we'd like you to do is put the CMC to operate and once you're in operate go to 2 and turn in ver 3, place inverter 3 on main A.

SCOTT Ok. Pick CMC up and go to 2 and turn 3 inverter.

CAP COM Affirmed Dave.

SCOTT Apollo 9 Houston.

CAP COM Roger, Apollo 9, Houston. While we've got you up we're having a little trouble getting some down range. We'd like you to place the S band at normal transponders switched to off for 4 seconds then to secondary.

SCOTT ... to secondary... (static)

CAP COM Rog,

SCOTT Ok Houston. We've got inverter 3 at mayday and ... (static)

CAP COM Roger Apollo 9, Houston, thank you very much.

SCOTT Thank you. How's everything moving down there?

CAP COM Oh, pretty smooth down here except for watching condenser exhaust temperature vary a little bit down here. Sorry that you had to get awakened by the master alarm.

SCOTT ... had me worried first.

cap com Ah we're watching you.

SCOTT Ok

CAP COM Apollo 9 Houston.

SCOTT Rog, Houston go ahead

CAP COM Rog. We're having some difficulty commanding down link and we'd like you to go pick in bit rate to high and we'll just leave it that way for the rest of the night.

SCOTT Alright Houston. (static)

A/9 Mission Commentary, 3/8/69, GET 110:21:00, CST 0021, 326/2

CAP COM

Roger

SCOTT

Well you'd better (static)

CAP COM

All right, thank you sir.

PAO

And this is Apollo Control at 110 hours 25 minutes. That completes the playback of the tape of the Ascension Island pass when which there was a brief conversation between spacecraft communicator Al Worden and command module pilot aboard Apollo 9 Dave Scott. At 110 hours 25 minutes ground elapsed time this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 110:50:00, CST 00:50 327/1

PAO                    This is Apollo Control 110 hours 50 minutes ground elapsed time. Apollo 9 is some 43 seconds out from the tracking station at Guam and the crew of Apollo 9 now has some 5 hours 9 minutes remaining in the rest period. Apollo 9 is midway through the 70th revolution and all systems apparently performing well during the most recent tracking we've had other than the earlier conversation over Ascension early in this revolution in which Dave Scott was requested to set the command module computer to OPERATE in Program 00 and put inverter 3 over to main BUSS A. This was to balance in the electrical systems onboard the spacecraft. At 110 hours 51 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

*Wght  
&  
Orbit*

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 111:55:00, CST 01:35 328/1

PAO                      This is Apollo Control, 111 hours 55 minutes ground elapsed time. Apollo 9 is over North Central Africa, beginning of the 71st revolution, and has just left the acquisition area of the Canary Islands tracking station, the first such pass over the Canaries for this morning. The present orbital measurements of the command and service module: perigee 120.8 nautical miles, apogee 128 nautical miles, the calculated weight of the spacecraft is 27 026 pounds. The next station to acquire Apollo 9 will be the Guam station at 27 minutes past the hour. At 111 minutes - 111 hours 56 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

*RETRA  
CLOCK WARNING*

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 112:50:00, CST 02:50a 329/1

PAO                    This is Apollo Control, 112 hours 50 minutes ground elapsed time. Apollo 9 is just leaving the tracking zone at the ship Mercury in the South Pacific near the end of the 71st revolution. The flight surgeon Ken Bears reported that during that pass Dave Scott, command module pilot, appeared to be awake according to the biomedical telemetry. We had a report earlier of the LM ascent stage on tracking at Ascension Island station where it appeared that the ascent stage was tumbling at the rate of 1 revolution each 84 seconds. Here in mission control the - one of the clocks has been set up for retrofire and nominal pre-mission flight plan retrofire time, this time will likely change as we get farther in toward the end of the mission. It now shows 125 hours 20 minutes until the orbit burn or SPS number 8. The next station to acquire Apollo 9 will be Canary Islands at 22 minutes past the hour. At 112 hours 51 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

A/9, MISSION COMMENTARY, 3/8/69, GET 113:50, CST 0350, 330/1

PAO                      This is Apollo Control, 113 hours 50 minutes  
GET. Apollo 9 is midway through the 72 revolution over the  
subcontinent India. The next station to acquire the space-  
craft will be Honeysuckle with 8 minutes past the hour. Recently  
it was attempted by the tracking ship Mercury to track the as-  
cent stage of the LM, Lunar Module, and it was no joy in that  
case because apparently the Lunar Module's batteries have died,  
and ofcourse the transponders and other equipment for tracking  
would not function without the electrical power. Earlier in  
that Lunar Module revolution the Honeysuckle station was able  
to get some tracking on the vehicle. And a recent pass over  
the Canary Island station earlier in this revolution the  
Apollo 9 cabin pressure was going 4.9 lbs per square inch.  
The cabin temperature of 72½F. At 113 hours 51 minutes GET  
this is Apollo Control.

END OF TAPE

A/9 Mission Commentary, 3/8/69, GET 114:50, CST 04:50, 331/1

PAO                      This is Apollo Control. 114 hours 50 minutes ground elapsed time. Apollo 9 has just begun the 73rd revolution, is now over the Antigua tracking station of the eastern test range. Will go on over the tracking ship Vanguard in Mid Atlantic on into the Canary Island tracking station area. The awake time clock shows 1 hour and 9 minutes remaining in the crew rest period. The ignition time, which is a pre-mission flight plan time and not necessarily the final time for retrofire or the SPS number 8 deorbit burn now shows 123 hours 20 minutes remaining until the end of the mission. At 114 hours 51 minutes ground elapsed time this is Apollo Control.

END OF TAPE

*Crew asleep*

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 115:50, CBT 05:50a 332/1

PAO                      This is Apollo Control 115 hours 50 minutes ground elapsed time. Apollo 9 is flying just north of the north island of New Zealand coming up on the tracking ship Mercury in just over a minute. The crew is still asleep at this time, the sleep period is scheduled to end in a little over 9 minutes, however, it is unlikely that the spacecraft communicator Al Ward here in Mission Control will call the crew until beginning of the Eastern Test Range pass at Antigua which begins 18 minutes past the hour. The count-down clock to retrofire de-orbit burn now shows 122 hours 20 minutes remaining in the mission. This retrofire time is subject to change but is based on the pre-mission flight plan. At 115 hours 51 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

A/9, MISSION COMMENTARY, 3/8/69, GET 116:18, CST 0618, 333/1

PAO This is Apollo Control, 116 hours 18 minutes GET. Apollo 9 is just passing across central America and we're standing by for a wake up call to the crew from spacecraft communicator Al Worden from Mission Control. This continuous pass across the lower end of the eastern test range, the tracking ship Vanguard, the station at Canary Islands, and Madrid. We'll have a total time of approximately 20 minutes. Still standing by for the wake up call. While we're waiting for the initial call from the spacecraft communicator, perhaps we can review the weather forecast in the contingency landing areas for today. The space flight meteorology group here at Mission Control has issued a forecast that reads that all landing zones for Apollo 9 will have satisfactory weather conditions today and tomorrow. In the primary landing zone in the West Atlantic, centered about 800 miles east of Jacksonville, partly cloudy skies are forecast with northwesterly winds at 20 knots and seas 4 to 6 feet. Temperature will range from 65½ to 70½. In the Mid-Pacific landing zone, centered about 600 miles northwest of Honolulu, skies will be partly cloudy and winds will be from the north at 15 knots. Seas are expected to be from 4 to 6 feet with temperatures 60½ to 65½. In the West Pacific landing zone, centered about 400 miles southeast of Tokyo, mostly cloudy skies will prevail, with winds 15 to 20 knots. Seas will be 4 to 5 feet with temperatures 60½ to 65½. In the East Atlantic landing zone, centered about 500 miles southwest of the Canary Islands, partly cloudy to cloudy skies are expected with southwesterly winds 15 to 10 knots. Seas 4 to 5 feet, with temperatures near 65½. Cloudiness is not expected to effect the SO 65 multispectro photography experiments scheduled over the Southwestern United States and Mexico later today. To summarize the last 8 hours of the mission, since the orange team came on, the team came on while the crew, or after the crew had begun the rest period at a little after 109 GET. The auxiliary room here in Mission Control had run out of estimate on the life time of the Lunar Module ascent stage, following the ascent engine burn to depletion during the day shift. They came up with a rather astounding number of 6,904 days 23 hours 41 minutes, which computes out to about 19 plus years. Later on over the ascent station at 110 hours 20 minutes, there was an exchange between Dave Scott, in the command module, and Al Worden here in Mission Control on changing some switch positions to adjust the electrical loads in the spacecraft, also to put the command module computer in operate and program 00. Scott talked in rather a low tone to keep from waking his crew mates. Farther on into the shift, at 112 hours 20 minutes, the network

A/9, MISSION COMMENTARY, 3/8/69, GET 116:18, CST 0618, 333/2

PAO - Controller reported that the ascent track of the Lunar ascent stage showed that the stage was tumbling at a rate of about once each 84 seconds. The balance of the shift has been rather quiet with the crew continuing to sleep well. The spacecraft is well into the Antigua tracking station. We've had indication that the Vanguard has had acquisition of signal. Flight surgeon Ken Beers is observing the cardioscope and respiratory rates on his console to determine which crew men are awake, or if indeed they are awake. Continuing to monitor the air to ground circuit for any possible conversation here for this 20 minute pass. Members of the white team of flight controllers are beginning to drift in for the hand over of the orange team or sleep watch. Apollo 9 is approximately midway between -

END OF TAPE

A/9 Mission Commentary, 3/8/69, GET 116:28:00, CST 06:28, 334/1

PAO Apollo 9 is approximately mid-way between the United States east coast line and the west coast line of Africa. Flight surgeon Ken Bears just advised spacecraft communicator Al Worden that it appears that the crew men are awake now and from the giggles on the cardioscope I would judge they are. Still standing by for the anitial call. CAP COM is making his call now.

CAP COM Apollo 9 Houston. Apollo 9 Houston.

SC ...Apollo 9

CAP COM Goodmorning Apollo 9. Apollo 9 Houston You're giting a little low on the H2 trial tanks pressure, we'd like you to turn the H2 number 2 fan on and the configuration for H2 tank 1 would be fans off and 1 and 2 heaters off.

SC I missed the first part of that would you start over again please.

CAP COM Roger. Dave turn the H2 tank 2 fan on and leave the H2 tank 1 fan off and the 1 and 2 heaters off.

SC Ok. H2 fan 2 is on 1 is off both heaters for H2 are off.

CAP COM Roger.

SC And my tank... Houston Apollo 9

CAP COM Apollo 9 Houston go

SC What do you want to do about our switch configuration when we get powered up? Do you want to go back to sort of nominal switch configuration or do you want to leave that inverter on at the S band and secondary?

CAP COM Apollo 9 Houston stand by. We'll get a reading on that for you.

SC Ok, thank you.

CAP COM Apollo 9 Houston.

SC Go ahead Houston.

CAP COM You can leave the S band in secondary for now and go ahead and turn the inverter off.

SC Ok, I'll leave the S band in secondary and the inverters coming off.

CAP COM Roger.

PAO This is Apollo Control. Conversation is rather sparse on this first pass of the morning after the crew is waked up. First order of business of course will be for the crew to have their breakfast and following that there will be flight plan update for the days activities and consumables update, powering up the spacecraft and all of the other chores that have to be done for the SPS 6 maneuver, service propulsion system maneuver number 6 which will now come about 5 hours 12 minutes from now. We'll continue to monitor the pass over the Canary Islands and Madrid. For about another 3 minutes until LOS from Madrid.

CAP COM Apollo 9 Houston.

SC Go ahead.

CAP COM All right Dave I've only got a minute left here at Canarys, we're going to start today for you at

A/9 Mission Commentary, 3/8/69, GET 116:28:00, CST 06:28, 334/2

CAP COM  
for the day.

Carnarvon with the updates and the plan

SC  
from now?

Ok, what time will that be? How long

CAP COM  
17:05.

Roger, that will be about a half hour,

SC

All right, your all set.

CAP COM

Rog,

SC

Ok

PAO

This is Apollo Control. We've got a little  
more than minute left of tracking at Madrid however judging  
from the conversation between Dave Scott and spacecraft  
communicator Al Worden, there will be no further conversation  
until the Carnarvon tracking station. At 5 minutes past  
the hour at which time the flight plan update will be passed  
to the crew for the days activities. At 116 hours 38 minutes  
ground elapsed time...

END OF TAPE

APOLLO 9 MISSION COMMENTARY,3/8/69,GET 116:28,CST 06:28a 335/1

PAO At 116 hours 38 minutes ground elapsed  
time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 116:38:20, CST 06:38a 336/1

SC  
CAP COM  
Houston here.

Houston, Apollo 9.  
Apollo 9, Houston. Go. Apollo 9,

SC  
CAP COM

Houston, Apollo 9.  
Apollo 9, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 117:04, CST 704 337/1

PAO This is Apollo Control at 117 hours 4 minutes. We are standing by for acquisition at Carnarvon. We expect the update for today's flight plan over this station. The Orange Team is in the process of handing over to the White Team. We will stand by for the Carnarvon pass.

CAPCOM Apollo 9, Houston.

SC Go Houston, this is Apollo 9.

CAPCOM Roger, Apollo 9. If you've got a pencil ready, we will start on the update.

SC Roger. How do you read me?

CAPCOM I'm reading you loud and clear, Dave.

SC Okay, and good morning there, Sonny.

CAPCOM Good morning, Dave. You ready to copy some updates?

SC All set.

CAPCOM Okay, we'll give you the flight plan updates first. Add 11755, begin batt A charge. That's batt alpha charge. 11800, CO2 filter change number 10. Fuel cell O2 purge. At approximately 11930, after breakfast, chlorinate potable water. Do you read? 11311840, P51.

SC You want to delete that P51 at 11840?

CAPCOM That is affirmative. Add 12002, P51 and P52 to preferred.

SC Okay.

CAPCOM 12140 end batt alpha charge. SPS6, TIG is 1214858. 12200 begin batt A charge. Delete 12530 S065 add landmark tracking. Perform P52, that's P52, to nominal alignment at 12435. Time of align to be updated. Add 12850, waste water dump. Note, first S065 exercise remains as scheduled and - Rog, go ahead. Note number 2, the landmark tracking is for practice and will be only one landmark. And before we get to Honeysuckle, you can turn up your S-band volume.

SC Okay, Sonny, I'll read most of that back to you now. I've got a 11755 begin batt A charge. 11800 CO2 filter change number 10 and fuel cell number 2 purge. At about 11930 after breakfast, chlorinate the potable H2O. There was something at 11840 that I missed. How about giving me that one?

CAPCOM Roger. At 11840, delete P51.

SC Okay, and I've got perform P51 and P52 at 12050.

CAPCOM That's perform P51 and P52 at 12202.

SC Okay, P51 and P52 to preferred at 12002. End the batt A charge at 12140, at 1214858 SPS6, TIG, at 12200 resume batt A charging. 12530 delete S065, in its place add landmark tracking with tracking on one landmark

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 117:04, CST 704a 337/2

SC for drill and P52 to a nominal alignment then you are going to update the T-align, and that will be done at about 12430 and at 12850, a waste water dump.

CAPCOM Roger, that's correct, Apollo 9. And you can turn up your S-band now. We are coming up on Honey-suckle.

SC Roger.

CAPCOM And Apollo 9, Houston. Just to warn you. We've had a little trouble with S-band. We might not pick you up here.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/8/69, get 117:14, CST 0714, 338/1

CAPCOM Apollo 9, Houston through Honeysuckle.  
CAPCOM Apollo 9, Houston.  
CAPCOM Apollo 9, Houston.  
SC Go ahead. Apollo 9.  
CAPCOM Roger. There you are.  
SC I have a question on SO 65 on this up-  
date.  
CAPCOM Roger. Go ahead.  
SC Okay. You still want us to do the SO 65  
that we unstow for and we are supposed to do at 124:00, is  
that correct?  
SC And you want us to complete the one at  
125:40.  
CAPCOM Apollo 9, let me get the words on that  
and I will call you back.  
SC Okay.  
CAPCOM Let me give you the consumables update  
in the meantime. You ready to copy?  
SC Ready to copy.  
CAPCOM Okay at 117 47 20 55 26 49 27 50 27 402  
32 33 29 39, and I'd like to give you the Service Module  
DAT redline quad A 36, quad B 47, quad C 49, quad D 49. Over.  
SC Okay, we got 117 4720552649 275027 402  
3233 2939, Service Module DAT redline - A 36, B 47, C 49,  
D 49.  
CAPCOM Roger. Apollo 9. Houston. Copy. That's  
correct.  
SC Bankers hours today, huh?  
CAPCOM Oh, we watched you while you were sleep-  
ing.  
SC How did we look?  
CAPCOM You're looking pretty good.  
SC Hey, finally got to bed last night at  
107 hours and something. I figure we had a nice 26 hour  
day yesterday.  
CAPCOM You had a nice 10 hour night, too.  
SC Yes. That was a lot of fun too, but -  
CAPCOM Sorry we had to wake you up. Incidentally  
on that H2 tank - there are no plans today to do anything  
about the tank. We are just going to watch it.  
SC Okay, that's tank number 1 though.  
CAPCOM Roger. Tank number 1.  
SC Roger, Houston. You might comment on  
the status of the high bit rate, too. Where you want it to  
stay in high or if you want us to switch it again or what.  
CAPCOM Roger. When you get over the states,  
we've got a trouble shooting routine we want go through to  
see if we can figure out what the problem is, but we won't  
tackle that until we get to the states.

SC Okay.  
CAPCOM Okay, are you ready for a block update  
number 13?  
SC Give me about 2 seconds here.  
CAPCOM All right.  
SC Okay. Go ahead.  
CAPCOM Roger. Block update number 13. We  
probably won't be able to get all of it. We will go as  
far as we can. 075 1 alpha plus 290 minus 06 82 117 36 36  
409 2 076 2 bravo plus 307 minus 03 30 119 17 43 40 92 077  
2 bravo plus 22 7 minus 0329 120 5215 40 92 078 1 alpha  
plus 280 minus 0690 122 1741 40 92 079 - Roger, okay -  
PAO This is Apollo Control at 117 hours,  
22 minutes. Honeysuckle has loss of signal. We updated the  
flight plan during this pass over Australia. The tracking  
ship Mercury will acquire at 117 hours, 26 minutes. This  
is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 117:25, CST 0725 339/1

PAO This is Apollo Control at 117 hours 25 minutes. Apollo 9 coming within range of the tracking ship Mercury in the south Pacific. We'll stand by.

SC Houston, Apollo 9, we have a good lock on that. How do you read?

CAPCOM Apollo 9, Houston, loud and clear.

SC Okay.

CAPCOM Go ahead.

SC With a longitude the third line and 0762

Bravo.

CAPCOM Roger, we'll start out with longitude in block 0762 BRAVO. That's minus 0330 119 1743 4092 0772 BRAVO plus 227 minus 0329 1205215 4092 0781 ALFA plus 280 minus 0690 122 1741 4092 0794 ALFA plus 318 minus 1705 125 0233 3343 0804 BRAVO plus 337 minus 1705 1263609 3343 081 4 ALFA plus 310 minus 1705 1280944 3343 082 DELTA CHARLIE plus 179 minus 1600 1294643 3343. The SPS gimbal trim for rev 751 ALFA through 781 ALFA, pitch minus 089, yaw minus 112, for rev 794 ALFA through 82 DELTA CHARLIE trim angles are pitch minus 089, and yaw minus 115. Over.

SC Okay, are you ready to read back, Al?

CAPCOM Roger, Apollo 9, go ahead.

SC Okay, I'll read it back pretty fast here.

0751 ALFA plus 190 minus 0682 1173636 4902 0762 BRAVO plus 307 minus 0330 1191743 4092 0772 BRAVO plus 227 minus 0329 1205212 4092 0781 ALFA plus 280 minus 0690 1221741 4092 0794 ALFA plus 318 minus 1705 1250233 3343 0804 BRAVO plus 337 minus 1705 1263609 3343. Turn the page, and then its 0814 ALFA plus 310 minus 1705 1280944 3343 082 DELTA CHARLIE plus 179 minus 1600 1294643 3343 SPS trim for 75 and 78, pitch minus 0.89, yaw minus 1.12. Rev 79 through 82, pitch minus 0.89 minus 1.15.

CAPCOM roger, Apollo 9, Houston copy correct, and the answer to your question on FO 65 at 124 is yes. Perform the FO 65 at 124 is just deleted at 125:30, and we have a question for you. Did you leave the selectable meter in position battery bus A over night?

SC Stand by.

SC Okay, the answer is probably yes.

CAPCOM Roger, understand the answer is yes.

PAO This is Apollo control at 117 hours 34 minutes, and Mercury has LOS. The Texas station will be next to acquire Apollo 9 at 117 hours 47 minutes. This is Mission Control, Houston, at 117 hours 24 minutes.

END OF TAPE

PAO This is Apollo Control at 117 hours, 47 minutes into the mission. Apollo 9 being acquired at the Texas station.

CC Apollo 9, Houston.

SC Roger Houston, Apollo 9.

CC Roger Apollo 9; got a couple things here for you, prior to SPS 6.

SC Okay, go.

CC Okay, before SPS 6, turn quad C and D off on auto RCS selects in adapt. And in adapt, I'm sorry. Use BD - Baker, Delta - 2 jet ullage for SPS 6 for 18 seconds. Use BD roll for SPS 6 and subsequent activities; post SPS 6, you may return to normal 2 jet authority. And Apollo 9, Houston, when you get a chance, we'd like to get the condition on the windows - and prior to SO65 we'd like you to try and get a picture of the hatch window; over.

SC Okay - hold on; that was a bunch; let me get the first part of that again. For SPS 6 you want us to disable A and C, quads A and C and also A and C in the DAP. And you want us to use B and D ullage for 18 seconds, 2 jets, and B and D roll for SPS 6 and subsequent roll control. Post SPS 6 you want us to return to normal 2 jet authority.

CC Roger Apollo 9. The last 3 items were correct; the first one, for your pre-SPS 6 activities, turn quads Charlie and Delta OFF on the auto RCS select and in the DAP. That's pre-SPS 6.

SC Okay, understand. Pre-SPS 6 you want us to turn Charlie and Delta off on the auto RCS select, and also in the DAP.

CC That's affirmative Apollo 9.

SC Okay, and understand you want to know what the windows look like, and also you want a picture of the hatch window prior to performing SO65.

CC Apollo 9, Houston; that's correct.

SC Okay, this is kinda a subject of evaluation, but it seems to me that all the windows are really pretty good when you're looking at the ground or anything that is lighted; if you look at the sky, you can see some smudges on some of the windows; the number 2 window ... stand by just a moment.

CC Roger.

SC Okay, when you look up at the sky, I get sunlight on the number 2 window; it's kinda of a hazy or foggy but when you are looking at the ground, it appears okay. So it's a fairly light coating. Also on the hatch window, from time to time, there appears to be a ... a circular area right in the middle of it about 4 or 5 inches in diameter that appears to be foggy, but again, looking at the ground through it, it doesn't seem to be too noticeable.

CC Roger, understand.

SC Houston, Apollo 9.

CC Apollo 9, Houston; go.

SC                   Okay, one question on the DAP configuration  
after SPS 6; you want to go to 2 quads?  
CC                   Apollo 9, Houston. You can go back to  
normal - 2 jet authority - after SPS 6.  
SC                   Okay, I guess I understand. You want to  
use 6 jets for attitude control total, and when we run the DAP,  
I guess we use 2 adjacent quads, is that what you want?  
CC                   Affirmative, Apollo 9.  
SC                   Okay, thank you.  
CC                   Apollo 9, Houston.  
SC                   Go ahead Houston.  
CC                   Roger; we would like to continue on with some  
trouble shooting on the telemetry command. We would like you  
to place the up-telemetry data to up-voice backup.  
SC                   Roger; going to up-voice backup.  
CC                   Roger, and we may have to use VHF for comm  
and we will send you a command tone.  
SC                   Be advised I have a tone right now Houston.  
SC                   Houston, Apollo 9.  
CC                   Roger Apollo 9, Houston. We just sent you  
a command.  
SC                   Roger. From the time I wiped the up-voice  
backup, I had a steady tone at that time, and it's still the  
same.  
CC                   Roger; we'll send you another command.

END OF TAPE

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CAPCOM Apollo 9, Houston. You should get some variations in that steady tone you were hearing when the command is sent.

SC Roger. I've got my S-band up louder now. Go ahead and send another command.

CAPCOM Roger, we're sending another command.

On my mark, mark.

CAPCOM Mark.

SC Okay, I got a very slight beep on it.

CAPCOM Roger. We sent you three commands.

CAPCOM Apollo 9, Houston. We sent you three commands. Could you distinguish variation in your tone on three occasions?

SC Negative. How do you read, Al?

CAPCOM I'm reading you loud and clear, Rusty.

SC Okay, I was commenting there and didn't hear any response. When you said 3, 2, 1, mark, about 3 seconds after that I got a slight interruption in the steady tone. That happened only one time. When you came back on and told me that you sent three commands, in the middle of telling me that, I got another interruption tone, and that's all I've heard.

CAPCOM Roger, Rusty. We'll send you one more command on my mark, 3, 2, 1, mark.

SC Nothing.

CAPCOM Roger, understand nothing.

CAPCOM Apollo 9, Houston. We will digest that a little bit and call you back.

SC Okay.

SC Houston, I just got another little beep in it.

CAPCOM Roger, Apollo 9, Houston. Understand.

CAPCOM Apollo 9, Houston.

SC Go ahead.

CAPCOM Roger. We would like you to verify the following: flight and postlanding batt buss A open.

SC Flight and postlanding batt buss A -- Roger, it's open now. Thank you.

CAPCOM Roger and on panel 8, we would like for you to verify SPS pitch 1, yaw 1 open and EDS, all three open.

SC Okay, the two SPS's were closed; we opened them. The EDS's were all open.

CAPCOM Roger, Rusty, understand. And was the flight postlanding batt buss A open when you called? Had it been open before then?

SC Negative, it was closed.

CAPCOM Roger, understand closed.  
SC Houston, we've got a question on the fuel cell purge.  
CAPCOM Roger, Apollo 9, go.  
SC Rog. Yesterday, when fuel cell 3, rather fuel cell 2, had the high TCE after we purged it, it dropped way down in performance and it's still below 1 and 3. We would like to verify that you really want to purge that. We are concerned that it may drop the performance too low again, and drop it off the bottom of TCE.  
CAPCOM Roger, Apollo 9, stand by. We will get an answer on that.  
SC Okay.  
CAPCOM Apollo 9, Houston.  
SC Roger, go ahead.  
CAPCOM Roger, Apollo 9, Houston. While we've get a minute here, we would like to get a crew status report from you. If you are ready, the first question is regarding any illness, how are you feeling now, and want to know what medication you took yesterday and today on all three, and especially what you took yesterday morning, Rusty.  
SC Okay. Everybody is feeling fine and stand by on the medication.  
CAPCOM Roger.  
SC Hello Al, this is Jim.  
CAPCOM Rog, Jim.  
SC Roger, I didn't take anything yesterday or today. I've got some information for retro. They wanted to know last night were we going to do some things. I've worked out a plan here if you are ready to copy it down.  
CAPCOM Roger, go.  
SC Okay, we are going to have one suit underneath the left hand seat, have two suits underneath the center seat. We are going to take the compartment B1, we are going to move all the feed out of that and use it as a garbage bin, so the density will be much less than it was before. We are going to take the LCG's, the ones that Rusty had been wearing and pass them to the floor in the lower equipment bay on top of the lithium hydroxide canisters. We will take the lithium hydroxide canister that we've brought back from the LM and put it on the floor in the lower equipment bay underneath the suit. And the rest of the stowage will remain essentially the same.  
CAPCOM Roger, Jim. Copy you are going to put one suit under the left hand seat, you are going to put two suits under the center seat, you are going to take the feed out of B1 and use it as a garbage bin, you are going to stow

CAPCOM                   one LCG on the floor in the LEB around the lithium hydroxide canisters, you are going to stow the lithium hydroxide canister you brought back from the LM on the floor under the suit and the rest remains the same.

SC                         Roger. We will probably make some other changes, but that's basically what we are going to use for a while.

CAPCOM                   Reg, we got that.

SC                         Okay, Al, this is Rusty again. Yesterday morning I didn't take anything, last night before I went to bed I took an Actifed and a Seconal.

CAPCOM                   Roger, Rusty. Understand you - last night, you didn't take anything yesterday morning, and last night you took one Actifed and one Seconal.

SC                         That's affirmative. Dave didn't take anything at all yesterday.

CAPCOM                   Roger, okay, ready for the next question. How much sleep did you get last night?

SC                         Dave said he got about 8, I got about 8.

SC                         Okay, and Rusty, I got 8 also.

CAPCOM                   Roger, copy you all got 8 hours.

CAPCOM                   Okay, we would like you to do some troubleshooting on the biomed harness.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 118:10 CST 0810 342/1

CAPCOM                    Okay, we'd like you to do some trouble shooting on the biomed harness. We would like each of you to check your sensors. Dave, we didn't get any ETG on you last night. We'd like you to check your sterile sensor in the grounds for a loose sensor, and if the sensors are secure to replace the external leads and sensor with a spare.

SC                        Okay, we'll do some trouble shooting on the sensors. Dave had his sensors all plugged in last night. I guess you still weren't getting anything, is that right?

CACPOM                    That's affirmative, Jim, and we'd like you - we got no respiration on you. We'd like to check your actuator sensor.

SC                        Okay, I'll check those, and right now neither Dave or I are plugged in to the biomed. I don't know about Rusty.

SC                        Yes, I'm plugged in, and how do mine look. Do you want any trouble shooting on mine, Al?

CAPCOM                    Okay, stand by one, Rusty.

SC                        Dave and I will get plugged in as soon as we get through doing some of our chores here.

CAPCOM                    Roger, Rusty, we're not getting anything on you.

SC                        Okay, be advised - I can give you a little bit of information on you right now. I've had to take mine off 4 or 5 times here in getting into the 2 LTG's and back into the console wearing (garbled) and things like that. But I've noticed that the yellow signal conditioners connector does not seem to go all the way in any more. I'll look at it and see if I can do anything with it, but it may be that.

CAPCOM                    Roger, Rusty, understand, and would you switch the UP telemetry data switch to DATA now, please?

SC                        Roger, UP telemetry back to DATA.

SC                        Al, Dave went through all his biomed harness last night, and he unscrewed it and screwed it back in, pushed down on all the sensors, checked the connections, and everything looked alright. Anything else you wanted done?

CAPCOM                    Let us think about it for a little, Jim, and we'll give you a call back on it. We weren't reading anything on him last night.

SC                        Okay.

PAO                        This is Apollo Control at 118 hours 12 minutes and Canaries has LOS. During this long stateside pass we passed up some information to the crew on management of the reaction control system. During the upcoming service propulsion system burn number 06 and subsequent to that burn, we received a window report from Rusty Schweickart. He says all the windows look pretty good, and that when they look at the ground or a lighted object they can see through them very well. There is some haziness or fogginess when they look at the sky. However, it appears to be a light coating. And the hatch window, from time to time he reported a foggy circle in the middle of the window 4 to 5 inches in diameter, but nothing of a serious

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 118:10, CST 0810 342/3

PAO nature that prevents them from seeing out. We also did some trouble shooting on some telemetry command problem during this pass, and we're taking a look at some procedures on fuel cell 02, which seems to be operating at a performance slightly lower than the other 2 fuel cells. E COMM is taking a look at that and will recommend some action later. The crew reported that they were feeling fine. Jim McDivitt and Dave Scott have taken no medication. Rusty Schweickart reported that he took nothing during the day yesterday, however, before going to bed he took an ACTIFED which is a decongestant tablet, and a SECONAL, a sleeping pill. Each of the crewmen reported 8 hours sleep. Jim McDivitt gave a report on how he intends to handle reentry's stowage. The LCG, which you heard reference in that report, is the liquid cooled garment. That's the long-johns with the tubes running through it providing cooling to the EVA pilot. And just prior to LOS we asked the crew to do some trouble shooting on their biomedical harnesses. The ground received no ECG on Dave Scott last night, no respiration information on Jim McDivitt, and also having trouble getting some readings from rusty Schweickart. Apollo 9 is in its 75th revolution now. We'll miss the Tananarive station on this rev, the next station to acquire will be Carnarvon at 118 hours 40 minutes. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 118 hours, 39 minutes. Apollo 9 getting ready to tag up at the Carnarvon station. We'll standby.

CAPCOM Apollo 9, this is Houston through Carnarvon. Standing by.

SC Good morning, Smokey, how are you?

CAPCOM Oh, good morning service leader. I'm just fine.

SC Hold on this is service number 3.

CAPCOM Okay. Hey there, Rusty - sound awful chipper.

SC Yes, it's breakfast time here and it's tasting good.

SC Hey, Smokey. How about asking Sir John how my biomed (garbled) switch went out.

CAPCOM Okay, standby one, Rusty.

CAPCOM It's still not coming through at all, Rusty. We're not getting any biomed from anybody.

CAPCOM But standby on any trouble shooting you have up there. Let us work our site out here. We might have a ground problem.

SC Okay.

CAPCOM Hey, Rusty. Houston here. I realize you are at breakfast there, but if - could you move a couple of switches for me. We are still trying to trouble shoot this command system.

SC Sure can. Go ahead.

CAPCOM Okay. We'd like to have the up telemetry command switch to RESET then OFF and then NORMAL.

SC Okay. Up telemetry command. Go into RESET three, two, one, mark.

CAPCOM Okay, and back to OFF. And now back to NORMAL.

SC Okay. We are in NORMAL.

CAPCOM Okay. Understand. Thank you, and we might have a couple more here.

CAPCOM And Apollo 9, we are going to lose you at Carnarvon here in a few seconds. Bring up your S-band volume and we'll see you over Honeysuckle in about a minute.

SC Okay, we're with you.

CAPCOM Apollo 9, Houston through Honeysuckle.

How do you read?

CAPCOM Apollo 9, Houston through Honeysuckle.

How do you read?

SC Oh, you're coming in 5 square there, Smokey.

CAPCOM Okay, Rusty, looks like we have got our command system back again and we are going to be transmitting

the light here. And support command, so you should see  
SC And it'll be on for about a minute.  
CAPCOM Okay. What should we see?  
SC You should see the abort light.  
SC Okay. Standby.  
CAPCOM Okay. We got a light on it.  
CAPCOM Okay.  
SC Mark - you should have the light.  
CAPCOM (Garbled) we don't.  
SC Okay, we'll try again.  
CAPCOM How now?  
SC Still the same. I wonder if we may have  
to get some circuit breakers or something closed for you.  
CAPCOM That's a negative, Rusty. We should be  
getting in. Okay, we don't need the EDS power on, huh?  
SC Stand by.  
CAPCOM Did you get it then, Rusty?  
CAPCOM That's a negative.  
SC

END OF TAPE

CC Okay, Apollo 9, we're still trouble shooting on that one. Ya'll made all the headlines on that rendezvous; it was mighty pretty. I see here that they are cooking you a 350 pound cake aboard the Guadacanal that you'll have to eat when you get down there.

SC Listen; we're ready man, we're ready. With the amount of time we've had to eat in the last few days, we are gonna eat it.

CC Roger.

SC Hey Stu - I don't know if you guys got my message yesterday because we were scrambled and getting ready for the APS burn, but I would like to thank ya'll for the tremendous job that you did; all that practice that we did in those simulations really paid off and I think that, as I said yesterday, we've got the world's greatest set of controllers.

CC Thank you Jim; that makes us all feel real good and the whole control center here appreciates that.

SC Yeah - and that's what it goes for; it goes for all those guys down there in the pit, up there in the balcony, even the guys in the viewing room, and running the computers and all those kind of things; I want to include them all.

CC Roger.

SC That goes for all of us too Smoky. We all agree.

CC Roger; I tell you, ya'll really put on a show for us; that was fantastic.

SC Hey, I don't know if you had a chance to plot it out; but I don't think we got more than a pencil width off the nominal line the whole time we were off.

CC No - it - you were right on all the way around and it was phenominal the way all the pre-solutions were coming together. It was beautiful.

SC Wasn't that something. Might give you the impression that it might work, huh?

CC Yeah (laughter) it sure does.

Hey and Apollo 9 - Jim, when you and - just stand by.

And when Dave plugs in the biomedas, we'd appreciate a call just so we'll be sure we're getting the data; we're about 30 seconds LOS off Honeysuckle, and we'll see you over Mercury about on the hour. And Apollo 9, if you can still read me, we would like to have you look in your logs and we're going to be asking you for the time of your last 2 fuel cell purges.

POA This is Apollo Control - and Honeysuckle has loss of signal now. The crew was eating breakfast during this pass over Australia. We are continuing to trouble shoot the telemetry commanding problem. That was Jim McDivitt who responded that they were ready for that 350 pound cake that the USS Guadacanal, the recovery carrier, is going to have ready for them on recovery day. Jim McDivitt also passed on the crew's thanks again to the ground support personnel for the job that they've been doing during the course of this mission. The Mercury will acquire at 119 hours even. This is Mission Control Houston.

PAO This is Apollo Control at 119 hours into the mission. Apollo 9 approaching acquisition at Mercury. We will monitor through this pass.

CAPCOM Apollo 9, this is Houston. We will have you for about 5 minutes and we're looking at the fuel cell here, Apollo 9, and we would like, if possible, to get the time of the last two fuel cell purges. If you could give us that some time.

SC Stand by.

CAPCOM Rog.

SC Houston, Apollo 9.

CAPCOM Good morning, Dave. Go ahead.

SC Hi there, how are you?

CAPCOM Real fine.

SC We purged yesterday at approximately 6 hours when we started the day and then last night we purged at about, just about what it says on the flight plan, at 102, probably 10250, and we did all three fuel cells 02 for 2 minutes.

CAPCOM Rog, copy. Thank you very much, that will help us out here.

SC Okay. And I was on the horn there on your last pass, but I would also like to express my appreciation to all you guys for doing an outstanding job. I tell you, it's real - when you are driving this thing around alone, to know you guys are at home, watching.

CAPCOM Thank you, Dave, we all appreciate that. And just to prove that I can follow instructions here, I've got a ball score. The Astros lost to the Los Angeles Dodgers 8 to 1 in the spring exhibition opener at Cocoa Beach.

SC Hey, we're holding true to form.

CAPCOM Rog.

SC Hey, is the University of Houston still playing basketball?

CAPCOM Rog. Chris wanted to pass on to you that Virginia Tech beat them in their last game.

SC Oh, you're kidding. I don't believe it.

SC If that's true, I'm going to have to have a talk with a couple of people.

CAPCOM (laughter) Rog.

SC Hey, since we didn't get to launch on the right day, is Chris there?

CAPCOM That is affirmative.

SC Okay, we've got a message for him.

CAPCOM Okay, he is on the loop.

SC Happy Birthday to you, Happy Birthday to you, Happy Birthday dear Christopher, Happy Birthday to you.

CAPCOM That was magnificent. The only thing - you may even overshadow the rendezvous with performances like that.

SC Listen, we have two more choruses of that.  
Is Deke there?

CAPCOM That's negative.

SC Okay, when he comes in, let us know. I want to give him one too. And also when Charlotte shows up, if she ever does.

CAPCOM All right, fine, we will let you know.

CAPCOM And Apollo 9, Houston. We will be coming off the Mercury in about 30 seconds. We will see you over Redstone about 41.

SC Roger.

CAPCOM And Dave, when you plug in your biomed, we would like a call, just to make sure our system is working.

SC Okay. I'll do it right now.

CAPCOM Okay, thank you.

SC Houston, are you getting my respiration now? This is Jim.

CAPCOM That's affirmative, Jim. The last report I have here, you were coming through,

SC Okay, I haven't done anything to it as far as the biomed sensors themselves. All I've done is plug and unplug the comm meter a few times when I changed configuration.

CAPCOM Okay, Jim, I was in error. We are getting your EKG, we are not getting your respiration.

PAO This is Apollo Control at 119 hours 6 minutes. Mercury has LOS. Very tuneful pass at the Mercury, with the crew acappella singing Happy Birthday to Christopher C. Kraft, Director of Flight Operations at the Manned Spacecraft Center. Chris's birthday was February 28th, the original launch date for Apollo 9, prior to the crew coming down with colds. Mr. Kraft was standing up near his console at the time of this serenade, broad smile on his face, puffing a cigar occasionally, saying beautiful, beautiful. Crew also expressed to similarly wish Happy Birthdays to Deke and Charlotte. That Deke is Donald K. Slayton, one of the original seven astronauts, and now Director of Flight Crew Operations at MSC. Charlotte is Charlotte Maltese, the secretary for the Apollo 9 crew. Next station to acquire will be Redstone at 119 hour 13 minutes. This is Mission Control Houston.

END OF TAPE

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PAO This is Apollo Control at 119 hours 14 minutes and the Redstone has acquired Apollo 9.

CAPCOM Apollo 9, Houston through the Redstone, standing by.

SC How about a map update?

CAPCOM Roger, Apollo 9, in work.

SC Jerry, I'm going to have time to look out, and man, I'm going to look out.

CAPCOM Okay, and to the question back on the fuel cells, we've looked at our performance plot versus the time of the purges and so forth, and we saw no change in the performance, no drop, and we are recommending a purge on all 3 fuel cells.

SC Okay, very good, we'll purge all 3.

CAPCOM And we're showing that the load fan went down because of the high temperature on the condensor exhaust there and not the purge.

SC okay.

CAPCOM And Apollo 9 I have your map update.

SC Roger. Go ahead.

CAPCOM Okay, rev 75 is GET 119:10:01, right ascension 1642, longitude 14327 west.

CAPCOM And Apollo 9, Houston, we got you through Guaymas now. Did you get your map update through the Redstone, Jim?

SC Roger, it was rev 75, GET 119:10:01, 1642 right ascension, 14327 west.

CAPCOM That is affirmative.

SC Roger, thank you.

CAPCOM Roger.

SC And Houston, are you getting any biomed on the CMP dump?

CAPCOM Dave, we've getting the respiration, no EKG, and on Jim we're getting EKG and no respiration, and Rusty's coming through on both of them. The only thing that we could suggest was if whenever you have the time try the spare sensors, there, tank and - Dave, replace his sternal lead to the blue ones and Jim replace his yellow leads from the spare sometime when you get around to it.

SC Okay, we'll try and do that.

CAPCOM Okay.

SC We'll let Dave breath and we'll let my heart beat.

CAPCOM Okay, very good.

CAPCOM And Apollo 9, this is Houston, we would like to have you go crew in ACCEPT. We'll be uplinking to you through Mila here in about a minute and a half here.

SC Okay, we'll go crew in ACCEPT.

CAPCOM Roger.

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 119:14, CST 0914 346/2

CAPCOM                    And you should just about be on landfall  
coming across now.

SC                        Roger, we just passed over it.

PAO                       This is Apollo Control. That telemetry  
command problem seems to have cleared up now. And Jim  
McDivitt indicated the crew has some time today to look out  
the window and watch the world go by and they intend to, so  
he asked for a map update. That information we passed up to  
him enabled him to locate the ascending node on rev 75,  
and properly locate the ground track of the spacecraft. The  
ascending node is the point at which the ground track crosses  
the Equator in the portion between perigee and apogee.

END OF TAPE

CAPCOM Apollo 9, Houston. I have SPS 6 PAD  
when you are ready to copy.  
SC Roger. Standby one.  
CAPCOM Standing by.  
SC Okay, Houston, go ahead.  
CAPCOM Roger. Reading SPS 6 - 121 48 5760  
minus 00 369 all zips minus 00204 00 422 00 273 00 1627 010  
minus 089 minus 113 1235 44 023 600 and I'm going to have  
to give you a time on your nav check here since TIG is so  
far ahead and the time of this nav check 1203000 minus 19  
18 plus 16 49 21203 end of update.  
SC Okay, that's good. Six readback 12148  
5760 minus 00 369 all zips minus 00204 00422 00273 0016270  
10 minus 089 minus 113 1235440 23600 and the time of the  
nav check 1203000 minus 1918 plus 16492 1203.  
CAPCOM Roger. Apollo 9, your readback is cor-  
rect. And Apollo 9, the computer is yours. We have uplinked  
the state vector and a target load.  
SC Roger. State vector and target load.  
CAPCOM Apollo 9, Houston. We're about 30  
seconds from LOS Canary. We'll see you over Tananarive at  
around five-nine. You have a GO for 93 dash 1.  
SC Roger. GO for 93 dash 1.  
PAO This is Apollo Control at 119 hours,  
46 minutes. Apollo 9 out of range of the Canaries. Apollo 9  
has received a GO for 93 revolutions. They are now in their  
76th revolution. We have passed up the information to the  
crew for the upcoming Service Propulsion System burn number 6.  
That will occur at 121 hours, 48 minutes, 57 seconds - that's  
11:48:57am Central Standard Time. Delta V will be 42.2 feet  
per second duration of the burn - 1.6 seconds. This is  
expected to result in an orbit of 121 by 105 nautical miles.  
Apollo 9 prior to the burn - the orbit will be 127.8 by  
120.5 nautical miles. The object of this burn is to lower  
perigee so that we will maintain a backup deorbit capability  
using the Reaction Control System on the Service Module in  
case of the problem with the big SPS engine. Tananarive  
will acquire at 119 hours, 58 minutes. We'll be back then.  
This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 119 hours, 58 minutes and we are acquiring at Tananarive.

CC Apollo 9, Houston. We should have you through Tananarive in about another 5 minutes.

SC Okay, Houston, Apollo 9 reads.

CC Boy I'm reading you loud and clear.

SC Houston, this is Apollo 9.

CC Go Apollo 9, this is Houston.

SC Houston, we are having a little optics problem again; it seems that the shaft is hanging up, and now it's hanging up around at about 100 - I guess about 220 degrees. And we are still going through a trouble shooting here trying to figure out how to get it out; yesterday it worked just fine all day long, and I'm not sure whether it's except we had one little (garble) early in the morning and then if we couldn't find it - I'm not sure whether it's an early morning problem or exactly what.

CC Roger, Apollo 9, Houston. We copy that. We are not getting any data here; maybe over Carnarvon we can have some words on it and we'll go to work on it.

SC You might start thinking about some changes in the flight plan here; we may not be able to get this one lined up there.

CC Roger; understand.

SC So we won't be able to do SPS 6 on time.

CC Rog. copy.

SC Houston, Apollo 9.

CC Go Apollo 9, Houston.

SC Okay, I've got it running again, by breaking the shaft loose - the mechanical drive on the shaft, and driving it mechanically across the sticky part and then with power off, and turning the optics power back on and turning it through back to zero; is that okay? (garble)

CC Roger, Apollo 9; understand. Seems like you're doing some good trouble shooting there and I'm about to lose Tananarive. Carnarvon at 15.

CC And Apollo 9, Houston, if I still have you. One other thing - we'd like to have is from now on out, we'd like the time of each fuel cell purge, whenever you do the purges.

PAO This is Apollo Control at 120 hours, 6 minutes into the mission. Tananarive has LOS. Dave Scott reporting some trouble with the optics system there. It seems to hang up at about the 220 degree point he says, but he later came back up and said that he had been able to clear it, so we believe it may be working all right now. Next station to acquire will be Carnarvon at 120 hours, 14 and a half minutes. This is Mission Control, Houston.

END OF TAPE

PAO This is Apollo Control 120 hours 14 minutes. Carnarvon has acquired Apollo 9.

CAPCOM And Apollo 9, Houston. On the fuel cell purges, we would like to know the time of the purges from now on and also we would like to have your opinion of how today's purge went, what effect it had and how did it compare with yesterday.

SC Okay, Houston. We purged 2 minutes just after you gave us the word you thought the purge was a good thing to do and I checked them a few minutes ago and they all looked very well balanced. I'm checking them right now and they are very well balanced. Standby by one, let me look at the fuel cell performances. Okay, the TCE is up a little bit again on fuel cell 2. It's not off the top yet, but it is higher than fuel cell 1 and 3 and it's drawing about the same load.

CAPCOM Roger, Apollo 9, understand.

CAPCOM And we thank you for that info.

SC Roger.

CAPCOM And just for your info, it will be sunrise in about 19 minutes.

SC Okay, thank you.

CAPCOM Apollo 9, Houston. I copy your DSKY.

SC Houston, Apollo 9.

CAPCOM Go, Apollo 9.

CAPCOM Apollo 9, this is Houston. I'm reading you loud and clear.

SC Okay. Did you get the gyro torquing?

CAPCOM That is affirmative, Dave. I copied + 119 - 1277 + 503. We had a data dropout, I'm not sure I got the time.

SC Okay, those are the right numbers and 1202300.

CAPCOM I'll see you in about 20 seconds. Thank you for the time.

SC Rog, thank you.

CAPCOM Okay, Dave. When you get the chance with it fresh in your mind, we would like to have you run through the trouble that you are having. It appears to us that it's sticking in more than one place.

SC Yeah, that's right. Let me run back through it, the history of the thing. I guess I told you the other day, the T back is hung up in 64, and the tenths rolls all the time. I can't move the T back on the manual readout out of 64 manually or electrically. It seems to hang up closer on multiples of 64, plus and minus 64, and around the 180 side also. And when it hangs up, you

can't move the shaft in any mode, coupling, speed at all. So what I've been doing is turning the optics off and breaking out the T back with the manual dial on it - the manual crank there to where it looks like it flukes at least a tenth slower and then turn the optics back on and go into zero. That will zero it up and it seems to work for a little while until I get to that plus or minus 64 area and then it all seems to hang up and nothing will bring it out, not even the AUTO drive today.

CAPCOM                   Okay, Dave. That's a real good rundown We appreciate that and I'm going to lose you here at Honey-suckle probably in about a minute and Huntsville at 30.

SC                         Roger.

CAPCOM                   And we sure appreciate those comments.

SC                         Okay, I'd appreciate a smart optics guy coming with an answer.

CAPCOM                   Rog, we will give it a bloody go.

SC                         Maybe we need to oil it.

CAPCOM                   Dave, is it just the telescope. Have you noticed any trouble with the sextant.

SC                         It's - well, to tell you the truth, I think the sextant hangs up too. I couldn't be certain because I only notice it in the telescope and I haven't been able to get a star in the sextant with a stuck telescope to look through the sextant, but I'll check it next time.

CAPCOM                   Okay, thank you. That's a pretty pertinent question. We would like to have the info.

SC                         Okay, it's not stuck now, so I think I will stick to it to find out.

CAPCOM                   Okay.

END OF TAPE

PAO This is Apollo Control at 120 hours, 28 minutes. Honeysuckle has had LOS. The Huntsville tracking ship will acquire within a minute so we'll continue to stay up and come back up at Huntsville. Dave Scott gave the rundown on the optics problem there. He's not certain the sextant is also sticking. He knows the telescope is. He is checking the sextant now to see where - he suspects it is. He is checking it to see whether the sextant also sticks. The Guidance and Navigation people here in the control center are working on this problem to see what they can come up with to help Dave Scott overcome this problem. Rusty Schweichart reports the fuel cells are well balanced with condenser temp running on the fuel cell 2 - running a little higher than on the other two fuel cells. Huntsville has acquired now. We will stand by.

PAO This is Apollo Control. In the transmission over Honeysuckle where Dave Scott described the optics problem, he referred several times to a T back. That is the initial T and the word back. He was referring to the talk back counter or the device on the optics which registers the number of degrees to which the optics are pointed.

CAPCOM And Apollo 9, Houston through Huntsville. We'd like to have PCM bit rate low. We've got our command troubles also.

SC Okay. We're low.

CAPCOM Okay. Understand. And we'll see you over Hawaii at four-three.

SC Roger. And while you are waiting I'm trying the sextant and it seems to work fine in all modes - hand feed, manual, auto, zero and in any combination thereof, only the telescope gets hung up.

CAPCOM Roger. Understand. Copy, Dave. Thank you very much.

PAO This is Apollo Control at 120 hours, 36 minutes. Huntsville has loss of signal. Hawaii will acquire Apollo 9 at 120 hours, 42 minutes. Just before LOS at Huntsville Dave Scott reported that the sextant does work fine and in all modes. And the Guidance and Navigation officers here in the control center says that to them this means that the problem is mechanical and not electrical. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 120 hours,  
42 minutes and Hawaii has acquired.

CAPCOM And Apollo 9, Houston through Hawaii,  
standing by.

SC Go ahead, Houston. You're a little  
broken again.

CAPCOM Rog, you're coming in okay, Apollo 9.  
We're on a low elevation here and we'll have continuous cov-  
erage on across the States now.

SC Oh, very good.

SC Houston, Apollo 9. By the way, we did  
get a good alignment for the burn.

CAPCOM Rog, copy. Understand.

CAPCOM Apollo 9, Houston. We'd like to have  
H2 tank 2 fan off, please.

SC Roger, H2 tank 2 fan off.

CAPCOM Thank you.

SC Houston, are you still there?

CAPCOM Roger, Apollo 9, we're still here. We  
get good solid lock on you now. Go ahead.

SC We really have been having some peculiar  
spacecraft rates. You know, when we go to bed at night, we  
try to damp the rates down to near zero so we don't have a  
let - running the clock will spin us up during the night.  
And every morning we get up and the rates are down around a  
10th of a degree per second or something like that. Here in  
the last hour or so we've been trying to do this alignment  
and the rates keep building up. And I just - when Dave fin-  
ished I let them build up and they went up to about 2/10ths  
of a degree per second in pitch, and now that we're going  
along here without any jet firings, they've gradually dropped  
back down to they're almost zero, and it looks like we're  
trying to stabilize the spacecraft at a certain fixed posi-  
tion which right now happens to be command module down towards  
the Earth.

CAPCOM Rog, Apollo 9, copy. That's very inter-  
esting, thank you. We'll ponder that a while.

SC Okay. Could you explain to me when I  
get down on the ground just exactly how you ponder?

CAPCOM Yes, sir, I'll do that.

SC It sounds like so much fun I don't want  
to miss it.

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 120:42, CST 1042 351/2

CAPCOM Yes, copy that. Sounds like y'all are  
having a ball up there. Wish I could swap.  
SC Yes, I wish you could too. You work so  
hard I'd like to see you up here right now.  
CAPCOM Thank you.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/8/69, GST 120:52, 1052 352/1

CAPCOM And Apollo 9, Houston, you are coming up over Baja, California now.

SC Roger, there it is down there.

SC Houston, this is Apollo 9.

CAPCOM Go ahead Apollo 9.

SC Coming across here, looks like we're going to have a lot more cloud cover over the states. When do you want to go to SO 65? That was supposed to be across the southwest U.S., wasn't it?

CAPCOM Stand by, Apollo 9.

SC Okay.

CAPCOM Roger, Apollo 9, we'll give you a mark on when to start, and we are looking at this.

SC Okay.

SC Okay, we're going across Atlanta, Georgia right now, and we can see Robbins Air Force Base and the whole city.

CAPCOM Sounds great.

SC Okay, we got a couple of pictures for the folks.

CAPCOM Real good.

PAO This is Apollo Control. Apollo 9 is being acquired by the Vanguard right now. We've had continuous coverage since Hawaii, and this coverage will continue through the Canary Island's pass. There is very little conversation, the crew reported a considerable amount of cloud cover over the United States and they did see an open portion in Georgia. A little bit earlier Jim McDivitt reported he thought they were getting some peculiar rates on the spacecraft that appeared to try to stabilize Apollo 9 with the command module pointing down toward the earth. He said he would be interested in a briefing on this when he gets back. We'll continue to stand by through loss of signal at Canaries.

PAO This is Apollo Control, we are 39 minutes away from SPS burn number 6.

CAPCOM Apollo 9, Houston. Dave, that switch you made on the biomed harness is working real well. We're getting good data.

SC Okay, but this is Jim, I'm on Dave's lead now. He's not plugged in yet. Did you get mine? My respiration count?

CAPCOM Houston, Apollo 9.

SC Roger, Apollo 9, copy and we are getting it.

SC Okay. Ask those doctors if they can tell when we switch comm leads.

CAPCOM Okay.

SC Cause if they can't they are sure going to have some screwy data.

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 120:52, CST 1052 352/2

SC                                    Just as a matter of interest Dave is  
working on his right now, too, so as soon as he gets plugged  
back in you want to call us and let us know whether his are  
fixed,

CAPCOM

Okay, Jim, we sure will.

SC

He's going to be on the left -

END OF TAPE

CC Okay, Jim we sure will.  
 SC He's gonna be on the left hoses for awhile.  
 CC Roger, Houston understands.  
 CC Apollo 9, this is Houston, you are GO for  
 SPB 6 and I'd like to top in a reminder about the pitch 1 yaw  
 1 circuit breakers are out.  
 SC Okay, fine, thank you. Why did you want  
 these circuit breakers out this morning?  
 CC Roger. We were working on the bad A  
 problem.  
 SC Ah, okay. You don't want them on any  
 longer than, do you?  
 CC We'd like to have them in for the burn and  
 then pull them out after the burn again.  
 SC Okay. You have to keep reminding us about  
 them then.  
 CC And Apollo 9, Houston; I'm gonna lose you  
 in about a minute here off of Canaries. And if you could, we'd  
 like to have an estimate of when you closed the flight and  
 post landing battery bus A circuit breaker, and this is just  
 for our power consumption.  
 SC Houston, I don't think we have any idea  
 when that thing got closed. It must have got - static.  
 CC Okay, Apollo 9; understand.  
 CC And we'll see you over Tananarive around

33.

SC Roger.  
 PAO This is Apollo Control at 121 hours, 17  
 minutes and Canaries has LOS. Apollo 9 does have a GO for  
 the service propulsion system burn number 6. In the viewing  
 room at the present time here in the Mission Operations Control  
 Room, Director of Flight Operations Chris Kraft is briefing  
 4 members of the sub-committee on Manned Spaceflight of the  
 House Committee on Space and Aeronautics. They are Representa-  
 tive Larry Winn of Kansas, Representative Robert D. Price of  
 Texas, Representative Bertrum Podell of New York and Repra-  
 sentative Don Fuqua of Florida. The Congressmen are acc-  
 ompanied by their wives. The next station to acquire will be  
 Tananarive at 121 hours, 32 minutes. This is Mission Control  
 Houston.

END OF TAPE

PAO This is Apollo Control at 121 hours, 32 minutes. Apollo 9 is within range of the Tananarive station.

CAPCOM Apollo 9, Houston through Tananarive.  
How do you read?

SC Standby, Houston.  
CAPCOM Okay. When we pick up over Carnarvon you are going to be rocking right on the burn time. We are afraid we won't get the command in. We'd like to have you go PCM bit rate high at four-three. That will be approximately five minutes prior to the burn.

SC Okay. PCM bit rate high at four-three.  
CAPCOM Roger. That's correct. Thank you.  
SC And are you through with your trouble shooting on the batteries. We'd like to get the circuit breakers set for the SPS.

CAPCOM Roger. Go ahead and put in the circuit breakers.

SC Okay. Thank you.  
CAPCOM And Apollo 9, Houston. We're coming off Tananarive. We'll see you over Carnarvon right at your burn.

SC Roger.  
PAO Carnarvon has LOS. We're nine and a half minutes away from SPS burn number 6. That maneuver is scheduled at 121 hours, 48 minutes, 57 seconds - about 40 seconds after acquisition at Carnarvon. To recap it will be retro grade burn - Delta V 42.2 feet per second. Duration of the burn 1.6 seconds and we are lowering the apogee - I beg your pardon - we are lowering the perigee to maintain the backup deorbit capability in the Service Module Reaction Control System. We are in orbit now of 127 by 120. We expect this maneuver to change the orbit to 121 to 105 nautical miles. We'll come back up just prior to the Carnarvon acquisition. This is Mission Control Houston.

END OF TAPE

PAO This is Apello Control at 121 hours, 48 minutes and we are 52 seconds away from the burn - should have Carnarvon acquisition very shortly. We'll stand by.

SC Houston, Apello 9.

CC Go Apello 9.

SC Okay, we got no ullage that time so we aborted the burn; we'll regroup here and try to figure it out.

CC Roger, we copy Apello 9 - affect Charlie Delta in the DAP.

CC And Apello 9, Houston - we'll be looking one rev later for the burn.

SC Okay.

SC Roger, Houston; we see CD off which means we shouldn't - but I had just reset the DAP to turn it back on about 7 or 8 minutes ago.

CC Okay, Apello 9 - Roger, we copy. And there we really didn't get our data until your ignition time and your next, a rough cut at the next ignition is 123 plus 28.

SC Okay, 123 plus 28.

CC And we'll be taking a look at our data and looking at the DAP here, see if we can sight this out.

SC Okay - we even have a cross check on setting the DAP - thought we had it all squared away.

CC Understand Apello 9.

SC Houston, Apello 9.

CC Go Apello 9.

SC Roger; you want us to go back to local (garble)?

CC That's affirmative Apello 9 - thank you.

SC Okay.

CC Apello 9, Houston, we'll see you over the Huntsville around 30.

SC Roger, have you had a chance to look at anything yet?

CC We don't have any good word yet for you Apello 9 - maybe over Huntsville we will pass some words of wisdom.

PAO This is Apello Control at 121 hours, 55 minutes. Apello 9 did not perform the SPS burn over Carnarvon. Dave Scott reported they did not get ullage prior to the time they were to ignite the SPS engine, so they aborted that burn. We think the problem may be in the DAP - the digital autopilot configuration - we are taking a look at that right now. This burn has been rescheduled for 1 revolution later, approximate time of the SPS burn number 6 now is 123 hours, 28 minutes - little over an hour and a half from now. Next station to acquire will be Huntsville at 122 hours, 2 minutes. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 122 hours,  
3 minutes, and we're putting in a call at the Huntsville.  
HUNTSVILLE Houston, Huntsville lost a valid two-way.  
The signal is too weak still.

CAPCOM Rog.  
SC Hello, Houston, Apollo 9 here.  
CAPCOM Rog, Apollo 9. This is Houston through  
Huntsville. How do you read?

SC (garbled)  
CAPCOM Okay, Apollo 9, this is Houston. I think  
you're reading me. You're not coming back too sterling. We  
are looking at the data - playing the data back. We will  
have some words on that. I'd like to pest you on something;  
am I getting through at all?

SC You're coming through very weak.  
HUNTSVILLE Huntsville valid two-way.  
SC Houston, this is Apollo 9. We're read-  
ing you weakly but clearly. Go ahead.

CAPCOM Okay, I think we've got good solid two-  
way lock now. How me?

SC You're still weak but clear.  
CAPCOM Okay, what we're thinking of here, this  
S065 pass as scheduled is a prime one; there is a front mov-  
ing in that will probably have it blanked out tomorrow. We  
do have aircraft out off of Los Angeles and out around Tucson  
showing the cloud cover is good. You're only going to have  
about 32 minutes from the SPS 6 until the time we want the  
first picture taken, and if we get you all your pads and  
give you warning, do you think you can get configured for  
that in 32 minutes after the burn?

SC I think your question (blacked out) in 32  
minutes after - is that the question?

CAPCOM That is the question and our comm here  
is pretty bad. We'll have Hawaii at 14. We'll still be on  
here for about another 4 minutes but you're breaking up bad-  
ly coming in here, but you do have my right question. Can  
you be prepared to take your first picture 32 minutes after  
the burn?

SC Roger, I believe that we can (garbled).  
CAPCOM Okay, copy. Thank you and we'll really  
go to work and have everything ready.

SC Okay.

PAO                    This is Apollo Control at 122 hours, 10 minutes, and Apollo 9 is beyond the range of Huntsville now. The spacecraft communicator, Stu Roosa, queried the crew about whether they thought they could get prepared in time for this S065 photography. That's the Multispectral Terrain Photography that's being done on Apollo 9, and it's scheduled about 30 minutes - to begin about 30 minutes after the SPS number 6 burn. There is a weather front moving in to the area in the southwestern United States over which this experiment will be conducted. And we would like to complete this part of the photography in this particular geographic area today, if possible, because it may be blanked out by weather tomorrow. This is the photography experiment consisting of a cluster of four Hasselblad cameras pointed out of the hatch window. It will provide photographs taken simultaneously in four specific portions of the visible and near infrared spectrum. One of the major objectives is to see whether this type of photography can be effectively applied to earth resources programs such as agriculture, forestry, geology, oceanography, hydrology, and geography. The next station to acquire will be Hawaii at 122 hours, 13 and a half minutes. That's less than a minute away so we'll just stay up live and go on into the Hawaii pass and then we'll have continuous coverage across the United States ending at Vanguard. Hawaii should be acquiring any minute now.

END OF TAPE

CAPCOM Apollo 9, Houston. We have you through Hawaii.

SC Roger.

SC We are getting that SO 65 checked out right now.

CAPCOM Okay. Real good and a question, Dave. When you said you had cross checked it. Did it mean that after you had gone through the VERB 48 you recalled VERB 48 and check the load?

SC No. As we were going through both of us - two of us watched us do it.

CAPCOM Okay. Roger. We are going to take another look at the data, but also wondering about after loading up R1 R2 precede vice enter there.

SC No, I proceeded through it to check the weight and the pitch trim yaw trim again.

CAPCOM Okay. I guess what I'm saying is after you did get in the DAP load - maybe you missed an inner there before you proceeded on to through to the weight.

SC Roger, I understand what you mean.

CAPCOM And our data - we're trying to take a look at it, but we really can't psyche anything out yet and I was just wondering if you had recalled it to verify that it was actually in.

SC No, we didn't go back and recall it again.

CAPCOM Okay, thank you.

CAPCOM Apollo 9, this is Houston. I know you are real busy. You're coming up on a long pass here. We'll have you for about the next 20 or 22 minutes, and I have SPS 6 PAD anytime you are ready.

SC Okay. Standby, please.

CAPCOM Roger.

SC Okay, Houston, 9. Go ahead with the PAD.

CAPCOM Roger. Reading SPS 6 - 123 25 05 90 minus 00388 all zips all zips 00388 00240 0014 27010 minus 089 minus 113 12355 0023400 minus 0646 minus 01109 1269 end of update.

SC Roger. Copy 123 25 0590 minus 00388 all zips all zips 00388 00240 0014 27010 minus 089 minus 113 123 55 0023400 minus 0646 minus 01109 1 (garbled)

CAPCOM Apollo 9, Houston. I think we are in the middle of a handoff here. Let's standby for about 10 seconds.

SC Roger.

CAPCOM Okay, I've got you now - you dropped out on a couple of these, Dave. Would you read me Delta VC trunnion and the latitude and altitude.

SC Okay. On Delta VC 0020 trunnion 2300 longitude minus 01109 the altitude (garbled) .9

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 122:14, CST 1214 357/2

CAPCOM Roger. Copy that and I am showing latitude 0646.  
SC Copy - 06 -  
CAPCOM Okay. Very good. You have the PAD.  
SC Thank you.  
SC I guess we'll assume that the DAP's working all right (garbled).  
CAPCOM That's our assumption. Let's assume that right now, Apollo 9. We are looking at it.  
SC Okay.  
CAPCOM Apollo 9, Houston. We'd like to have POO and ACCEPT. We'll give you a state vector and a target load.  
SC Okay. You have POO and ACCEPT.  
CAPCOM Roger. Understand. We'll be shipping it up.  
END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 122:29, CST 1229 358/1

CAPCOM And Apollo 9, it will be about another minute before we start shipping to you. We are getting a dump.

CAPCOM Apollo 9, Houston. We've got about 3 minutes left in this pass. I have your S065 update when you are ready.

SC Stand by one.

CAPCOM If we don't get it here, it will be no sweat. We will have Ascension at 51.

SC Okay, about 10 minutes.

CAPCOM Okay.

END OF TAPE

SC Go ahead, Houston.  
CAPCOM Okay, S065 update. 180003275000012355  
20, N/A, next time block, I want this orb rate, your first  
area is southwest U.S., 12400200625, we would like to have  
a second area, which will be Houston, 12405150603, and also,  
now with the hand-held camera, I would like to give you a  
time here of 124 + 30 + 28. We would like to have about four  
pictures looking north of the ground track with the hand-  
held camera. And this is just about as far north as we've  
come in any of the orbits. We would just like to have some  
pictures up there. And I would like to make a comment on  
this southwest U.S. pass. The weather is clear from Los  
Angeles to Tucson. You will be just past Tucson when you  
have exposure 15. As you come into El Paso, if it looks  
like it's completely socked over, you can terminate, but we  
want to keep going up through 15.

SC Okay. Want a readback? Do we have time?  
CAPCOM We've got about 30 seconds. Go ahead.  
SC Okay, 180327 and a half 01235520, NA, orb rate.  
southwest U.S. 12400200625, Houston 12405150603.

PAO This is Apollo Control at 122 hours 44  
minutes and the Vanguard has LOS. Stu Roosa passed up the  
information for the S065, the multispectral terrain photog-  
raphy which is due to start about 124 hours elapsed time.  
What the crew has been asked to do with this set of four  
cameras mounted together pointing out the hatch window is  
to take, starting just off the coast of California, contin-  
uing to the area west of El Paso, to take 25 exposures, 6  
seconds apart. The weather is reported to be clear to west  
of Tucson. By the time they get to that area, they will  
have taken 15 photographs. This is the minimum number that  
we want. If the weather is too bad from Tucson on into  
El Paso, the crew will discontinue this experiment. We  
would prefer to get all 25 exposures, if possible. And then  
it will be repeated over Houston. At 1240515, we've asked  
for three pictures over Houston, 6 seconds apart, three ex-  
posures, 6 seconds apart. And then, as you heard, they've  
asked at 1240328 for one of the crewmembers using a hand-  
held camera to take four pictures looking north. This is  
about as far north as the orbit goes and they would like to  
get some photography north of the northmost point in the  
orbit. Ascension will acquire in about 3 minutes. We will  
be back up then. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 122 hours 52 minutes, and we're at Ascension.

SC Okay, any addition comments? The weather is clear from LA to Tucson, and you figure that we'll get to Tucson at the 15th exposure, and using our judgement SPR looks now like it's clobbered in to go ahead and forget them. Understand that at 124:03:28 with a handheld camera you'd like pictures looking north of the orbit track, and why don't you give us an orbit rate?

CAPCOM Okay, stand by.

SC Degrees per second.

SC Okay, we'd like it in degrees per second.

CAPCOM Roger, understand.

SC Houston, this is Apollo 9.

CAPCOM Go ahead, Apollo 9, this is Houston.

SC Roger, these angles that you sent us, are these inertial angles or those local vertical angles? This is for SO 65.

CAPCOM Roger, those are your R brake angles.

Now, on your FPAI.

SC Roger. do you have a corresponding set of inertial angles that we could have?

CAPCOM Stand by.

SC Houston, Apollo 9.

CAPCOM Go ahead, Apollo 9.

SC Okay, one more question on that, if you will check the check list CMP 3-15, and there is an orb rate column there, and it goes 0,90, 180, and 270 degrees. Could you give us a word on that? What those are.

CAPCOM Roger, copy Apollo 9, stand by.

SC Okay.

CAPCOM Apollo 9, this is Houston, you are GO for SPS 6, and we are working on your question.

SC Roger, GO for 6, thank you.

CAPCOM Apollo 9, Houston, about 30 seconds LOS Ascension, we'll see you at Tananarive about 09 if we can talk to you.

SC Okay, I've got a quick question. All these angles that you are going to get us are based on the REFSMMAT that we had in there for the previous burn, right?

CAPCOM That is affirmative, Apollo 9.

SC Okay.

CAPCOM And on your attitudes for the burn, you will be about 2/10 off, I didn't bother passing those. It's essentially 000.

SC Okay, very good.

SC Come on, you are falling down on the job.

CAPCOM Okay, sorry about that.

SC Houston.

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 122:50, CST 1250 360/2'

CAPCOM

Go ahead.

PAO

This is Apollo Control at 122 hours 58 minutes. Ascension has LOS. We're 26 minutes away from the SPS number 6 burn. Next station to acquire will be Tananarive at 123 hours 08 minutes, for now at 122 hours 59 minutes this is Mission Control Houston.

END OF TAPE

APOLLO 9 COMMENTARY, 3/8/69, GET: 123:08 CST: 1308 361/1

PAO This is Apollo Control at 123 hours, 8 minutes. Apollo 9 coming up on Tananarive.  
CC Apollo 9, Houston through Tananarive, do you read?  
CC Apollo 9, this is Houston through Tananarive. I am not reading you; your orb rate is .067.  
PAO This is Apollo Control. That rate is in degrees per second.  
CC Apollo 9, this is Houston. We'll see you over Carnarvon at about 22 -- just before your burn.  
SC Static.  
CC And Apollo 9 - I'm not getting you back; your busting up your orb rate is .067 and we'll have the rest of your angles for you after your burn.  
SC Thank you.  
CC And Dave, if you can read me, I'll pass this to you now - that the checklist there on CMP 315, those values are to be used; those are your roll angles. In other words, in this one where you're at 180 degree roll, you would use that column versus your orb rate of .067 to get those values to load in for the procedures. Those are your outer gimbal angles Dave - and I'll cover this with you again because I may not be getting through.  
PAO This is Apollo Control and Tananarive has LOS. We are about 12 minutes, 45 seconds away from the SPS number 6. It will be performed over Carnarvon; we will acquire Carnarvon at 123 hours, 21 minutes. This is Mission Control, Houston.

END OF TAPE

PAO This is Apollo Control at 123 hours, 21 minutes. Apollo 9 almost in acquisition at Carnarvon. We'll standby. We're about 3 minutes 15 seconds away from the burn.

CAPCOM Apollo 9, Houston through Carnarvon. Standing by for your burn.

SC Roger, and I think the DAP is squared away. What does it look like down there?

CAPCOM We don't have data yet, Apollo 9.

SC Okay.

CAPCOM Roger. It is GO.

SC Okay, thank you.

PAO GMC said the burn looked good.

SC Houston, this is Apollo 9.

CAPCOM Go ahead, Apollo 9.

SC Got our residuals for you. Plus 1.2 minus 0.4 and minus 0.3 Delta V counter is minus 13.1.

CAPCOM Roger. Copy. Plus 1.2 minus 0.4 minus 0.3 and minus 13.1.

SC Roger, and that pitch out of P00 was 354 degrees.

CAPCOM Roger. Copy.

SC That 1 G you earthlings have down there is quite a sensation.

CAPCOM Roger, and Dave thanks you from the bottom of his computer for that pitch angle.

SC Roger.

CAPCOM Apollo 9, Houston. We're going to have you here for about another 2 and one-half minutes at Carnarvon. I believe you got your orb rate .2067 over Tananarive and that page 3 dash 15 - what that is telling you is your outer gimbal - that's your roll angle - and we are going to have you with a roll of about 180, so you will use that column versus your orb rate to get your parameters to load in the procedure.

SC Okay. Fine then. I copied your whole transmission over Tananarive and I think we've got it in hand. Thank you.

CAPCOM Roger. And I'll have you some inertial angles here at the start of your orb rate shortly.

SC Okay. Thank you.

PAO And it looks like we are going to get an orbit rate close to what we were aiming at.

CAPCOM Apollo 9, Houston with your inertial angles.

SC Go ahead, Houston.

CAPCOM Roger. Roll 0, pitch 332.4, yaw 359.5 and the time of this will be 55 plus 20.

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 123:21, CST 1321 362/z

SC Roger. Understand. Roll 0, pitch 332.4,  
yaw 359.5, and the time is 55.20.

CAPCOM Roger.

CAPCOM And we are going to lose you here at  
Carnarvon. We'll probably see - see you at Hawaii around  
four-eight. We'll have a low pass on Guam this time.

SC Okay. Fine.

PAO This is Apollo Control at 123 hours,  
29 minutes. Carnarvon has LOS. The SPS number 6 burn per-  
formed successfully over Carnarvon. A very preliminary  
look at the orbit - after a very short bit of tracking after  
the burn - shows an orbit of 120.2 nautical miles by 104.8  
nautical miles. We have a low elevation pass at Guam. We  
may be able to communicate through this station. We'll  
come back up and see - that's about 5 minutes away. One  
hundred 23 hours, 36 minutes, acquisition at Guam for a  
couple of minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 123:36, CST 1336 363/1

PAO This is Apollo Control at 123 hours,  
36 minutes and we'll stand by here at Guam.

CAPCOM Apollo 9, Houston through Guam. Do you  
read?

SC Rog, Houston, reading you five by.

CAPCOM Okay, I'm reading you a little weak,  
but Dave I don't know if I've confused you on this state 315  
or not, but that top column is your outer gimbal angle. Use  
the value for your outer gimbal angle when you are at the  
proper pitch for this photography.

SC Okay, I was just going to ask you about  
that. You gave him some roll of zero degrees so that's  
(garbled).

CAPCOM Rog, that zero degree inertial looks  
good and so that top column is your outer gimbal angle.

SC Okay, very good. Thank you.

CAPCOM Rog.

CAPCOM Apollo 9, Houston. If you read me, the  
roll on our S065 pad where we gave you 180 should be 0.

SC Oh, okay. The roll on the S065 pad  
should be zero.

CAPCOM Rog.

PAO This is Apollo Control at 123 hours,  
39 minutes. Guam has LOS. We got some more tracking during  
this station and we're now showing an orbit of 120.2 by  
105.4 nautical miles. Hawaii will acquire at 123 hours,  
47 minutes, about 7 minutes from now. And prior to reaching  
Hawaii the crew will start unstowing and installing the S065  
cameras for this multispectral terrain photography that will  
begin about the coast of California on this revolution. This  
is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 123 hours, 47 minutes. Hawaii has acquired. We'll have continuous contact from here through the Antiqua station.

CC Apollo 9, this is Houston through Hawaii; standing by.

SC Roger; we're getting set up.

CC Very good.

SC When we come over, I want you to smile now, Stu.

CC Okay, and we've sent somebody outside, said it was clear out here.

SC Is it clear?

CC Yeah, it is here.

CC Apollo 9, Houston.

SC Go ahead Houston.

CC Roger, we would just like to remind you; when you get into the checklist on S065, and you disable jet A3 to renable quad C in the DAP.

SC Houston, we would like to go on and use A and C and B here.

CC Roger, understand Apollo 9.

SC We - when you get the red lines, C is by far the lowest, and we didn't figure we were gonna be firing that many (garble) as we went along here ; we (garble) the fire on the pump; we took a picture rather remote.

CC Roger Apollo 9.

SC Houston, this is Apollo 9.

CC Go Apollo 9.

SC Listen, this technique isn't working; we're driving the wrong way or something up here and we're not going to be vertical it doesn't look like. You want us to just take over and try to fly it around manually or skip it.

CC Roger, we copy Apollo 9.

SC Better hurry up; we gotta start taking pictures right now.

CC Roger; we'd like you to take over and do it manually.

SC Okay.

SC Houston, Apollo 9.

CC Go Apollo 9.

SC (static) Hey, Houston, we still have the 3 to take over.

CC I didn't copy that; you busted out Apollo 9.

SC Roger, we have the 3 pictures to take over Houston - (garble) squared away.

CC Roger.

CC Okay, you ought to be coming over about Apollo 9, snapping away.

SC Yeah, it's quite a sight.

SC Clear as a bell down there.  
CC Okay, we won't move.  
SC Don't move. Smile.  
CC And did you get a good picture of the  
oil slick off the coast?  
SC (garble) Houston, Apollo 9.  
CC Go Apollo 9.  
SC This is the uncertain gang overhead, but  
I took 7 pictures instead of 3.  
CC Roger, copy; you took 7 instead of 3.  
SC (garble)  
CC And Jim, you're breaking up and Dave is  
coming through loud and clear.  
SC (garble) Did you take into account the  
fact that (breaking up) - Houston?  
CC Apollo 9, this is Houston. You're breaking  
up quite badly. I can not read you.  
SC Roger. Thank you.  
SC Houston? You still with us?  
CC Roger. We show you - we still should have  
good lock on you, however you are breaking up quite badly  
Apollo 9.  
SC Okay, how about that, are you with us now?  
CC Oh, that's loud and clear.  
SC Okay, I guess we have some question about  
the platform alignment too since we have aligned retrograde.  
The uprate technique with adapt works real well; it just  
looked like we were going the wrong way.

END OF TAPE

SC Okay, I guess we have some question about the platform alinement, too, since we had aline retrograde. The abort rate technique with adapt works real well, it just looked like we were going the wrong way.

CAPCOM Roger, Copy. And G&C here has a lot of good words to say about that. Sounds like you are absolutely right.

SC Okay, then maybe we can get them squared away for next time.

CAPCOM Roger, it looks like we went V cross R instead of R cross V.

SC Roger, at least you got the middle.

SC It's not all at first either.

CAPCOM Roger.

SC Anytime, the next time we try it how about when you give us the update give us the pad with the inertial gimble angles on it, and add to it the orb rate and we can probably go from there and set this thing up pretty good.

CAPCOM Roger, we'll do that, we'll have inertial angles and orb rate on the next pad.

SC Okay, thank you. You might also have the orbit rate angle, too, cause we could monitor that on the orb rate ball.

CAPCOM Roger, understand.

SC Houston, how do you read me now?

CAPCOM You're loud and clear, Jim.

SC Okay.

CAPCOM And Apollo 9, Houston you're coming across the Caribbean. We'll have you for about another 8 minutes.

SC Okay.

SC Houston, this is Apollo 9.

CAPCOM Go Apollo 9.

SC Okay, according to this flight plan update you gave us this morning you were going to give us a time for a nominal P52 alinement. Do you have that data for us yet?

CAPCOM Roger, it's in work, we'll have it here before we lose Antigua.

SC Okay, when are you going to send us the pad for landmark tracking?

CAPCOM Say again, Apollo 9.

SC When are you going to send us the pad for landmark tracking?

CAPCOM Roger. Stand by. We'll try to have that over Ascension, Apollo 9.

CAPCOM Okay, Apollo 9, I have your time for the nominal alinement.

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 124:07, CST 1407 365/2

SC Okay, go ahead.  
CAPCOM Roger, 125 plus 03 plus 00.  
SC Roger, 125 plus 03 plus 00.  
CAPCOM That's affirmative.  
CAPCOM Apollo 9, this is Houston. We would like to have a voice check here to check our S-band. That's what was breaking up on the pass over the last track.  
SC Okay, voice check, 1, 2, 3, 4, 5 5, 4, 3, 2, 1, Apollo 9.  
CAPCOM Oh, that's beautiful, loud and clear.  
SC Okay.  
SC Houston, I might make a comment on this SO 65. It seems to have worked very well. It's easy to put together, and it seems to take pretty good pictures. I don't know about the quality, but it's easy to operate.  
CAPCOM Okay, copy. How did it look from Tucson to El Paso, Jim? Did you take those pictures?  
SC Roger, we took the pictures, but I couldn't tell exactly what the cloud cover was. Let me put Dave in.  
SC It was a scattered deck, you know, like probably 2000 feet or so, and other than that it was pretty good, but soon as we got to within about a couple of three minutes of Houston it broke out in the open.  
CAPCOM Okay, real good, that was our report according to aircraft from Los Angeles. Tucson was supposed to be clear, and I think with the scattered deck the pictures should still be good with the word I had. I'm glad you took them.  
SC I'm taking today, but I'm not taking tomorrow.  
CAPCOM That's right, and we're going to lose you in about 20 seconds here and we'll see you at Ascension at 26.  
SC Okay.  
PAO This is Apollo Control at 124 hours 18 minutes. Antigua has loss of signal. Ascension will acquire at 124 hours 25 minutes. The crew reported that during this pass across the United States they did perform the SO 65 photography, the camera equipment was easy to operate, they did take all of the pictures from the coast of California to just west of El Paso and in all the 25 exposures requested there. Over Houston they took 7 exposures instead of 3, reported the weather good up to just a little past Tucson a little scattered deck of clouds from Tucson until they were just a little west of Houston when they broke out in the clear again. This is Mission Control Houston.

END OF TAPE

PAO This is Apello Control at 124 hours, 25 minutes. Apollo 9 about to be acquired through the Ascension station.

CAPCOM Apollo 9, Houston through Ascension.

SC Roger, Houston. Apollo 9 here.

CAPCOM Roger. Good evening.

SC Hi, how are you?

CAPCOM Good shape, good shape. About ready for our evening fireside chat again looks like.

SC Yes. When you said good evening I was absolutely amazed. I looked at my watch. It says 3:30 down at the Cape.

CAPCOM That's right.

SC How are you there, Mr. Ron?

CAPCOM Good shape. Good shape. We're working on our landmark tracking pad. We should have that before we finish up here, I hope.

SC Okay. I want you people to realize that we are having this trouble with the shaft on the telescope and we may not be too successful with this thing.

CAPCOM Roger. We understand that.

SC All right.

PAO That was Astronaut Ron Evans communicating with Jim McDivitt. Ron has taken over the spacecraft communicators console now.

CAPCOM Apollo 9, Houston. Have your line mark update.

CAPCOM Apello 9, Houston.

SC Roger. Go ahead.

CAPCOM Okay, you're real weak there. I'll go ahead and read. Your line mark ID 011, your GET 125 32 1600 and you'll be 60 miles north of track.

CAPCOM We have about 30 seconds to LOS - probably Carnarvon at five-seven.

SC Roger. Say again the roll, pitch, yaw, shaft and trunnion.

CAPCOM Roger. We don't have that now it's NA.

SC Okay. I missed the number, was it 011?

CAPCOM Affirmative. Line mark ID is 11.

SC Thank you, and 125321600.

CAPCOM Roger.

PAO This is Apollo Control at 124 hours, 31 minutes. Ascension has LOS. Tananarive will acquire in about 4 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 12443, CST 1443 367/1

PAO This is Apollo Control at 124 hours 43 minutes. Apollo 9 about to acquire at Tananarive for a very low elevation pass. The duration of this pass will be about a minute and a half.

PAO This is Apello Control. No attempt to establish communications that time, a minute and a half pass. Apollo 9 will be within range of Carnarvon at 124 hours 57 minutes. This too will be a low elevation pass. Duration of acquisition there just slightly over 3 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 12457, CST 1457 368/1

PAO This is Apollo Control at 124 hours 57 minutes into the mission. Apollo 9 acquiring at Carnarvon for a 3-minute pass. We will stand by.

CAPCOM Apollo 9, Houston through Carnarvon, standing by.

SC Reger, Houston, Apollo 9 here.

CAPCOM Reger. I just wanted to make sure that you got the word that that landmark is 60 miles north of your track.

SC Reger, 60 miles north, thank you.

CC Apollo 9, Houston. This is 30 seconds LOS Guam at 07.

SC Apollo reading very good.

PAO This is Apollo Control at 125 hours. Carnarvon has LOS. Guam will acquire in about 7 minutes. The White Team is handing over to Flight Director Jerry Griffin and the Gold Team at this time. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 125 hours, 07 minutes Ground Elapsed Time. Good afternoon from the friendly Gold team, We are about to acquire at Guam, and we'll stand by for any air to ground.

CAPCOM Apollo 9, Houston through Guam.

SC Go ahead, Houston. This is Apollo 9.

CAPCOM Roger, Jim. If you have got time a minute we've got a switch tap we'd like to have you copy and perform. If you don't have time here we can do it later, but -

SC Houston, Apollo 9. I'm having a pretty tough time reading you.

CAPCOM Nine, Houston. How now?

SC That's much better.

CAPCOM Okay, Jim. We have a PUGS switch tap we would like to have you perform if you have time.

SC Okay. Just a minute.

SC Okay. You want us to copy this thing down or you want us to do it just as we are talking to you?

CAPCOM You can do it, but it will take SPS 13 malfunction procedure.

SC Okay. Standby one.

CAPCOM 9, Houston, I can probably read it to you as we go.

SC Okay, go ahead, I've got the SPS 13 end up.

CAPCOM Okay, SPS gaging to AC-1.

SC Roger, gaging to AC-1.

CAPCOM SPS heaters and gaging main A and main B closed.

SC Stand by. Roger, they're closed.

CAPCOM Pumps mode switch to normal.

SC Roger. Pumps mode to normal.

CAPCOM And press switch to position 2 for 8 seconds.

SC Roger. It was there for 8 seconds.

CAPCOM Roger. Pumps load switch to auxiliary.

SC Roger. Pumps load to auxiliary.

CAPCOM Okay. DSFS 13 box 2 and 4 and let us know of any results.

SC Okay.

CAPCOM We would like the quantity readings and the imbalance meter before and after each activation of the test switch.

SC You were a little late on that request. I'm not sure where it started. I just finished Test 1 for 10 seconds and the reading 24.9 and 23.4 and the imbalance is reading 400 increase.

CAPCOM Roger.

SC Okay, I have gone to 2 for 10 seconds  
and they read 23.5 and 22.0.  
CAPCOM Roger.  
SC And the unbalance is 380, again on the  
increase.  
CAPCOM Roger, 380, increase.  
SC Okay, you also want block 4. Right?  
CAPCOM Affirmative, block 4.  
SC Okay, I just performed for you, are you  
still with me?  
CAPCOM Affirmative.  
SC Okay, just performed block 4 and after  
the initial jump back on the normal systems, it was reading  
23.1, 21.1 increase 500 and it remained there all through  
block 4. No change.  
CAPCOM Okay, we copy.  
sc Although the caution warning light did  
come on after about 5 or 6 seconds.  
CAPCOM Okay.  
CAPCOM Nine, Houston, we'd like to verify that  
you are in primary and not normal when you went through  
block 4.  
SC I beg your pardon, I was in normal.  
CAPCOM Okay.  
SC I'll go primary and do it for you.  
CAPCOM Roger.  
SC Nine, Houston, if you can hold off there.  
we're about LOS, we'll catch you first time in Hawaii on  
that.  
SC Roger.  
CAPCOM Will be in Hawaii at 22.  
PAO The Apollo 9 spacecraft has evidently  
moved out of range of the Guam tracking station. They will  
be reacquired at 22 minutes after the hour. Meanwhile,  
let us pass on one administrative announcement. The change  
of shift press conference will be held here in Houston at  
3:30 p.m., approximately 3:30 p.m., central standard time.  
at 125 hours 15 minutes, this is apollo control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY 3/8/69, GET 125:22, CST 15:22, 370/1

PAO This is Apollo Control at 125 hours 22 minutes\*  
ground elapse time. On this the 79th rev in the mission of  
Apollo 9. We expect acquisition at Hawaii momentarily, and  
we'll stand by for the air to ground.

CAPCOM Apollo 9, Houston to Hawaii.

SC Roger, Houston, Apollo 9.

CAPCOM Roger, loud and clear, I read that.

We'll let you continue with your land mark tracking there,  
and we'll check back over Guam the next rev.

SC Alright.

CAPCOM 9, Houston we're watching your metal  
gun alignment for you and we'll keep you advised.

SC Roger, I'm keeping a pretty close  
eye on it too.

CAPCOM I would assume so.

PAO Hawaii has lost the signal at 27 minutes  
after the hour of, on the ground elapse time clock. At  
125 hours 27 minutes 33 seconds. This is Mission Control.

END OF TAPE

PAO This is Apollo Control at 126 hours, 41 minutes ground elapse time. We expect acquisition at the Guam tracking site in perhaps a minute or so, a minute or less. The systems checkouts that have been going on down here indicate that the spacecraft now is functioning fairly normally. No anomalies of any sort. We have some air-to-ground coming up, so let's standby and monitor.

CAPCOM Apollo 9, Houston through Guam.

CAPCOM Apollo 9, Houston through Guam.

SC Hello Houston through Guam, this is Apollo 9.

CAPCOM Roger. If you have time, we would like to go through that subswitching test again.

SC Alright, we will get the PUGS switcher open to see.

CAPCOM Okay.

SC Houston, this is Apollo 9. I've got some data for you from that last one, if you would like that.

CAPCOM Okay, I think I copied the data. I didn't have what your readings were before you started the test 1 position dump, before you started the malfunction procedures.

SC Okay, I didn't either. That is whatever it was after that last burn when we shut if off. I think we read that down some time, but why don't we just do it again.

CAPCOM Okay, let's do it again. Just PUGS mode to auxiliary and then go through SPS 13, boxes 2 and 4 and give us your readings before you start and after each test position.

SC Okay, how much time do we have in this pass?

CAPCOM Roger, we have 2 more minutes, 3 more minutes.

SC Roger, Ron how about the IMU. Did you say go ahead and power down.

CAPCOM Affirmative, you can fire down the IMU, and if you have POO and ACCEPT, we will give you state vector now.

SC Okay, POO and ACCEPT, you have it, Okay, and Ron, we have 24.9 and 21.2, and the oxidizer unbalance and off scale high. Okay?

CAPCOM Roger, copy.

SC Okay, ON in auxiliary. Okay after 10 seconds in auxiliary, the oxidizer unbalance is increased 400 and the quantities are reading 25.2, 23.6.

CAPCOM 25.2 and 23.6.

SC Roger. Okay, and after going to ACCEPT and POO, we have 430 pounds increase, 23.8 and 22.1.

CAPCOM Roger, 23.8 and 22.1.

SC Okay, going to primary. Okay, after I

SC (Garble)  
CAPCOM Roger.  
SC Roger. Is Charley there?  
CAPCOM Affirmative.  
SC Okay, stand by, Charley. Happy  
Birthday to you, Happy Birthday to you, Happy Birthday,  
dear Charley, Happy Birthday to you.  
CAPCOM She's getting a great kick out of it  
and says Thank You.  
SC Okay, sorry we didn't have time to  
celebrate before the launch.  
CAPCOM She said it was beautiful.  
SC Okay, we think she is, too.  
CAPCOM Roger.  
CAPCOM When you get a chance there, we could  
use the number of frames used on 8065.  
SC Okay. (Garble)...seven frames over  
Houston, we used one frame to check the thing out when we  
put it up on the window to make sure that all of the  
(garble).....one additional frame.  
CAPCOM Roger. One additional, one to start  
and seven over Texas and seven somewhere else. Is that  
correct?  
SC You broke up a little there. There was  
one to check, one accidental one, seven - I say, there  
was seven over Houston and there was 25, 25 across  
Southwest .....

SC Roger. Copy the 25.  
CAPCOM Houston.  
SC Houston, go.  
CAPCOM We were supposed to wind each film pack  
forward one frame by hand, so that one is also gone.  
SC Roger, understand. You wound one  
frame by hand.  
SC Roger.  
SC Houston, this is Apollo 9.  
CAPCOM Houston, go.  
SC ... All we're doing is spinning through,  
keeping it out of gimbal lock and we don't need it anymore.  
CAPCOM Roger. Stand by. We're checking it.  
CAPCOM Apollo 9, Houston. affirmative. IMU  
to stand by..  
SC Say again, please.  
CAPCOM Apollo 9, Houston, IMU to stand by.  
We still need the CMC.

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 126:25, CST 1625 371/3

PAO                    The Happy Birthday greetings that were transmitted from the Apollo 9 crew back to earth were to Charley, who in real life is Charlotte A. Maltese, the secretary to astronauts McDivitt, Schweickart, and Dave Scott. Spacecraft presently is in the far east approaching Island of Sumatra. Next station to acquire will be tracking site at Guam and that acquisition should take place in about nine minutes. So, at 126 hours, 32 minutes, GET, this is Mission Control, Houston.

END OF TAPE

SC                    went to primary, I went to test 1, the  
oxg increased, the oxidizer unbalanced, jumped right away  
to full scale high, and stayed there. Its final readings  
are 28.6 and 21.8. I am going to test 2 now.

CAPCOM                Roger, and we didn't quite get your load  
in the computer, so we will finish it at Hawaii.

PAO                    Spacecraft has evidently moved out of the  
range of the tracking station at Guam. There are some checks  
and system tests to be completed before the crew settles  
down for the nights sleep. We expect that they will continue  
the testing and readup data when the spacecraft is next  
acquired at Hawaii, which should take place in about 9 minutes  
approximately 9 minutes. So at 126 hours, 40 minutes ground  
elapse time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 126:57, CST 16:57, 373/2

CAPCOM 9, Houston, go.  
PAO The Apollo 9 moved out of range of the Hawaii station at 01 and will be picked up by the Redstone in oh a matter of 17, 18 more seconds so we'll just stand by.  
CAPCOM Apollo 9 through Houston, through Redstone this time.  
SC Houston, Apollo 9.  
CAPCOM Houston, go.  
SC Roger, I have a couple of questions. Do you want us to use any fuel to take that picture, the target of opportunities picture? And the second thing, I just wanted to tell you, we have 4 or 5, 16 millimeter magazines of film left for exterior and we were planning on putting 75 millimeter lense on and shooting some targets across the ground. You might sort of put that into the flight planners minds and see if they have anything in particular they would like me to take a picture of.  
CAPCOM Okay, will do. Apollo 9, Houston negative on the fuel target, if you can see it okay, if you can't fine.  
SC Okay, very good.  
CAPCOM And vectrafair is good, however leave the computer going. I think this is one thing we might want to keep powered up this evening.  
SC Okay, very good.  
CAPCOM Apollo 9 Houston, we've come up with a CRYO plan here if you'd like to copy some of the things down.  
CAPCOM Apollo 9 Houston.  
SC Yes, Houston.  
CAPCOM Roger, I have a CRYO plan if you'd like to copy some of these things down for a power down.  
SC Okay, just a minute and let us get a piece of paper.  
CAPCOM Roger. We'll hope it werks tonight.  
SC That's okay. So do we.  
SC Go ahead.  
CAPCOM Okay, allow both H2 tanks to decrease until both tanks are 2 hundred.

END OF TAPE

CAPCOM Decrease until both tanks are 200 psi or below. Maintain 190 to 200 by cycling H2 tank heaters or fans as required. Maintain the pressure at, but not above 200 psi.

SC Are you still with us, Ron?

CAPCOM Okay, fuel cell purges may be used to decrease this pressure as required to 200.

SC Fuel cell purges to decrease the hydrogen pressure?

CAPCOM Affirmative. If you need to get it down to below 200.

SC Okay, and then I guess you want us to keep it all night below 200 by cycling the heaters or the fans, huh?

CAPCOM No, I don't want it to start creeping up and we're hoping that it won't creep up above the caution and warning limits prior to morning.

SC But it's all right to let it go ahead on up above 200 after we go to bed?

CAPCOM Affirmative. After you go to bed.

SC Okay.

CAPCOM Okay, at your normal power down time we want you to perform the following: IMU to stand by - you already have that - SCS electronics power switch to off; the auto RCS selection switches, off; the rate control power, off; translation control power, off; and leave all other equipment powered up. Over.

SC Okay, copy. IMU, stand by; SCS electronics power, off; auto RCS, off; rotational control power, off; translational control power, off; everything else, on. Is that correct?

CAPCOM That's correct.

SC Okay, let me go back to the H2 again. You want us to get - let both H2 tanks go to 200 or below, and then keep it between 190 and 200 by cycling the tanks and fans as required and not to let it get above 200 before we go to bed, then let it go.

CAPCOM That's correct.

SC Okay, I guess we got that straight.

CAPCOM Yes, and before you go to bed we'll have you turn the tank 2 fans on.

SC Okay.

CAPCOM                   And we're testing this type thing. We hope it works. If it doesn't and we see a good trend in the early part of your rest cycle, we'd just as soon call you then, rather than in the middle of the night.

SC                        You're fading out. Would you say the last part again, please?

CAPCOM                   Rog, we'd just as soon call you early in your rest cycle, rather in the middle of the night.

PAO                      Well, Apollo 9 has just gone over the hill. We've had loss of signal. We'll pick them up again at 127 hours, 48 minutes into the flight, or about 30 some minutes from now. At 127 hours, 12 minutes, this is Mission Control Houston.

END OF TAPE

PAO This is Apello Control at 127 hours, 48 minutes ground elapse time. The Apollo 9 crew is heading over the southernmost tip of Africa, and should be acquired by the station Tananarive momentarily. We expect some air to ground shortly. Let's standby.

PAO A little more than a minute into this pass and we are still standing by for conversation.

CAPCOM Apollo 9, Houston through Tananarive.

SC This is Apollo 9.

CAPCOM Roger, I have you.

SC Say, did you have anything between the discussion on the H2 and the -

CAPCOM Apollo 9, Houston, are we with you now?

CAPCOM Tananarive M and O Houston comm tech conference. How do you read?

CAPCOM This is Tananarive M and O, I read you loud and clear.

CAPCOM Roger, thank you. Are we upranking properly?

CAPCOM That is affirmative.

CAPCOM Thank you.

CAPCOM Apollo 9, Houston.

SC Answering. You are coming through loud and clear now. Did you have anything that you gave us between the discussion of the H2 and the power down?

CAPCOM The only thing - disucssion on the H2, I said that if, for some reason, you can't get it down to 200 psi before you retire, you can go ahead and do a fuel cell purge, to decrease the pressure.

SC The next thing I heard was to - the power down. You ordered us to standby and that sort of thing, and I thought maybe you said something in between.

CAPCOM Negative.

SC Okay, if you say it is alright to purge number 2. Stand by. Okay, in other words, can we purge all three fule cells?

CAPCOM Apollo 9, Houston. You can purge all three, if necessary.

SC Okay, and then over night, do you want us to leave the fans ON, AUTO, or OFF on the cryo's?

CAPCOM On the cryo's, we want the H2 tank 2 fan ON.

SC Roger, understand. H2 tank 2 fan ON.

CAPCOM Roger.

SC Okay, thank you.

CAPCOM And I have - we have no flight coverage for rev 83 and I have the MIRA AOS, LOS time in case you want to call us, over.

SC Okay, go ahead.

APOLLO 9 MISSION COMMENTARY, 3/8/69, GET 12748, CST 1748 375/2

CAPCOM Roger, ARIA 6130 plus 422130 plus 53.  
ARIA 2131 plus 352131 plus 44. Over.  
SC Roger, ARIA 613042 213053, ARIA 213135213144.  
CAPCOM Houston, affirmative.  
CAPCOM Apollo 9, Houston, about LOS, standby  
for block data at Hawaii, and I will also give you a consumable  
update at Hawaii.

SC Roger, understand, block data and  
consumable at Hawaii.

PAO And we have had loss of signal at  
Tananarive. We have about an hour and 3 minutes before the  
crew is scheduled to start their rest cycle. We will expect  
to have communication again with them as they approach the  
Hawaii tracking station. At - that is the next station up  
for them. At 127 hours, 56 minutes ground elapse time, this  
is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 128 hours, 29 minutes. We have got the spacecraft in Hawaii acquisition at the present time. I think the ground is prepared to transmit some data. Let's listen.

SC Houston, Apollo 9.

CAPCOM Roger, loud and clear. On that H2 purge, if it is necessary and if you haven't already done it, we had just as soon have you do it on fuel cell number 2 only.

SC Oh, you would like to do it on number 2 only, okay, very good. It looks like we are still going to have to do it, Ron, because we are still running about 215, in tank number 2.

CAPCOM Roger, we copy.

SC Okay, we will do it all and number 2.

CAPCOM Okay, and your consumables down link plus dosemeter readings when you get a chance and I'll have the block data when ever you are ready to copy.

SC Oh, okay, why don't you go ahead with the block data. We are getting the other data in the meanwhile.

CAPCOM Okay, block data, 083 charlie charlie plus 302 plus 148013108493592084 charlie charlie plus 260 plus 138013240273592085 charlie charlie minus 245 minus 161013432193592086 alpha charlie plus 031 minus 028013505333592087 alpha charlie plus 156 minus 0320136400935920882 alpha plus 275 minus 0300138153635920892 bravo plus 329 minus 0300139493035920901 bravo plus 303 minus 066014114423592 pitch minus .89, yaw minus 1.15, over.

SC Okay, how much more time do we have Ron?

CAPCOM Roger, still have about 2 minutes.

SC Okay, you want the systems data first or the readback?

CAPCOM No, let's get the systems data.

SC Okay, Service Module A is 54, D 62, D 52, and 55 on Delta.

CAPCOM Roger -

SC And C is 36.9, pyro A is 371, B 371.

CAPCOM Roger, copy.

SC Okay, all of the Command Module RCS injector temps are off scale high, except 6 charlie, which was 4.7.

CAPCOM Roger.

SC Okay, what do we start with on that block data?

CAPCOM Start from 083. Let's hold off on that, I've got another DSE thing I would like to get to you.

SC Okay.

CAPCOM On this DSE voice play back, it has a lot of background noise on it; however, the voice seems to be okay

CAPCOM . . . . when you are transmitting to us over a station, but is kind of fades away to unreadable when you are just talking between stations. So, it looks like, if you want to record the data on the DSE, you must talk directly into the mike and in a loud and clear voice. What I would like to do, is after a Redstone LOS, give us a test count or something like that and we will play it back and see if it is anygood and let you know in the morning.

SC Okay, understand you want us to give you a test count on the DSE sometime when we are not over a station. Do you have any particular time, you want it for a dump or what.

CAPCOM Affirmative, just after Redstone LOS, it will be about 128 plus 45 or somewhere in there.

SC Okay, understand 125 plus 45 you want us to give you a test count on the DSE and see how that works out.

CAPCOM Roger.

SC Okay. Okay, do you want the readback?

CAPCOM Roger, go ahead and readback.

SC Okay, 083 charlie charlie plus 302 plus 148013108493592084 charlie charlie plus 260 plus 138013240273592085 charlie charlie minus 245 minus 161013432193592086 alpha charlie plus 031 minus 028013505333592087 alpha charlie plus 156 minus 0320136400935920882 alpha plus 275 minus 030013815363592 089 bravo plus 329 minus 0300139493035920901 bravo plus 303 minus 066014114423592 pitch minus .89, yaw minus 1.15.

CAPCOM Apollo 9, Houston, your call out on your readback is correct. A couple of items. We would like for you to terminate bat A charge, just prior to retiring. Also, put inverter 3 on main A.

SC Roger, terminate battery charge, and just before retiring put inverter 3 on main A.

CAPCOM Roger. And I guess we need to verify the CO2 canister change and also that you are going to perform a waste water dump.

SC Roger, we will verify this time, the canister change and we will be dumping waste water before retiring.

CAPCOM Roger. And 9, Houston, we show you are down linking both simplex alpha and bravo -

END OF TAPE

CAPCOM Nine, Houston. We show your downlinking both simplex alpha, and bobble, so we'll show simplex alpha for the night, I guess.

SC Roger. We're listening to the tower over Guam, or Vietnam, or where ever it is.

CAPCOM Okay.

CAPCOM Nine, Houston. We could use the PR dosimeter readings as they are available. Also, to give you a warm feeling, I can give you a consumable update.

SC Okay. We're ready. We always want a warm feeling. Let's get out the pad.

CAPCOM Okay. GET.

SC Wait a second. Wait a second.

CAPCOM Okay. Hold it.

SC Let us get out the pad first.

CAPCOM Roger.

SC Are Al, or Dick, or Pete, there?

CAPCOM Not right now. I could pass it on to them.

SC No. Just tell them I said hello.

CAPCOM Will do. They will be in again tomorrow.

SC Okay. Ready to copy.

CAPCOM Okay. GET 1274413501648174717392302626 39 and jot down now your service module RCS, bat red lines are good tonight. A 29 percent, Bravo 37, Charley 39, Delta 39.

SC Okay now. Let me get the second line there. System A to RPS to APU.

CAPCOM Roger. 44 percent PU, 13 percent hydrostat.

SC Okay. Here we go. 1273312401638173717 29120161629 and then the red lines 29, 37, 39 and 39. Dosimeter reader.

CAPCOM Roger. Dosimeter readout. We got it all.

PAO The spacecraft evidently has moved out of the range of the tracking station at Redstone - tracking ship, Redstone. You heard some block data being passed up there to the crew. In this particular case it was reentry information on each pass for several revolutions, was passed up. In the event of a contingency reentry, such a reentry would be required. MCC passed to the crew the location of the landing zone and the spacecraft attitudes and probably most importantly, the retro fire times.

PAO Normally these updates are made for every three or four revs ahead. Perhaps you caught the reference to 086 Alpha Charley, which translated meant 86th rev and alpha would be the recovery area in the Atlantic Ocean where the recovery ship, Guadalcanal, will be standing by. Charley would indicate the level of the support that could be given. Also, immediately following that was 1250533 which, of course, was a time reference. The spacecraft at the present time is flying at an apogee or achieves an apogee of 119.6 nautical miles and has a perigee of 104.9 nautical miles. It completes one rev every 88 minutes and a few seconds over. This is the 81st rev in this flight and the weight of the spacecraft at this particular time is something on the order of 26,877 pounds. Tananarive will next acquire at 129 hours, 22 minutes which is little more than a half an hour away. In a normal course of events, the crew conceivably could be resting and perhaps there will be no communications at that time. However, we'll stand by and monitor at 128 hours, 45 minutes this is Apollo Control.

END OF TAPE

PAO                      This is Apollo Control at 129 hours, 50 minutes ground elapse time. The spacecraft, just crossing the coast of Japan in the West Pacific. We have had no communication with the spacecraft, had no communication when we were last over the Tananarive station. However, the telemetry look at the spacecraft disclosed that all of the systems were functioning normally. We would expect that when the Apollo 9 is acquired by the tracking station at Hawaii that we would probably get some down link biomedical information on the crew. They are now some 50 minutes into their rest cycle. Everything seems to be functioning normally, or it was on the last TM link that we had. So, at 129 hours, 51 minutes this is Apollo Control.

END OF TAPE

PAO This is Apollo Control at 130 hours 11 minutes into the flight. During the last pass over the station, or the tracking sight at Hawaii, the ground got a call from 9, and the crew sent down medical information to us which brought a smile on the face of the friendly surgeon here on the Gold team shift. We recorded that transmission and will play it to you now.

SC Houston, Apollo 9,  
CAPCOM Houston, go.  
SC Roger, I got a couple of dosimeter readings for you.

CAPCOM Beautiful. You're making the doctor very happy.

SC Okay, it's great to make the guy that sticks needles in you happy. Jim is 31.14 and mine is 80.14, that's 8 0 . 1 4, and Daves is kind of stuck away somewhere we'll try to pick that up again tomorrow.

CAPCOM Roger.  
SC Dave is in the process of contributing to medical science in a different fashion here.

CAPCOM Okay understand. When you take your battery charger off the line note the time on it and give it to us tomorrow.

SC Okay, tell you what, we're just about to sack out, why don't I just take it off right now.

CAPCOM Affirmative, you can go ahead.  
SC Okay, how about a 3 2 1 mark.  
CAPCOM We've got it.  
SC Okay and I'm just about to purge fuel cell to your hydrogen 2.

CAPCOM Roger.  
SC There you go.  
CAPCOM Apollo 9, Houston, about a minute and a half to LOS we'd like to have the inverter 3 on main A over the site here if possible.

SC Say that one again, Ron.  
CAPCOM Roger, request inverter 3 on main A.  
SC Okay 3, 2, 1, mark. Inverter 3 on main A.  
CAPCOM Roger that's part of your sleep power configuration there.

SC Roge, and Houston we got a message from the CMP, he says to tune in to his EKG next pass.  
CAPCOM Will do. Very good.  
CAPCOM 9 Houston. Have a good night. We'll see you tomorrow.

SC Guten abend.  
PAO At 130 hours, 14 minutes ground elapse time this is Apollo Control.

END OF TAPE

PAO                      This is Apollo Control at 131 hours, 5 minutes ground elapsed time. We've been out of touch with the spacecraft since the Hawaii pass, little less than an hour ago, with the exception of some contact between the spacecraft in an ARIA at about 130 hours, 42 minutes. At the present time the spacecraft is approaching India and all systems are working well on it. The crew is bedded down, so at 131 hours, 6 minutes, this is Apollo Control.

END OF TAPE

PAO                    This is Apollo Control with a short status announcement at 132 hours, 4 minutes ground elapse time. The track of the spacecraft on this, the 83 revolution, is such that it has been out of range of most of the stations, with the exception of an ARIA or Apollo Range Instrumentation Aircraft. That aircraft had acquisition about half hour ago, and the telemetry indicated that all systems were working well. However, we had no communication with the crew, as we are maintaining silence during this rest cycle. The spacecraft at the present time is nearing the end of the 83rd rev as it approached the west coast of South America. At 132 hours, 5 minutes GET, this is Mission Control, Houston.

END OF TAPE

PAO This is Apollo Control at 132 hours, 50 minutes ground elapsed time. Apollo 9 is now over central China midway through the 84th revolution here in the control center. Here in the control center, the Orange team, headed up by Flight Director Pete Frank is taking over from Gerry Griffin's Gold team for the remainder of the sleep or rest period for the crew of Apollo 9, which has some five hours and 39 minutes remaining. The countdown clock for deorbit burn or retro-fire shows 105 hours, 57 minutes remaining. This, again, is likely to change as we have further maneuvers in the mission. Coming up next on the tracking ship Huntsville at 8 minutes past the hour. According to the Flight Surgeon during a recent pass over Ascension earlier in this revolution, the two crewmen, Commander Jim McDivitt, and command module pilot, Dave Scott, who are attached to the bio-medical telemetry transmitter are apparently asleep. Rusty Schweickart, lunar module pilot, is in one of the sleep stations beneath the couches. As the spacecraft passes over the stations during the sleep period, the flight controllers here, particularly EECOM or the environmental communications and control engineer, monitors the downlink telemetry of all the spacecraft systems to sort of feel the pulse of the spacecraft. At 132 hours, 51 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

Apollo 9 Mission Commentary, 3/8/69, GET 13, CST 2351, 383/1

PAO                      This is Apollo Control. 133 hours, 50 minutes ground elapsed time. Apollo 9 is in the South Central Atlantic, at the start of the 85th revolution and within a minute will be acquired by the tracking station at Ascension Island. At this time all systems are GO. The Apollo 9 crew are, is all asleep. The next station after Ascension will not be until Guam, until 31 minutes past the hour. Almost a half of revolution without contact with the crew, with this spacecraft. At 133 hours 51 minutes ground elapse time this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 134:50, CST 0050a, 504/1

PAO                    This is Apollo Control 134 hours 50 minutes GET. Apollo 9 has just entered the tracking zone of the tracking ship Mercury in the South Pacific. In a report from the Spacecraft Analysis Support Room here in Mission Control, it appears that all systems as of 133 hours 30 minutes GET were performing quite well. Most of the entries say all parameters are normal, with the exception of the service module rejection control system propellant. As of 130 hours 08 minutes GET, there were 582 pounds of usable propellant remaining compared to a predicted amount of 784 pounds at this time in the mission. Photography targets of opportunity for the next several hours, or after wakeup, have been approved provided no RCS propellant has been used. In other words, no RCS propellant has been allocated for these photography targets of opportunity. In the cryogenic oxygen and hydrogen area for the fuel cells, there are 371 pounds remaining of cryogenic oxygen, 28.45 pounds of cryogenic hydrogen. The next station that will see Apollo 9 will be the Canary Islands station at half past the hour. At 134 hours 51 minutes GET, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 9/9/69, CET 135:50, CBT 01:50a 385.

PAO This is Apollo Control, 135 hours 50 minutes ground elapsed time. Apollo 9 presently is over west Pakistan midway through the 86th revolution. Apollo 9 crewmen are still asleep at this time with some 2 hours 39 minutes remaining in their rest period. The next station to acquire Apollo 9 will be the Huntsville tracking ship in the southwest Pacific at 14 minutes past the hour. At 135 hours 51 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 136.50, CST 0250, 386/1

PAO                      This is Apollo Control, 136 hours  
50 minutes GET. Apollo 9 is just starting it's 87 revolution,  
is over the central part of the continent of South America.  
Coming up on Canary Island tracking station on the hour,  
some 1 hour 39 minutes remaining of the crew sleep period.  
The orbit time on the clock shows 101 hours 57 minutes until  
the de-orbit burn. The present orbital measurements are  
perogee 104.1 nautical miles and apogee 118.6 nautical miles.  
All up vehicle weight 26,866 lbs. At 136 hours 51 minutes  
GET, this Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 137:50, CST 03:50a 387/1

PAO This is Apollo Control, 137 hours 50 minutes ground elapsed time. Coming up on the tracking ship Mercury in the South Pacific in 6 minutes. The crew at this time is still asleep, however, in revision of the flight plan for today's activities, the crew rest period has been extended approximately an hour where they will be awakened at 139 hours 30 minutes ground elapsed time or about 5:30 am Central Standard Time. In other minor revisions to the flight plan following the end of the rest period, of course they will have their breakfast, there's GO-NO GO for landing area 108-1 at 142 hours 30 minutes also updates for landmark tracking later in that revolution over the Southeast United States and Central Africa. The next revolution there are additional landmark tracking exercises over the southern United States, western and southern Africa, followed thereafter at - over the continental United States. Starting at about 146 hours ground elapsed time of the S065 photography experiment and again the following rev over the continental United States. At 149 hours the spacecraft is powered down and goes into drifting flight. The crew will then have their evening meal and begin their rest period at 152 hours ground elapsed time. At 137 hours 52 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

*Felt Plan  
updates for  
Day 7*

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 138:50, CST 0450, 388/1

PAO                    This is Apollo Control. 138 hours 50 minutes ground elapsed time. Apollo 9 presently is crossing the north end of the Red Sea. The crew has some 39 minutes remaining in the sleep period. The retrofire count down clock is now 99 hours 57 minutes until retrofire or deorbit burn. Carnarvon Australia tracking station will pick up the spacecraft 10 minutes past the hour. Things are rather quiet here in mission control. Routine planning tasks are going on for the next days activities in Apollo 9. At 138 hours 51 minutes ground elapsed time this is Apollo Control.

END OF TAPE

Jun 3/9/69  
Wake Up Crew

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 139:56:00, CST 05:56a 389/1

PAO This is Apollo Control, let's join the  
call now to Apollo 9.  
SC ...  
CAP COM Rog, we're reading you loud and clear.  
SC Oh, very well.  
CAP COM And a cheery good morning.  
SC Houston, how do you read me?  
CAP COM I read you loud and clear.  
SC Okay. Well, we're with you what would  
you like to do first?  
CAP COM Okay, I've got some block data, I got a  
short consumables pad and I got some changes to the flight  
plan. So, your choice.  
SC Well, I got the consumables sittin' in  
front of me. Why don't you do that one?  
CAP COM Okay. And the - I'm not reading any of  
the quads that's the same thing as I gave you last night.  
I'm starting on the cryo O2 that is 365 and if you compare  
the one you had before you'll see that you didn't really  
use that much, that was a mistake on the other one. H2  
28 36 26 39.  
SC Okay 365 28 36 26 39.  
CAP COM Okay that's good.  
SC Okay, let me flip the page here and look  
at the flight plan.  
CAP COM Okay.  
SC Okay. Go ahead.  
CAP COM Okay this is the flight plan right Dave?  
SC Right, flight plan.  
CAP COM Okay. Just a reminder on your CO2 filter  
if you'll note the clock we've let you sleep a little later  
and you can turn on the H2 heaters now for a purge that's  
coming up.  
SC You want the H2 tank heaters on or do  
you want the H2 heaters for a purge?  
CAP COM We want the H2 purge heaters on now.  
SC Okay, that fella's on.  
CAP COM Okay, and we're recommending that you  
wait until after breakfast to chlorinate the water instead  
of the time shown in the flight plan. And I'm gonna pass  
you a time for your nominal alignment.  
SC Go ahead.  
CAP COM 14 142 plus 46 plus 44 and that is for  
your alignment at 142:15.  
SC Okay, and see about the water, we might  
talk about that. We chlorinated it last night just before  
we went to bed because the thing didn't taste very good for  
quite a while so it seems like maybe if we could chlorinate  
it before we go to bed normally and keep some sort of system

SC like that.  
CAP COM Okay, copy. We'll give you some words on that.  
SC Okay (cut out) alinement at 142 46 44.  
CAP COM Okay and at 143 plus 45 where you are doing a P52 alinement in there, we'd like - would recommend that you do this one using the plan at option with Jupiter.  
SC Oh, that sounds like a fine recommendation. Alright, we'll do that with Jupiter. (cut out)  
CAP COM Say the last again.  
SC Roger, that's ... REFSMMAT is that right?  
CAP COM That is the REFSMMAT using Jupiter.  
SC Okay, incidentally found Jupiter in the sextant the other day and you can see four Moons about Jupiter.  
CAP COM Beautiful. Okay, and on this landmark tracking we're saying there'll be two landmarks per rev and also for today we're recommending trying the sextant ... the telescope.  
SC Okay, we'll give that a try. Two landmarks per rev with the sextant.  
CAP COM Okay and on over here at 144:25 where we show this landmark tracking, essentially we're substituting S065 for this landmark tracking in here so at - you can delete the P52 realine at 144:25.  
SC Okay, understand. Delete the P52 realine at 144:25 so we can do an S065 instead on the landmark tracking. Right? (cutting out) realine at 144:25; 144:25 is the (cutting out)  
CAP COM Okay, alright. Well, we had one back over here. Stand by one. Okay, well yeah you're right Dave but anyway this pass this landmark tracking pass in here at about 144 hours over here 145, we're scrubbing that out and we'll do an S065 and on that we'd like to pass you the times at 145:25 why unstow and install your S065.  
SC ...  
CAP COM Yes.  
SC Houston, 145:25 unstow S065.  
CAP COM That is affirmative.  
SC Ah, wait a second. I thought you just said to do the unstowing at 44:25?  
CAP COM Wait a minute. No, okay, somehow or another I got a bad time slipped in here on me, but what I'm saying is this pass here at - starting at about 145 hours you are now showing now with the realinement and the landmark and so forth, we are scrubbing that out and we're deleting that alinement as shown in your landmark tracking and at 145:25 you can unstow and install your S065 and at 145 plus 50 will be the approximate time of the S065 pass and of

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 139:56:00, CST 05:56a 389/3

CAP COM course we'll have you a pad on this later.  
SC When you said 145:50 you dropped out and  
we didn't catch what you said after that.

CAP COM Okay, 145:50 will be the time that you'll  
begin the S065, that's the approximate time and we'll have  
your pad for you but that will be the time - the approximate  
time you'll start your S065 pass.

SC Okay, understand S065 and you'll give us  
a pad and it'll be approximately 145:50.

I still have another question in the  
landmark tracking that started at 144:30, that's still in  
there is that correct?

CAP COM Ah, yes, that's affirmative, Dave. Did  
you copy that, it's still in there at 144:40. (pause)  
Apollo 9, Houston, do you read me?

SC Houston, 9. What else do you have?

CAP COM Okay, and you might start fishing through  
your - dragging out your block data pad there and just so  
we're squared away here and on over at about 147:35 you'll  
have another S065 pass.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 140:06, CST 0606, 390/1

CAP COM Apello 9 Houston how do you read? Apollo  
9 Houston do you read?  
SC Rog, we've got you now. Can you read  
us?  
CAP COM Rog, I'm readin you real good and at  
147 35 you'll have another SO 65 pass.  
SC All right, we got that. Is that in lou  
of the land mark tracking in that orbit?  
CAP COM That is affirmative. On that rev we're  
substituting SO 65 in lou of the landmark tracking.  
SC Ok, we got that. You're not going out.  
CAP COM Ok, and one other item we'd like to have  
a check made of the optic sun filter whenever it's convenient.  
SC All right, we'll pick that up as we go  
along. Any particular procedures you want?  
CAP COM No, that's negative.  
SC Ok, we'll check it.  
CAP COM Ok. And we'd also like to turn inverter  
3 off.  
SC All right inverter 3 is off.  
CAP COM Ok, and we'd like for you to make your  
dog roll today.  
SC Ok, PD roll.  
CAP COM And we'd like to have a status report at  
your convenience. How much sleep you got and so forth.  
SC Ok, oh gee I got about 7 and 1/2 hours  
I guess.  
SC This is Jim and I got about 8.  
CAP COM Ok, I understand Dave 7 and 1/2, Jim  
about 8.  
SC And Rusty said he got about 8 and 1/2.  
CAP COM And rog, copy 8 and 1/2 and we're on this  
So 65 now the, the check list orbrate maneuver should work  
today, we should have the platform pointed in the right  
direction and of the vectors crossed right so we're saying  
that it will go today.  
SC Very good.  
CAP COM And in other words on the status report  
the medication.  
SC Must of taken an actifed seconal before  
he went to bed. I had a vitamin pill. This is Dave, I had  
a vitamin pill.  
CAP COM Ok  
SC Rusty said he had a vitamin pill too.  
CAP COM Ok, I understand. Thank you. And this  
takes care of everything except the block data.  
SC Ok, go ahead.  
CAP COM And reading block data number 15. 0 niner  
1 1 baker plus 335 minus 0680 142 44 15 28 44 0 niner 2 1 baker.

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 140:06, CST 0606, 390/2

CAP COM plus 318 minus 0625 1441936 2844 0 niner  
31 alpha plus 26 niner minus 0680 145 5218 2844 0 niner 4  
4 baker plus 32 niner minus 164 niner 1483640 28440 niner 5  
4 baker plus 333 minus 164 0 15010272844 0 niner 6 4 alpha  
plus 2 niner 1 minus 1650 151440 0 2844 0 niner 7 charlie,  
charlie plus 174 minus 1610 1531 niner 442844 0 niner 8  
charlie, charlie plus 0 niner 5 and insure your S band volume  
is up please. minus 1710 1545155 2844 and your trim angles  
pitch minus point 89 YAW minus 1.15 end of update.

SC Ok coming back. Are you ready?

CAP COM Go ahead let her rip.

SC 0911 bravo plus 331 minus 0680 1424415

284409 Oh we got a little drop out there are you still there?

CAP COM Roger, I'm still with you and we should  
have about another 2 minutes.

SC Ok, 092 plus 318 minus 0625 14419362844

09 (static)1483640 (static) plus 291 minus 165015144002844

097 charlie charlie. plus 174 minus 16101531944 2844 098

charlie charlie plus 095 minus 17101545155 2844 with a pitch  
trim minus .89 and YAW trim of minus 1.15.

CAP COM Ok Dave. On the second line it's plus  
335.

SC Oh, Ok you were sort of garbled there,  
335, ok.

cap com Ok and I'm, your going to have to read  
the second and third blocks again to me we had lots of static  
I couldn't get them.

SC Ok, here comes the second one.

END OF TAPE

APOLLO 9 MISSION COMMENTARY 3/9/69 GET 140:25:00 CST 0625 391/1

CAPCOM We had a lot of static; I couldn't get them.

SC Okay, here comes the second one. 0921  
Bravo plus 318 minus 0625 1441936 2844 0931 Alpha plus 269  
minus 0680 1455218 2844.

CAPCOM Rog. Copy and your longitude and the next  
block under 0944 Baker and the longitude is minus 1649; if  
you just verify that. And the longitude in the next block is  
minus 1640.

SC Roger. Verify both of those.

CAPCOM Okay, real good. And we'll see you over  
Carnarven at about 43.

SC And, Houston, Apollo 9. I'd like to have  
a map update.

CAPCOM Okay, we've lost Apollo 9; we'll see you  
at Carnarven at 43; we'll have your map update.

PAO This is Apollo Control. Quite a bit of  
static there at the tail-end of the Canary Islands and Madrid  
pass. As Apollo 9 came up over the first state-side pass in  
the morning over the Grand Bahamas, Spacecraft Communicator,  
Stu Reosa, made an initial call; they didn't respond and then  
he said, "ring-a-ring-a-ring." Dave Scott responded and they  
proceeded to go into the flight plan update for today's activ-  
ities. Among these are several sets of landmark trackings and  
the SO 65 multispectral photography experiment. And landmarks  
to be tracked with the sextant during rev 91 will be the east  
tip of Dimit Island near Corpus Christi, Texas; the south tip  
of Yellow Peninsula in Spanish Sahara; the west tip of Punta  
Yayanco, Mexico (if you'll believe that pronunciation). During  
this ninety-second rev, the landmarks to be tracked - the single  
landmark to be tracked will be the southernmost tip of Cape  
Fear, North Carolina. The sextant, with its narrow field of  
view, will be used since the scanning telescope is apparently  
still on the blink. For revolution 93, the multispectral photog-  
raphy experiment will be a sequence of photos running from the  
Salton Sea in California all the way across to Roswell, New  
Mexico; and picking up again over the Mississippi River. Another  
run at the end of the next rev will pick up again over the Salton  
Sea and go through El Paso, Texas and pick up again at San Anto-  
nio, Texas and through the Gulf of Mexico. Since there's a  
great deal of motion picture film still available to the crew,  
they'll be shooting some targets of opportunity with the motion  
picture camera; including a storm over East Africa at about  
146 hours, 40 minutes and tropical storm, Rita, in the Mid-  
Pacific near Kwajalein at about 147 hours, 20 minutes. Mean-  
while the spaceflight meteorology group positioned its morning  
weather forecast for conditions in the landing zones for Apollo 9;  
and the primary landing zone in the West Atlantic, centered about  
800 miles east of Jacksonville, skies are forecast to be partly

PAO ... cloudy to cloudy with southerly winds 15 to 20 knots. Seas are expected to be 4 to 6 feet and temperatures 62 to 72 degrees. In the Mid-Pacific landing zone, centered about 600 miles northwest of Honolulu, partly cloudy skies are forecast with easterly winds at 10 knots. Seas should be 3 to 4 feet; and temperatures 50 to 55 degrees. A strong frontal system approaching the West Pacific landing zone, centered about 400 miles southeast of Tokyo, will cause high winds in seas in this zone. Landing points along these revolutions have shifted to the central Pacific, where favorable weather is forecast. At the latter positions, partly cloudy - cloudy skies are expected with easterly winds 12 to 15 knots, seas 3 to 4 feet, and temperatures near 80 degrees. In the East Atlantic zone, centered about 500 miles southwest of the Canary Islands, partly cloudy skies are expected with easterly winds 10 to 15 knots. Seas will run 3 to 5 feet and temperatures are 95%. The meteorology group goes on to comment that the partly cloudy skies may limit multispectral photographic coverage scheduled over the Southwestern United States later today. During the just completed pass over the Canary Islands Vanguard and Antigua stations. Dave Scott gave a sleep report on the crew. Apparently they all rested quite well, Dave Scott had 7 hours total sleep, Jim McDivitt 8 hours and Rusty Schweickart 8 1/2 hours. The next station to pick up Apollo 9 will be the Carnarvin Australia station. At 42 minutes past the hour. 140 hours 22 minutes ground elapsed time this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 140:42:00, CST 06:42a 392/1

PAO This is Apollo Control 140 hours 42 minutes ground elapsed time. We're a few seconds out of Carnarvon, Australia tracking station overlapping with a slight dropout into the Honeysuckle, Australia tracking station. Members of the White Team of flight controllers are beginning to drift in for the handover and the continuing days activities. Standing by for spacecraft communicator Stu Roosa to place the first call here at Carnarvon. The clock here in Mission Control Center for deorbit time is now showing 98 hours 3 minutes until deorbit burn. Spacecraft communicator Roosa is conferring now with the flight activities officer, the man who co-ordinates all the flight plan changes and activities for each work day. Standing by for the Carnarvon and Honeysuckle pass. There'll be approximately 4 minutes gap between Honeysuckle and tracking ship Mercury. Apollo 9 is about half way through the 89th revolution.

CAP COM Apollo 9, Houston through Carnarvon and I have a map update.

SC Okay, just a minute, Houston. We'll copy down.

CAP COM Rog.  
SC Okay, Houston. Go with the map update.  
CAP COM Okay, map update. You're on rev 89  
time 141 17 38 the longitude 123 degrees West and if you  
wanna use the star chart there you're right ascension 16 14.  
SC Okay, rev 89, 141 17 38, 123 West. Thank

you.  
CAP COM Rog. And we'd like to have the H2 tank 2 fan OFF at this time.

SC Roger, H2 tank 2 fan OFF.  
CAP COM That's affirmative. And in regards to the question about the interior film, just a couple of thoughts ... as good ideas as we have but if you want to take some of the CO2 filter change, on that couch folding and stowage is about the only two items we kick in at this time and the, ah, oh the hatch during the daylight sometime when you've got the SO65 out of it while the Sun angles changing on it.

SC Okay, we also have a lot of exterior film. We have about 4 rolls of exterior film and we're gonna take some pictures of the ground. I just wondered if you had any particular subjects on the ground that you wanted a picture taken of. We'll probably put the 75-mm lense on it and let it run for awhile.

CAP COM Okay, we'll work on that and we're wanting you to keep, if possible, some of that 368 film and take some photographs during entry if you wanna kick that one around.

SC

Roger, we already have planned for that

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 140:42:00, CST 06:42a 392/2

SC and we have four or so rolls of film in addition to that one.

CAP COM Okay, real good and we'll see if we can think up some good subject.

SC Alrighty. How about the beach on the Riviera?

CAPCOM Hey, that sounds good.

CAPCOM Apollo 9, Houston. We will be dropping Carnarvon and picking up Honeysuckle in about a minute. Stand by.

SC Okay, fine.

CAPCOM And Apollo 9, we get to Honeysuckle in about 7 minutes.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 140:52, CST 0652 393/1

PAO This is Apollo Control about 6 minutes remaining in the Honeysuckle pass. We'll continue to monitor the air-ground circuit for any further conversation.

PAO This is Apollo Control. About 2 minutes remaining in the Honeysuckle pass, however, it is unlikely that there will be any further conversation. We'll continue to monitor the circuit just in case Spacecraft Communicator Stu Roosa does converse with the crew again.

CAPCOM And Apollo 9, we're losing Honeysuckle. We'll see you over Mercury in about 5 minutes.

PAO This is Apollo Control. No acknowledgment from Apollo 9 on the comment by Stu Roosa that they were losing acquisition at Honeysuckle. Tracking ship Mercury coming at 2 minutes past the hour. At 140 hours, 57 minutes, Ground Elapsed Time this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 141:03 CST 0703 394/1

PAO This is Apollo Control at 141 hours  
02 minutes, Apollo 9 approaching acquisition at Mercury.  
We'll stand by.

CAPCOM APOLLO 9, Houston, through Mercury, have  
you about 7 minutes.

SC Okay Houston.

SC Hey Smokey, I've got a good one for you  
here.

CAPCOM Okay, go ahead.

SC I wonder if you can get one of those  
guys like maybe FAAers or somebody to figure out in relation  
to right Ascension declination where the Gagenschein is.

CAPCOM Hey, that sounds great. By gosh, we'll  
locate the Gagenschein.

SC Okay, we'll try and identify it after  
you locate it.

CAPCOM Okay, very good.

SC Hey, Houston, 9.

CAPCOM Go ahead 9.

SC I've got some gyro torquing angles for  
you for the nominal on the time, and we'll do a realine if  
you like on the next pass, also have to update the state  
vector. We went through a P52 just to check out the optics  
and if you've got a pencil I'll give you the numbers.

CAPCOM I'm standing by to copy.

SC Okay, GET of 140:57:00 plus 00630 plus  
00557 minus 00093, and looks like the telescope is working  
okay this morning.

CAPCOM Roger, I copy your times, and copy the bit  
about the telescope. Real good.

SC So far.

CAPCOM Roger, understand.

CAPCOM And Apollo 9, Houston. We would like to  
start a charge on battery BAKER at about 141 plus 25 and we  
will be putting about 5 amp powers back in it.

SC Okay, Roger, battery charge on BRAVO at  
14125.

CAPCOM That's right, thank you.

CAPCOM Apollo 9, Houston, 1 minute LOS. We'll  
see you over Texas about 24.

SC Alrighty.

CAPCOM Apollo 9, Houston, I have the right  
ascension on declination on the Gagenschein.

SC Okay, go ahead.

CAPCOM Roger. 11 hours 16 minutes and plus  
4 degrees.

SC Okay, 11 hours 16 minutes and plus 4 degrees.

Thank you.

CAPCOM Roger.

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 141:03, CST 0703 394/2

SC                    That's pretty Gagenschein computations.  
CAPCOM                Thank you.  
PAO                    This is Apollo Control at 141 hours 10  
minutes. Mercury has loss of signal. Rusth Schweickart asking  
for the location of the Gagenschein there, he would like to  
try to photograph it. That's spelled Gagenschein, one word.  
It's a faint light area always opposite the sun on the  
celestial sphere, and our Gagenschein experts say it's  
believed to be a reflection of sunlight from cosmic dust  
moving beyond the earth's orbit. Dave Scott reported this  
time that the telescope is working properly so far today.  
There had been a problem yesterday with the telescope sticking  
at certain degrees. Apparently no trouble in that area.  
Texas will be the next station to acquire at 141 hours 24  
minutes. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 141 hours, 24 minutes and the Texas tracking station has just acquired Apollo 9.

CC Apollo 9, Houston. We've got you through the Texas sight; you're coming up on the lower end of Mexico.  
SC Roger. Just about time to take some pictures of it.

CC Okay.  
CC Apollo 9, Houston. At your convenience, we'd like to have 2 and accept for state vector.

SC Roger; got 2 and accept.  
CC Okay, and anytime at your convenience, no hurry, I've got your landmark tracking updates.

SC Okay, just a minute.  
CC Roger.  
SC Houston, Apollo 9.  
CC Go ahead Apollo 9, Houston.  
SC Roger, you can go ahead with your update.  
CC Okay. I'll be giving you 4 sites here; this is landmark tracking update. 021 142 56 17 00 and this one is 3 miles south of track. Your next ID 207 143 14 58 00; this one is 30 miles south of track. Your next ID - 010, 144, 26 1900, this one is 60 miles south of track. And your last one - 042 144 34 0400, and this one is 13 miles north of track; end of update.

SC Roger Houston; do you read Apollo 9?  
CC That's affirmative Apollo 9.  
SC Okay, I've just been having some trouble getting you on this mike.

SC Okay, the first landmark is 021 142 56, 1700, 3 miles south. Next is 207 143 14 5800, 30 miles south. Next one 010 144 26 1900, 60 miles south - that's 60 miles south. Next one - 042 144 340400, 13 north of track.

SC That's affirmative Apollo 9; Houston confirms the update.

SC Roger.  
CC And Apollo 9, this is Houston. We can't uplink at this time; would you clear the DSKY and then give us the accept again.

SC Roger. Okay, go ahead.  
CC Okay - we'll try shifting it.  
CC And Apollo 9, Houston. I have a nav check to go along with this state vector.

SC Okay, go ahead.  
CC Roger. Reading nav check. 142 16 44 00. Minus 29 02 plus 09800 1137 and under comments, "Good morning from your smiling Fido and Gido."

SC Roger, under comments, "Good morning to them." And my little 'ole nav check is 142 16 44 00 minus 2902 plus 09800 1137.

CC Roger, Houston confirms the update.

SC I didn't realize Fidos and Guidos smiled.  
CC Yeah, they been smiling pretty good.  
SC Alrightey. How's How's retro doing; does  
he still look worried?  
CC Roger; copy. And Apollo 9, Retro's only  
comment - said he would smile if he knew exactly where all  
that stuff was located.  
SC Okay. Listen, tell Retro I haven't forgotten  
him; the thing that I told him yesterday still applies; every-  
thing is right where we said it was yesterday, but we are going  
to have to move it around and ask him when he needs to have that  
information for a reentry.  
CC Okay; we'll do that. And Apollo 9, Houston,  
the computer is yours; you have state vectors both slots.  
SC Roger; thank you.  
CC Apollo 9, Houston; we are recommending  
Charlie and Delta auto RCS select switches OFF, and Alpha ON.  
SC Say that again Houston.  
CC Roger; we are recommending Charlie and Delta  
auto RCS auto select switch OFF and Alpha switches ON.  
SC Okay, you want Alpha, Charlie and Delta OFF.  
CC That's negative; we want Charlie and Delta  
OFF and Alpha ON.  
SC Oh, okay. Roger, all I have on right now  
is B - Baker.  
CC Roger, copy. We confirm.  
CC And Apollo 9, you can go back to block at  
your convenience. And Apollo 9, Houston. We'd like to start  
a charge on battery B at your convenience.  
SC Okay, we're gonna start charge on battery  
B now.  
CC Okay.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 14139, CST 739a 396/1

CAPCOM Apollo 9, Houston, 1 minute LOS Canaries.  
We will see you at Carnarvon at 17.

PAO This is Apollo Control at 141 hours 49 minutes. The Canaries has LOS. This pass started when Apollo 9 came into acquisition at the Texas station while the spacecraft was down over the lower part of Mexico. Jim McDivitt reported that they were photographing Mexico at that time. We passed up landmark tracking information to them. Landmarking is used in connection with space navigation. A number of prominent terrain areas on the surface of the earth have been identified as Apollo landmarks for an aid to navigation. Apollo 9 will track four of these within the next several hours. The ones we passed up in the times landmark number 21 is the east tip of Demit Island near Corpus Christi, Texas. That landmark will be 3 miles south of Apollo 9's ground track at 142 hours 56 minutes 17 seconds. The next one, landmark 207, is the south tip of the Yala peninsula, Punta Dumford, Spanish Sahara Africa. That landmark will be 30 miles south of Apollo 9's ground track at 143 hours 14 minutes 58 seconds. The third landmark to be tracked is number 10, the west tip of Punta Yayahmko. Mexico, which will be 60 miles south of the ground track at 144 hours 26 minutes 19 seconds. The fourth one, number 42, is the southernmost tip of the headland at Cape Fear, North Carolina. That will be 13 miles north of the ground track at 144 hours 34 minutes 4 seconds. The next station to acquire will be Carnarvon. Apollo 9 misses Tananarive on this 90th revolution. Acquisition at Carnarvon at 142 hours 16 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 142:16 CST 0816 397/1

PAO This is Apollo Control at 142 hours  
16 minutes. Apollo 9 being acquired through the Carnarvon  
Station.

CAPCOM Apollo 9, Houston, through Carnarvon,  
standing by. We'll have you about 6 minutes.

SC Roger, Houston, we have a question here  
on the fuel cells purge this morning. I take it that you  
want us to do a hydrogen purge as well as an oxygen purge this  
morning.

CAPCOM Roger, that's affirmative, Apollo 9.

SC Okay, fine, we'll start that right now.

CAPCOM Okay.

CAPCOM And Apollo 9, Houston, I've got a couple  
of targets of opportunity here we'd like to shoot with the  
16mm.

SC Okay, stand by, we'll copy that down in  
just a second.

CAPCOM Roger, no problem.

SC Okay, Stu, go ahead with those targets.

CAPCOM Okay, the first one here is a thunderstorm  
over West Africa, and we'd like to have you to start the  
exposure at 144 plus 55 plus 45, and you'll be shooting  
northeast of the ground track, let it run 5 minutes at 1 frame  
per second. Use the 16mm camera with the 75mm lens, and the  
film CEX 368.

SC Okay, Start shooting 144:55:45, thunderstorm  
West Africa, northeast of ground track, 1 frame a second,  
16mm camera CEX with a 75, CEX 368 with the 75mm lens.

CAPCOM That's affirmative, and your other one  
is at the GET 152:06:08 using the same camera, same lens,  
and shooting SO 368 film and would like to have you shoot  
southwest of ground track for 5 minutes at 1 frame per second,  
and this is Hawaii. Now, it's about a 300 mile range, but  
the purpose of this second one is to study the effects the  
islands have on the weather and jet stream, and so forth.

SC Okay, would you say again how long you  
want it to run from the time, Stu?

CAPCOM Okay, 5 minutes at 1 frame per second.  
You're shooting southwest of the ground track.

SC Okay, right. 152:06:08, same camera lens  
and film, southwest of ground track for 5 minutes and we're  
photographing the weather formations and stuff around Hawaii.

CAPCOM Okay, on the film, in this second one  
over Hawaii, we'd like to have - the film is SO 368.

SC Yes, that's CEX 368, same thing.

CAPCOM Okay, I didn't do my homework.

CAPCOM And Apollo 9 you are GO for 108-1 and  
we'll be picking up at Honeysuckle in about 2 minutes with  
S-band volumes up.

Apollo 9 MISSION COMMENTARY, 3/9/69, GET 142:16 CST 0816 397-2

SC Okay.  
SC Houston, Apollo 9.  
CAPCOM Go, Apollo 9.  
SC Roger. Do we assume that on all these  
targets of opportunity that these are zero fuel opportunities?  
CAPCOM Roger, Apollo 9, copy. Stand by.  
CAPCOM Apollo 9, this is Houston. What we'd like  
to do is, as we've done it here, is give you the data early  
and let you, if you can just move over there real slowly  
and get in that area so that you can photograph it. But  
just minimum usage is the way I'm wanting to term it.  
SC Okay, understand minimum usage on that.  
SC Houston, Apollo 9, did you get the cal  
terqueing angles that time?  
CAPCOM Apollo 9, stand by.  
CAPCOM That's affirmative, we got them, Apollo 9.  
SC Okay, thank you.  
CAPCOM Roger, thank you.  
CAPCOM Apollo 9, Houston, 1 minute LOS Honeysuckle,  
see you Mercury 37.  
SC Roger.  
CAPCOM And Apollo 9, Houston, no need to answer  
this, but USC beat UCLA last night 46 to 44.  
SC Wow. Say, isn't that something.  
CAPCOM Yes, that's the second loss in 90 games.

END OF TAPE

PAO                    This is Apollo Control. Honeysuckle has LOS. During this pass we asked the Apollo 9 crew to perform some 16 millimeter photography in two areas. We'd like some photographs of a thunderstorm over west Africa at 144 hours, 55 minutes and 152 hours, 6 minutes we would like some footage of the Hawaii area so that researchers might study the effects the islands have on weather in the jet stream. Apollo 9 has been given a GO for 108 revolutions. It is now in the 90th revolution of this mission. Mercury will acquire in about 2 minutes. We'll be back then. This is Mission Control Houston.

PAO                    This is Apollo Control at 142 hours, 36 minutes and Mercury is acquiring Apollo 9.

CAPCOM                Apollo 9, this is Houston through Mercury standing by. I'll have you about 5 minutes.

SC                     Roger.

CAPCOM                Apollo 9, Houston. One minute LOS Mercury. Redstone five-zero.

SC                     Roger, Houston.

PAO                    This is Apollo Control at 142 hours, 42 minutes. Apollo 9 moving along across the Pacific beyond the range of the tracking ship Mercury. The tracking ship Redstone will acquire Apollo 9 at 142 hours, 49 minutes. We're showing an orbit now for Apollo 9 of 117 nautical miles apogee, 104 nautical miles perigee. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 142 hours, 49  
minutes; the Redstone has acquired.  
CC Apollo 9, we have you good solid lock now;  
standing by.  
SC Roger, Houston. Apollo 9.  
CC Apollo 9, this is Houston; did you call?  
SC Negative Houston; Apollo 9.  
CC Okay, I'm sorry.  
SC Houston, when you get a chance, you might  
give us our inclination.  
CC Roger, sure will.  
CC Apollo 9, your inclination is 33.63.  
SC Roger; thank you.  
SC Houston, Apollo 9.  
CC Go ahead Apollo 9.  
SC Okay, I'm wondering about the time on this  
particular landmark; I've got 1425617 and we're past it already  
and we are apparently not yet the landmark.  
CC Okay, that time should be when Corpus Christi  
comes over the horizon.  
SC Okay - very good. I think Corpus Christi  
is coming over the horizon.  
CC Okay.  
SC Houston, Apollo 9.  
CC Go ahead Apollo 9.  
SC Okay, big story; the telescope hung  
up again, and I went to the sextant and was able to find in the  
sextant; took 5 marks, so I have to procede to do the program  
to see what they did, but I got a 121 alarm, which is the same  
thing I got yesterday when the telescope hung up, CDU's NO/GO  
at the mark.  
CC Roger, Apollo 9. Copied that alarm, and  
we copied your info and understand you got 5 marks on it with  
the sextant with no problem.  
SC Roger; but I'm not sure the marks went in,  
although it indicates that it did go into the program.  
CC Roger, understand.  
CC And Dave, if you want any other time on these  
land marks, just let me know; we can give you any time you want,  
when it's 30 degrees down or anything, the time we are passing  
you is the time that it'll snap over the horizon.  
SC That's fine time, Stu, we'll use that one;  
that's good.  
CC Okay, very good.  
SC It looked like I got one CDU NO/GO before  
I completed the marks, because my second program alarm was marks  
not decided, so apparently I got the marks in alright, and I  
don't know what the CDU NO/GO is going to do to it, but we'll  
take a look as we go through the program.

CC Okay, real good. Copied; thank you.  
 SC Stu - I'd like the time - I'd like the  
 time that we're gonna be at the closest point to the target.  
 It helps me point to the roll rate I'm putting in here.  
 CC Okay, we'll pass the time coming over the  
 horizon and the time of closest approach.  
 SC Roger.  
 SC Houston, Apollo 9.  
 CC Go Apollo 9.  
 SC Okay, I guess none of the marks got in that  
 time. My Delta R Delta V for the change in the state vector is  
 zero and I doubt if my first mark was perfect, and also my  
 mark counter is zero, so I guess we still got some sort of  
 problem, so we'll run through it again on the next landmark.  
 CC Roger, copy; you had a perfect mark there,  
 and evidently they didn't get in. Thank you.  
 SC Well that's not exactly what I said, but it  
 sounds pretty good.  
 CC Roger - Roger's helping you out a little  
 bit there.  
 SC Thanks; I'll take all I can get.  
 CC Okay.  
 SC But we're learning how to do it, anyway.  
 CC Roger; sounds great; I thought you might  
 have more trouble with the sextant than it sounds like you're  
 having.  
 SC Well, I did too, as a matter of fact, but  
 auto optics did pretty fair, and I could see where it was re-  
 lative to the telescope on the auto drive and then when I went  
 to the sextant, it was pretty clear. Of course, Corpus Christi's  
 not a hard thing to identify.  
 CC Roger.  
 CC Roger, we'll see how you make out here with  
 Punta Dumford.  
 SC Yeah, that ought to be a trick. Hey, keep  
 it clean will you Stu?  
 CC (Laughter.) Okay.  
 CC And Apollo 9, Houston, I have your time for  
 closest approach on landmark 207.  
 SC Go ahead.  
 CC 143 plus 18 plus 42.  
 SC Thank you.  
 CC Roger.  
 SC You are absolutely a wealth of information,  
 today; I can't believe it.  
 CC Boy, wish I had this many people funnel  
 me the info all the time.  
 SC Houston, Apollo 9.  
 CC Go ahead Apollo 9.  
 SC Roger. Since you located the Gegenschein  
 for us, can you locate the trojan point?

CC Roger, we'll go to work on the trojan  
point.

SC

Okay.

SC

who's gonna win the NCAA basketball championship.

CC

Roger, couple of scores on the regional

quarter finals -

END OF TAPE

CAPCOM Roger. Couple of scores on the regional quarter finals. Davidson beat Villanova 75 to 61 and Miami of Ohio beat Notre Dame 63 to 60.

SC Ah listen, I'm not going to be able to live with my wife. You know she is from Miami.

CAPCOM Ah, so.

CAPCOM And Apollo 9, Houston. Ohio State beat Michigan 95 to 66.

SC Ah, boo.

SC Listen, if Michigan got beat, Miami of Ohio won - I'm in trouble when I get home.

CAPCOM Well, that's the way it shapes up unless we can fix the scores here.

SC Hey, you've fixed everything else so far, how about fixing that?

CAPCOM Roger, in work.

SC Rusty also wants you to get us fixed to see the news.

CAPCOM And Apollo 9, Houston. You'll be getting a master alarm shortly TCE on fuel cell 2.

SC Okay, thank you. We got it this time.

SC Houston, Apollo 9.

CAPCOM Go ahead, Apollo 9.

SC Roger. It went a lot better that time by using the point of time closes to approach. I'll let Dave tell you about the rest of it.

SC Okay. The telescope and sextant both seemed to work that time, and I left the telescope early and went to the sextant and I was able to track him all the way across the meter and back off on the other side and our roll rate was something like - I guess 6 tenths of a degree per second. It seemed to be real good. I took the works early - probably earlier that I should have in order to get it before we had a problem. So next time I think it'll work out pretty good.

CAPCOM Roger. Sounds great.

SC Your times and everything - they are real good and AUTO optics seems to be doing real good.

CAPCOM Okay. Copy. I'm going to lose you in about 30 seconds off Canary. We'll see you at Tananarive at three-five.

SC Okay.

PAO This is Apollo Control at 143 hours, 22 minutes. Apollo 9 beyond the range of the Canary station. Two landmark tracking assignments during this long pass. The first one near Corpus Christi, Texas. Dave Scott reported the telescope hung up again and he had some difficulty taking marks and tracking the landmarks through the optics. However, on the landmark in Africa - the Spanish

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 143:10, CST 0910 400/2

Sahara, he reported the optics appeared to work well again, and that he could track the landmark very well. Next station to acquire will be Tananarive at 143 hours, 34 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 143:35, CST 935 401/1

PAO This is Apollo Control at 143 hours 35 minutes and Tananarive has acquisition.

CAPCOM Apollo 9, Houston through Tananarive.

SC Go Houston, Apollo 9.

CAPCOM Rog. I have an update to your landmark tracking update.

SC Stand by one.

CAPCOM Okay.

SC Okay, go ahead with it.

CAPCOM Okay, for landmark number 10, your next one coming up, your time of closest approach is 1443007. And now the east coast is overcast, so you're not going to be able to get your Carolina pass in there. Your fourth landmark will be number 212, the time over the horizon 144503600, time of closest approach 1445410, and since we have moved it, we want to delete that 16 mm film of the thunderstorm over Africa. We will get something on that later.

CAPCOM Okay, Apollo 9, situation is normal here at Tananarive. I'm not reading you and we will see you at Carnarvon at 51. We will still be here for about another 3 minutes, but Carnarvon at 51.

SC Roger, Houston. Apollo 9, do you read?

CAPCOM Rog, reading you loud and clear.

SC Okay, landmark 212, north or south of track?

CAPCOM I'm sorry. It's 34 miles south of track.

SC Okay, readback. 212 144 50 36 34 south, closest approach 1445410, closest approach for ... is 1443007.

CAPCOM Rog, your readback is correct. We are deleting the 16 mm film for the African thunderstorm.

SC Okay, delete 16 mm film.

CAPCOM Okay and your readback is correct. Thank you.

CAPCOM And Apollo 9, Houston. If you are still reading me, there is a transducer that is slightly erratic on your helium pressure on quad baker. It will not affect our gaging or our predictions, I just want to let you know this in case you see some funny readings.

PAO This is Apollo Control at 143 hours 42 minutes. Tananarive has LOS. The weather has apparently socked in the landmark at Cape Fear, North Carolina, so we have substituted for that a landmark, number 212 which is the southernmost point of Isle Tamara off the coast of Guinea in Africa. We also advised the crew of an erratic transducer that may give them some erratic helium pressure readings on our reaction control system quad, but we advised them it was no problem. The next station to acquire will be Carnarvon, at 143 hours 50 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 143:50 CST 0950 402/1

PAO This is Apollo Control at 143 hours 50  
minutes, and Carnarvon is acquiring Apollo 9.  
CAPCOM Apollo 9, Houston through Carnarvon,  
standing by.  
SC Roger, Houston, Apollo 9.  
CAPCOM And Apollo 9, Houston, I have several  
remarks on how we are set up on this landmark tracking when  
you are ready to talk.  
SC Okay, Smokey, one question first.  
CAPCOM So.  
SC What was our GMT at liftoff?  
CAPCOM Okay, we'll get it.  
SC Okay, thank you.  
CAPCOM And could you give us POO in ACCEPT.  
We'd like to uplink your state vector.  
SC Roger, POO in ACCEPT.  
CAPCOM Understand correct set.  
CAPCOM And Apollo 9, Houston, time 16 plus 00  
plus 01.  
SC Roger, 16 plus 00 plus 01. Gee, we were  
a little late.  
CAPCOM Yes, just a tad there. And Dave, there  
are a couple of comments about this Noun 71 setup and a couple  
of other things I'd like to talk with you.  
SC Roger, go ahead.  
CAPCOM Okay, your mark counter will not update  
in this P22. Now, we have a display on it and we are showing  
that your marks are getting in. We showed 5 on the first  
pass just as you stated, and so that's one thing that you  
can expect. Okay, under noun 49 your DELTA-R DELTA-V is  
going to read zero in this P22, and the reason for this is  
W matrix is initialized to accept marks for LATS, LONG, and  
altitude only, so you're going to see zero on that DELTA-R  
DELTA-V.  
SC Okay, that was a real puzzler. We've  
been sitting here trying to figure out why that didn't  
give us anything and we were absolutely stumped.  
CAPCOM Okay, now one other thing. Down here  
I'm looking at your procedures book, and under your noun 71,  
in here where it says that your last two digits there, can  
either be 00 or 01 for earth orbit, we should restrict that  
to 00 here for earth orbit, and it's not setup to accept  
that lunar landmark stowage there. So we'd like to have  
that noun 71 at either 10 000 or 20 000, and since we're  
not working on known landmarks we're saying 10 000.  
SC Okay, I understand that. I was planning  
not to use that 01 anyway, cause we weren't going to the  
same landmark, but okay, we use 1000 all the way through.  
CAPCOM Okay.

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 143:50 CST 0950 402/2

CAPCOM Okay.  
CAPCOM And Apollo 9, let's turn up S-band volume.  
We'll be seeing you at Honeysuckle here in a minute.  
CAPCOM Apollo 9, this is Houston. The computer  
is yours. I have a nav check to go along with the state  
vector. You have been uplinked state vector both plots.  
CAPCOM Apollo 9, this is Houston. I should have  
you at Honeysuckle. Do you read?  
CAPCOM Apollo 9, this is Houston. I should have  
you through Honeysuckle now, the computer is yours, I have  
a nav check to go along with the stat vectors that have been  
uplinked.  
SC Roger, stand by just one.  
CAPCOM Roger.  
SC Okay, go ahead.  
CAPCOM Roger, reading nav check: 144050069 minus  
2027 plus 16071 1177. End of update.  
SC Roger, read back, 144050069 minus 2027  
plus 16071 and 1177.  
CAPCOM That is affirmative, Houston affirms the  
update, and did you talk to me over Tananarive about your  
pressure transducer on quad BAKER?  
SC Roger, we did.  
CAPCOM Okay, and one other comment, the 121 alarm  
that you got back there, Dave, is not connected with the optics  
problem.  
SC Oh, okay, thank you. What is the connection  
with it?  
CAPCOM Well, everybody here agrees that it is  
not unreasonable to see that, that that alarm is a reasonable  
test on the CDU's and at the time you sampled it, it flashed  
you that, but it's not connected now with the sticking of  
the optics.  
SC Okay, maybe all this will make sense in  
a couple of more revs.  
CAPCOM Roger, and that alarm is the platform  
CDU's Dave, I guess that will clarify for you.  
SC Okay, well I just had a quick gouge up  
here on the alarms and CDU's and it didn't specify.  
CAPCOM Roger, understand. I was thumbing through  
my book here trying to see what the alarm was, I was watching  
you go through that, but I've got a couple of more rooms of  
brains back here that you don't have.  
SC it's nice to have them back there, isn't  
it?  
CAPCOM Boy, it sure is.  
CAPCOM Apollo 9, Houston, we are about to lose  
you at Honeysuckle. I see you working on your realignment  
there. We'll see you at Huntsville at 06.

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 143:50 CST 0950 402/3

PAO                    This is Apollo Control at 144 hours 4 minutes. We have LOS at Honeysuckle. That Greenwich mean time of liftoff that Dave Scott requested 16 00 01 translate to 1 second past 10:00 a.m. Central Standard Time, and you heard several references on this transmission to CDU's. Those are coupling display units, and those are assemblies of electromagnetic transducers to display coordinated data from the Apollo guidance and navigation equipment. Huntsville will acquire Apollo 9 in about 10 seconds. We will stand by for acquisition there.

END OF TAPE

CC Apollo 9, Houston through Huntsville.  
Standing by, and I'm real curious how 'ole Jupiter worked out.  
CC And Apollo 9, Houston through Huntsville  
standing by; we'll have you about another 3 and a half minutes.  
SC Say again Houston, Apollo 9.  
CC Roger. We've got you at the Huntsville now;  
should have you for about another 3 minutes and I'm curious  
how 'ole Jupiter went.  
SC Say again about Jup.  
CC Roger, how did the alinement go on Jupiter,  
there?  
SC We're still tracking him down here.  
CC Oh, okay.  
SC We just found him.  
PAO The crew is realineing the spacecraft's  
inertial platform using the planet Jupiter as a reference.  
SC Hey Smoky, is this the ninth?  
CC That is affirmative; it is the ninth.  
SC Thank you. Sorta lost track here.  
CC Roger; I can understand that.  
CC Apollo 9, Houston. See you at Hawaii 18.  
SC Roger.  
PAO This is Apollo Control at 144 hours, 12  
minutes. LOS at the Huntsville. Hawaii will acquire at 144  
hours, 18 minutes. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 144 hours, 18 minutes. Apollo 9 within range at Hawaii now.

CAPCOM Apollo 9, this is Houston through Hawaii standing by.

SC I read.

SC And Houston the P52 with Jupiter didn't work out very well. I stuck in the numbers I had in the checklist for the days we asked you to check on and got about a 67 degrees star angle difference when I used Jupiter and Acrux which are pretty familiar figures, so we'll have to regroup on that one.

CAPCOM Roger. Copy. Understand.

SC And we did not torque the platform, by the way.

CAPCOM Oh. Good thinking and show you about 7 minutes old Punta Willard ought to be coming over your horizon.

SC Okay.

SC Houston, Apollo 9.

CAPCOM Go ahead, Apollo 9.

PAO This is Apollo Control. Apollo 9 approaching the coast of Baha, California now. We'll have continuing coverage through the Canaries station. We'll stay up live.

SC Houston, this is Apollo 9. You are still around, aren't you?

CAPCOM Apollo 9, Houston. Say again.

SC Roger. Houston, Apollo 9. Had a little trouble (garbled) that time. I wasn't able to recognize it until we got about 30 seconds from overhead and then I'm not sure because of the cloud cover, but I got 3 marks in with the sextant and the auto optics seemed to work pretty good.

CAPCOM Roger. Copy and that CDU alarm we feel at that time was caused by the roll rate.

SC Okay. Very good. And you just about have to have that kind of roll rate to stay on it with the sextant.

SC What's the roll rate limit that causes that?

CAPCOM We're working on that right now.

SC This is Apollo 9.

CAPCOM Go ahead, Apollo 9.

SC Did you get my question about roll rate on CDU warning light to come up?

CAPCOM That's affirmative, Jim. We're working on that. We're trying to find out what limits you have in there now and also we may be able to change it - change the limit. And just for your info, too, when you do get that

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 144:18, CST 1018 404/2

alarm, it will reject that mark. It  
won't accept it with that mark.  
CAPCOM So we'll try to have -

END OF TAPE

CC We'll try to have you a roll rate limit here.

SC Okay, Stu. Just as you say, just for your information, you cut out. What was for my information?

CC Okay. That when it flashed, that CDU alarm, it will reject that mark.

SC Okay, it rejects one mark, but not the whole string of marks, is that right?

CC That's affirmative.

SC Okay, thank you.

SC And Stu, I got another question on this new program we're working with here. It doesn't seem to allow us to procede out of the flashing 51 here, as we do in the other programs.

CC Okay, I copied. I'll try to get you an answer.

SC Okay.

SC Hey, Houston, this is Apollo 9.

CC Go ahead Apollo 9.

SC Hey, did all that work that Dave did on his EKG last night fix it?

CC That's affirmative; it's coming through loud and clear, and the surgeon says thank you.

SC Dr. Scott appreciates his thank you.

CC Roger.

SC I've been thinking I'm looking for a new job.

CC The surgeon says they'll put you to work.

SC They've been doing that for several years.

CC Very good. And Apollo 9, Houston; I can just see the headlines now, "Scott Quitting Space Program."

SC Yeah, I hope we see those, huh?

CC Yeah.

SC Alright you guys.

CC And Apollo 9, Houston. Dave, you could proceed on that flashing 51 if you could get one valid mark into the computer, but that's what is hanging up on the flashing 51 there.

SC Well okay. I thought I got a couple; I got 3 there, and I didn't get the program alarm, I don't think.

CC Okay, we'll check that.

SC Okay.

SC I was looking through the tube there and didn't see the (static) on the first one.

CC Okay. And we didn't see the 3 alarm.

SC Okay, we'll slow down the roll rate.

CC Apollo 9, Houston.

SC Go ahead.

CC Okay, I guess you've got somebody eyeing the middle gimbal, and I realize that is less than 4 minutes before 212 coming over the horizon; we can go into the (garble)

memory, but with the address I can give it to you and we can double the rate that's in there. Right now it's six tenths of a degree CDU rate; now we don't have that info translated into a body rate yet.

SC                   Okay, why don't we just go slower on this one Houston, and not try and do that now, cause we are coming up on the target, and I think, you know the summation of all this is, it's probably designed for the lunar orbital case, where you have a lot more time and you're going a lot slower, and that's probably what the problem is.

CC                   Roger; we understand, and concur with not changing it. We don't have to let out - I thought we might want to try it on this last one here today, and really, we are proving the technique, sounds like you've really got the technique swinging.

SC                   Oh yeah, and I'm surprised even the sextant is as easy as it is. Once we get the high spacecraft rates, it's pretty easy to track it with the sextant.

SC                   Stu, if we do any of these things tomorrow, we might jack up the rate in that erasable load.

CC                   Okay, real good.

SC                   And Houston, on this next night pass, we'll do that P52 Jupiter again.

CC                   Roger, understand. Maybe by then, we'll have somebody look at those half unit vectors and (static)

PAO                  This is Apollo Control; we've had LOS at Vanguard; the Canary Island Station will acquire within a few seconds for about a minute and a half pass there.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 144:50, CST 1050 406/1

PAO                      This is Apollo Control at 144 hours,  
52 minutes and Canaries has loss of signal now. The next  
station to acquire will be Tananarive at 145 hours, 8 min-  
utes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 144:53, CST 1053 407/1

CAPCOM  
SC  
per second yet?  
CAPCOM  
have it.

Go ahead, 9.  
Roger, Houston. Have you got into degrees  
That's negative. I'm sorry, we don't

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 145:08, CST 1108 408/1

PAO This is Apollo Control at 145 hours  
8 minutes and Tananarive is acquiring Apollo 9.

CAPCOM Apollo 9, Houston, through Tananarive,  
do you read?

CAPCOM Apello 9, this is Houston, I am not reading  
you. I may be coming through to you. If so, on the P52  
alinement I'd like to have you check the unit vectors for  
Jupiter on the last page of section 7.

TAN CAPCOM is uplinking properly from  
Tananarive.

SC We get the numbers on that.

CAPCOM Okay, Apollo 9, I got that transmission.

CAPCOM And Apollo 9, this is Houston. Our  
comm is pretty bad. I'm going to wait until over Carnarvon  
to give you your SO65 pad and that will be Carnarvon about 24.

PAO This is Apollo Control at 145 hours 12  
minutes. Tananarive is too noisy we will not attempt to  
communicate here through the remainder of this pass, about  
a minute and a half left there. The next station will be  
Tananarive at 145 hour - will be Carnarvon, the Carnarvon,  
Australia station at 145 hours 23 minutes. This is Mission  
Control Houston

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 145:23, CST 1123 409/1

PAO This is Apollo Control at 145 hours,  
23 minutes. Apollo 9 coming upon the Carnarvon station.  
CAPCOM And Apollo 9, Houston through Carnarvon.  
How do you read?  
SC Five by, Houston.  
CAPCOM Okay, I have your SO 65 PAD.  
SC Roger. Ready to copy.  
CAPCOM Okay, I'm going to give you your inertial  
angles first 18000 27320 all zips 145 - I'm giving you now  
the GET. I'll give you your orb angles in a minute. I'm  
now on the GET 1455700 this is orb rate. Your first area  
is the Salton Sea - 14602 210806. Your second area is in  
New Mexico - 1460459 0803. The next area is the Mississippi  
River - 1460 807 0804 and your orb rate is .068 and now on  
your orb rate angles - I'm not sure - I think this is what  
you were wanting, Jim, but you're reading 180 degrees of  
roll and with the local vertical you are 32 and one-half  
degrees pitch, yaw 0.  
SC Stu, I think that we'll probably pitch  
down there 32. Would you confirm that?  
CAPCOM That's affirmative. Your pitch down  
32 and one-half degrees below the local horizontal.  
SC Okay.  
SC Okay. Readback then - 18000 27320 all  
zips 1455700 orb rate first area Salton Sea 146 0221 0806,  
New Mexico second sight 1460459 0803, Mississippi River  
1460807 0804 orb rate is .068 and to roll a vertical angle  
it would be 180 and whatever 360 minus 32 is and zero.  
CAPCOM That's affirmative. I confirm that and  
we have interpolated off of that chart there. We want to  
save you all the mental gymnastics to get your VWX parameter.  
SC All right. Go ahead.  
CAPCOM Okay. You want me to read those then,  
is that affirmed?  
SC Standby just one.  
CAPCOM Okay.  
SC Okay. Go ahead, Smokey.  
CAPCOM Okay. Reading V as in Victor - 77775,  
W as in whiskey - 61331, X-ray all zips, Y 65732 and then  
zebra 54142.  
SC Okay. Got 77775, 61331, all zips,  
65732 and 54142.  
CAPCOM Okay, and the order of that is V, W, X,  
Y, Z.  
SC Roger. We got that flight B chart is  
onboard. That even agrees with the Z component of preflight  
calculation. Okay, thank you very much.  
CAPCOM Roger.

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 145:23, CST 1123 409/2

SC Okay. I can give you a quick rundown  
on Jupiter, now that we've got it.

CAPCOM Okay.

CAPCOM We're about 10 seconds LOS here. We'll  
catch you over the Huntsville at three-nine.

SC Okay. Very good.

PAO This is Apollo Control at 145 hours,  
31 minutes. Carnarvon has LOS. Huntsville will be the  
next station to acquire in a few minutes. We'll be back  
up then. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 145:39, CST 1139 410/1

PAO This is Apollo Control at 145 hours  
38 minutes and Huntsville has acquisition.

CAPCOM Apollo 9, Houston, through the Huntsville,  
standing by.

CAPCOM ... data and look well.

SC Houston, Apollo 9, how do you read?

CAPCOM You're coming in loud and clear, Dave.

SC Stand by a minute and I'll give you a  
run down on Jupiter alinement.

CAPCOM Roger. We've taken a look at some of  
the data, and it looks well.

SC Roger, and I've got a couple of comments  
on it, just a second. Two times the gimbals we picked  
with the numbers we had to put in in the - star angle difference  
was .04 on the first one and .03 on the second one. And  
did you get the torquing angles?

CAPCOM That is affirmative, Apollo 9.

SC Okay, it seems to work real well. The  
planet fills up the whole inside of the sextant in between the  
reticle lines. It's about the size of (garbled) and one thing  
was noticed in the program is that when you load unit vectors  
for the planet and then let auto optics - it works real  
well. The torquing angles were small and the planets were  
easy to find. I think that would be a fine thing to use  
if you couldn't see the stars in the daytime.

CAPCOM Hey, that sounds real great, and that  
was an extremely good summary.

SC And on the last landmark track  
I think we got the hang of the whole thing. We had cloud  
coverage again, and we had to reject the first part because  
I just couldn't see it clearly. We got almost overhead and  
I got two real good markings, I think we've got that one  
nailed.

CAPCOM Okay, Dave, understand.

SC (garbled) and we're getting ready for  
S065 right now.

CAPCOM Real good.

CAPCOM And if you've got time for a question,  
Dave, just help me out. Jim asked specifically for this  
way, I've got him emptied at orb rate angle and to make  
sure that I'm giving him what he wants - is that what you  
want, your relation to the local vertical?

SC Stu, we have what we want.

CAPCOM Okay, real good.

SC Stu, on the inertial angles - won't do what  
we want, and the relative local vertical attitude (garbled).

CAPCOM Okay, real good. Well, we will flip it  
to you.

SC Houston, Apollo 9.

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 154:39, CST 1139 410/2

CAPCOM Go ahead, Apollo 9.  
SC (garbled) The way we got the unit vectors was to interpolate between the times that we had on the charts on board and so we tried to go to 5 digit numbers, get as close as we could to the time, the GMT that we had right now and I guess we - the repeatability varies with a bunch of those vectors that you had there, that we had on the chart (garbled)

CAPCOM Okay, Dave, understand. We're about 1 minute LOS Huntsville, we'll see you Hawaii in about 5 minutes and 49.

SC 49 Hawaii.  
HTV Huntsville LOS.  
PAO This is Apollo Control at 145 hours 45 minutes and the Huntsville has less of signal. During this pass Dave Scott summarized the last landmark tracking and the platform realignment using the planet Jupiter as a reference. The crew is now in process of preparing for the next SO65 experiment, the multispectral photography, which will be conducted during this revolution over the United States. The first area to be photographed is the Salton Sea, then New Mexico, and finally the Mississippi River. Hawaii will acquire at 145 hours 48 minutes, This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 145:48, CST 1148 411/1

PAO This is Apollo Control 145 hours 48 minutes, and Hawaii has just acquired.  
CAPCOM Apollo 9, Houston through Hawaii, standing by.

SC Rog.  
CAPCOM Apollo 9, Houston.  
SC Houston, Apollo 9. We're with you.  
CAPCOM Okay, Apollo 9. Looks like we are about to make a mistake here. I've got to give you new numbers. You loaded the ones we gave you, but those aren't right. We have got to use the complement of those. Are you ready to copy?

SC Rog, go ahead.  
CAPCOM Rog. 0000216446, stand by. Okay, and X is all zips, 12045, and Z is good as is. Sorry about that.  
SC No sweat, we will get it.  
CAPCOM I thought I had them signed in blood.  
SC You watch these as they go in, okay?  
CAPCOM Okay, we're watching.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 145:59, CST 1159 412/1

PAO This is Apollo Control. Apollo 9 crossing the coast of California now. We probably won't have too much conversation with the crew during this pass because they will be busy with the photography experiment; however, we will continue to stand by.

SC Houston, Apollo 9.

CAPCOM Go ahead, Apollo 9.

SC Roger, we just completed the S065 pass.

CAPCOM Rog, and how did the cloud cover look?

SC Really neat. There weren't any clouds

all along the way. It looked very, very nice.

CAPCOM Oh, real good and we noticed you're torquing the right way and we just about fouled you up there.

SC Hey, but you didn't. You're right on

time. That's very good.

SC You're getting a little drama into the game, Stu.

CAPCOM That's right. We've got everybody awake anyway.

SC Say, you know on this orb rate torquing, I don't think we had a jet firing the whole time after it started the rates going.

CAPCOM Roger, G & C says there were very few of them, but there were some.

SC Okay, we just didn't hear any of them go and it seemed to be real smooth.

SC Yes, we wanted to freeze up Aldebaran and we're still at an inertial altitude of 328.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 146:10, CST 1210 413/1

SC Yes, we went to 3 sometime ago and we still have an initial altitude of 328.

CAPCOM Very good.

SC Houston, Apollo 9. That was the best that you had, that trip across the states there.

CAPCOM I'm sorry, Apollo 9. I didn't catch it. Say again.

SC Roger. I said that was the best that you had yet, that trip across the United States.

CAPCOM Roger. Copy.

CAPCOM Apollo 9, Houston.

SC Go ahead.

CAPCOM Roger. I'd like to read you a little blurb out of the newspapers here. It's - byline Newark, New Jersey. McDivitt honored. The ancient order of Hyburnians representing 250,000 Irishmen across the country voted Saturday to honor Apollo 9 Astronaut James A. McDivitt for his achievements. The executive board of the Hyburnians voted unanimously - stumbled over that one - to award McDivitt the John F. Kennedy Medal for National Civics Service. McDivitt will receive the medal at the Hyburnian dinner in Newark on May 10th a spokesman said.

SC Roger. I wish to thank my fellow Hyburnians for that honor. And you might also mention that I am flying with green handles on my seat.

CAPCOM Okay. Copy.

PAO This is Apollo Control. Astronaut Ron Evans is replacing Stu Roosa at the spacecraft communicators console at this time.

PAO This is Apollo Control at 146 hours, 19 minutes. The Antigua station has LOS. During this pass across the United States the Apollo 9 crew completed another photography experiment. Reported no cloud cover - the photography went very well. Jim McDivitt called it a most enjoyable trip across the United States. CAPCOM Stu Roosa read him a newspaper clipping about an award from the ancient order of Hyburnians and Jim responded: Thanks to the organization, and then reported his couch has green handles. The next station to acquire will be Ascension at 146 hours, 26 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 146:26, CST 1226 414/1

CAPCOM  
through Ascension.

SC  
CAPCOM  
SC

for you.

CAPCOM  
SC

+ 00006.

CAPCOM  
SC  
CAPCOM

time.

SC  
CAPCOM

Tananarive at 44.

SC  
PAO

minutes. Ascension has LOS. Tananarive will acquire at  
146 hours 43 minutes, 10 minutes from now. This is Mission  
Control Houston.

END OF TAPE

Apollo 9, Houston. Good afternoon,

Houston, Apollo 9.

Roger, loud and clear this time, Dave.

Okay, I've got some gyro torquing angles

Roger, ready to copy.

Okay. A GET of 1462700 + 00100 - 00050

Roger, we copy. Thank you.

Roger. Seems pretty good in the daytime.

Yeah, amazing what it's like in the day-

Rog.

Apollo 9, Houston. One minute LOS,

Roger.

This is Apello Control at 146 hours 33

minutes. Tananarive will acquire at

146 hours 43 minutes, 10 minutes from now. This is Mission

Control Houston.

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 146:44, CST 1244 415/1

PAO This is Apello Control at 146 hours,  
44 minutes. Tananarive has acquired Apollo 9.

PAO This is Apello Control at 146 hours,  
46 minutes. Apollo 9 has gone through Tananarive acquisition without air-ground conversation. The low elevation pass, about one and a half degrees, at Tananarive that time and short acquisition time. Carnarvon will acquire at 146 hours, 57 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 146:57 CST 1257 416/1

PAO This is Apollo Control at 146 hours  
56 minutes. Apollo 9 is within range of Carnarvon now.  
CAPCOM Apollo 9, Houston, through Carnarvon  
with your S065 update.  
SC Roger, Houston, all set to copy.  
oops, stand by, my pen's not there.  
CAPCOM Roger, standing by.  
SC Roger, got the pen now.  
CAPCOM Okay, I'll give inertial angles first:  
18000 25280 and all zips. Your orb rate ball angles 180 327.5  
and 0. Your GET 147:30:27, NA on the a line, you'll be orb  
rate, the rate is .068. The first sight Saltan Sea 147354008  
05. Tucson 14737120609. Matagerda will be a sight 14740426003  
and I'll go ahead and give you your orb rates for loading  
the dap. I'll give them victor through zulu. Victor 00002  
Whiskey 16446, X-ray all zips, Yankee 12045, Zulu 54142,  
and you can read back if you want to.  
SC Okay, coming back in the same order, Ron.  
1800025280 all zips 1473027 NA orb rate .068, Saltan Sea  
14735400805, Tucson 14737120609, Matagorda 14740420603,  
and I guess I forgot to read the vertical angles, 18327.5 and  
0, and then go on Victor through Zulu, 00002 16446, all zips,  
12045 54142.  
CAPCOM Alright, your readback is correct, and  
I've got your points where Achilles chased Hector around  
the walls of Troy.  
SC Okay.  
CAPCOM First point: right ascension 12 hours 10  
minutes, declination minus 1 degree. Second point: right  
ascension 19 hours 50 minutes, declination minus 26 degrees.  
SC Okay, 12 hours 10 minutes minus 1 degree,  
19 hours 50 minutes minus 26 degrees.  
CAPCOM Roger, and that will be at a GET of  
148 plus 00.  
SC Okay. by the way, looking for the  
Gegenschein I was sort of all dark adapted on the pass that  
Dave marked on Jupiter and was not able to see anything.  
CAPCOM Roger, no Gegen.  
CAPCOM Apollo 9, Houston, on your pass over  
Ascension we noticed the surge tank was dropped about 100 pounds  
and then it's coming back up. Was this filling the repress?  
SC Roger.  
CAPCOM Roger, thank you.  
SC We may give it a couple of more shots  
here just to twig it all the way up.  
CAPCOM Roger, concur.  
CAPCOM Apollo 9, Houston, 30 seconds LOS, Guan  
at 11.  
SC Roger.

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 146:57, CST 1257 416/2

PAO                    This is Apello Control at 147 hours  
4 minutes. Carnarvon has LOS. During this pass Ron Evans  
updated the crew on the next pass across the United States  
later in this 93rd revolution. For the S065 multispectral  
photography experiment. Areas to be photographed, Salton  
Sea again, Tucson, Matagorda Island off the coast of Texas  
in the Gulf of Mexico. Ron's reference to Achilles chasing  
Hector around the walls of Troy, or Hector's chasing Achilles  
has to do with Rusty Schweichart's earlier request today  
for the Trojan point, which as we understand from one of the  
Flight Controllers here, is the 120 degree point in a stable  
orbit of a satellite around a central body. Guam will acquire  
next at 147 hours 10 minutes. This is Mission Control  
Houston.

END OF TAPE

APOLLO 9 COMMENTARY, 3/9/69, GET: 147:11 (1311)

417/1

PAO This is Apollo Control at 147 hours, 11  
minutes; Guam has acquisition.

CC Apollo 9, Houston. Two minutes to LOS  
Hawaii at 23.

SC Roger.  
PAO This is Apollo Control at 147 hours, 15  
minutes. Apollo 9 out of range at Guam now. Moving across  
the Pacific toward Hawaii. Hawaii station will acquire at  
147 hours, 22 minutes. This is Mission Control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 147:22, CST 1322 418/1

PAO This is Apollo Control at 147 hours 22  
minutes. Hawaii is acquiring Apollo 9.  
CAPCOM Apollo 9, Houston. Standing by through  
Hawaii.

SC Roger, Houston. Apollo 9.  
CAPCOM Roger.

PAO This is Apollo Control at 147 hours 29  
minutes. We have LOS at Hawaii. The Redstone will pick up  
acquisition within a minute and then we will have overlapping  
coverage from the Redstone on through the United States,  
losing coverage at Antigua. We will stay up live through  
this long pass.

END OF TAPE

SC Houston, Apollo 9.  
CAPCOM Apollo 9, Houston. Go.  
SC Roger. Sometime here within the next  
hour or so we'd like to get another map update.  
CAPCOM Roger. I have one now if you want it.  
SC Houston, we're ready to copy.  
CAPCOM Roger. I'll give you rev 93 first.  
Rev 93 - 147 plus 11 plus 09 right ascension 16 07, longi-  
tude 147 east. I can give you rev 94.  
SC All right, I guess 93 is good enough,  
Ron.  
CAPCOM Okay.  
CAPCOM Apollo 9, Houston.  
SC Go ahead, Houston. This is Apollo 9.  
CAPCOM Roger. We've just passed on SO 65 -  
if it was nominal and if the number of frames used was about  
right.  
SC Roger. We used exactly what we had on  
the plan and went exactly according to the way they called  
it up. The only thing, I'm a little concerned that you might have  
missed your time at Matagorda by just a couple of seconds.  
We have taken only one picture of Matagorda and the other  
two of the Gulf.  
CAPCOM Roger. Copy.  
CAPCOM Nine, Houston. You can go to standby  
in your IMU at your convenience.  
SC All right. Roger.  
SC Say, Houston, this is Apollo 9.  
CAPCOM Houston. Go.  
SC Did you find out how many frames  
are on those small 70-millimeter hasselblad fill backs. I  
think there's 60 and I'm not really sure.  
CAPCOM Roger. We'll check it.  
SC I know that there's 150 in the big ones,  
but I don't know what there are in the little ones.  
CAPCOM Roger.  
SC Ron, I think they are MAGS F and G.  
CAPCOM Okay. MAGS F and G.  
CAPCOM Apollo 9, Houston.  
SC Go.  
CAPCOM Roger. You can terminate BAT B charge  
and if you do it after five-two just let us know the time  
at Ascension.  
SC Three, two, one, mark.  
CAPCOM Roger. We got it.

END OF TAPE

APOLLO 9 COMMENTARY, 3/9/69, GET: 147:52 (1452)

420/1

CC Apollo 9, Houston. About 30 seconds LOS  
and you have a GO to chlorinate prior to sleeping tonight if  
you want.

SC Okay, fine, thank you; we'll do that  
before we go to bed.

CC

Roger.

PAO This is Apollo Control at 147 hours,  
52 minutes. Antigua has LOS. And Apollo 9 has completed  
the S065 multi spectral terrain photography experiment for  
today. They've been given a GO to power down their inertial  
measurement unit and go into drifting flight essentially.  
Next station to acquire will be Ascension at 148 hours even.  
This is Mission Control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 148:00, CST 1400 421/1

PAO This is Apollo Control at 148 hours into the mission. Apollo 9 coming within range of the Ascension Island station.

CAPCOM Apollo 9, Houston through Ascension.

SC Hello, Houston, Apollo 9.

CAPCOM Roger, looks like you have 65 frames in those small 70mm packs.

SC Okay, very good. Thank you.

CAPCOM And 9, Houston. Looks like our cryo plan is about the same as last night. If you still have that one, it is the same. Unless you want me to read it up again and remind you.

SC No, I believe it's to turn the heaters and fans off now and let the hydrogen pressure drop down to between 190 and 200, and then just before we go to bed we're going to turn H2 fan number 2 on.

CAPCOM Okay, we'll use number 1 fan tonight. H2 tank 1 fan on just before you go to bed.

SC Okay, H2 tank 1 fan on just before we go to bed.

CAPCOM And we'll - put inverter 3 on main A just before you go to bed.

SC Okay, and we've been running all day long without either heaters or fans on H2 and tank 1 is reading about 208 or so, but tank 2 is all the way up in the 220's. We're going to have to do a lot of purging to get it down.

CAPCOM Roger, if a purge is required, which it looks like it may be, go ahead and purge fuel cell 2.

SC Okay.

SC And Houston, this is Apollo 9.

CAPCOM Houston. Go.

SC On our power down, do you want us to just power down on things we powered down last night and not power down completely?

CAPCOM Affirmative. That'll be SCS electronics power off, the auto RCS switch is off, rote control power switch is off, and the translation control power off. The rest of them powered up.

SC Okay, very good.

CAPCOM 9, Houston.

SC Go ahead.

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 148:00, CST 1400 421/2

CAPCOM Roger, we wanted to get a couple of frames for hydrology and oceanography there at Matagorda.

SC Oh, very good. Well, that's what you got.

CAPCOM Okay.

CAPCOM 9, Houston. We're coming up on LOS. Low pass at Tananarive and Carnarvon. Probably Guam at 42.

SC All righty.

PAO This is Apollo Control at 148 hours, 5 minutes. Ascension has LOS. Apollo 9's orbit in this 94th revolution takes it at a very low angle to the Tananarive station. We expect about a minute and a half, slightly less than a minute and a half acquisition at Tananarive. We probably won't communicate but we'll come back up at that time and stand by.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 148:18, CST 1418 422/1

PAO This is Apollo Control at 148 hours 18 minutes. Tananarive is about ready to acquire for a 1 minute, 24 second pass. We will stand by.

PAO This is Apollo Control, 148 hours 20 minutes. Went through that short Tananarive pass without communicating. The next station to acquire will be Carnarvon, again a low elevation pass, acquisition time duration of only 1 minute 32 seconds. We don't expect to make a call to the spacecraft, but we will come up and stand by in case they call us at that time. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 148:32, 1432 423/1

PAO                    This is Apello Control at 148 hours  
32 minutes. Apello 9 coming up on Carnarvon for a 1 minute  
30 second pass.

PAO                    This is Apello Control. No conversation  
during that brief acquisition at Carnarvon. We'll have good  
coverage at Guam at 148 hours 42 minutes, about a 7 and a half  
minute pass at that time. this is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 148 hours, 42 minutes. Apollo 9 approaching Guam. As the Gold Team moves in to take over from the White Team. And we're estimating change of shift briefing for 3:15pm Central Standard Time. Three-fifteen pm for this change of shift news conference. Guam has acquisition now. We'll standby.

CAPCOM Apollo 9, Houston through Guam.

SC Roger, Houston. Apollo 9. Go.

CAPCOM Roger. Request an E MEMORY dump VERB 74 when you get a chance at it, and give us a mark.

SC Roger. Here we go. VERB 74, three, two, one, mark.

CAPCOM Roger.

SC Houston, did you say you wanted to do an ACCEPT also?

CAPCOM Standby. We are verifying the E MEMORY first.

CAPCOM Apollo 9, Houston. The E MEMORY dump was complete. Request POO and ACCEPT. We'll give you a state vector.

SC Roger. Standby one.

SC Okay. You have POO and ACCEPT.

CAPCOM Roger.

CAPCOM Uh, Nine, Houston. We have sent the state vector up. We've checked it and it all looks good.

SC Okay. Thank you very much. I just went into the DSKY then I hope you had the thing in I'd forgotten.

CAPCOM Roger. We had it in.

SC Okay. Thanks.

CAPCOM And you might stick those CRD's on the wall somewhere. We're going to be calling for readout one of these passes there.

SC Stick what on the wall?

CAPCOM Those dosimeters.

SC Oh yes, we'll do that. Man, we've got our dosimeters out. We've been waiting all day for you to ask us.

CAPCOM Okay.

CAPCOM Roger. You can go to BLOCK on the computer.

SC Okay. Thank you.

CAPCOM Nine, Houston. In about 30 seconds LOS. Hawaii at five-seven.

SC Roger. Hawaii at five-seven.

CAPCOM By the way, I don't think we ever told you - your DSC is good when you are talking into the mike. It's real good.

APOLLO 9 MISSION COMMENTARY, 3/9/69. GET 148:42, CST 1442 424/2

SC

Oh, Okay. Good.

SC

We'll try and stay close to the mike then.

CAPCOM

Roger.

PAO

This is Apollo Control. Apollo 9 out of range at Guam. Hawaii will acquire at 148 hours, 57 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 148:57, CST 1457 425/1

PAO This is Apollo Control at 148 hours, 57 minutes. Apollo 9 is approaching the Hawaii tracking station. We expect to have acquisition there momentarily and we'll stand by for the air-to-ground.

CAPCOM Apollo 9, through Hawaii. I've got a couple of flight plan updates and targets of opportunity for you.

SC Roger, go ahead.

CAPCOM Roger, ARIA 5 at 154 plus 19 to 154 plus 29. ARIA 2, 155 plus 13 to 155 plus 22. Here comes some targets of opportunity.

SC Go ahead.

CAPCOM 149:08:46. It's Guatalupe, weather, 3 frames, 60-second intervals on track. 149:14:00, Chapingo, Mexico, geology, 10 frames, 6-second intervals, 40 degrees off nadir south. 149:16:57, San Salvador, geology, 10 frames, 6-second intervals, 20 degrees off nadir south. 149:19:43, Gulf of Panama, oceanography, 5 frames, 6-second intervals, 10 degrees off nadir north. 149:20:42, Columbia, geology, 10 frames, 6-second intervals, on track. 149:21:57, Venezuela, weather, 6 frames, 30-second intervals, high oblique to north. And over.

PAO We just heard astronaut Ron Evans read up some photographic targets of opportunity to include some photography of geological and of weather and of oceanography. The spacecraft has moved out of range of Hawaii, so we will bring down the line at 149 hours, 2 minutes. This is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 149:05, CST 1505 426/1

PAO This is Apollo Control at 149 hours 5 minutes. We've just reacquired the spacecraft over the ship Redstone. Let's monitor.

SC Yeah. Got the weather, 6 exposures, 30 second intervals and a high oblique to the north.

SC Okay, it looks like we are only oriented so we can see south. So we will try and pick up the ones that are off to the south.

CAPCOM Roger.

SC And I'll give you a readback on the ARIA's. You might want to know if we got that right or not. ARIA 5 15419 to 15429, ARIA 2 15513 through 15522.

CAPCOM Roger. And we know that your optics are still on manual and request zero if you are not going to use them any more.

SC Rog. We were just using them to take a look outside to see where we were going.

CAPCOM Okay, fine.

CAPCOM Apollo 9, Houston.

SC Go ahead.

CAPCOM Roger, just a comment. Are the cabin fans on now or what are you generally doing with the cabin fans.

SC We had the cabin fans off until today and we had run it with one cabin fan on today.

CAPCOM Roger, and in general, on cycling or storing the H2 cryos there, are you doing this at any time other than when we request same?

SC Negative.

CAPCOM Roger.

SC Yes, we have, rog. We've been doing it every morning on our wakeup checklist.

CAPCOM Okay, that's good.

SC Yes, that's called for on the flight plan, though.

CAPCOM And Apollo 9, Houston. I have the block data here. I can either give it here or else over Guam.

SC Okay, stand by.

SC Okay, Houston, go ahead.

CAPCOM Roger, block data: Area 099 Charlie Charlie, plus 231 plus 1430 156:15:41 3343. 100 Charlie Charlie, minus 253 minus 1610 158:06:17 3343. 101 Alpha Charlie, plus 029 minus 0300 158:40:36 3842. 102 Alpha Charlie, plus 166 minus 0320 160:15:37 3842. 1032 Alpha,

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 149:05, CST 1505 426/2

plus 281 minus 0300 161:50:48 3842. 1041 Bravo, plus 255  
minus 0595 163:17:18 3842. Pitch trend, minus .88. Yaw,  
minus 1.08, over.

SC Roger, 099 Charlie Charlie, plus 231  
plus 1430 156:15:41 3343.

PAO We've been advised that the Change of  
Shift Press Conference is due to start momentarily, there-  
fore, we'll pull the line down. We've still got about a  
minute and a half of acquisition time at the Texas station.  
We'll record that and play it back to you at the conclusion  
of the Change of Shift Press Conference. At 149 hours,  
15 minutes, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 149:58, CST 1558 427/1

PAO This is Mission Control Houston at 149 hours, 58 minutes Ground Elapsed Time. When we took the line down just prior to the Change of Shift Press Conference, there was still some minute or so of conversation prior to the loss of acquisition at the Texas station, and then we have some 4 or 5 minutes of conversation over the Tananarive station. We'll play that air-to-ground back to you at this time.

SC Roger, 099 Charlie Charlie, minus 253, minus 1610 158:06:17 3343. Are you still with me?

CAPCOM Affirmative. You can go a little faster.

SC 101 Alpha Charlie, plus 029 minus 0300 158:40:36 3842. 102 Alpha Charlie, plus 166 minus 0320 160:15:37 3842. 1032 Alpha, plus 281 minus 0300 161:50:48 3842. 1041 Baker, plus 255 minus 0595 163:17:18 384.2. Pitch, minus .88. Yaw, minus 1.88.

CAPCOM Houston. Your readback is correct.

Tananarive at 50.

SC Rog, Tananarive 50.

CAPCOM Apollo 9, Houston through Tananarive.

SC Go ahead, Houston, Apollo 9. Houston,

Apollo 9.

CAPCOM Rog, we got a lot of static here. Do you read me okay?

SC Affirm. We're reading you loud and clear.

CAPCOM Roger, I have some targets of opportunity, about 3, and then one flight plan update.

SC Okay, go ahead.

CAPCOM Roger. 150:51:27, Galapagos Island, geologic, 8 frames, 6-second, on track. At 150:57:07, Peru coastline, 8 frames, 8-second, on track.

SC Okay.

CAPCOM 9, Houston. Let me correct that one. That's 4 frames instead of 8 frames.

SC That was 4 frames.

CAPCOM Okay, at time 151:47:17, Formosa Strait, oceanography, 5 frames, 8-second, on track.

SC Okay.

SC Okay, we got all those; do you want us to read them back to you?

CAPCOM Let me give you a correction there, Dave, again. On the second one for the Peru coastline, the time is 150:55:07.

SC Okay, 150:55:07. We got all those, thank you.

CAPCOM Okay, then I got a waste water dump for

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 149:58, CST 1558 427/2

you.

SC

Go ahead.

CAPCOM

ing to the DSE last night, you may want sunrise time, 151:38.  
Sunset, 152:30, over.

SC

Okay, we have that.

CAPCOM

Okay.

SC

(garbled)

CAPCOM

It sounded like it was great.

PAO

The spacecraft now is - will next be  
acquired by the tracking station at Guam at 17 after the  
hour. At 150 hours, 5 minutes Ground Elapsed Time, this is  
Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 15017, CST 1617, 428/1

PAO This is Apollo Control at 150 hours, 17 minutes ground elapsed time. We expect acquisition by the tracking station at Guam momentarily, and we will standby to monitor any conversation.

CAPCOM

Apollo 9, Houston through Guam.

SC

Hallo Houston through Guam, Apollo 9.

CAPCOM

some things here, they may be on the DSE and if it is on the DSE, just say so and we will dig it out then. What were the results of the optics sun filter evaluation?

SC

Okay Ron, I guess we really never got to that. We were really sort of busy most of the day and just fixin to take a look at some of that stuff on our next day pass.

CAPCOM

Oh, okay good. And, for future planning purposes down here, how many magazines of CEX 36870 millimeter film are left?

SC

We have about 250 usable frames.

CAPCOM

opportunity, did you get some of these or most of them on this or the DSE? Okay, if not, can you let us know?

SC

Yes, we get most of these when we went across south of Mexico there.

CAPCOM

Okay.

SC

So far today, we've taken a sizeable number of 70 millimeter frames of the ground. Some of the United States, some of Mexico, some across Africa, and a bunch down through Cuba, the Islands down through the Caribbean.

CAPCOM

Roger, thank you.

SC

We filled our daily quota of 70 millimeter frames today.

CAPCOM

Say again.

SC

Said we filled our daily quota of 70 millimeter frames today. I figured we had to take about 200 a day, so we are well up on it.

CAPCOM

Very good, thank you. I guess you still owe us a power down consumables onboard readout.

SC

We don't have those available for you yet, we will get them for you in just a minute.

CAPCOM

Okay, no hurry.

SC

(garble) half hour or so, I'll probably have some more data for retro (garble).

CAPCOM

Roger.

PAO

Apollo 9 is apparently moved out of range of the Guam station, on this the 95 revolution. Incidentally, the spacecraft is flying at an apogee of 116.7 nautical miles, and its perigee is 103.3. It is orbiting around earth each 88 minutes and the spacecraft weight is something on the

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 15017, CST 1617, 428/2

PAO                    order of 26 800 pounds. We expect the  
station at Hawaii to acquire in another 9 or so minutes.  
At 150 hours, 22 minutes, this is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 150:31, CST 16:31 429/1

PAO This is Apollo Control at 150 hours, 31 minutes. Hawaii should be acquiring within a few seconds and with the Hawaii acquisition, we'll have approximately 14 minutes of time at which we'll be over sites, Redstone, Guaymas and , of course, Hawaii. We've got signal of acquisition at Hawaii. Let's stand by.

CAPCOM Apollo 9, Houston, to Hawaii, standing by.

SC Okay, Houston, we've got some data here for you.

CAPCOM Very good, ready to go.

SC Okay. Service module, A, B, C, and D. 53585256. Bat C power A and B, 96.9, 37.1, 37.1.

CAPCOM Roger, Copy.

SC Temperatures are all off-scale high, PRD the commander, 3114, the IMP 8015, and CMP is unknown.

CAPCOM Roger.

SC (Garble)

CAPCOM Apollo 9, Houston, go.

SC Roger, We have CMP dosimeter reading.

CAPCOM Hey, I thought it was on the LM.

SC No, he's got a 6115.

CAPCOM Roger, thank you.

SC Houston, Apollo 9, here.

CAPCOM Houston, go.

SC Hey, just as a matter of interest,

all our windows are staying very clean. That lefthand rendezvous window looks like it stopped getting that white film goup all over it and has remained the same and all the rest of them are quite clear.

CAPCOM Very good, thank you.

SC They get an occasional little bit of what looks like a bit of frost or moisture between the panes, but it goes away. They are quite good.

CAPCOM That makes us feel a lot better.

SC Houston, Apollo 9.

CAPCOM Houston, go.

SC Roger. For retro's information, the equipment that we brought back from the LM with us to check with and things like that, are stowed down in one of the compartments on A8, the compartment largest and closest to the lower equipment bay.

CAPCOM Okay, that sounds good.

SC The equipment that was in there didn't weigh very much. There was some underwear and some things like that. We moved that up to the top compartment in A8 and we moved the one heavy piece of equipment, the tool kit, down into A5.

CAPCOM

Roger. Tool kit is in A5 now.

SC

And the di-stripper bracket which was off on the A8 has been moved down to A5.

CAPCOM

Roger.

SC

As a matter of interest, we brought all the LM books back with us except for the malfunctions procedures and the systems book. So, we brought all the checklists back and the cards, plus another 3 or 4 pounds of loose pieces. I think all together, we have something on the order of 10 pounds.

CAPCOM

Okay, sounds good.

SC

Including an ascent engine in A7.

CAPCOM

Okay.

SC

Houston, Apollo 9.

CAPCOM

Houston, go.

SC

One other item there, that lithium hydroxide cannister that we brought that was supposed to be stored in A1, and it is. and I guess we ought to tell you about that, too.

CAPCOM

Roger. I understand that it is in A1 where it belongs, now. Right?

SC

Yes.

CAPCOM

Roger. Nine, Houston, we're about to lose you here. I guess you still owe us a CO2 cannister change.

SC

Okay. We'll give it to you.

CAPCOM

Roger.

CAPCOM

Nine, Houston.

SC

Go ahead.

CAPCOM

What do you want me to put on your steak that I'm going to have for you tonight.

SC

Nothing, just eat it just raw. Well not raw, medium rare. Don't put anything on it, you'll ruin the taste.

CAPCOM

Okay.

SC

Baste it good for us, will you?

CAPCOM

Will do.

SC

Put your knife and fork on it. Listen, you may be having steak, but I have a larger choice of things right here. I have 36 BOC, I have 36 BOC, I have 36 BOC and I even have 36 BOD.

CAPCOM

Hey, that sounds great. A perfect selection.

END OF TAPE

*I have Jay C meal C and Jay C meal D*

APOLLO 9 MISSION COMMENTARY, 9/9/69, GET 15123, CST 1723, 430/1

PAO This is Apollo Control at 151 hours, 23 minutes. We have acquired the spacecraft at the Tananarive tracking station and we will standby for the air-to-ground. CAPCOM that will be talking to the crew now is Al Worden.

CAPCOM Apollo 9, Houston.

SC Go ahead.

CAPCOM Roger, Apollo 9. Just wanted to let you know that you can rest easy tonight, the National Guard is on the duty.

SC Oh, very good, I'm very glad to hear that.

CAPCOM Say Jim, we would like you to check to make sure that you deactivated the DAP.

SC Okay, we haven't got that completed as of yet.

CAPCOM Alright.

PAO Apollo 9 has moved out of range of the Tananarive tracking station. Next station to acquire will be Hawaii at 03 after the hour. At 151 hours, 31 minutes ground elapsed time, this is Mission Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY 3/9/69, GET 152:03, CST 18:03 431/1

PAO This is Apollo Control at 152 hours, 3 minutes into the flight. The Apollo 9 crew is now about 3 minutes, 3 and a half minutes into their rest cycle. They are, however, coming up on Hawaii, and there will possibly be some air-to-ground with them at that time. So we'll stand by to monitor any conversation.

SC Houston, Apollo 9.  
CAPCOM Apollo 9, Houston, go.  
SC Roger, I'd like to inform you we did the fuel cell O2 purge at 1 51 48 and we took away purging fuel cell 2 with fuel and hydrogen and we're just about to stop. We started that purge at 1:52:01:30.

CAPCOM Roger, Apollo 9, Houston, copy.  
SC Houston, this is Apollo 9. How do you show us on Hydrogen quantities remaining for the rest of the flight? How are we following the curve? I show us a little low on the curve but holding steady.

CAPCOM Roge Apollo 9, Houston copies, stand by.  
SC Houston, we just purged fuel cell 2 for 4 and a half minutes with H2.

CAPCOM Roger, Rusty, we copy that.  
CAPCOM Apollo 9, Houston.  
SC Go ahead Houston.  
CAPCOM Roge Jim, got some numbers on the crowds for you. It looks like at CMSM set you'll have a surplus of 193 pounds, 1-9-3 pounds of O2 and 12 pounds of H2. That may not correlate with the curves you have on board exactly because your curves were not corrected for the loaded condition.

SC Okay, can you tell me what those numbers are in percent remaining indicated?  
CAPCOM Apollo 9, Houston, say again.  
SC Roger, can you tell me that number percent remaining indicated on the gage?

CAPCOM Roge, stand by.  
CAPCOM Apollo 9, Houston.  
SC Go ahead Houston, Apollo 9.  
CAPCOM Roger, Jim, we're getting some numbers on the, pertaining to the CRYO's remaining at CMSM sep and in the meantime I guess we'd just sort of like to remind you of the waste water dump and to put inverter 3 on main A before you all go off to sleep.

SC Okay, and I think we'll probably put inverter 3 on main A now and we're just preparing to do the water dump.

CAPCOM All righty.  
SC How's everything going down there Mr. Ward.

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 152:03, CST 18:03, 431/2

CAPCOM Oh, it's going very nicely, Mr. McDivitt.  
SC Very good. I want you to stay awake tonight.  
Keep a look out for us.  
SC Al, did you enjoy your steak tonight?  
CAPCOM What steak? I had eggs for breakfast tonight.  
SC That dirty Ron Evans told me, told us, he  
was going to go out and get a steak for us.  
CAPCOM He went out and got one for himself. He  
didn't take care of me.  
SC He's a dirty guy. Hey that's a great  
shift you got isn't it.  
CAPCOM Yes, it's pretty neat.  
SC Who ever gave you that bum deal?  
CAPCOM Want me to name names?  
SC No.  
SC Listen, I got one like that from him too,  
once.  
CAPCOM Okay boss man, here's your surplus of CRYO's  
O2 you'll have 29 percent, and H2 you'll have 15 percent remaining  
CMFM sep.  
SC Okay, thank you very much.  
CAPCOM Yes sir. Apollo 9, Houston.  
SC Go ahead sweet lips.  
CAPCOM Okay doky, you're about to go out of sight  
here. I'll give you the arrive times if you'd like them in case  
you need to call us.  
SC We already have 5 and 2 that Ron gave us.  
CAPCOM Oh, okay doky.  
SC Thanks anyway.  
CAPCOM Yes sir, just looking out for you. We're  
going to have LOS here pretty soon and I guess we'll be talking  
to you in the morning.  
SC Alright, say hello to my lovely family  
for me will you?  
CAPCOM I'll do that.  
PAO At 152 hours, 16 minutes ground elapsed time  
the spacecraft has moved out of range of the tracking ship  
Redstone. And this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 153:03, CST 1903 432/1

PAO                    This is Apollo Control at 153 hours, 3 minutes, ground elapsed time. We've just concluded a pass over Tananarive and we thought perhaps there might be some conversation between the crew and the ground; however, there was none. The telemetry data that was downlinked, however, indicates that the spacecraft systems are functioning okay. Crew evidently is in the final stages of their evening housekeeping in preparation for their sleep cycle. We will acquire them again at 37 minutes after the hour at the Hawaii tracking site. Meantime, we'll stand by at 153 hours, 4 minutes. This is Mission Control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 15351, CST 1951, 433/1

PAO                    This is Apollo Control at 153 hours, 51 minutes. Spacecraft moved out of the range of the Hawaii tracking station about 4 or 5 minutes ago. During that pass over Hawaii, the Surgeon reported that we had received some biomedical information from the crew, specifically from the Commander. According to the data that was transmitted down to the ground, Astronaut Jim McDivitt was - had mean heart rate of about 80 to 85 and his average respiration was about 20 per minute. Indicating, according to the surgeon, that he was not asleep, but was resting. Meanwhile, the spacecraft cabin pressure is holding steady at 4.9 pounds per square inch, and the temperature is reading a comfortable 70 degrees Farenheit. At 153 hours, 52 minutes, with the spacecraft now over the Pacific Ocean, this is Mission Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 154:51, CST 2051 434/1

PAO                    This is Apollo Control at 154 hours, 51 minutes into the flight. The spacecraft at the present time is flying over China on this, the 98th revolution. Apollo 9 has been out of range of our tracking stations the past hour or so; however, we stationed in ARIA over its last tracking path about twenty minutes or so ago. The data that was transmitted down to the Apollo range instrumentation aircraft indicated that the spacecraft systems still were functioning normally. There was no communication with the crew. They are well into their rest cycle at the present time and we would expect that they are probably sleeping, although we will not have data on them to give us any indication that they are sleeping for another hour or so. So, at 154 hours, 52 minutes, this is Mission Control, Houston.

END OF TAPE

156:01:00  
APOLLO 9 MISSION COMMENTARY 3/9/69, GET 155:00, CST 22:00, 435/1

PAO                    This is Apollo Control at 156 hours, ground elapsed time. The Apollo 9 spacecraft has moved out of range of the Ascension tracking station. While it was over Ascension, the flight surgeon here at MCC monitored some biomedical information that was transmitted to the Control Center, and he concluded from the data that he read, that both the commander and the command module pilot, who evidently each is, each is in his couch, are in fairly sound sleep at the present time. The guidance navigation and control systems engineer reported to the flight director that most of the, or all of the systems that he was monitoring, appear to be normal. The spacecraft is functioning well at this time. On this, the 99th revolution, at 156 hours, 1 minute ground elapsed time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 15655, CST 2255, 436/1

PAO                    This is Apollo Control at 156 hours, 55 minutes ground elapse time. The Apollo 9 spacecraft, at the present time, has been acquired by the tracking ship Mercury. And, the data that has been transmitted back to the Mission Control Center here, indicates again that all systems are working well. The Flight Surgeon, after reading his biomedical information, has advised that the Commander and the Command Module Pilot seem to be sleeping, as the spacecraft passes out of range of the tracking ship, Mercury. At 156 hours, 56 minutes ground elapse time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/9/69, GET 157:50, CST 2350, 437/1

PAO This is Apollo Control, 157 hours, 50 minutes GET. Apollo 9 presently is over West Pakistan, about 1/3 of the way through the 100th revolution. The crew rest period has another 4 hours 9 minutes to run. The next station to acquire Apollo 9 will be the tracking station Guam in the West Pacific at 5 minutes past the hour. All is going well in spacecraft systems and crew status. The orange team of flight controllers have settled down for the night here in Mission Control. At 157 hours, 51 minutes GET, This is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 158:50, CST 0050, 438/1

PAO                      This is Apollo Control, 158 hours, 50 minutes GET. Apollo 9 has just begun the 101st revolution, is now over the northern portion of Argentina. The crew is still asleep, they have a little over 3 hours, 9 minutes remaining in their sleep period. The next station to acquire the spacecraft will be the Canary Island station, first pass of the morning, at 4 minutes past the hour. At 158 hours, 51 minutes GET, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 159:50, CST 0150, 439/1

PAO                    This is Apollo Control, 159 hours, 50 minutes GET. Apollo 9 is presently just west of the island of New Caledonia in the southwest Pacific, midway through the 101st revolution. We've just had Huntsville two-way lock comment very weak signal, because its toward the very ragged edge of Huntsville acquisition. As the various stations interrogate the telemetry of the spacecraft, and determined the status of the spacecraft systems, all seems to be quite normal this time of night. The crew is still asleep. All systems are functioning nominally. Some 2 hours and 9 minutes remaining in the crew sleep period. There is 79 hours even to retro-fire or the SPS number 8 deorbit burn. The next station after the Huntsville tracking ship will be tracking ship Mercury, in approximately 5 minutes. At 159 hours, 51 minutes GET, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 160:50, CST 0250, 440/1

PAO                      This is Apollo Control. 160 hours 50 minutes ground elapsed time. Apollo 9 presently is over the eastern end of the Mediterranean Sea and has just begun the 102nd revolution, is in an orbit measuring 102.5 nautical miles at perigee. 115.1 nautical miles at apogee, spacecraft weight is 26 thousand 816 pounds. Next station to acquire Apollo 9 will be Honeysuckle at 20 minutes past the hour. The crew has approximately 1 hour and 9 minutes remaining in the rest period. All systems are functioning normally and at 160 hours 51 minutes ground elapsed time this is Apollo Control.

END OF TAPE

3:50

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 161:50, CST 5:50a-441/1

PAO --1 hour 57 minutes ground elapsed time. Apollo 9 is just beginning the 103rd revolution and within seconds will be acquired by the Antigua tracking station of the Eastern Test Range overlapping tracking ship Vanguard Canary Islands tracking station and Madrid for a total 20 minutes. The wake-up time is some 2 minutes away, remains to be seen whether the spacecraft communicator Stu Roosa will actually give them a call at the early part of this pass. Upon waking the crew will first be given the flight plan and consumables update and also routine block data for contingency landing areas for the day. At 6:58 Central Standard Time this morning in the Houston area, there is a slight possibility that one could view the spacecraft very low in the South, actually the southeast by south. A maximum elevation of 6.3 degrees which with haze and smog will be rather hard to see. This is during revolution 104. It will rise at 6:58 am at an azimuth of 160 degrees which is somewhat east of due south. Among the major activities of today's flight plan will be service propulsion system burn number 7, which is scheduled to take place now at 169 hours 38 minutes 59.3 seconds. This is 11:38 am Central Standard, during revolution 107 over the Texas station. The burn will impart a velocity change of 653.3 feet-per-second, will raise apogee from 114 nautical miles to 250.7 nautical miles, lower perigee from 102 nautical miles to 98.1 nautical miles. Standing by for the first contact of the morning with the crew of Apollo 9. At 166 hours 30 minutes, there is scheduled in the flight plan a GO-NO GO from Mission Control Center here for landing area 122-1. Several sessions of the S065 photography experiment are scheduled during the day and likely some targets of opportunity will be assigned for photography; terrain, geology, geographic study type photography. These have not been determined yet but will be passed onto spacecraft communicator by the flight activities officer as the day wears on. Apparently the crew will be permitted another 40 winks of sleep. Spacecraft communicator Stu Roosa has conferring with the flight director at the present time and is making no move toward coming up on the air-ground circuit to talk to the crew. We'll come back on the air when and if the wake-up call is made. At 162 hours 2 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

113 x 25" (SM)

NEW BURN TIMES & FPS  
EXTRA STEPS -

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 162:50, CST 04:50a 442/1

PAO This is Apollo Control 162 hours 50 minutes ground elapsed time. Apollo 9 is now over Central Australia in acquisition by the Carnarvon, Australia tracking station. Although the crew was to have been waked up, according to the flight plan, during the last stateside pass, it has been decided to let them sleep on until 165 ground elapsed time which is about 2 hours 10 minutes from now unless they wake up on their own prior to that time. It is felt that the days activities can be carried out without the necessity of waking them this early. The revised flight plan calls for GO-NO GO for 122-1 at 166 hours 30 minutes over Texas. IMU orientation during the 106th revolution over Carnarvon. Their maneuver update for SPS-7 which will take place over the States right at the end of the 106th rev with service propulsion burn number 7 taking place over Texas near the end of rev 108, as you were 107 at 169 hours 38 minutes 59 seconds. This will be a 653 foot-per-second posigrade burn with a slight out of plane component to raise apogee to 251 nautical miles and lower perigee to 98 nautical miles. Also in the flight plan is S065 multispectral photography experiment over Mexico during the 110th - 109th revolution, over Brazil during the 110th revolution at 173 hours, over the Southwestern United States at the end of the 108th rev at about 171 hours 10 minutes, and power down of the spacecraft and go into drifting flight at 174 hours 20 minutes at the end of the 110th revolution. The rest period tonight will begin at 175 hours. As the crew wakes up and air-to-ground communications pick up, we will come back up with these conversations live. At 162 hours 53 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

25 Sec.

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 163:50, CST 0550, 443/1

PAO                      This is Apollo Control. 163 hours 50 minutes ground elapsed time. Apollo 9 is over North Central Africa. Within a few seconds of - going out of range of the tracking station at Madrid, still no contact has been made with the crew. They're getting an extra 40 winks of sleep. Prior to the rather leisurely work day it is estimated by the flight activities officer that if they sleep as late as 165 hours ground elapsed time, another hour and 10 minutes, all of today's activities can be carried out without any crowding. Orange team flight Dynamics officer Maurice Kennedy, recently reported that the present period of revolutions, that is from crossing a certain meridian of longitude to crossing it again is 93 minutes 12 seconds. At 163 hours 51 minutes ground elapsed time this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 164:17, CST 0617, 444/1

PAO This is Apollo Control, 164 hours, 16 minutes GET. Apollo 9 has just come in the range of the tracking station at Carnarvon, Australia. The crew has still not been contacted, nor has the crew of Apollo 9 contacted the ground, however the metrical telemetry shows that they have been stirring about some what in the spacecraft. Meanwhile the weather bureau space flight meteorology group here in Mission Control, headed up by Allen Sandy Sanderson, has issued a forecast for today's weather in the primary landing zone, as well as all the contingency landing zones. In the primary landing zone in the West Atlantic, centered about 800 miles east of Jacksonville, skies will be mostly cloudy and winds northwesterly at 18 to 25 knots. Seas about 5 to 7 feet are forecast with temperatures near 65 $\frac{1}{2}$ . We're standing by for a call to the spacecraft.

SC Hello Houston, Apollo 9.

CAPCOM Oh, good morning. The alarm clock has just gone off.

SC I can tell. Good old alarm clock.

CAPCOM Tick-Tock $\frac{1}{2}$

SC How's everything down there in Houston today?

CAPCOM Oh, real fine. Looks like you are all sleeping well.

SC Yes, we sure are.

CAPCOM Guess I'd better use past tense on that now.

CAPCOM Okay, and your over Carnarvon, just coming into the sunset here. Guess just a little better timing we'd gotten you up at sunrise, but we let you sleep a little bit extra here.

SC We'll take it.

CAPCOM Okay.

SC No, we don't have any complaints.

SC Houston, 9.

CAPCOM Go ahead 9.

SC Here, we've got one little item for you. Last night we were shifting cabin fans, it was a little warm in here, and we had cabin fan 2 on, we turned it off, turned 1 on, and it did not come on, it was hot to the touch, so we turned it off and pulled the circuit breakers.

CAPCOM Okay, copy understand. That's cabin fan number 1.

SC That's affirmative, there are 2 still working okay.

CAPCOM Okay.

SC Then we noticed the suit cabin temps were running a little higher yesterday than they had been previously, and wonder what you all thought about it on the ground.

CAPCOM Okay, copy. Stand by.

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 164:17, CST 0617, 444/2

CAPCOM Go ahead ECOM.

CAPCOM ECOM, I'm flight. Go ahead.

SC Hot break.

CAPCOM Apollo 9, Houston. About 1 minute LOS Carnarvon. We'll have you over Honeysuckle in about a minute or a minute and a half. Bring up your S-band volume. We can turn off the fan in H2 tank 1 now, and turn off inverter 3.

SC Okay, H2 tank 1 fan coming off now and inverter 3 coming on.

CAPCOM Okay.

PAO This is Apollo Control to continue with the weather forecast while we wait to come up on Honeysuckle station. In the Mid-Pacific landing zone, centered about 600 miles northwest of Honolulu, mostly cloudy skies and widely scattered showers are expected, with southerly winds 15 to 20 knots. Seas will be 4 to 6 feet and temperatures 60 to 65 degrees. In the West Pacific landing zone, centered about 400 miles southeast of Tokyo, mostly cloudy skies will prevail with northeast winds at 18 knots. Seas will be 4 to 5 feet and temperatures 55 to 60 degrees. In the East Atlantic landing zone, centered about 500 miles southwest of the Canary Islands, scattered clouds with light and variable winds are expected. Seas will be 1 to 3 feet and temperatures near 72 degrees. Cloudiness may effect the scheduling of the multispectro photographic experiment over Texas and Mexico later today. People in the Houston-Clear Lake area may have a chance of spotting the Apollo 9 at 6:58 this morning when it will rise at an angle of southeast by - as you were southwest by south, but the maximum elevation angle will be only 6.3 degrees and depending on the amount of horizon haze and cloudiness, may or may not be seen, also ground - here goes some more air to ground.

CAPCOM - about another 6 minutes.

SC Rog, Houston, your very, very weak.

CAPCOM Rog, I think it was just the start of the lock up, how now Dave?

SC That's very nice.

CAPCOM Okay.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 164:27, CST 0627, 445/1

PAO                    This is Apollo Control with still about  
3 minutes remaining in the pass over the Honeysuckle station.  
Will continue to monitor the air ground line to read any further  
conversation between Apollo 9 and spacecraft communicator  
Stu Roosa here in Mission Control Center.

CAP COM                and Apollo 9 Houston. About 1 minute  
LOS Honeysuckle, will see you at Mercury in about 5 minutes.  
SC                      Ok, Mercury in plot. Roger, Mercury in  
plot.

CAP COM                Rog, got you covered.

PAO                      This is Apollo Control. Apparently that  
concludes the conversation over Honeysuckle. Tracking ship  
Mercury next at 36 minutes past the hour. At 164 hours 31  
minutes ground elapsed time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 164:36, CST 06:36a 446/1

PAO This is Apollo Control, 164 hours 36 minutes ground elapsed time. Within a few seconds, Apollo 9 will be acquired by the tracking ship Mercury in the South Pacific. Apollo 9 is midway through the 104th revolution. The retro-fire countdown clock is now showing 74 hours 14 minutes. Here goes a call.

CAP COM 7 minutes.

SC Wanna get the block data and stuff then?

CAP COM Rog, I'm standing by. I have block data, I have consumables and I have flight plan update. Just let me know when you're ready.

SC Okay, I got the consumables here, why don't we hit that one first?

CAP COM Okay. The hour on this one is 162, starting with 43 12 47 15 48 16 47 16 327 24 36 29 39. End of update.

SC Roger. 162 43 12 47 15 48 16 47 16 327 24 36 29 39 and I wonder if we could have SM RCS DAP redline too please?

CAP COM Rog. Reading Quad A, 28 36 38 38.

SC Okay, 28 36 38 38.

CAP COM That is affirmative.

SC Okay, go ahead with the block data.

CAP COM Okay reading block data. Number 17  
1052 Bravo plus 332 minus 0290, 1645402 2844 1062 Alpha  
plus 288 minus 0300 166 2738 2844 107 Alpha Charlie plus  
211 minus 0340 1680103 2844 1081 Alpha plus 263 minus 0680  
1692608 2844 1094 Charlie plus 334 minus 1590 1721834 3831  
1104 Bravo plus 328 minus 1609 1735615 3831. Okay your  
pitch and yaw trims for rev 105 through 108. Your pitch  
trim minus .88 yaw minus 1.09 and for rev 109 and 110 pitch  
minus .88 yaw minus 1.40. End of update.

SC Roger, coming back. 1052 Bravo plus 332  
minus 0290 1645402 2844 1062 Alpha plus 288 minus 0300 166  
2738 2844 107 Alpha Charlie plus 211 minus 0340 1680103 2844  
1081 Alpha plus 263 minus 0680 1692608 2844 1094 Charlie  
plus 334 minus 1590 1721834 3831 1104 Bravo plus 328 minus  
1609 1735615 3831. And the pitch and yaw trim per revs 105  
through 108; pitch minus .88 yaw minus 1.09. For revs 109  
and 110; pitch minus .88 yaw minus 1.40.

CAP COM Rog. Houston confirms the update. We'll see you at Texas around 58. We'd like to remind you of the O2 purge and CO2 filter change.

SC Okay. O2 purge and CO2 filter change at 58 Texas.

CAP COM That's right.

PAO This is Apollo Control. Apparently we have had loss of signal now at tracking ship Mercury. During that pass the consumables update and routine landing updates

APOLLO 9 MISSION COMMENTARY,3/10/69,GET 164:36,CST 06:36a 446/2

PAO for contingency landing areas were read up to the crew. They were instructed also to conduct a fuel cell oxygen purge and change the carbon dioxide filters in the spacecraft. These items were scheduled in the flight plan prior to the time they actually woke up. At 57 minutes past the hour, the Texas station will acquire for the first of a series of long stateside passes. This pass overlapping several stations, Texas, Mila, Vanguard, Canary will last until 22 minutes past the hour - 22 minutes past the next hour. At 164 hours 46 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 164:56, CST 0656, 447/1

PAO This is Apollo Control. 164 hours, 57 minutes Ground Elapsed Time. Apollo 9 is nearing the end of the 104th revolution. Coming up on the Texas station within about 30 seconds. Here in Mission Control the White Team of flight controllers are taking over from the retiring Orange Team with numerous briefings going on in each console as each flight controller hands over to his successor. We'll standby for any continuing conversation between Spacecraft Communicator Stu Roosa and the crew of Apollo 9, as they update the flight plan for today's activities. We've had acquisition at Texas. We'll standby. It looks like Roosa is punching that to go out.

CAPCOM Apollo 9, this is Houston. Got you through Texas now. Showing you're just coming up on the coast of lower Mexico. I have a flight plan update for you.

SC Okay. Standby one.

CAPCOM Roger.

SC Okay, Houston. We're ready. Go ahead.

CAPCOM Okay. The first change will be at the hours 170 plus 20. We want to add a P52 alignment to NOMINAL and your time for that NOMINAL alignment - T ALIGN - 170 plus 48 plus 00. Your next item will be another P52 - and the hour will be 171 plus 45. I'd like to add another P52 to NOMINAL. Your T ALIGN time - 172 plus 19 plus 00. Okay, and we might be rushing you on this rev, but we've got a target of opportunity we'd like to have photographed over Africa and this is if you can get to it. The time of this is 165 plus 25 plus 33, and we'd like to have the target of the country of Niger and Chad. And the time I gave you will be the first frame. We'd like to have 10 pictures, 6 seconds apart shooting 30 degrees south of the Nadir.

CAPCOM Okay, are you with me? I've got three more items.

SC Okay, we're with you. Go ahead.

CAPCOM Okay. The hour 172 plus 28, we're going to do some COMM checks with an ARIA. This will be both S-band and VHF. We'd like to have S-band volumes up. And another COMM check with the ARIA at 174 plus 06.

SC Okay. We got those.

CAPCOM Okay, and the last one is at 174 plus 55 - delete the battery B charge and add waste water dump.

SC Okay. You want me to read it back now?

CAPCOM That's affirmative. That's the end of it.

SC Okay, 17020, a P52 to NOMINAL, T ALIGN time 1704800, 17145 P52 to NOMINAL - 1721900 for T ALIGN, 1652533 targets of opportunity - we got that and I think we will be able to make that okay. Niger and Chad 10 frame, 6 second intervals 30 degrees south of the Nadir. And

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 164:56, CST 0656, 447/2

17228 COMM checks with ARIA - S-band  
and VHF and one COMM check at 17406.

CAPCOM That is affirmative and 174 plus 55,  
delete the battery B charge and waste water dump.

SC Oh yes. We got that one, too.

CAPCOM Okay. That's the flight plan update  
as of now.

SC Okay.

CAPCOM And Apollo 9, Houston. I'm just stand-  
ing by here with a map update. I'd like -

SC Oh, go ahead.

CAPCOM Okay, rev 104 which you are on now, 164  
51 05 longitude 124.5 west and if you want to use your star  
chart right Ascension 15 plus 45.

SC Okay, rev 104 - 1645105 longitude 124.5  
west, right Ascension 15 plus 45.

CAPCOM That is affirmative.

SC Thank you.

CAPCOM Roger.

CAPCOM And Apollo 9, Houston. Any time at your  
convenience we'll take a crew status report.

SC Okay, this is the Commander. I had about  
9 hours sleep last night. I took an actifed and a vitamin pill  
yesterday.

SC This is the CMP. I had about 9 hours sleep  
last night and had a vitamin pill yesterday.

SC Okay. Rusty had one vitamin pill and  
8 and one-half hours of sleep.

CAPCOM Okay. I copy those. Thank you.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 165:07, CST 707 448/1

CAPCOM Apollo 9, Houston.  
CAPCOM Apollo 9, Houston through Canary.  
SC Rog, Houston, 9 here. 5 by.  
CAPCOM Rog. We would like to recommend the following RCS configurations for today.  
SC Houston, Apollo 9. You are 5 by.  
CAPCOM Rog, Apollo 9. Do you read Houston?  
I'd like to give you the RCS configuration.  
SC Roger, go ahead.  
CAPCOM Okay. We would like - today we would like to use quads baker and charlie and use for roll baker delta, and on SPS 7, we are recommending baker and delta ullage.  
SC 7, use baker delta for the ullage.  
CAPCOM You cut out on the first part of the readback. Use quad baker and charlie, BD roll, and BD ullage.  
SC Roger. Baker and charlie, BD roll, and BD ullage.  
CAPCOM Rog, thank you, Dave.  
SC Roger.  
CAPCOM Apollo 9, Houston. Thirty seconds LOS.  
We will see you at Carnarvon at 51.  
SC Roger, Carnarvon at 51.  
PAO This is Apollo Control at 165 hours 22 minutes. Apollo 9 out of range at the Canary Islands station. There is a very low elevation pass at Tananarive this time. Acquisition for about a minute, but at only 3/10ths of a degree elevation, so we will attempt to converse with the crew at Tananarive. We will wait until we get to Carnarvon at 50 minutes past the hour. During this stateside pass, Apollo 9 crew reported their sleep last night and also on medication taken yesterday. Spacecraft commander Jim McDivitt reported 9 hours sleep, said he had taken one Actifed. That is a decongestant tablet and one vitamin pill. Command module pilot Dave Scott, 9 hours sleep and one vitamin pill. Lunar module pilot Rusty Schweickart, 8-1/2 hours sleep and a vitamin pill. Stu Roosa also advised the crew on the configuration for the reaction control system plots. The packages on the service module that we desire to use for today's activities. We want to use quads B and C for roll maneuvers. We want B and D, and for the 18-second ullage maneuver to settle the propellants for the service propulsion system number 7 burn, we want to use B and D. If there is a call from the spacecraft during the Tananarive pass, we will come up then, otherwise we will until Carnarvon at 165 hours 50 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 165:50 CST 0750 449/1

PAO This is Apollo Control at 165 hours  
50 minutes. Carnarvon has acquired Apollo 9.  
CAPCOM Apollo 9, Houston, through Carnarvon,  
standing by.  
SC Roger Houston, Apollo 9.  
SC How's the weather in Houston today?  
CAPCOM It's a little chilly, but it's been  
sunshiny over the last couple of days, but pretty chilly.  
It may start turning a little cloudy this afternoon I  
understand.  
SC Okay.  
SC Hey, Stu, this is Rusty.  
CAPCOM Yes, go ahead, Rusty.  
SC How about giving the pal a call and saying  
good morning to her for me?  
CAPCOM Okay, I'll do that for all three of you  
SC Mine, that is.  
CAPCOM Hey, there's some bit about this SPS burn  
that we'll be talking to you probably in more detail, but I'd  
like to start on now if you have time to listen for a couple  
of minutes.  
SC Okay, do I have to write anything down?  
CAPCOM No, I don't think so, just sort of let  
me summarize a few things here.  
SC Okay, go ahead.  
CAPCOM Okay, on this burn we are going to try  
to get a better hack at this, at the PUGS system, and then  
wise the data and really think - understand most of the funnies.  
And so to get data on a burn where we are using ullage we've  
increased the length of this burn, the burn time is going  
to be about 25 seconds, and we're going to use the PUGS on it,  
and we're going to use it in the primary mode and don't  
switch, and you may get caution and warning lights after  
about 5 seconds when it comes on, and there's a definite  
procedure here we want to use for the PUGS. It's about  
3 steps, which I would want you to write down later on, but  
I just wanted to pass this on to you so you can be thinking  
about it.  
SC Okay, so you're going to make the burn  
25 seconds longer. Do we have that much fuel left?  
CAPCOM Roger, that's book 3 plan, we can get you  
that specific details, Jim.  
SC Okay, don't forget we have one more after  
this.  
CAPCOM Doggoned, I knew we were forgetting  
something.  
SC I figured you guys left out one step,  
just the retro burn, huh?  
CAPCOM Yes, that's it.

APOLLO 9 MISSION COMMENTARY, 3/10/69 GET 165:50 CST 0750 449/2

SC Okay, why don't you give me a hack at how much fuel I have left?

CAPCOM Okay, you have 68 seconds of burn time left and we are going to take about 25 of those.

SC Comm blocked you out, say again how many seconds left?

CAPCOM You have 68 seconds left and we are going to use 25 of those.

SC Okay.

CAPCOM And your deorbit burn is shaping up to be about 12 seconds.

SC Okay.

CAPCOM And Apollo 9 this is Houston, just for tank management here we would like to turn the heater OFF in O2 Tank 1, leave the heater in Tank 2 in AUTO.

SC Okay, the heater on O2 Tank 1 is going OFF at this time, and we leave in heater in O2 Tank 2 in AUTO.

CAPCOM Okay, very good, thank you.

SC What's our resulting alinement going to be when we finish up the 25 second burn here?

CAPCOM Just a second. I took a hard copy of this thing a minute ago, but I can't read it. Stand by one here.

SC Still going to be about 200 by 95 or something?

CAPCOM Roger, it's going to be 250 by 98.

SC Very good, 250 by 98.

CAPCOM And Apollo 9, we'll have you at Honeysuckle in about a minute if you will bring up your S-band volume at that time.

SC Okay, very good, come up on S-band.

CAPCOM Okay.

PAO This is Apollo Control, the Carnarvon station has lost Apollo 9 signal, however, Honeysuckle will be acquiring in just a few minutes. We will continue to stand by through Honeysuckle.

CAPCOM And Apollo 9, Houston, we should have you through Honeysuckle.

CAPCOM And Apollo 9, Houston, we've got you locked up on Honeysuckle about 5 and a half minutes.

SC Roger.

SC Hey, Stu, were you the fellow who told us about the big cake on the Guadelcanel?

CAPCOM Yes, I mentioned that.

SC Well, ever since you mentioned it Rusty and Dave haven't stopped talking about it.

CAPCOM I sure am sorry about that. Maybe we better send a switch out there and have them make that a 700 pounder.

APOLLO 9 MISSION COMMENTARY, 3/10/69 GET 165:50 CST 0750 449/3

SC What's the weather forecast for the recovery area at recovery time?

CAPCOM Jim, I hate to bring that up. I was going to wait until you asked. We got a look at that this morning and, course it's a long range forecast on how fast this front moves through, but they are calling right at your prime site for fairly heavy winds, yes, around 30 knots or so and waves around 6 to 8 feet. Now, that's the first cut right now. We're going to get - and we'll make sure the weather is good, though. I don't think we'll plunk you down in the middle of a front there.

SC Okay. Stu, you keep putting the drama back into it.

CAPCOM Well, you know, you've had too easy a time here. We're got to keep jacking you up a little.

SC I've noticed that.

CAPCOM But you know Jim, it sure is lucky you weren't landing out in there either yesterday, I don't know how it is this morning, but all day yesterday and last night I guess the waves of - having 10 to 12 foot swells out in that area.

SC Yes, when we were flying across the Atlantic there it looked like it's been pretty rough down there. You could see the white caps from up where we are.

CAPCOM Yes, it's really been kicking up. Some body was telling me the winds around Bermuda this morning were running 60 knots.

SC Oh great.

CAPCOM Yes, in fact we're not even using Bermuda because the winds have blown so hard it's hard to get a lock on you.

SC It blows those radio right out of the way, huh?

CAPCOM Roger.

END OF TAPE

CC Hey, Jim, I still got you for about another minutes I think; instead of having to depend on the forecast, you're the best weather recon we got; we'll just let you pick out your own area.

SC You still there Stu?

CC Yeah, I'm still here.

CC We'll see you over Mercury at 11.

PAO This is Apollo Control at 166 hours, 4 minutes. Apollo 9 is beyond the range of the Honeysuckle station. A lot of conversation during this pass. The crew members asked Stu Roosa to call their wives, say good morning for them; we suspect that the wives may have heard the good morning first hand from their husbands however. They are following this mission with great interest. There was some discussion about the recovery area weather. The Bermuda area is rather stormy at the present time; we told the crew that we were not using the Bermuda tracking station at the present time because of 60 knot winds; Bermuda is having difficulty pointing their big antennas and locking on to the spacecraft because of high winds, and Cap Com Roosa suggested that Apollo 9 was the best weather reconnaissance vehicle aloft at the present time, and perhaps they could pick their own landing area. However, we promised not to plunk them down in the middle of the storm. Several days ago Stu reported to the crew that a commissary man aboard the USS Guadalcanal, the recovery carrier, is baking a 350 pound cake to present to the Apollo 9 crewman on recovery. This morning Jim McDivitt reports that Rusty and Dave haven't stopped talking about the cake since they heard about it. We advised the crew on the configuration for the oxygen tanks, one was showing 51 percent in oxygen tank 2 remaining at 47 percent in oxygen tank 1, and we are going to use two mainly today to balance the tanks better. And there was considerable discussion about the upcoming SPS 7 burn. That burn is scheduled for an elapsed time of 169 hours, 38 minutes, 59 seconds. That's 11:38:59 AM Central Standard Time. Originally this was about an 8 or 9 second burn; it has been elevated to a 25 second burn so that we may do some trouble shooting on the pugs, the propellant utilization gaging system. During one of the earlier SPS burns, the crew experienced a caution and warning light during that burn; we determined that the pugs was not performing satisfactorily and we have not been using that system during subsequent burns. It's not a required system to burn the SPS engine; it is a gaging system. So, we shut down the pugs, but now we would like to do some trouble shooting on that, and we need at least a 20 second burn in order to properly trouble shoot this system. So SPS 7 will be a 25 second burn, Delta V of 653 feet per second. We expect the resulting orbit to be 250 by 98 nautical

miles. Apollo 9 presently in an orbit of 114 by 102 nautical miles. So we advised the crew of this propellant utilization gaging system test, also advised them that it is possible that they might get a caution and warning light about 5 seconds into the burn. We are within a few seconds of acquiring at the tracking ship Mercury; we'll stand by for air to ground conversation over that ship.

CC Apollo 9, Houston; I've got you through the Mercury now, and how much time you think you'll have on this rev for some pictures?

SC Quite a bit. We're just eating; we just finished up eating and we'll be powering up the spacecraft here in a few minutes.

END OF TAPE

SC - quite a bit. We're just eating, we're just finishing up eating and we will be powering up the spacecraft here in a minute.

CAPCOM Okay.

SC Give us the updates, Stu. If we get them fine, if we don't, that's too bad.

CAPCOM Okay. Let's just take them in order then. The first one we would like you to have would be the Corpus Christi area and I can give you a time on that. It's 33 + 33, it's on this rev. We would like to have three shots at 6 second intervals and you should be shooting right on the nadir on this one. I think you go right over it.

SC Okay.

CAPCOM Then we would like to have you shoot Galveston and that will be at 34 + 05. Like to have three shoots, 8 second interval and you will be shooting 30 degrees north of the nadir.

SC Stu, how far north of the nadir was that?

CAPCOM 30 degrees, it says.

SC Oh, okay, thank you.

CAPCOM Okay, I've got a couple more. On this one, the Mississippi delta, that will be at 35 + 17. We would like to have three shots, 8 second interval and you will be shooting 30 degrees south of the nadir. And another one will be Mobile, Alabama at 35 + 43. Like you to take three shots 8 second interval, shooting 20 degrees north. And the last one I have for you now will be on this rev coming across Africa, starting at 52 + 00, like to have you use the 16 mm, 75 mm lens, shoot it a 6 frames a second, using CEX 368. We would just like to have you take a strip all the way across the continent.

SC Okay, we will just take a strip across the continent.

CAPCOM Rog. And one other thing, I would like to have some 16 mm settings with the 16 mm camera, 75 mm lens, same film as above, and this is just any daylight pass where you can see the sun gleaming off the ocean. If you can find this, we would like to have about 5 minutes of film on that at 6 frames a second.

SC Okay.

CAPCOM And that will do it for now. We are about to lose Mercury. We will see you over Redstone about 23.

SC Okay.

PAO This is Apollo Control at 166 hours 16 minutes and the Mercury has loss of signal. The crew completing breakfast at this time and we've asked to do some

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 166:12, CST 812 451/2

photography over the United States during this present 105th revolution. Areas we asked them to photograph if possible, Corpus Christi, Texas; Galveston, Texas; the Mississippi River delta; Mobile, Alabama; this using the 70 mm Hasselblad camera and then we would like some 16 mm movie footage across the continent of Africa and then on any daylight pass, we would like some movie footage of the sun glinting off the ocean, about 5 minutes worth of that. We have 68 seconds worth of capability left in the service propulsion system. We plan to use 25 seconds of that for SPS burn number 7. At the present time, it looks like the deorbit burn, which will be SPS burn number 8, will be a duration of about 12 seconds, so that still gives us a good margin in the SPS system, even after taking into account both of these remaining burns. Hawaii is due to acquire Apollo 9. I beg your pardon, Apollo 9 misses Hawaii on this rev and the next station to acquire will be the tracking ship Redstone at 166 hours 23 minutes. This is Mission Control Houston at 166 hours 18 minutes.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 166:23, CST 0823, 452/1

PAO This is Mission Control at 166 hours, 23 minutes. The Redstone about to acquire Apollo 9 and we will have continuous coverage through the Carnay Island station.

CAPCOM Apollo 9, Houston through the Redstone. We should have you for about the next 30 minutes coming across.

SC Okay.  
CAPCOM Hey, Rusty, you busy? I got a little news.

SC Go ahead, Stu.  
CAPCOM Roger. Elin won first place in the science fair.

SC Fantastic. That kid (garbled) big head. That's two years in a row.

CAPCOM Yes, that's what I understand.  
SC That's good. Tell her she's a good

girl, for me, Stu.

CAPCOM Okay. Sure will.  
CAPCOM And Apollo 9, this is Houston. If you have got time as you come across us you might give us the weather report - how it looks from weather recon there.

SC Okay, I'll be your friendly weather man this morning.

CAPCOM All right. We appreciate that.  
SC Houston, this is Apollo 9 now. We are just about to Corpus and the weather doesn't look very good over in this area. It might be better up around Houston there.

CAPCOM Roger. Copy.  
CAPCOM And Apollo 9, this is Houston. Those pictures at Corpus and Galveston we would like regardless of the weather. They are also interested in the weather in those pictures.

SC Okay. We'll hurry then.  
SC Okay, Houston. This is Apollo 9 now. We're coming across the vicinity of Corpus Christi now. The cloud deck is breaking up. I can look out into Texas which is most of our track here - right along the Gulf Coast. It's all pretty clear out there.

CAPCOM Okay. How does it look down to the south, Jim? Is there a storm down there moving up on us?

SC No, I didn't see - it just looked like a lot of high clouds.

CAPCOM Okay.

END OF TAPE

PAO This is Apollo Control. Elin, to whom Stu Roosa referred a minute ago, a conversation with Rusty Schweickart, is Rusty's 7 year old daughter, who has won the science fair at her school. That's spelled ELIN. We don't have any details on what her project was; we'll try to find out and let you know as soon as we can. We also understand this is the second year in a row that she has been the winner at the science fair at her school.

SC (garble)

SC Houston?

CC Go ahead Apollo 9, Houston.

SC Roger, we're running across the East Coast now; you can look down at Florida; all of Florida is almost clear except just the tip end. There's a lot of snow along the East Coast; they must have had some pretty good snow storms up there recently; comes way down here to the South.

CC Roger; copy.

SC There's a definite break in the clouds right along the coast; then as you get out into the Atlantic there a lot of clouds, but they don't look to be very fierce. Just a lot of low to middle clouds it looks like; I don't see any big thunder storms or anything that looks like a major weather sticking out.

CC Okay, copy. You know the weather map of yesterday shows a pretty good front laying right out in the Atlantic; it's really kicking it up.

CC Also, one way at the North; I don't know how far up you can see, but there's a disturbance way up to the North that causing some swells coming down as far south as Florida there.

SC Okay, well, I can see that. Way up to the north it looks like there is some pretty significant weather.

CC Yeah, that beauty is kicking off swells and they are affecting all the way down in through, underneath your track down in there now.

SC I'll be darned. Let's see if we can see the white caps on the water down here today.

CC Okay. And Jim, just to elaborate a little more on that weather briefing that we got on the recovery this morning - they are going to wait till tomorrow to see, get a better hack, you know, at this stage of the game, that was just the first prediction on that movement of the front.

SC Okay. Looking down here, I can see white caps on the ocean.

CC Okay, you can is that affirmative?

SC Affirmative; yes I can see white caps on the ocean.

CC Okay, and we'll give you a hack here when you're over the prime landing spot.

SC Yeah, it really looks rough and windy down there although there aren't too many clouds, it's about 5 or 6 tenths coverage.

SC Stu, how about getting those things moved out, okay?

CC Okay, in work.

SC Thank you. As a matter of fact Houston, there's really a - when we get out over the Ocean here, you can see the water pattern more; up to the north of us - must be the center of a great big thick lull and there's probably a front hanging down out of it, swirling off to the southwest and then around to the southeast, and you can see the cloud pattern follows that cyclonic pattern all the way down here to where we are; must be, oh, I guess it's a thousand miles across this thing.

CC That's really a vivid description Jim; it just matches the weather map here perfectly. And Apollo 9, the Vanguard is having 18 foot swells, we might have a little trouble with the comm across there, if so, we'll pick you up at Canaries; we'll have Canary aqui around 49.

CC Apollo 9, Houston, do you read?

SC Roger, Houston, go ahead.

CC Roger, you have a GO for 122 dash 1, and you'll be coming over the Vanguard here, we're talking through the Vanguard now, and they are having 18 foot swells down there.

SC Oh boy, you're making me sea sick way up here, Stu.

CC Roger. I'm sure glad we advanced where the Capcomm stays in Houston.

SC Yeah, I'd hate to have you get sick on us.

CC There you go.

SC They didn't give you the period of those swells, did they Stu?

CC No, they sure didn't Rusty, I bet we can find out though.

END OF TAPE

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CAPCOM - and Rusty, Houston here. The period on the swells is about 12 seconds.

SC Okay, that's lovely. A lot of energy in those.

CAPCOM Rog.

CAPCOM And Apollo 9, Houston. I've got about six steps on this PUGS operation for this burn and any time that you get something to write on and want me to cover them I'll be glad to.

SC Stand by just a second, Stu.

CAPCOM Rog, no sweat. We've got all kinds of time.

CAPCOM Apollo 9, 30 seconds LOS at Canaries. See you at Tananarive 08.

SC Okay, Stu, and the weather is real nice across Africa and we're getting a 16 mm strip.

CAPCOM Oh, real fine, Jim. Thank you.

PAO This is Apollo Control at 166 hours 55 minutes. Apollo 9 is out of range of the Canary Islands station. Flying over the continent of Africa taking 16 mm movie footage, clear across the continent on this 106th revolution. Jim McDivitt reporting the weather there good. During this long pass, which started at the tracking ship Redstone, between Hawaii and California, we received from Jim McDivitt a running weather report across the United States. He reported seeing a lot of snow along the east coast. Said he could see the whitecaps down on the storm-tossed Atlantic Ocean and in the Atlantic Ocean area, Jim gave a description of the weather pattern which fits perfectly with the weather map we have just received here, based on Tyros weather satellite photography. Tracking ship Vanguard in the Atlantic is experiencing 18 foot swells, 30 to 35 knot winds, which prompted Capcom Stu Roosa to observe that he was very glad that the Capcom stays in Houston now. Back in the earlier days of manned space flight, before all of the tracking stations and ships were configured to remote the signal to Houston, it was necessary to send a Capcom to each of the stations. Apollo 9 has received a GO for 122 revolutions. And Stu Roosa informed Rusty Schweickart that Rusty's 7 year old daughter, Elan, has again won the science fair at her school. Elan's dad said to tell her he was very proud of her. Tananarive will acquire Apollo 9 at 167 hours 8 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69 GET 167:08 CST 0908 455/1

PAO this is Apollo Control at 167 hours 8 minutes. Apollo 9 coming up on the Tananarive station.  
CAPCOM Apollo 9, Houston, through Tananarive standing by.  
CAPCOM Apollo 9, Houston through Tananarive standing by.  
TAN CAPCOM uplinking properly.  
TAN Apollo 9, can you read now?  
CAPCOM Apollo 9, Houston, how do you read?  
SC We're reading you. why don't you go ahead - over here on this - but why don't you go ahead and try that procedure on the PUGS?  
CAPCOM Okay, Rusty, I'm reading you now. Step 1, SPS gaging to AC 1. Step 2, SPS heater slash gaging Main A, Main B, closed. PUGS mode, primary; now go test 2 until oxidizer reads 10.8 percent. Record the fuel readings before ignition. do not switch PUGS mode during the burn. We would like to emphasize that we do feel you will get at least one caution and warning, maybe more.  
SC Okay, just before I do the test 2 I missed that step.  
CAPCOM Okay, you test 2 until oxidizer reads 10.8 percent.  
SC I know, just before that you want me in PUG mode primary?  
CAPCOM That's affirmative. The third step is PUGS mode primary.  
SC Main A, Main B closed.  
CAPCOM Okay, Apollo 9, if you read. We are not getting you. I believe you were attempting a readback. We'll be here for about 2 and a half minutes if you want to try again in about 30 seconds. If not, we'll see you at Carnarvon at 25 and confirm it then.  
CAPCOM And just to clarify one other point, we do feel you will get this caution and warning when the PUGS comes in about 5 seconds after ignition.  
CAPCOM Apollo 9, Houston, 30 seconds LOS Tananarive, Carnarvon 25.  
PAO This is Apollo Control. Tananarive has loss of signal. We attempted to pass up the steps to this propellant utilization systems test that we plan during the service propulsion system number 7 burn. We'll check over Carnarvon, see whether the crew received all of this information. Carnarvon will acquire at 167 hours 24 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 167:24, CST 0924, 456/1

PAO This is Apollo Control at 167 hours,  
24 minutes and Carnarvon has acquired Apollo 9.  
CAPCOM Apollo 9, this is Houston through Carnar-  
von.

SC Go, Houston. Apollo 9.

CAPCOM Okay, and situation normal - I couldn't  
read you very well over Tananarive. I just wanted to verify  
that Rusty got those steps.

SC Okay. You ready to copy, Stu?

CAPCOM Roger. Go ahead.

SC Okay. Let me read you back what I've got.  
That was SPS gaging to ET 1. The main A and D breakers closed  
on the gage-in heaters and PUG mode to PRIMARY. POO in number -  
test 2 until the oxidizer reads 10.8 and record the fuel  
and expect the caution and warning during the burn. And  
the fuel after scoring with 15.4, one, five, four and  
the oxidizer balance is full scale DECREASE.

CAPCOM Roger. Very good, Rusty. We copy and  
would like to make two other notes. Do not switch the MODE  
during the burn, go ahead and let it stay in PRIMARY, and  
we want to emphasize that we do feel that you will get  
caution - at least a caution and warning about 5 seconds  
after ignition, when this comes in and you may get more  
than one.

SC Roger. The way it behaved the other day, Stu,  
I'm not sure how clear that got across, but the oxidizer unbalanced  
during the burn with extremely unstable - it would jump all  
over and give repeated caution and warning and unless some-  
thing changed I'd expect the same behavior.

CAPCOM Okay, Apollo 9. Make it clear again -  
I have seen all of that on the data and we do feel we do  
know the answers to it. And we do want to do it on this  
test to see if what we are going to get - for two things.  
One on an ullage start which we have not seen on this  
system and the other one is attempt to really nail down  
these biases that we are seeing in the oxidizer storage  
tanks.

SC Houston, this is Apollo 9. We're all  
for the test. We're just commenting on it.

CAPCOM Okay. Real good. And those series that  
you got the other day - those seven - everyone has been nailed  
down except one, on that caution and warning.

SC Roger. What did you nail them to, Stu?

CAPCOM Well, 5 of them - one of them was a  
O2 high flow that came in. I don't mean O2. I mean H2  
tank pressure. It came in right at that time and 5 of them -

SC Houston, this is Apollo 9 here. We're

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 167:24, CST 0924, 456/2

flying over Australia, I guess. And we can see a number of the cities down there all lighted up. Which one are we over right now? It's a great big one with all kinds of lights.

CAPCOM Okay. That should be Purth, Apollo 9.

SC Okay. Hello all you people down there in Purth. Apollo 9 sends you greetings.

CAPCOM And Apollo 9, Houston.

SC Go ahead.

CAPCOM Okay, just got a comment. Rusty asked about those wirings. What it was we had a small residual in that oxidizer storage tank and it appeared to be wetting the capacitant's probe and getting real erratic readings on it.

SC Oh. Okay.

CAPCOM That was after it was empty. That was on your SPS 3 and we think we got at least 5 of the caution warnings came from that.

SC Okay.

CAPCOM And the other problem that we think we have is the capillary action of the fuel and that its given an erroneous reading at the start. That's why we are interested in getting an ullage start on it. To see if that will help solve that problem.

SC Okay.

CAPCOM And Apollo 9. About 30 seconds LOS Carnarvon. We'll have Honeysuckle in about a minute and a half with your S-band volume up, please.

SC Okay.

PAO This is Apollo Control. Carnarvon does have Loss of Signal. Honeysuckle will acquire the spacecraft in about a minute. During this pass you heard Stu Roosa discussing the propellant utilization gaging system test with the crew and explaining the ground's evaluation of prior caution and warning systems during SPS burns. Crew also reported that they could see Australian cities all lighted up and at the time they passed over Purth, Australia - the city of lights, Astronaut Dave Scott radioed a hello to Purth and said: Apollo 9 sends greetings to all the people of Purth. We have acquired at Honeysuckle now. We'll stand by.

CAPCOM Good Morning, Apollo 9. Through Honey-suckle.

SC Good morning. Who is this speaking to us?

CAPCOM Ron's back on in the daytime. Would you believe it?

SC No, I don't believe it.

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 167:24, CST 0924, 456/3

SC Hello, Ron back on in the daytime, how are you?

CAPCOM Good shape. Good shape.

SC How was your steak?

CAPCOM Really delicious.

SC Hey listen, I've had guys play dirty tricks on me before, but nothing like that one last night. It nearly got me.

CAPCOM I figured that would really get to you.

SC It really did.

SC Jim was so disturbed he only got 8 and one-half hours of sleep last night.

SC Hey, Ron. We've got some gyro torquing angles if you didn't get them there on that P52.

CAPCOM Roger. Go.

SC Okay. GET of 167 33 30 minus 01322 plus 01073 minus 00655.

CAPCOM Roger, Nine. Houston. We copy.

SC And that was P52 to a NOMINAL T ALIGN of 170 - 1704800.

CAPCOM Roger.

CAPCOM Hey, Dave. This is Stu again.

SC Go ahead. Say again, please.

CAPCOM Okay, Apollo 9. Just to comment on this alignment now - you will be doing this the first of the burn so we'll want that - another T ALIGN on after the burn before the SO 65 pass.

CAPCOM Roger. We'll do that. We just wanted to get the line lined up here so we'd be in plane and all squared away.

CAPCOM Okay. I understood that. I just wanted to make that other note.

SC That's a good note.

END OF TAPE

PAO                    This is Apollo Control; Honeysuckle has lost the signal but we're coming up very shortly on the Huntsville; we'll continue to stand by.

PAO                    Astronaut Don Evans has taken over the Capcomm duties from Astronaut Stu Roosa. And the dirty trick that Jim McDivitt referred to on the part of Ron last night as Ron left shift, he apparently described in detail the steak he was going to eat. Huntsville has acquired, we'll stand by.

CC                    Apollo 9, Houston through Huntsville.  
CC                    Apollo 9, Houston? Apollo 9, Houston through Huntsville; we have a HF circuit here; you are not coming back.

PAO                    This is Apollo Control, at 167 hours, 45 minutes. Apollo 9 out of range at the Huntsville. Communications very poor during this pass over the Huntsville. We're an hour and 52 minutes away from SPS burn number 7 now. Hawaii will acquire Apollo 9 at 167 hours, 51 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69 GET 167:51, CST 0951 458/1

PAO This is Apollo Control at 167 hours  
51 minutes. Apollo 9 is about to tag up at the Hawaii  
station. We will then have coverage clear across the United  
States and out through the Vanguard in the Atlantic. Hawaii  
has acquired now, we'll monitor.

CAPCOM Apollo 9, Houston, through Hawaii.  
SC Roger, Houston, Apollo 9, go.  
CAPCOM Roger. I have 3 Hasselblad targets of  
opportunity this rev if you think you can get them while you  
are getting ready for the burn.  
SC Okay, fine.  
SC Okay, go ahead.  
CAPCOM Roger, first one, Dallas-Ft. Worth  
geography 1680701 3 frames 6 seconds at south 15 degrees.  
SC Okay.  
CAPCOM The Intertropical Convergence Zone, the  
weather 16825, delay that, 1682841 3 frames 18 seconds at  
south 40 degrees.  
SC Okay.  
CAPCOM The Gulf of Guinea, Oceanography, 1683037  
5 frames, 60 seconds and it's north 50 degrees. Over.  
SC Roger, understand, 1680701 Dallas-Ft. Worth,  
geography 3 frames 6 second intervals south 15 degrees.  
1682841, Intertropical Zone weather 3 frames 18 seconds  
south and I believe you said 40 degrees. Is that correct?  
CAPCOM Affirmative, south 40 degrees.  
SC Okay, then 1683037 Gulf of Guinea,  
Oceanography 5 frames and I didn't get the interval on that.  
CAPCOM Roger, 60 second intervals.  
SC Roger, 60 seconds, and north and I didn't  
get the degrees on that.  
CAPCOM North, 50 degrees.  
SC Okay, north 50 degrees.  
CAPCOM We're about LOS. I'll have your maneuver  
pad in about 2 minutes.  
CAPCOM Apollo 9, Houston.  
SC Go ahead, Houston, Apollo 9.  
CAPCOM Roger, we noticed a CTE reset about  
15 minutes ago and we wondered if you noticed any other glitches  
or anything.  
SC Stand by one.  
SC Houston, there is nothing that we can  
think of that we saw abnormal.  
CAPCOM Roger, and I have your maneuver pad.  
SC Okay, but we've got to get the book.  
CAPCOM Roger.  
PAO CTE stands for central timing equipment.  
CAPCOM Your purpose SPS 7, 169385930 plus  
02270 minus 05900 plus 01650 06533 06366 0250 26772 minus  
090 minus 110 2231830 28400 minus 1510 plus 14563 1137. Over.

APOLLO 9 MISSION COMMENTARY, 3/10/69 GET 167:51, CST 0951 458/2

SC Roger, SPS 7, 169385930 plus 02270 minus  
05900 plus 01650 06533 06366 0250 26772 minus 090 minus  
110 2231830 28400 minus 1510 plus 14563 1137.  
CAPCOM Apollo 9, Houston, you read back correct.  
SC Roger.  
CAPCOM and 9, Houston, while we have you we'd  
like to get some more information on the cabin fan.  
SC Okay, Houston, we haven't run the cabin  
fans very much. As a matter of fact yesterday is the only  
day they were on. they seemed to make the temperature  
go up, so when we were shifting the fans around at the end  
of the day is when we discovered that cabin fan number 1  
didn't run and heated up like it did.  
CAPCOM Roger, understand the cabin fan had been  
on most of the day yesterday, then heated up.  
SC Negative, negative. We were using the  
other cabin fan and we decided to shift fans. When we decided  
to shift fans we put on fan number 1, and when we did that  
we noticed that there wasn't any sound or wind coming out  
of the cabin fan area. So we switched back to number 2,  
I happened to stick my hand in that area to clean out some  
junk and I felt that fan housing on fan number 1, it was very  
hot. So we pulled the circuit breaker on it.  
CAPCOM Okay, now we copy correct. Thank you.  
SC Roger.  
CAPCOM And Apollo 9 Houston, request P00 and  
accept, we'll send you your state vector and target load.  
SC Roger, P00 and accept.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 168:02, CST 1002 459/1

CAPCOM Apollo 9, Houston. I can give you some pointing data here to take a look at your prime recovery area, if you want.

SC Okay, fine, go ahead.

CAPCOM Okay, at 168 plus 13 plus 00 with a roll 015, pitch 235, yaw 025, range will be 224 miles, and you'll be pointing right at your prime recovery area.

SC All righty, thank you.

CAPCOM Apollo 9, Houston. You have state vectors both slots and the target load. Computer is yours.

SC Roger, thank you.

CAPCOM And 9, Houston. We're also checked your vector and it's good.

SC Very good, thank you.

CAPCOM Apollo 9, Houston. About one minute to LOS Vanguard; Tananarive at 42.

SC All righty, Houston. Tananarive at 42.

END OF TAPE

PAO This is Apollo Control, at 168 hours, 22 minutes; Vanguard has LOS. During this pass across the United States, we asked the crew to photograph the Dallas/Ft. Worth area and the intertropical convergence zone. And we've asked for photography of the Gulf of Guinea, off the Coast of Africa, which Apollo 9 is now approaching. The ground noted reset of the CTE or Central Timing Equipment during this pass, that's the onboard timer used to record the ground elapsed time, or the time of the mission since liftoff. We noted a 2 second lag in the timer prior to reset, but this is well within the allowable tolerances of plus or minus 5 seconds. However, that timer has been reset to the proper time, now. And we asked for clarification of a report the Apollo 9 crew had given us yesterday on one of the cabin fans. They reported that cabin fan number 1 had heated up and would not run. In addition, we gave the crew information to allow them to take a look at the weather and the planned primary recovery zone, at a time when they are closest approach on this revolution which was 224 nautical miles. We did not get a report from the crew however on what the weather looked like there. And we've gotten a little more information on the science fair winner. Elin Schweickart. Who is a first grader at the Webster, Texas elementary school. Her project was a pictorial display dealing with fractions. And as the first grade winner there, her display will now go to the Clearlake High School in League City, Texas to be entered in a more advanced portion of the fair. Tananarive will acquire Apollo 9 at 168 hours, 41 minutes. This is Mission Control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 168:41, CST 1041 461/1

PAO This is Apollo Control at 168 hours 41  
minutes. Apollo 9 is within range of Tananarive. We will  
stand by.

CAPCOM

Apollo 9, Houston standing by, Tananarive.

CAPCOM

Apollo 9, Houston standing by, Tananarive.

SC

Roger, Houston, Apollo 9 here. Reading

you loud and clear.

CAPCOM

Roger, same here.

PAO

This is Apollo Control. Tananarive has  
lost the signal. Carnarvon will acquire in about 6 minutes,  
at 168 hours 57 minutes. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control, at 168 hours, 57 minutes. Apollo 9 just about within range at Carnarvon; we'll stand by.

CC Apollo 9, Houston.  
 SC Go ahead, Houston, Apollo 9.  
 CC Roger; in preparation for a possible fuel cell two, H2 purge, request H2 purge line heater on.  
 SC Roger; they're on.  
 CC Roger.  
 CC Apollo 9, Houston.  
 SC Go ahead Houston.  
 CC Roger. Request an H2 purge on fuel cell 2 for 5 minutes, at 169 plus 17 and this to bring the exhaust temperature down.

SC Roger; fuel cell purge for 5 minutes at 16917.

SC Affirmative, and this is so we won't get a master alarm due to the high exhaust during the burn.

PAO This is Apollo Control at 169 hours, 5 minutes; Carnarvon has LOS. Apollo 9 beyond range of that station. We miss Honeysuckle on this the 107th revolution and the next station to acquire will be the tracking ship Huntsville, at 169 hours, 12 minutes. We've asked the crew to perform a fuel cell purge, exhaust temperatures on - the condenser exhaust temperatures on fuel cell 2 are higher than normal; it is not a problem, but we don't want the master caution and warning system on this fuel cell to be activated during the service propulsion system burn number 7, which will be performed over the United States during this revolution. We are about 32 minutes away from that burn, it's scheduled for an elapsed time of 169 hours, 38 minutes, 59 seconds, that's 11:38:59 AM Central Standard Time. Originally this burn of the big service module engine was planned for a duration of about 8 and a half seconds, and on the order of 220 feet per second. Now it's set for 25 seconds duration, and 653 feet per second. The crew got several caution and warning alarms on the propellant utilization gaging system during SPS burn number 3, although the engine was performing well, so at that time, the PUGS was disabled and it has not been used since. Propulsion system experts have been working on this PUGS problem, and they think they might have the answers, so they would like to perform a test of the system. They burn, an SPS burn of at least 20 seconds is required for this test. SPS number 7 will satisfy the original requirements for that burn of optimizing the reaction control system deorbit capability to the primary recovery zone on the revolution after the planned SPS deorbit. As well as satisfy the pugs PUGS test requirement. We expect an orbit following this burn of 250 by 98 nautical miles. The reaction control system deorbit mode is a backup in case the SPS deorbit burn cannot be performed. We like to stay in the proper posture to use the insurance burn, as well as staying in good posture for the

APOLLO 9 COMMENTARY, 3/10/69, GET: 168:57 (1057) 462/2

primary deorbit burn. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69 GET 169:12 CST 1112 463/1

PAO                    This is Apollo Control at 169 hours 12 minutes and the Huntsville has acquisition of Apollo 9.

PAO                    This is Apollo Control. The crew is busy with preparation for this SPS number 7 burn. We're 24 minutes away from that burn now. Data from that pass just completed a few minutes ago at Carnarvon shows Apollo 9's cabin pressure 4.9 pounds per square inch, cabin temperature of 69 degrees F. We'll continue to monitor the Huntsville pass.

PAO                    This is Apollo Control at 169 hours 18 minutes. Apollo 9 is beyond Huntsville's range. Next station to acquirie will be Hawaii at 169 hours 22 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 169:22, CST 1122, 464/1

PAO This is Apollo Control at 169 hours,  
22 minutes and the first call has just gone up.  
SC Roger, Houston. Apollo 9 standing by.  
CAPCOM 4, 3, 2, 1, sixteen minutes.  
SC Okay. We're right with you.  
PAO Ten minutes from SPS number 7.  
CAPCOM Apollo 9, Houston.  
SC Go ahead, Houston. Apollo 9.  
CAPCOM Roger. You're looking great down here.  
You have a GO for SPS number 7.  
SC Roger. Understand a GO for SPS number  
7.  
CAPCOM Affirmative.  
PAO This is Apollo Control. The purge of  
fuel cell number 2 - several minutes ago did bring down the  
temperatures in the condenser exhaust - as expected.  
PAO Five seconds away - five minutes away  
from the SPS number 7.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 169:34, CST 1134 465/1

PAO Two minutes.  
CAPCOM Apollo 9, Houston. You're still looking good; standing by.  
SC Roger, Houston, Apollo 9.  
PAO One minute.  
PAO Ullage.  
PAO Ignition. It looks good.  
PAO Engine nice and stable. Rates are low, the G & C Officer says.  
PAO Engine off.  
SC Houston, Apollo 9. Have you got the residuals off the DSKY?  
CAPCOM Apollo 9, Houston. I have the residuals.  
SC Rog, we're at the attitude and the EMS DELTA V counter is minus 17.5.  
CAPCOM Minus 17.5.  
PAO Initial look shows we're right on as a result of this burn. Right on what we were looking for.  
CAPCOM Apollo 9, Houston. We have your orbit 253.1 by 97.9.  
SC Rog, it's pretty smooth, too.  
CAPCOM Good.  
SC Like an arrow in the sky.  
CAPCOM Beautiful.  
SC You know, after all these days up here in zero g we're not accustomed to these high g's like .8 g's.  
CAPCOM (chuckle).  
SC Houston, where are we right now?  
CAPCOM Roger, you're over Mila now.  
SC Okay.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 169:44, CST 1144, 466/1

CAPCOM Nine, Houston. Everything looks real good down here. Looks like we will have you for about 8 more minutes.

SC Okay. Very good.

PAO This is Apollo Control. The Flight Surgeon lost data during that burn, but he has heartrate readings just prior to and just after the burn. For Jim McDivitt, before 92, after 95. For Dave Scott, before 60, after 70. And for Rusty Schweickart, before 58 and after 58.

PAO And we've passed up preliminary orbital numbers to the crew of 253.1 by 97.9 nautical miles. Tracking, which is continuing through Antigua will further refine these figures.

SC Houston, Apollo 9.

CAPCOM Houston. Go.

SC Listen. I never was able to get the spacecraft over in the right attitude to look at the weather as we went by before. So I'm afraid I can't tell you what the weather is. Besides which I didn't want to tear up by myself for seeing how bad it really was.

CAPCOM Roger. That's all right. It's going to get better anyhow.

SC Okay.

SC Now that we have performed our day's work we are back eating again.

CAPCOM Okay. Good.

CAPCOM Nine. Houston.

SC Go.

CAPCOM Hey, while you are eating your lunch there I might read to you what the astrologers say about your day. This is for both Jim and Dave. You must learn to listen well. Don't get into any disagreements today and group activity is preferrable tonight.

SC Well, we'll try, Ron.

CAPCOM Okay.

SC Hey, is three considered a group?

CAPCOM Standby. This is Rusty's. Be selective in choosing your friends. Get any new scheme moving promptly.

SC I got a new scheme moving promptly this morning.

CAPCOM Okay.

SC I think he may have a little trouble choosing his friends for a couple of days.

CAPCOM That's right.

SC Hey, did they have any more good basketball games last night?

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 169:44, CST 1144, 466/2

CAPCOM Roger.  
SC How far along are they in the playoffs  
for the basketball championships?  
CAPCOM Roger. Copy. Just a second.  
CAPCOM Nine, Houston. Request a readout of  
the PUGS gages and the imbalance meter.  
SC Okay. The oxidizer is 9.2 and the fuel  
is 5.0 and the unbalance is full scale high - that is full  
scale on the increase.  
CAPCOM Roger. Was the fuel 9.0?  
SC Nine point - that's right- fuel was  
5.0, oxidizer 9.2.  
CAPCOM Roger. Fuel 5.0.  
SC That's affirmative.  
SC Hey, Mr. Evans. I have a little bit  
of news for you.  
CAPCOM Roger. Go.  
SC Do you realize that that was the 17th  
propulsive maneuver that we have performed on this flight -  
not counting the S1C, the S2, the three S4B's, and the APS  
burn to depletion.  
CAPCOM That's right, by golly.  
SC Is he throwing us a lot of useless data up  
here?  
CAPCOM (Laughter.)  
CAPCOM Antigua at - Ascension at five-eight.  
SC Okay.  
PAO This is Apollo Control at 169 hours,  
53 minutes. Antigua has LOS. We got some readings on the  
propellant utilization gaging system for the people running  
that test. We passed up the crew's horoscopes. Jim McDivitt  
reported he did not get a chance to take a look at the weather  
in the recovery area on that last revolution - the one prior  
to the one they are in now. Apollo 9 is in the 108th revo-  
lution now. The crew performed a very successful SPS -  
Service Propulsion System - number 7 burn and after doing  
that good job the pilots have started another meal. Ascen-  
sion will acquire at 169 hours, 58 minutes. This is Mission  
Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 169:59, CST 1159 467/1

PAO This is Apollo Control at 169 hours,  
59 minutes, and Ascension has just acquired Apollo 9.  
CAPCOM Apollo 9, Houston through Ascension.  
SC Roger, you're five square, Houston.  
CAPCOM Roger, loud and clear. That Miami and  
Notre Dame game was one of the playoff games. The playoffs  
are on now. We'll get some more scores for you when we get  
some.  
SC Okay, very good. The USC/UCLA game  
wasn't a playoff game, was it?  
CAPCOM Negative, that was a conference game.  
SC Okay. Did the University of Houston get  
into the playoffs?  
CAPCOM I'm not sure. San Jacinto State beat  
Tyler here in the first game of the Texas playoffs for the  
National championship.  
SC Oh.  
CAPCOM Apollo 9, Houston. We'd like to verify  
the H2 purge line heater is off.  
SC That's verified, Houston.  
CAPCOM Roger, thank you.  
SC Houston, 9.  
CAPCOM Houston, go.  
SC Oh, roger. What's our inclination fol-  
lowing that burn, please?  
CAPCOM Roger, stand by one.  
CAPCOM 9, Houston. Your inclination is 33.54  
degrees.  
SC Okay, understand 33.54. Thank you.  
CAPCOM Apollo 9, Houston. One minute to LOS.  
Tananarive at 15.  
SC Roger, Tananarive 15.  
PAO This is Apollo Control at 170 hours,  
7 minutes. Apollo 9 is out of range at Ascension. Will  
acquire Tananarive at 170 hours, 14 minutes - make that  
15 minutes - 170 hours, 15 minutes. And the Apollo 9 crew  
should be in the process now of unstowing and installing the  
battery of four cameras that make up the equipment for the  
SO65 Multispectral Terrain Photography. Several photographic  
runs with that equipment will be made this afternoon. This  
is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69 GET 170:15 CST1215 468/1

PAO                    This is Apollo Control at 170 hours  
15 minutes and Tananarive has acquisition of Apollo 9.

PAO                    This is Apollo Control at 170 hours  
23 minutes. Apollo 9 is out over the Indian Ocean out of  
range of the Tananarive station. Carnarvon will acquire at  
170 hours 30 minutes. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control, at 170 hours, 35 minutes. We have some orbital figures just handed to us by Dave Reed, the Flight Dynamics Officer, based on tracking and the orbit is 250 by 98 nautical miles, which is what we were looking for with this SPS burn number 7. Meantime, Carnarvon has acquired Apollo 9, and Astronaut Ron Evans has been updating the crew on the SO 65 experiment. Here's that conversation.

CC Apollo 9, Houston through Carnarvon.  
 SC Roger, Houston, read you 5 square.  
 CC Roger; I have an SO 65 update.  
 SC Okay, go ahead; we're ready to copy.  
 CC Roger. Inertial angle is 180 00 181 20  
 all zips, EVT is 171 24 00, your T aline was 170 48 00.  
 It's orb rate and the rate is .066 degrees per second, your  
 orb rate fall angles 180 327.5 and 0. The site is the Amazon  
 River mouth 171 29 26 20 and 03.  
 SC Okay - what by one there?  
 CC Roger, I have some more brief data for you.

Just the one on this one here.

SC Okay, go ahead with your orb rate data.  
 CC Roger. Victor through zero - 00002,  
 14 175 00000 11 546 54 621. Over.

SC Okay - understand. 80 00 181 20 all zips,  
 171 24800 1704800 orb rate .066 degrees per second. With  
 angles 180 327.50 Amazon River mouth 171 29 26 20 03 and  
 Victor through zero - 00002 14175 all zips 11 546 and 54621.

CC Apollo 9, Houston; your readback is  
 correct, and I've got some sequence camera stuff for you.

SC Okay, stand by one.  
 SC Go ahead.

CC Okay, it's a high oblique to the north,  
 sweeping across the United States.

CC Sequence camera 75mm lens, 6 frames per  
 second, and you'll be using CEX 368 film, you'll start at  
 GET 171 plus 11 plus 38, 2, 171 plus 19 plus 16. Over.

SC Roger. High oblique to the north sweep-  
 ing across the US, sequence camera 75mm lens, 6 frames per  
 second, CEX 368, beginning 171:11 38, 2, 171 19 16; we may  
 have a little problem there because to point way out to the  
 north there we are gonna get a gimbal lock - we'll - if we  
 point out 45 degrees or so, we'll be able to hack it for  
 you.

CC Roger; that'll be mighty fine.

SC Alrighty.

PAO This is Apollo Control, at 170 hours, 41 minutes. Carnarvon has LOS on Apollo 9. Next station to acquire will be Guam, at 170 hours, 44 minutes. During this pass at Carnarvon, we asked for some SO 65 and multispectral terrain photography at the mouth of the Amazon River.

APOLLO 9 COMMENTARY, 3/10/69, GET: 170:35 (1235)

469/2

Flight Activities Officer Tom Holloway reports that it is clear there today, which is a rarity for that area. And we asked for some sequence camera photography high oblique photographs over the Continental United States. This is Mission Control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 170:44, CST 1244 470/1

PAO This is Apollo Control at 170 hours 44 minutes and Guam has acquired Apollo 9.

CAPCOM Apollo 9, Houston through Guam.

SC Roger, go ahead, Houston.

CAPCOM Rog. I have your libration points if you feel so inclined.

SC Yeah. The ones that I wanted, Ron, by the way, were the ones for the moon, earth-moon libration point.

CAPCOM That's affirmative. That's what we gave you.

SC Okay, good. Go ahead.

CAPCOM Okay. Number 1, and this is all at 172 hours, number 1, right ascension 12 hours 46 minutes, declination -6 degrees 13 minutes, number 2 is at 20 hours 46 minutes, declination -22 degrees 15 minutes.

SC Okay, number 1 at 12 hours 46 minutes, -6 degrees and 13 minutes, number 2, 20 hours 46 minutes, declination - 22 degrees and 15 minutes, and those are good for 172 hours.

CAPCOM Rog. And number 1 turned out to be up around by Spica, number 2 is down in the Cadillac V.

SC Okay, thank you.

CAPCOM 9, Houston. We will have you at Hawaii at 58.

SC Roger.

CAPCOM And be advised that you have burned 10,515 feet per second delta V in the LM and CSM.

SC Roger. (garble)

CAPCOM Say again.

SC Do we get a pin for the 10,000 club?

CAPCOM Hey, that's right. How about that?

PAO This is Apollo Control at 170 hours 52 minutes. Apollo 9 passing on over the Pacific, out of range at Guam, heading toward Hawaii. Acquisition at Hawaii at 170 hours 57 minutes. Capcom Ron Evans just informed the crew that Apollo 9 has expended a total of 10,515 feet per second in the maneuvers of the combined spacecraft, the LM and command and service module. Rusty Schweickart's response was that he thinks they should get some kind of a pin for passing the 10,000 foot per second mark. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 170 hours, 57 minutes and Apollo 9 is within range of the Hawaii station.

CAPCOM Apollo 9, Houston through Hawaii and it looks like we'll have you all the way through Antigua until about two-eight.

SC My goodness, what a long pass.

SC Roger, Houston. Understand. Hey, we have got another little thing you can work on - for those libration points. I wonder if you could give us the one-half unit vectors for those and we could use them on optics.

CAPCOM Roger. One-half unit vectors. We'll see if we can't work them out for you.

SC Okay. Thank you.

PAO This is Apollo Control. Apollo 9 is about midway through the Hawaii pass. The libration points that Rusty Schweickart has inquired about are the points between the earth and moon at which gravity is essentially neutral and stabilized as cosmic dust and other particles become trapped there.

SC Houston, Apollo 9.

CAPCOM Apollo 9, Houston. Go.

SC Roger. We need a little more detail on this string of 75-millimeter - 16-millimeter movies we are going to take here. How far out - how far below the horizon do you want the picture taken or how far out from the track do you want it taken? We need some angle to point the camera.

CAPCOM Okay. Understand.

CAPCOM Apollo 9, Houston.

PAO This is Apollo Control. That was Jim McDivitt asking for additional information on these sequence camera high oblique photographs that we have asked them to take over the United States.

CAPCOM Apollo 9, Houston.

CAPCOM Apollo 9, Houston.

CAPCOM Apollo 9, Houston.

SC Houston, Nine.

CAPCOM Roger. Read you loud and clear, Nine. On this pointing angle you want about 45 to 60 degrees above the Nadir.

SC Forty-five to 60 degrees above the Nadir

CAPCOM Affirmative.

SC Okay. Thank you.

PAO The Nadir is a straight line running from the spacecraft to the ground.

SC Houston, this is Apollo 9.

CAPCOM Apollo 9, Houston. Go.

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 171:20, CST 1320 472/1

CAPCOM Apollo 9, Houston.  
SC Go, Houston, Apollo 9.  
CAPCOM Roger, I wonder if you could tell us if  
the FDAI is in one half, and if ball one is in orb rate at  
this time.  
SC The FDAI is in one half and ball one is  
not in orb rate; it's inertial. And ball two is in orb rate.  
CAPCOM Roger, thank you.  
SC Houston, 9.  
CAPCOM Houston, go.  
SC Roger, we just let the 16mm run all the  
way down. Just by coincidence it's gone right down The Chain  
of Islands and just went right through the middle of the tongue  
of the ocean back there aways.  
CAPCOM Roger, we copy that.  
SC This is the Apollo 9 travelogue.  
CAPCOM Right.  
CAPCOM Apollo 9, Houston. I have those half  
unit vectors there if you have somebody that can copy them.  
SC I guess we're all taking pictures. Can  
you stand by.  
CAPCOM Sure. We'll catch you at Ascension.  
SC Okay.  
PAO This is Apollo Control at 171 hours,  
29 minutes, and Ascension has loss of signal. From Dave  
Scott's comments it sounds as if all three crewmen are busy  
taking pictures. They took sequence pictures over the United  
States and the Caribbean area, and we're taking the S065 pho-  
tography experiment photographs of the mouth of the Amazon  
River, where it's very clear today. In addition Jim McDivitt  
asked if we'd like to get some regular Hasselblad photographs  
of that area, since it is somewhat of a rarity for it to be  
so clear there. We told him that we would like to have some  
if they thought they could handle it and he indicated that  
they could take pictures out of most every window and remarked  
that "You wouldn't believe how much gear we have in here."  
referring to all of the camera equipment. Ascension will be  
the next station to acquire. Acquisition there at 171 hours,  
35 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69 GET 171:36 CST 1336 473/1

PAO This is Apollo Control at 171 hours 36 minutes. Apollo 9 is within range of the Ascension Island station.

CAPCOM Apollo 9, Houston through Ascension.

SC Roger, Houston, go.

CAPCOM Roger. Do you want those unit vector things?

SC Go ahead.

CAPCOM Roger. I sub X over 2 minus .48708, Y minus .09910, Z minus .05414. That was for the number 1 point. The number 2 point I sub x plus .30664, Y minus .34659, Z minus .18932. Over.

SC Roger, minus .48708, minus .09910, minus .05414, plus .30664, minus .34659, minus .18932.

CAPCOM Apollo 9, Houston, your readback correct.

SC (garbled) it looked like the Amazon was cloudy again today, but we took the pictures anyway.

CAPCOM Oh, okay.

SC And it also looked like we were slightly off the coast and not directly over the Amazon, at the mouth of the Amazon.

CAPCOM Okay, understand. It's really where we wanted it to be, so -

SC Okay, well, we got some Hasselblad of the mouth, too.

CAPCOM Okay, good.

CAPCOM Apollo 9, Houston, Tananarive at 51.

SC Roger, Tananarive at 51.

PAO This is Apollo Control at 171 hours 43 minutes. Ascension has loss of signal, Tananarive will acquire Apollo 9 at 171 hours 51 minutes. Dave Scott reporting on this pass that the photography at the mouth of the Amazon River was accomplished, although to the crew the Amazon looked cloudy, rather than clear as it was reported supposedly to have been. This is Mission Control Houston.

END OF TAPE

APOLLO 9 COMMENTARY, 3/10/69, GET: 171:51 (1351)

474/1

PAO This is Apollo Control at 171 hours, 51 minutes. And the tracking station at Tananarive is about to acquire Apollo 9.

CC Apollo 9, Houston; through Tananarive; do you read well enough for 3 targets of opportunity update?

SC This is Apollo 9; we read you 5 square. Go ahead with the updates.

CC Roger. Costa Rica active volcano. Geology weather, 172 plus 57 plus 00 3 frames, 10 seconds apart, on track. Target: West Coast of Columbia, weather 172 plus 59 plus 40, 10 frames, 10 seconds apart, on track. Target: Brazil, Reo Madara, geology, weather, 173 plus 03 plus 54, 6 frames, 10 seconds, on track. Over.

SC Okay. How do you read Houston?

CC Not too well.

SC Okay, you want a readback, or you want to save it?

CC We'll save them.

SC Okay, we'll talk to you next station.

CC Roger; we'll be at Carnarvon at 07.

PAO This is Apollo Control at 172 hours. Tananarive has LOS. Capcomm Ron Evans passed up 3 photographic targets of opportunity. The active volcano in Costa Rica, weather photography over the West Coast of Columbia, and Reo Madara in Brazil, both geology and weather photography there. The Carnarvon station will acquire Apollo 9 at 172 hours, 7 minutes. This is Mission Control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 172:07, CST 1407 475/1

PAO This is Apollo Control 172 hours 7 minutes. And the Carnarvon station has acquired Apollo 9.

CAPCOM Apollo 9, Houston through Carnarvon.

SC Rog, Houston, go ahead.

SC Go ahead, Houston, Apollo 9.

CAPCOM Roger. I have your S065 update, and then you can give me the targets of opportunity, if you want.

SC Roger, ready to copy.

CAPCOM Okay, inertial angles 1800021830, all zips, 17246001721900, it will be orb rate, your orb rate ball angles are the same as before, 180, 327.5, and 0. The site, Toluca, Mexico 17252080804, and that's the only one.

SC Okay, and are Victor 2 Whiskey, or Victor 2 Zulu the same as before?

CAPCOM That is affirmative. We are doublechecking them and all that and will let you know if there's any difference.

SC Okay, then on the readback, 180, 218.30, all zips, 17246001721900, orb rate, got the local vertical ball, the target is Mexico 17252080804.

CAPCOM Roger, your readback is correct.

SC Okay and I will give you those other ones also.

CAPCOM Okay, go.

SC Okay, I didn't get where the first site was. The time was 1725700, 3 frames, 10 second delta T, active volcano and weather. And must be somewhere in Mexico or around there.

CAPCOM Affirmative. It's in Costa Rica. And about 5 days ago, the lava flow was about 3 miles by a half a mile.

SC Okay. See if we can't get that one. Next one was 1725940, target was the west coast of Columbia, 10 frames at 10 second intervals, 1730354, Brazil, geogoly and weather, 6 frames and 10 second delta T. And the last two were on track. How about the volcano?

CAPCOM Affirmative, volcano is on track also.

SC Okay, thank you.

SC Houston, Apollo 9.

CAPCOM Apollo 9, Houston. Go.

SC Roger. Since that active volcano is at our track there, I wonder if the S065 guys would want a picture of an active in their little cameras?

CAPCOM We're checking on it to see.

PAO This is Apollo Control at 172 hours 15 minutes and the Carnarvon station reports loss of signal. The next station to acquire will be Guam at 172 hours 19

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 172:07, CST 1407 475/2

minutes. During this pass at Carnarvon, we gave the crew another S065 photography experiment location, Toluca, that is T-o-l-u-c-a. And Rusty Schweickart inquired whether they should also shoot S065 photographs over that Costa Rican volcano. They have already been asked to do some regular photography, target of opportunity photography there. We are inquiring of the experimenters now whether they would also like photography of this area. We will probably pass that information up to the crew at one of the next several stations. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 172:20, CST 1420, 476/1

PAO This is Apollo Control at 172 hours,  
20 minutes and Guam has acquired Apollo 9.  
CAPCOM Apollo 9, Houston through Guam.  
SC Roger.  
CAPCOM Roger. Apollo 9, Houston. It's pretty  
well weathered in down there, but we want to see what the  
IR film will do on this SO 65, so I have the data for that.  
CAPCOM And I'm talking about the volcano.  
SC You were cut out on that last one, Ron.  
Go ahead now.  
CAPCOM Okay.  
CAPCOM Okay. And the volcano - it looks like  
it's partially - a pretty well cloud cover, but we'd still  
like an SO 65 pass on it. I have that data.  
SC Okay. Standby just one.  
CAPCOM Wilco.  
SC Okay. Go ahead.  
CAPCOM Roger. The sight is the volcano at  
1725700 10 and 03. Over.  
SC Okay, volcano 172 57 00 1003.  
CAPCOM Roger. Copy correct.  
SC Houston, Nine.  
CAPCOM Houston. Go.  
SC Roger. If you've got another map up-  
date, we'd appreciate that.  
CAPCOM Roger.  
CAPCOM Here we go - rev 109 at 172 17 35 right  
Ascension 1545, longitude 123.6 east. Over.  
SC Okay. Rev 109 172 17 35, 1545 at Ascen-  
sion and 123.6 east.  
CAPCOM Nine, Houston. That's correct. And I  
have some block data we can start reading it up here and  
continue it through ARIA.  
SC Standby just one.  
CAPCOM Will do.  
SC Okay. Go ahead.  
CAPCOM Okay. The area 111 4 alpha plus 268  
minus 1600 175 29 41 2834 1123 bravo plus 332 plus 1485  
176 53 09 3160 113 3 alpha plus 298 plus 1440 178 32 27  
3790 114 3 charlie plus 223 plus 1410 180 0448 2834 115  
charlie charlie minus 268 minus 1610 182 01 49 8196 and  
we're just about to have LOS here. We've got a COMM check  
through ARIA. So I'll get it.  
SC Roger.  
CAPCOM ARIA 2, Houston CAPCOM. Go remote -  
VHF up.  
PAO This is Apollo Control at 172 hours,  
28 minutes. Apollo 9 beyond Guam's range. We have an  
ARIA here though that we are trying to raise.

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 172:20, CST 1420, 476/2

ARIA                   ARIA 2. Go ahead.  
CAPCOM               Apollo 9 Houston. I don't read you  
very well. How me?  
ARIA                   (Garbled.)  
CAPCOM               Apollo 9 Houston. I don't read you  
at all but this VHF part of it. How do you read and then  
when I'm not talking how much noise is in the background?  
SC                    Okay, Houston. How do you read Apollo 9  
now?  
CAPCOM               Oh Roger. You're weak, but clear that  
time.  
SC                    Okay, you are coming through about 4 by 3  
and then you do not transmit very little voice. It is some  
but not occasional.  
CAPCOM               Roger. I copy that. And now Apollo 9  
turn your S-band volume up. ARIA 2 REMOTE S-band up.  
CAPCOM               Apollo 9, Houston. How do you read  
S-band?  
SC                    Five and clear. Beautiful comm.  
CAPCOM               Okay. You're about 4 by 4 with me.  
Lets continue with the block data. I have three more  
blocks.  
SC                    Ready to copy.  
CAPCOM               Roger. Area 1 -

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 172:30, CST 1430 477/1

CAPCOM                    Okay, you're about 4 by 4 with me. Let's continue with the block data; I have three more blocks.

SC                         Ready to copy.

CAPCOM                    Roger. Area 116 Alpha Charlie, plus 049 minus 0320 182:21:01 4982. 1172 Charlie, plus 222 minus 0270 183:59:05 3802. 1182 Alpha, plus 298 minus 0300 185:37:27 3239. You're pitch trend: minus .88; yaw: minus 1.41. Over.

SC                         Very good. Are you ready for the read-back?

CAPCOM                    Affirmative. We have 3 - about 3 minutes for readback.

SC                         Okay, here it comes pretty fast. 1114 Alpha, plus 268 minus 1600 175:29:41 2884. 1123 Bravo, minus 332 plus 1485 176:53:09 3160. 1133 Alpha, plus 298 plus 1440 178:32:27 3790. 1143 Charlie, plus 223 plus 1410 180:04:08 2834. 115 Charlie Charlie, minus 268 minus 1610 182:01:49 8196. 116 Alpha Charlie, plus 049 minus 0320 182:21:01 4982. 1172 Charlie, plus 222 minus 0270 183:59:05 3802. 1182 Alpha, plus 298 minus 0300 185:37:27 3239. Pitch: minus .88; yaw: minus 1.41, over.

CAPCOM                    Apollo 9, Houston. Beautiful job, and what kind of a noise do you hear when I'm not transmitting now?

SC                         None at all, just clean as a whistle.

CAPCOM                    Okay, real good. We're getting a little bit of noise down here, but not bad at all. We should hand over right through Hawaii and then we'll pick you up on into Hawaii.

SC                         Roger.

PAO                        The block data just passed up gives the Apollo 9 crew reentry information for each of the revolutions 111 through 118, in case of contingency reentry.

PAO                        Apollo 9 is in the 109th revolution at the present time.

PAO                        And Hawaii has acquired Apollo 9.

PAO                        This is Apollo Control. Hawaii has had loss of signal; however, the Redstone will acquire Apollo 9 momentarily and we'll continue to stand by.

PAO                        And the Redstone has acquired.

END OF TAPE

PAO This is Apollo Control at 172 hours, 46 minutes. Very little conversation with the crew as the Apollo 9 crew is busy getting ready for the series of SO 65 experiment photography plus the targets of opportunity photography that was requested. The SO 65 photography in Mexico should have been completed by now. And very shortly, the Apollo 9 crew will be photographing the active volcano in Costa Rica; weather photography off the West Coast of Columbia, and Rio Madara in Brazil. We are in acquisition through the Guaymas station now; we'll continue to stand by.

SC Hey, Houston?

CC This is Houston; go.

SC Roger. That first site over Mexico was terrific; big volcano down there - and it was in the only clear area in the whole thing there.

CC Say, real beautiful.

SC We even took one extra; after the 55, in fact, two extra, you might want to log that.

CC Okay, we have that.

SC And we got some Hasselblads of it too.

CC Roger; real good.

CC Apollo 9, Houston; in about 30 seconds, we'll pick you up at Tananarive at 28.

SC Okay.

PAO This is Apollo Control at 172 hours, 55 minutes and the Corpus Christi, Texas station has LOS. Rusty Schweickart reports that the area in Mexico, the SO 65 photographic experiment area, a volcano was in the clear and they believe they got some very good photographs. They'll be going down there now, getting the active volcano in Costa Rica and the other photography in South America. The gold team is in the process of relieving the white team here in the mission control room. The next station to acquire will be Tananarive as Apollo 9 is in that part of the day where the orbits go down over South America, out of range at the Atlantic tracking stations. Tananarive will acquire at 173 hours, 28 minutes. This is Mission Control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 173:08 CST 1508 479/1

PAO                    This is Apollo Control at 173 hours 8 minutes ground elapsed time. Good afternoon from the Gold Team under Jerry Griffin, the Flight Director. Spacecraft at the present time is over South America and will be acquired by the tracking station at Tananarive at 27 after the hour. An administrative announcement follows. That is we estimate the change of shift press conference to start in Houston at 3:30, that's 3:30 central standard time. At 173 hours 9 minutes GET, this is Apollo Control.

END OF TAPE

PAO This is Apollo Control at 174 hours, 12 minutes into the flight of Apollo 9. During the press conference we recorded some air-to-ground transmission over the station at Tananarive and likewise over the tracking station at Guam, and then also a small bit of recorded information from an ARIA aircraft that was flying out in an area out west of Hawaii. We're prepared to play that tape with you now so let's roll the tape.

CAPCOM Apollo 9, Houston through Tananarive.

CAPCOM Apollo 9, Houston through Tananarive.

TAN CAPCOM, uplink is properly through Tananarive.

CAPCOM Roger. And 9, I've got some four more target updates here but I can't hear you at all yet.

SC We're reading you reasonably well; how are you reading ourselves?

CAPCOM Rog, I can't make it out. Do you read me good enough to read up the updates?

SC We hear you (garbled) up the updates.

CAPCOM Okay, Apollo 9, Houston. Here we go. Bonin Islands, weather, 174 plus 01 plus 14, 4 frames, 10 seconds, on track. Galapagos Islands, weather, 174 plus 32 plus 38, 4 frames, 8 seconds, on track. Lima, Peru, weather, oceanography, 174:37:03, 18 frames, 12-second interval, on track. The next one is in your rest period and not required unless you can get it. Japan volcanoes, geology, meteorology, 175:36:07, 7 frames, 30-second interval, at north 32 degrees. Over.

SC How do you read?

CAPCOM Roger, got you now.

SC Okay, 174:01:14, weather, 4 frames, 10 seconds, on track. 174:32:38, Galapagos, weather, 4 frames, 8 seconds, on track. 174:37:03, Lima, weather and oceanography, 18 frames, 12 seconds, on track. 175:36:07, Japan, volcanoes, weather, 7 frames, 30 seconds, north 32 degrees.

CAPCOM Apollo 9, Houston. Readback correct.

SC The (garbled) on the (garbled) Hasselblad and we've lost about 50 frames of film on that pack.

CAPCOM Roger, one pack is jammed; 50 frames are lost.

CAPCOM Apollo 9, Houston through Guam.

SC Hello, Houston, Apollo 9.

CAPCOM Rog, we have the state vector to shoot

up to you. If you have go to ACCEPT.

SC Okay, stand by one. Finally got the old sun filter on and it works pretty good. I can count about 15 sun spots.

CAPCOM Oh, okay. We can get this state vector over Hawaii if you're using it. No problem.

SC Okay, why don't we do that.

CAPCOM Okay.

SC Running about the sun.

CAPCOM 9, Houston. I've got some more things I'd like to discuss with you as usual. And we're requesting both O2 cryo heaters to AUTO, that's oxygen cryo heaters to AUTO.

SC Okay, do you want that done right now?

CAPCOM Sometime, yes.

SC Okay, both O2 cryo heaters to AUTO at this time.

CAPCOM Roger, and cryo plan is essentially the same as the last two nights, except that we'll have H2 tank 2 fan on.

SC Okay, you're going to let the oxygen and the hydrogen pressure dribble down to between 190 and 200, and when we go to bed we want H2 tank 2 fan on.

CAPCOM That's affirmative, and the same type of power down. IMU standby, SCS electronics power off, auto RCS off, remote control power off, trans control power off, everything else powered up.

SC Okay, very good. And let's see, what our heaters - you want inverter 3 on main A also?

CAPCOM Affirmative, just before you go to - hit the rack.

SC Okay, fine.

CAPCOM And, if you have to purge fuel - purge to get the H2 down, it may take a long time to get it down just through fuel cell 2, so you can use your discretion and purge all three if you want to.

SC Okay, thank you.

CAPCOM 9, Houston.

SC Go ahead.

CAPCOM Roger, we would like a readout of your battery manifold pressure systems test 4 Alpha, and have you been venting it periodically or not?

SC No, we haven't been venting it periodically.

CAPCOM Oh, roger. Don't vent it; just give us

a readout then.

SC Okay, 1.2 volts.

CAPCOM Roger, copy.

CAPCOM Apollo 9, Houston. When I called you about the FDAI select and orb rate, was the attitude sep switch in GDC or IMU?

SC Oh, I'm not sure. We've reconfigured a few times. Right now the attitude sep switch is in IMU.

CAPCOM Okay, understand it's in IMU now and it more than likely was at that time.

SC Yes, that's probably right, yes.

CAPCOM And 9, Houston. We'll have another ARIA check at 06.

SC Okay.

CAPCOM ARIA 2, Houston CAPCOM. Remote VHF up.

CAPCOM Apollo 9, Houston through ARIA 2 VHF.

SC Houston, Apollo 9. How do you read?

CAPCOM Hey, that's beautiful this time. How me?

SC You're about the same. It sounds like a little bit of ... a little dirty but you're clear though.

CAPCOM Okay, very good. While we have you here, I have a consumables update if you'd like to copy that.

END OF TAPE

CAPCOM A consumable update if you'd like to  
copy that.

SC Okay, stand by one.

SC Okay, go ahead.

CAPCOM Okay, at 173:43:10 4312471344133052232  
2839. And I've got some notes for you here.

SC Okay, you're evidently cutting in and  
out because I ended up with (garbled).

CAPCOM Okay, we're just about ready to switch  
to S-band. We'll try S-band now, so S-band volume up.  
S-band volume up and ARIA 2 remote S-band. Apollo 9, Houston.  
How do you read S-band?

SC I read you clearer on S-band. How do  
you read us?

CAPCOM Roger, about the same. A little weaker  
on S-band.

SC Okay, try it - we just - we're back into  
the noise depletion.

CAPCOM Okay, Apollo 9, I think it's a function  
of how the stuff gets from us to you and not from ARIA to  
you.

CAPCOM Apollo 9, Houston. How do you read now?

SC That's a little better, Houston.

CAPCOM Okay, that's a lot better. What didn't  
you get on the consumables there?

SC You're breaking up pretty bad here.

CAPCOM Okay, understand I'm breaking up pretty  
bad. We'll pick you up Hawaii about 12, in two minutes.

SC Houston, if you read us you're coming  
through very, very garbled. We're unable to read you.

CAPCOM Apollo 9, Houston, understand I am  
garbled.

CAPCOM Apollo 9, Houston through Hawaii.

SC Roger, Houston. We're reading you five  
square now. That last check wasn't too good on the S-band.

CAPCOM Roger, we concur on that also. I was  
reading you most of the time but it was way down in the mud.

SC Yes, we could tell you were talking but  
we were unable to read anything on the S-band that time. I  
think I read a couple of words one time and then it degraded  
again.

CAPCOM Okay, and request PU in accept. If you  
haven't done it, we don't quite have the data yet.

SC Okay, we have PU in accept.

CAPCOM Roger.

SC And I guess you read that I ran out of -

actually, I had a couple of slots left over when we finished that consumables update.

CAPCOM Okay, before I start it again, as soon as we get a good data lock on here, I'd like to have you take the attitude sep switch to GDC to standby.

SC What are you asking us to do?

CAPCOM Standby for attitude sep switch to GDC.

SC Okay.

CAPCOM Okay, we've got a keyhole there so I'll go ahead and read up the consumables plan again. At the 173 hours 431043124713441330522322839.

SC Roger, 173, 431043124713441330522322839.

CAPCOM Roger, that's correct and I've got some notes here.

SC Okay, ready.

CAPCOM Okay, tomorrow we will use quad Bravo and Charlie; Alpha and Delta will be off just as today. SPS DELTA V capability 1143 feet per second. SPS burn time 40 seconds. Service module DAP red lines 25313434. Over.

SC Okay, tomorrow you want us to use B and C; Alpha and Delta off as today. SPS DELTA V capability 1143 feet per second. SPS burn time 40 seconds. Service module DAP red lines 25313434.

CAPCOM Roger, that's correct.

CAPCOM We're about LOS there. Redstone at 17.

CAPCOM Apollo 9, Houston.

CAPCOM Apollo 9, Houston through Redstone.

SC Roger, go ahead.

CAPCOM Roger, we could clean up a few items around here. I guess you still owe us the waste water dump, and you know there's no battery charge tonight. And you still owe us the standard ... readout, power down readout. And dosimeter reading.

CAPCOM And Apollo 9, Houston. I guess that canister change. Just a reminder there.

SC Houston?

CAPCOM Houston, go.

SC Roger, the CDR has a dosimeter reading of 3115.

CAPCOM Roger, copy.

SC LMP is 8016.

CAPCOM Roger, copy 8016.

SC And 6116. Hey, did you get the pad 6116?

CAPCOM 9, Houston. Say again.

SC Rog, the CMP is 6116.

CAPCOM Roger, 6116.

CAPCOM Apollo 9, Houston, request adatives sep switch to GDC and give us a mark.

SC Roger, have sep switch going to GDC on my mark. 3-2-1 mark.

CAPCOM Roger, thank you.

SC What are you guys doing with Ap switch?

CAPCOM Okay, we've got our TM readout on an IMU pitch resolver and it showed a little bit of change and it's strickly a TM thing that goes into our computer here and its a functional whether your switches are.

SC Oh, okay.

CAPCOM Nothing in the spacecraft at all.

SC Alrighty, thank you.

CAPCOM And clarance is in the back and she says on the basis of your rendition of Happy Birthday, the bay area, the bay area chorus would like to extend an invitation to the crew to audition for a trio at a spring concert.

SC Oh boy.

CAPCOM That's what I said too.

SC Wonder what kind of food they serve.

SC Hey Houston, are you through with the computer?

CAPCOM Affirmative, computer is yours.

SC Okay.

CAPCOM And just to verify that you got the word, no battery charging tonight.

SC Real fine. No battery charging tonight.

CAPCOM Roger, thank you.

CAPCOM Houston, we know that you had a couple of master alarms last night during your waste water dump and we're trying to confirm that these were due to a high O2 flow. Can you confirm that?

SC Roger, that's correct.

CAPCOM Roge, thank you.

SC We've got so many master alarms in here it looks like the simulator.

CAPCOM Oh good.

SC Houston, you still with us.

CAPCOM Houston, roge, go.

SC Okay, thermas module A B C D. 53 55 49 53 VAT C and PIRO AB 369 371 371.

CAPCOM Roger copy thank you. Roger just about all that. Have a good night.

SC Okay. We can give you some more stuff here.

CAPCOM Go.

SC Okay, 6 Charley is 5.0. All the rest are all scale high on the injector tests.

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET174:22, CST 16:22, 481/4

CAPCOM Roger and confirm on the Bravo if possible.

SC Amnio Bravo.

SC Houston this is Apollo 9 we're going for  
a while so if you want to give us a call.

CAPCOM Okay, will do, thank you very much.

PAO At 174 hours, 34 minutes ground elapse  
time we've evidently run through all the tape that we picked  
up while the press conference was underway. And the Clair  
that was referred to during the recent conversation between  
the ground and the crew was Mrs. Schweickart who was here  
a little while ago with her children observing the flight  
from the viewing room. The spacecraft presently is approaching  
the West Coast of South America. On this the, near the end of  
the 110th rev at 174 hours 35 minutes this is Mission Control  
Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 175:03, CST 1703 482/1

PAO This is Apollo Control at 175 hours,  
3 minutes, ground elapsed time. We have had acquisition  
at the Tananarive station and we'll stand by to monitor  
any air-to-ground that will transpire.

CAPCOM Apollo 9, Houston.  
PAO That was the voice of Al Worden who is  
the new CAPCOM that has relieved astronaut Ron Evans.  
Al will be talking to the crew again shortly.

CAPCOM Apollo 9, Houston.  
COMTECH Capcom uplinking properly through  
Tananarive.

SC Houston, Apollo 9.  
CAPCOM Hey, there, Apollo 9, Houston is  
reading (Garble. Reverb.)

CAPCOM We noticed when we went out of range  
that your GSE probably wasn't running, so we'd like for  
you to switch the uplink telemetry command switch to  
reset and then back to normal.

SC Al, say that again. You say you want  
the up telemetry command set to reset and then back to  
normal. When do you want that?

CAPCOM Roger, Rpollo 9. That's affirmative,  
and you can do that now.

SC Okay. Going to command reset and back  
to normal.

CAPCOM Roger.  
SC Hello, there, Mr. (Roach?)  
CAPCOM Hello, Mr. (McGillicuddy?)  
SC How are you?  
CAPCOM I'm fine, sir. How are you?  
SC I'm fine, too.  
CAPCOM (Garble)  
SC Negative.

PAO We've got about 5 more minutes re-  
maining in this pass over Tananarive, will continue to  
stand by and monitor until the spacecraft moves out of  
range of the tracking station.

PAO The Apollo 9 crew is now about 15  
minutes into their rest cycle, and we would expect that  
the conversation between the ground and the crew henceforth  
will be held to a minimum. Consequently, we anticipate  
that we will be coming up on ... for hourly status  
reports at 50 minutes after the hour. At 175 hours,  
15 minutes, ground elapsed time, this is Apollo Control.

END OF TAPE

FAO This is Apollo Control at 175 hours, 53 minutes into the flight. At the present time, we have the spacecraft acquisition at the Hawaii tracking site, and the Flight Surgeon, Dr. John Zieglschmid reported that he had received some biomedical information from the Commander and the Lunar Module Pilot. And the data that was transmitted down indicates, according to the surgeon, that those two astronauts are resting, but not sleeping at the present time. After SPS burn number 7, the spacecraft apogee was changed to 250 nautical miles, and its perigee or low point was - is 97.7 nautical miles. It takes about 90 minutes to make one rev around earth. And at the present time the spacecraft weight is 25,078. We have a little conversation about to transpire between the two, and let's monitor.

SC Houston, Apollo 9.

CAPCOM Apollo 9, Houston, GO.

SC Hello Houston, Apollo 9 here. I just wanted to call you and tell you we had a very nice view of Hawaii as we flew across it.

CAPCOM Very good. Why don't you go ahead and remind him to -

SC We tried to take a few pictures for the folks down on the ground.

CAPCOM Roger. Hey, did you guys put inverter 3 on main A as you applied the power down?

SC No, we haven't done that yet.

CAPCOM Okay, we just wanted to remind you of it.

SC Okay, we are going to do it now, so we won't forget it.

CAPCOM Okay Rusty.

SC And, we were just talking about, we have to turn tank 2 (garble) and turn that inverter on yet.

CAPCOM Alright.

SC (garble) what the hydrogen looks like.

CAPCOM Roger, understand. Guess you will purge a little more to?

SC Yes, the pressure is way up today. It still reads about 212, 224, or 224.

CAPCOM Understand that is because we were real good to you and let you sleep an extra 3 hours this morning.

SC Yes, you guys are so good, I can't believe it.

CAPCOM Well, we are thinking only of you.

SC Yes, and we are thinking only of you.

CAPCOM I'm going to start calling you sweet lips.

SC No thanks.

SC You wouldn't call him sweet lips if you could see him. Hey Al, would you do me a favor?

CAPCOM Sure.

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 17553, CST 1753, 483/2

SC Call my kids and tell them that I'm really growing a fancy beard for them.

CAPCOM Okay, I'll do that.

SC Tell them I still can't bring it home for them, because I have to shave it off when we get onboard the ship; but tell them I'm going to have some pictures of it for them.

CAPCOM Okay, I understand. I understand that shaving it off to. You're a real full born Colonel up there. Got to shave that beard off before you get onboard, huh.

SC No, not before I get onboard, after I get onboard. I have enough beard to be proud of, I don't have to shave mine off ahead of time, but it is anything but fancy.

CAPCOM Don't want to mention any names, do you.

SC Yes.

CAPCOM Apollo 9, Houston, guess you are going over the hill, see you guys in the morning.

SC Okedokey, night-night.

CAPCOM Night-night.

SC What time in the morning?

CAPCOM Just a second, let me check. It's getting a little confused. It looks like it will be 184 plus 20.

SC Okay, thank you.

PAO At 176 hours ground elapsed time, the spacecraft has moved out of the range of the tracking ship Redstone. This is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 176:59, CST 1859 484/1

PAO                      This is Apollo Control at 176 hours, 59 minutes. During the pass over Tananarive, while we did not have any air-to-ground with the Apollo 9 crew, systems engineer is down here monitoring the spacecraft. All systems were functioning normally. Spacecraft at the present time is in the 112th revolution and it is heading over India. So, at 176 hours, 59 minutes, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY 3/10/69, GET 177:50, CST 19:50, 485/1

PAO                      This is Apollo Control at 177 hours, 50 minutes ground elapsed time. About 25 minutes ago the Apollo 9 spacecraft was over the Hawaii tracking sight and at that time the flight surgeon received some biomedical information down from the spacecraft. He got biomedical parameters on the Lunar Module Pilot which of course is Rusty Schweickhart, and the down link data indicated that Rusty was in the sleep couch but not yet asleep. His mean heartrate was running around, averaging around 60. The data that was transmitted down on the spacecraft indicated that everything was functioning normally. The temperature in the cabin was 69 degrees farinheit and the cabin pressure was holding steady at 4.9 pounds per square inch. At the present time the spacecraft is approaching the west coast of South America. More specifically coming up over Santiago, Argentina. Next station to acquire will be the Ascention tracking station at 178 hours, 5 minutes. About 13, 14 minutes from now. At 177 hours, 52 minutes this is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 17850, CST 2050, 486/1

PAO                    This is Apollo Control at 178 hours, 50 minutes. The Apollo 9 spacecraft is in the West Pacific off Japan at the present time. About 40 minutes ago, while over the Ascension tracking site, there was some biomedical information transmitted down and the surgeon reported that it was on the Commander, that is Astronaut Jim McDivitt. The information indicated that McDivitt was resting on the couch, but not asleep. His mean heart rate was in the mid 60's. Also at that same pass, there was an indication that all of the spacecraft systems are functioning, even though the spacecraft is powered down. Everything seems to be normal. At 178 hours, 51 minutes, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 17951, CST 2151, 487/1

PAO                      This is Apollo Control at 179 hours, 51 minutes ground elapsed time. The spacecraft has just moved out of range of the Ascension tracking station. While it was acquired at Ascension, the surgeon reported that he received biomedical data on the Commander who he identified as occupying the left seat and the Command Module Pilot who was in the right seat. According to the biomedical information, that was transmitted back down to Mission Control here, the Commander was evidently in a pretty sound sleep at the present time, as is the Command Module Pilot. Astronaut McDivitt's mean heart rate is in the low 60's while Astronaut Scott's heart was in the low 40's. Meanwhile the Flight Director asked or polled the electrical environmental communications engineer on how does it look. EECOM reported back that all systems were looking good. As did the Guidance and Navigation Control Engineer, who said everything was okay. The spacecraft at the present time is heading across Africa, on this the 114 revolution. At 179 hours, 53 minutes, this is Mission Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/10/69, GET 180:47, CST 2247 488/1

PAO                      This is Apollo Control at 180 hours, 47 minutes ground elapsed time. Spacecraft at the present time has been acquired by the tracking ship Mercury, on this 114th revolution and according to the information that was downlinked, all systems are still performing well. There was some bio-medical information on the Commander and the Command Module Pilot and the indications are that both are sleeping. We're in the process of shift change here, with the Orange Team headed by Pete Frank as the Flight Director replacing the Gold Team at 180 hours, 48 minutes, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY 3/10/69, GET 181:55:22, CST 23522, 489/1

PAO                    This is Apollo Control. 181 hours 55 minutes ground elapsed time. Apollo 9 is just crossing the coast of China directly over Hong Kong. Midway through the 115th revolution. The tracking station at Guam will acquire the spacecraft in approximately 4 minutes. The crew and spacecraft are powered down for the rest cycle. They have another 4 hours remaining in their rest period but it will likely run longer than that if yesterday's flight plan was any indication. The count down clock now shows 56 hours, 55 minutes remaining until retrofire or deorbit burn. At 181 hours, 56 minutes ground elapsed time this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 182:50, CST 0050, 490/1

PAO                    This is Apollo Control, 182 hours, 50 minutes  
GET. Apollo 9 has just begun it's 116th revolution, and is just  
south of the city of Baylean, Brazil. Canary Islands tracking  
station will pick up the spacecraft at 57 minutes past the hour.  
Crew and spacecraft are both still resting. There's 3 hours 9  
minutes remaining in the crew rest period, and at 182 hours, 50  
minutes GET, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 183:50, CST 0150, 491/1

PAO This is Apollo Control. 183 hours 50 minutes ground elapsed time. Apollo 9 presently is north of the north island of New Zealand midway through the 116th revolution coming up on tracking ship Mercury. In about 2 minutes some current numbers of the Apollo 9 spacecraft's orbit and gross weight 98 nautical mile perigee 249.2 nautical mile apogee total weight 25 thousand and 78 pounds. The retrofire people are generating numbers for the Thursday morning nominal splash down in landing area 151-1, which shows a retrofire or deorbit burn time of 238 hours 51 minutes 57 seconds. The sequence of events following retrofire and in given in expressed in times after retrofire, 4 hundred thousand feet altitude or sinceable atmosphere at 17 minutes 5 seconds after retrofire. Begin blackout 19 minutes 46 seconds. End blackout 22 hours 56 minutes, 22 minutes 56 seconds. Drogue deploy 27 minutes 13 seconds. Main parachutes deploy 28 minutes even. Splash down 32 minutes 55 seconds. This computes out in ground elapsed time to 239 hours 24 minutes 52 seconds or in central standard time 9:24 am. The targeting point for this entry 151-1 is 67 degrees west longitude 30 degrees, 39 minutes north latitude. The retrofire burn will occur at an altitude of 212 nautical miles which is down hill from apogee. Apollo 9 crew are still asleep at this time with a little over 2 hours remaining in their sleep period. at 183 hours 52 minutes ground elapse time this is Apollo Control.

END OF TAPE

RETRO  
SPLASH  
— 11:55

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 184:50, CST 02:50, 492/1

PAO                      This is Apollo Control, 184 hours 50 minutes GET. Apollo 9 about one-fourth of the way through the 117th revolution is now over the northern portion of the Arabian Peninsula, will be picked up by the Carnarvon, Australia tracking station at 11 minutes past the hour. Earlier in this revolution, during the crossing of the Antigua tracking station, from which biomedical and spacecraft systems data was telemetered to the ground and on into Mission Control Center here in Houston, Flight Surgeon Ken Beers commented to the flight director that quote: "Looks like the crew is still embraced in the arms of Morpheus." Beers said that he can tell by the heart-rate and respiration rates whether the crew was dreaming at the time - or individual crewmen are dreaming at the time. Morpheus, of course, was the God of the dreams in the Greek Pantheon. At 184 hours 51 minutes GET, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 185:12, CST 03:12a 493/1

PAO                    This is Apollo Control, 185 hours 12 minutes ground elapsed time. The alarm clock is about to ring for the crew of Apollo 9, we're coming over Carnarvon, Australia for a brief pass of about 3 minutes. It is anticipated that spacecraft communicator Stu Roosa will call the crew at this time and continue the conversation over Honeysuckle and later over Mercury. We're standing by now for the initial call. Apparently Roosa is conferring with the flight surgeon to see whether the biomedical telemetry indicates whether they're really awake at this time. Apparently the wake up call is being delayed for a few moments. We have lost acquisition at Carnarvon, however, Honeysuckle is coming up in a little less than two minutes. This is the first Carnarvon contact. Among the notations to be passed up to the crew in the initial pass of the morning will be the RCS quads to be used for maneuvering today. Spacecraft communicator Roosa is getting from flight director Pete Frank this last bit of information jotted down so that he can pass it up to the crew. Their routine flight plan update, consumables update, block data for contingency landing areas; all of the routine house-keeping type chores will be taken care of first. The spacecraft will be powered up for the day's activities, the crew will immediately begin digging out their breakfast meals before moving into the days activities of the S065 multi-spectral photography experiment and whatever else is generated here in Mission Control in the way of tasks for the day. Still a few seconds out of Honeysuckle. We've had acquisition, we'll stand by for Roosa's call. Minor huddle going on down around the environmental electrical and communications engineers console as they discuss the spacecraft's systems configuration for the day. Roosa has activated his air-ground transmit button, we're anticipating a call momentarily provided, of course, the crew -- there he goes.

CAP COM                Houston, anybody up there got their S-band up? Apollo 9, this is Houston. How do you read?

PAO                    No response from Apollo 9 over Honeysuckle. Apparently they do not have their S-band receiver volume turned up where they could hear a call. Another attempt will be made over Mercury in about 7 minutes using VHF. At 185 hours 21 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

WAKE UP  
Approximately  
3:30 CST

A/9 MISSION COMMENTARY, 3/11/69, GET 185:20, CST 03:20, 494/1

PAO This is Apollo Control 185 hours 28 minutes GET. We're standing by now for a second attempt to talk to the crew by spacecraft communicator, Stu Roosa. He has actuated his transmitter key. We're in acquisition at tracking ship, Mercury. About a 10-minute pass. The crew apparently did not have their S-band receiver volume turned up during the Honeysuckle pass.

CAPCOM ... Apollo 9.  
CAPCOM Good morning. How are you this bright  
sunshiny morning?  
CAPCOM Apollo 9, Houston.  
SC Houston, Apollo 9.  
CAPCOM Oh½ Good morning. Even though it is  
dark outside, it must be time to get up.  
SC Oh, I guess it must. You're calling.  
CAPCOM Oh yes.  
SC How do you read me?  
CAPCOM I read you loud and clear.  
SC Okay.  
CAPCOM Now, we let you grab one extra hour, but  
we figured if we let you sleep too long here, you would over-  
sleep on retro morning.  
SC Oh, we'll try not to do that.  
CAPCOM Okay. I didn't figure you would.  
CAPCOM We've got you zigging across Mercury,  
here. I'll have you for about the next 7 minutes.  
SC Alrightey. What would you like to start  
on?  
CAPCOM Well, I have block data or the consumables  
update. Which is the easiest?  
SC Well, let me find the book and find out.  
SC Houston, Apollo 9. Why don't we start  
with the consumables? Those are the only (garble)  
CAPCOM Okay. You're coming through a little  
weak, there, Dave. How are you reading me?  
SC Oh your part's clear. How me now?  
CAPCOM Oh, you're real good. Okay, the consum-  
ables first. 185 hours 43 10 42 12 44 13 43 13 285 20 32  
27 39 and your dap redlines service module, 25 31 34 34 and  
the consumables.  
SC Roger. 185 43 10 42 12 44 13 43 13 35  
20 32 27 39 25 31 34 34.  
CAPCOM Rog. Houston confirms the updates and  
would you like to take some block data?  
SC Well I reckon. Stand by one.  
CAPCOM Okay.  
SC Okay, Stu, I've got the appropriate  
squares. Go ahead and fill them.  
CAPCOM Okay, reading block data number 19.

A/9 MISSION COMMENTARY, 3/11/69, GET 185:20, CST 03:20, 494/2

CAPCOM 119 1 Bravo plus 262 minus 0640 187 03  
40 3515 120 1 Bravo plus 318 minus 06 80 188 42 36 31 06  
121 1 Bravo plus 336 minus 0663 190 25 20 3005 122 1 Alpha  
plus 303 minus 0660 19207023445 123 4 Alpha plus 312 minus  
1632 194 43 50 3198 124 4 Bravo plus 336 minus 1630 196  
2535 2993 125 4 Alpha plus 312 minus 1632 1980 706 3221  
126 3 Bravo plus 337 plus 1490 1992 549 2998 pitch and yaw  
trim minus .64 minus .94. We've got about 60 seconds. Read  
them back as fast as you can.

SC Roger. I missed the second batch. You  
broke up.

CAPCOM The second block, you say?

SC That right.

CAPCOM Okay, reading second block. 120 1 Bravo  
plus 318 minus 0680 188 42 36 3106 and we'd better take your  
readback over Antigua at 57 and we'd like to turn off the  
fan and H2 tank 2, and turn off inverter 3.

SC Okay, we'll clean up to suit you. What  
was the longitude on the first area?

CAPCOM Okay, longitude is minus 0640.

SC Okay, see you at 57.

CAPCOM Rog.

PAO And this is Apollo Control. We've had,  
or momentarily will have, loss of signal at the tracking ship  
Mercury. The conversation and flight plan updates and all  
the preliminary exchange of information for the day's acti-  
vities will pick up again at Antigua at 56 minutes 48 seconds  
past the hour when Apollo 9 is acquired by the Antigua track-  
ing station in the Eastern Test Range. People in Miami may  
have an opportunity, this morning, to see the spacecraft at  
6:30 am Eastern Standard Time. The spacecraft will rise from  
the southeast, will have a maximum elevation angle of 19 degrees,  
and will be at that maximum height at 6:35 eastern standard  
time. The spacecraft will set in the east at 6:38 eastern  
standard time. The slant range at maximum elevation will be  
372.7 nautical miles. This will be during the, or actually,  
at the beginning of the 119th revolution. At 185 hours  
40 minutes GET, this is Apollo Control.

END OF TAPE

PAO This is Apollo Control, 185 hours, 56 minutes GET. Apollo 9 is just south of the isthmus of Panama, at the start of the 118th revolution. We're anticipating continuation of the wake up conversation that was begun over tracking ship Mercury toward the end of last revolution. Should have acquisition of the eastern test range tracking station at Antigua within about 6 seconds. Stu Roosa has activated his transmitter button. We'll listen for that first beep.

CAPCOM Apollo 9, Houston, how do you read?

CAPCOM Apollo 9, Houston, how do you read?

SC Roger, mighty fine.

CAPCOM I'm reading you real fine. Apollo 9, we'd like to start a charge on battery Baker.

SC Okay, battery Baker percharge.

CAPCOM Okay, and our RCS configuration today we're recommending using quad's Charlie and Delta, and A C row.

SC Roger, use Charlie, Delta, and A C row.

CAPCOM That's affirmative. Apollo 9, if you wish, you could - I'm ready for a read back from the block data.

SC Okay. Stand by one.

SC Okay, block data. Are you ready?

CAPCOM I'm ready, let her rip.

SC Okay, the first couple here, there were some break ups even though I got some extra, so you might them.  
1191 Bravo plus 262 minus 0640 1870340 3525 1201 Bravo plus  
318 minus 0680 1834236 3106, turn the page, 121 Bravo plus  
336 minus 0663 1902520 3005 1221 Alpha plus 303 minus 0660  
1920702 3445 1234 Alpha plus 312 minus 1632 1944350 3198  
1244 Bravo plus 336 minus 1630 1962535 2993 1254 Alpha plus  
312 minus 1632 1980706 3221 1263 Bravo plus 337 plus 1490  
1992549 2998 with a pitch trend of minus .64 and the yaw trend  
of minus .94.

CAPCOM Okay, Dave. Two corrections under Delta VC in the first block. It's 3515.

SC Okay, 3515 for 1191 Bravo.

CAPCOM Okay, under the second block 1201 Bravo, the time of ignition is 1884236.

SC Okay 1884236.

CAPCOM Roger, and that's the block data confirmed.

SC Alrighty, thank you. We're charging the B and we have inverter 3 off and the H2 band is off.

CAPCOM Okay, very good, and I've got a string of flight plan update here for you at your convenience.

SC Okay, stand by again.

SC Okay, go ahead with the flight plan update.

CAPCOM Okay, let's start at 18610 and delete the H2 perfeedered on, and go along with that at 18630 delete the

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 185:56, CST 0356, 495/2

CAPCOM - H2 perch.  
SC Okay, 18610 and say again the other time.  
CAPCOM Okay, 18630 delete H2 perch.  
SC Okay, 18630.  
CAPCOM Okay, now these are all additions. At 18650, we'd like to do a P51 using the CO as option and then a P52 to REFSMMAT.  
SC Hey, would you believe that we were all set to do that? How about that, you were thinking right with us Stu.  
CAPCOM Well, you know I would like to take credit for that, but I've got to admit we picked up your idea of the DFC.  
SC Oh you fellows are clever.  
CAPCOM Well, I would have liked to have just kept mum, but I'm an honest guy.  
SC Oh, you're such a good guy.  
CAPCOM Okay, and we'd like to have your tourqueuing angles on that.  
CAPCOM Okay, at 1825.  
SC Okay.  
CAPCOM We'll do a P52 to nominal and your T aline is 1903000.  
SC Okay. 18825, P52 to nominal 1903000.  
CAPCOM Okay, and at 18934 we'll have some SO 65 photos.  
SC Oh very well. SO 65 and 18934.  
CAPCOM Rog, and we'll have your update and so forth later on, and then at 19125 we want to do a P52 realine to nominal and you T aline of that is 1920000.  
SC 19125, P52 to realine to nominal at 19200000.  
CAPCOM Okay, and now the next question is that do you know they're wanting to photograph the waste water dump from the ground, and one of the windows we have on there is right around 192, but that's also during a SO 65 photography, and we'd just like to have your comment on this. If you have any doubts about it, we don't want to do the waste water dump.  
SC Stu, I don't think we can do that and still take pictures. It's not going to interfere, we have enough guys to do it, but the deal is can we get enough for a roll of pictures.  
CAPCOM Rog, do you need -

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 186:06, CST 04:06a 496/1

CAP COM And we've got about 3 minutes here ...  
let me finish up these updates when we pick you up at the  
Canaries about oh in about 3 minutes ...

PAO This is Apollo Control. There was some  
deterioration in communications quality over the Vanguard.  
There was an earlier report that the Vanguard's COM CEP an-  
tenna relay antenna was on the fritz. This may account for  
the poor communications over Vanguard. Stu Roosa is waiting  
for acquisition at Canary Islands to pick up on the flight  
plan update. We'll leave the circuit open and stand by for  
restart of the air-to-ground communications. Apollo 9 is in  
mid-Atlantic at the present time just South of the point at  
which the tracking ship Vanguard is hove to. Some 2 minutes  
out of Canaries yet. Less than a minute out of Canaries for  
resuming the conversation. Standing by.

CAP COM Okay Apollo 9, Houston. How do you read  
me?

SC Five by.

CAP COM Okay, we got real good com again now.  
Okay you ready to continue with some update?

SC Oh, very well. We're ready. Go.

CAP COM Okay. At 19200 we will uplink you the  
desired orientation and at 19255 we'd like to have an aline-  
ment to that preferred option.

SC Okay. Understand, 19200 you'll give us  
an uplink with the desired and we'll aline to it at 19255.

CAP COM Okay. And the reason behind all that is  
at 19308 we'd like to do a S-band high gain antenna test.

SC How about that. Okay 19308 we'll try  
out that big antenna.

CAP COM Okay. And at 19335 we'll also have an  
S-band high gain antenna test.

SC Okay, 19335 S-band.

CAP COM Okay, 19427 a P-52 nominal option P-aline.  
195 plus 00 plus 00.

SC Rog, 19427 P-52 nominal, 1950000.

CAP COM Okay and at 195 plus 10, we'll have some  
P-22 landmark tracking and we can kick this around now or  
later, we're getting all the details but basically we're gonna  
disable the 121 alarm so you will not get it. We do have them  
trying to drum us up some body rates that correspond to that  
six tenths CDU rate that Jim asked for the other day which  
we haven't seemed to find yet and also we're having them look  
into what the program will do with it if we do mark even though  
you don't get the alarm but we can hassle with that later.

SC Okay, very good. Thank you. 19510 for  
P-22.

CAP COM Rog. And at 19700 we'll power down the  
spacecraft.

SC Okay power down at 19700.  
CAP COM And at 19710, we like to get a radiation survey through the pass across the Atlantic at that time and I've got a couple of procedures on that meter that got stuck down on the G&N signal conditionin' panel someway I guess - is that the same one you all took into the LM that we show on TV?

SC Roger, it is.  
CAP COM Okay and what we'd like to have at this time would be to place the range switch to 0 to .1 revs per hour and place the snub switch to OFF and obtain the ... rate and time of occurrence between GET of 197 plus 23 and 197 plus 33 from one of the couch positions.

SC Okay, understand set the range to 0 to .1, to snub off to obtain peak dose and time during the period 19723 to 19733.

CAP COM That's affirmative and that's all our updates at this time. We would like to get a report from 'ya on your S065 frames remaining, the 70-mm and 16-mm films remaining and anything about the targets of opportunity you photographed yesterday that you feel you haven't told us.

SC Okay, stand by.  
CAP COM And I'd like to have your S-band volume up at this time, we'll be going over to Madrid in a minute.  
SC Okay. We'll give you the photo stuff in a little bit. We're coming over the top of apogee here and we wanted to see if we could get some pictures.

CAP COM Oh, real good. (slurred too much) I'll stop talking to 'ya and about the only thing else we'd like to get from 'ya would be a crew status report at your convenience so we can do it as 'ya come back around.

SC Okay, very well.  
PAO This is Apollo Control. We're still more than a minute away from loss of signal, as you were, 4 minutes away from loss of signal out of Madrid; however the conversation has been terminated so that the crew can unlimber their cameras and take some photos of the Northern portion of the continent of Africa. The crew rest reports and also the updates on the targets of opportunity for photography that were made yesterday will be passed on during the Carnarvon pass or possibly the next stateside pass. We'll continue to monitor the air-ground circuit for any possible conversation until Madrid LOS some 3 minutes from now.

END OF TAPE

APOLLO 9 MISSION COMMENTARY 3/11/69, GET 186:16, CST 0416, 497/1

PAO                    It appears there will be no further conversation during this pass. At 186 hours 16 minutes ground elapsed time this is Apollo Control.

END OF TAPE

*Sleep Report*

A/9 MISSION COMMENTARY, 3/11/69, GET 186:44, CST 04:44 498/1

PAO This is Apollo Control, 186 hours 44 minutes GET. Apollo 9 is mid-way through the 118th revolution, coming up on Carnarvon. Should have acquisition at this time. Carnarvon tracking overlaps Honeysuckle. Honeysuckle has about 1 minute 30 second dropout between LOS Honeysuckle and acquisition at Mercury. Apollo 9 is near apogee over these stations and consequently the tracking times are somewhat longer than at a lower earth orbit. Spacecraft communicator, Stu Roosa, is busily jotting down notes at his console. His transmitter key is activated, but he's not making any move at this time to start the pass.

SC Rog. You send your voice clear, good morning.

CAPCOM Oh, good morning, Rusty.  
SC It's a beautiful day over Africa. How is it in Houston?

CAPCOM Well, I don't know. It's still dark outside. At least it was when I came in. It's a little chilly. We've been having some cold weather.

SC Boy, I'm glad we chose this time of year to take our vacation.

CAPCOM Yeah, you're missing - you're missing all the cold weather here. It'll be nice and balmy when you get back here. This should end and - the leaves are budding out you know, of course, it springtime, but it's cold.

CAPCOM And, if you want now, we can take a crew status report anytime you'd like to give it to us.

SC Houston, this is the CDR, here. I only got 7 hours sleep and took one actifed.

CAPCOM Rog. I copy that.

SC - yes, and one actifed.

CAPCOM Say your hours of sleep again, Rusty.

SC Yeah, that's 6-1/2.

CAPCOM Okay.

SC By the way, just out of curiosity, can you tell any difference in the quality of the voice between Dave and I or Jim and I?

CAPCOM You're coming through real good. Let's have Jim say something else here.

SC Roger, Houston, 1, 2, 3, 4, 5 or something else.

CAPCOM Okay, that's not quite as clear as Rusty's transmission.

CAPCOM I believe it sounded like Dave wanted to say something and I couldn't hear it at all.

SC Oh, okay, how about mine now?

CAPCOM Yours isn't quite as clear. It's a little mushy, but of the three, Rusty's is the best.

SC Okay, this is Rusty, I'm wearing a bunny

A/9 MISSION COMMENTARY, 3/11/69, GET 186:44, CST 04:44, 498/2

SC hat and the other two are wearing light-weights and we were just kinda curious.

CAPCOM Oh, well, it looks like we got a data point. Hey, Jim, for your info, the weather looks - shaping up real well for Thursday morning. Looks like it's going to be pretty good.

SC Oh, that's fine and dandy.

SC Stu, you do good work.

CAPCOM Well, can't say anything yet. I mean, when I say pretty good, that was compared to what I gave you yesterday. Officially, we're forecasting 2000 feet, scattered, verbal, broken, 10 miles vis, winds 300 degrees at 15 knots, the seas about 45 feet with a few high swells.

SC Well, keep working on it. That's not down to my specifications yet.

CAPCOM Yes sir, that's in work and could we get a CMP sleep report.

SC Rog. I had about 6-1/2 hours and had no pills.

CAPCOM Rog. Copy.

SC Oh, yes, and one other thing we should turn in, too. We each had a vitamin pill yesterday.

CAPCOM Okay. Very good. One vitamin. Staying healthy.

SC And, Houston, we've taken 85 frames of S065 so far.

CAPCOM Very good. Thank you.

CAPCOM And, at your convenience, we'd like to know how much 70 mm and 16 mm films you've got.

SC Roger. On the 70 millimeter, we've got roughly 200 frames left.

CAPCOM Very good.

CAPCOM And, Dave, a question just on curiosity, here, I was wondering if anybody had tried the D-meter looking at the ground targets and so forth - how they showed up in that.

SC No, we haven't tried it yet, but we're going to probably get around to it, here one of these days. That's a good idea.

CAPCOM And, Apollo 9, Houston, another thing while we've got a minute to chit-chat - on curiosity, I noticed the cabin temp running down 66, 69 and so forth, Do you not feel cool at that when you're sleeping, or do you sleep pretty warm?

SC Houston, as a matter of fact that's a little warm around 70, I think. That's our general feeling.

SC Stu, with the cabin fan not running, that's really the temperature of the cabin sensor, only. It's a little hard to tell exactly what the temperature of

A/9 MISSION COMMENTARY, 3/11/69, GET 186:44, CST 04:44, 498/3

SC of the cabin is, but if we turn the cabin fan on, we noticed the other day, that it jumps up a few degrees, so I guess that the cabin fan, I mean the temperature sensor is located in a spot that's a little cooler than in the main cabin.

CAPCOM

Oh, very good. Thank you.

SC

If you wanted a fairly honest reading, we could turn the cabin fan on for a second and let it get up there and turn it back off again.

CAPCOM

No. No, that's no problem. I was just thinking of you sleeping with that temperature. I was just curious whether you thought it was cold or not.

SC

It kinda depends on where the hose outlets are whether you're cold or warm during the night.

CAPCOM

Rog.

CAPCOM

And, if you would bring up your S-band volume, please.

CAPCOM

Okay, Apollo 9, Houston, I've got you through Honeysuckle. Did I get your S-band volume up?

SC

Sure did.

CAPCOM

Oh, very good.

CAPCOM

And, Apollo 9, Houston, we're recommending that Charlie roll be enabled and Delta roll disabled.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 186:54, CST 0454, 499/1

CAP COM and Apollo 9 Houston, we're recommending  
that Charlie roll be enabled and delta roll disabled.  
SC Rog, Charlie enabled and delta disabled  
on the roll.  
CAP COM And Rusty, Houston. At your convenience  
you might push on your biomed sensors, we're getting a little  
erratic data.  
SC Any particular one?  
CAP COM Rog, your chest's getting the EKGs jumpin all  
over.  
SC How about now, do they settle down any?  
CAP COM No it's ah, it's not, it's really going  
wild. Must either be, if it's not moved it must be a bad  
sensor.  
SC Either that or my heart.  
CAP COM Man I hope not (laugh).  
SC No I have an idea that the electro tape  
is dried out. It, the ground feels a little bit scratchey  
right now.  
CAP COM Ok, copy. And ... yall impart me with  
your wealth and knowledge coming up with statements like that.  
SC I'm afraid Dr. Scott used all the  
electro dumps.  
CAP COM I see.  
PAO This is Apollo Control. Apollo 9 presently  
is crossing the eastern coast of Australia. Just about to  
the point of Sidney where we'll continue to monitor the  
Honeysuckle pass with about a minute 30 second dropout between  
Honeysuckle loss of signal and Mercury acquisition of signal.  
Apollo Control monitoring air ground.  
CAP COM And Apollo 9 Houston. Just another  
curious question if you've got the time. When you dump the  
waste water does it hang around the spacecraft for a long  
time or do you, does it, do you see the particles or do they  
dissipate pretty easily?  
SC You can see them all right due especially  
at sun set and sun rise. They really shoot out of there with  
pretty high velocity and its kind of interesting behavior  
most of them disappear over the hill rapidly but it looks  
as though it continues to sputter and spurt out of the duck  
there for quite a while after you've completed the dump and  
not sure how long it continues that away but for quite awhile  
and when you're watching the particles go away, strangely  
enough it looks like some of them either collide or something,  
we haven't figured out what yet but occasionally one of them  
will come back past us for a little while.  
CAP COM Good grief, have you got some pictures of  
those?  
SC Ah, yea.

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 186:54, CST 0454, 499/2

CAP COM            Good. We're going to have an early LOS  
here at Honeysuckle and we'll see you Mercury 3:05.

SC                 Roger.

PAO                This is Apollo Control. We've not actually  
had loss of signal in Honeysuckle according to the acquisition  
table. Still about a minute remaining. Mercury coming up  
at 4 minutes and 12 seconds past the hour. 3 and 1/2 minutes  
from now. At 187 hours 1 minute ground elapsed time this is  
Apollo Control standing by for Mercury.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 187:04, CST 05:04a 500/1

CAP COM And Apollo 9 this is Houston through the Mercury and I wanna volunteer a map update here before my friendly CDR ... me.

SC Okay, stand by I'll get something to copy it.

CAP COM Okay.

SC Okay, go ahead.

CAP COM Rog, it's rev 118, which you're on now time 187 24 55 longitude 108 degrees West.

SC Okay, 187 24 55 108 West.

CAP COM That's affirmative.

PAO This is Apollo Control some 6-1/2 minutes remaining of this pass over the tracking ship Mercury. We'll leave the circuit open and monitor any possible conversation during this pass.

CAP COM And I copy your triangle difference and your torquing there Apollo 9.

SC Roger and I'll run a quick sextant realignment on the S-band to see what kind of accuracy we got out of this.

CAP COM I missed that Dave. Say again.

SC I say I'll hop down and run a sextant realignment now on REFSMMAT to see what kind of accuracy we got out of COAS.

CAP COM Oh, very good and I take it the telescope worked okay yesterday. Did it hang up at all with 'ya?

SC No, yesterday was a clean day. Wasn't one glitsch all day.

CAP COM Did 'cha do anything or did it just go away?

SC No, apparently it just worked itself out. Perhaps there was something on the outside from the LM thrusters or something. Seems to have --

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 187:14, CST 0514, 501/1

SC - LM thruster or something, but it seems  
to have worked itself out.

CAPCOM Very good.

CAPCOM Apollo 9, Houston, 40 seconds LOS Mercury,  
see you at Texas 30.

SC Okay.

PAO This is Apollo Control, apparently that  
concludes the conversation over the tracking ship Mercury.  
We'll have acquisition at the Corpus Christi, Texas tracking  
station at a little after 29 past the hour. At 187 hours, 15  
minutes GET, this is Apollo Control.

END OF TAPE

CREW STATUS  
FILM REPORT

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 187:39, CST 05:29a 502/1

PAO This is Apollo Control, 187 hours 29 minutes ground elapsed time and one item of information not directly related to Apollo 9 but to Apollo 10, the roll-out should begin right at this moment 6:30 am Eastern Standard Time of Apollo 10 space vehicle from a vertical assembly - er, vehicle assembly building at Kennedy Space Center out to launch complex 39B. Apollo 10 will be a launch to a lunar orbit mission in the spring in which the lunar module will descend to 50 000 feet above the lunar surface. Crewmen on that mission will be Tom Stafford, Eugene Cernan, and John Young. During the Apollo 9 pass over Carnarvon and Honey-suckle, the crew gave a report on sleep and medications. ~~McDivitt had 7 hours sleep last night, took one actifed which is a decongestant; Schweickart had 6-1/2 hours sleep took 1 actifed; Scott had 6-1/2 hours sleep, took no pills. All had one vitamin pill yesterday.~~ They have taken 85 frames of the S065 multi-spectral photography experiment so far in the mission and they have some 200 frames of 70-mm color remaining. We'll listen in now for the conversation about to begin over the tracking station at Texas.

CAP COM Standing by.

SC Houston, Apollo 9. Houston, Apollo 9

(too much static)

CAP COM Ah, Dave, the comm here is real bad.

Let's hold off for about 2 minutes. I couldn't copy.

SC Understand (too much static)

CAP COM Okay. (pause) And Apollo 9, Houston.

We have a state vector for you if you would give us P00 and ACCEPT, please.

SC P00 and ACCEPT.

CAP COM Understand. (pause) Apollo 9, Houston.

We'd like to turn the fan ON in H2 tank one at this time, please. (pause) And Apollo 9, Houston. How do you read now?

SC Ah, you're coming in five squeaky.

CAP COM Okay, Apollo 9. Verb 66 has been entered, the computer is yours and I have a nav check to go along with that vector.

SC Okay, stand by. Okay, go ahead.

CAP COM Rog, reading nav check. 1883000 minus 3329 plus 13537 2294.

SC Okay, understand. 1883000 minus 3329 plus 13537 2294.

CAP COM Rog, readback is correct and it looks like we ought to have an answer here shortly.

SC Here's your answer. And Houston, 9.

Let me give you some of this data from the COAS. I think you might find it interesting.

CAP COM Rog, I'm ready to copy. I can read you

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 187:39, CST 05:29a 502/2

CAP COM           okay now, Dave.

SC                Okay. I'll just give you the GET and  
the gyro torquing angles and tell you what instrument we  
used. Okay?

CAP COM           Alright.

SC                Okay, the first one's the COAS and I  
used the calibration that I made during the rendezvous 5 days  
ago and the COAS has been in and out about oh I guess 4 or  
5 times since then and the GET was 187:14:30 and the gyro  
torquing angles were minus 00080 minus 00013 and plus 00183.

CAP COM           Hey, that sounds beautiful, Dave. That's  
real good.

SC                ... star angle difference on that was  
.02.

SC                And on the sextant, which was the next  
torquing we did, the GET was 187:19:00 and the torquing angles  
was plus 00073 plus 00060 and minus 00084 and the star angle  
difference on that was .01.

CAP COM           Rog, Dave, I copy all those. Boy that  
COAS bombed through there didn't it?

SC                Yeah, then I did another couple here to  
see if the ... were all the way down so I have another sextant  
for you 187:24:00 and the gyro torquing angles were plus  
4 balls 3 minus 3 balls 25 and plus 4 balls 2 which sorta  
says the sextant's pretty good which we already know and the  
star angle difference on that was .01.

CAP COM           Rog, copy. V-e-r-y interesting.

SC                Okay, and then not to neglect the --

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 187:39, CST 0539, 503/1

CAPCOM Rog, copy, very interesting.  
SC Okay, then not to neglect our friendly telescope. The sun was coming up but I tried to get a telescope light also but I think we sort of lost a little bit because of my second star was Menkent and it was pretty dim, and I had a pretty hard time seeing so we did not port the platform but I'll give you the data anyway. The time was 1873100 GYRO tourquing angles were minus 00070 plus 00169 minus 00133, and the star angle difference was .05, and I think that was because I just couldn't see Menkent when we got daylight on through that telescope.

CAPCOM Okay, very good.  
SC Anyway, I think it shows there is a certain capability with that COAN.

CAPCOM Yes, it sure does. That look pretty good. Okay, and I have a couple of targets for you coming across Africa this time if your in a picture taking mood.

SC Okay, always.  
CAPCOM Alright, are you ready to copy?  
SC Okay, go ahead.  
CAPCOM Alright, the target is in Chad. It's the north east slop of the Tibesti Mountains. Your time for the first frame 1875703. We would like to have 7 pictures, at 10 seconds intervals, and straight down the Nadir. Next target, Red Sea, 1880306. 7 pictures, 10 second intervals, and right on the Nadir again.

SC Okay, copy the first one, 1875703, 7 frames 10 second interval, and the Nadir and 1880306, 7 frames, 10 seconds intervals and on the Nadir again.

CAPCOM That's affirmative, Apollo 9.  
SC Okay.  
SC Houston, you have a little discrepancy on our map there. According to the map up date this REV does not take us over Chad, we cross north of it at Bolivia. I wonder if its right.

CAPCOM Rog, I copy Apollo 9. The map might be off just a little bit due to orbital parameter, let me get more details on that. Rusty, I'm looking at the map here also, and I agree with you. I think we must have something wrong on our first update.

SC Okay. Looks like we may get the Red Sea one in there. Just the southern end of the Red Sea

CAPCOM Rog, I see that. Well Rusty, we're working that out, I'll have to say I've got you because I didn't check that against the map before I passed it to you.

SC We got through some more of the bad ones.  
CAPCOM Yes, I think it was, and I did not check it on my map before I sent it up to you so you've got me.  
SC Didn't mean to do that, just want to get it

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 187:39, CST 0539, 503/2

SC - straight.

CAPCOM Rog.

PAO This is Apollo Control. Apollo 9 is in the Mid-Atlantic now in acquisition by the Canary Island tracking station. We'll continue to monitor the air to ground circuit for the duration of this pass, which will be at Madrid LOS at 53 minutes past the hour, approximately 6 minutes from now.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 187:49, CST 0549, 504/1

CAP COM Apollo 9 Houston.  
SC Go ahead Houston, Apollo 9.  
CAP COM Ok, Jim I've run that first target out  
on the map here and I would believe 30 degrees south of the  
Nadair, which is information that we have now. I don't know  
the Tibesti Mountains by first name and they're not listed  
but there is that mountain range right there where you'll  
be at that time. So the time and the frame stay the same.  
Shot at 30 degrees south of the Nadir.  
SC Ok, fine. And be advised we have about  
2 and 1/3 rolls of 60 mm outdoor film still left. We  
want to save one roll for re-entry.  
CAP COM Rog, copy. 2 1/3 rolls 16 mm and saving  
one. And Jim these targets of opportunity I'm planning on  
just passing them to you at convenient times until you holler  
Uncle. So if we start giving you too much just say so.  
SC Ok. We'll pick up the ones we can get  
to easiest and uh serve a random process.  
CAP COM Rog, understand.  
CAP COM And Apollo 9 Houston, I was guilty of  
sliding someone on my flight plan update in under the comment  
it was good morning from your smiling flight commander.  
SC Say that one again Houston, we just  
missed it.  
CAP COM Rog, We'll see you over Carnarvon about  
20. We're going to loose you here at Honeysuckle, I'm at  
Madrid within a minute.  
SC Ok Houston. We want to report on another  
failure. Last night the exerciser failed.  
CAP COM Rog, understand the exerciser failed.  
Who do we give credit for being so strong? Who busted it?  
SC Rusty broke it.  
CAP COM Ok  
PAO This is Apollo Control. A few seconds  
away from loss of signal at Madrid. The next station to  
acquire Apollo 9 will be the Carnarvon, Australia tracking  
station at 19 minutes past the hour. At 187 hours 53 minutes  
ground elapsed time this is Apollo Control.

END OF TAPE

A/9 MISSION COMMENTARY, 3/11/69, GET 188:19, CST 06:19, 505/1

PAO This is Apollo Control 188 hours 19 minutes GET, about 30 seconds out of acquisition at Carnarvon, Australia. Meanwhile, the Space Flight Meteorology Group of the SL Weather Bureau issues the following forecast for today and tomorrow. In the primary landing zone in the West Atlantic about 800 miles east of Jacksonville, skies will be mostly cloudy and winds northwesterly 20 to 25 knots. Seas will range 6 to 8 feet, and temperature 55 to 63 degrees. In the mid-Pacific landing zones about 600 miles northwest of Honolulu partly cloudy skies will prevail with northwesterly winds about 18 knots. Seas are expected to be 5 to 6 feet and temperatures near 60 degrees. In the West Pacific landing area about 400 miles southeast of Tokyo, skies will be cloudy with widely scattered showers and winds southeasterly 15 knots. Seas will be 4 to 5 feet and temperatures near 60 degrees. In the East Atlantic landing area, about 500 miles southwest of the Canary Islands, mostly cloudy skies with widely scattered showers are expected. Winds will be southwesterly 20 to 25 knots, Seas 5 to 7 feet and temperatures around 70 degrees. We're standing by now for the initial call here at Carnarvon. Carnarvon and Honeysuckle overlap for a total time of about 19 minutes, and then there's about a minutes and a half of dropout or a minute and 3 seconds dropout, between Honeysuckle and Mercury. These long passes are due to the fact that the spacecraft is near apogee at this time in the southern hemisphere over Australia and Mercury tracking ship. Standing by until spacecraft communicator, Stu Roosa, punches up on the air-to-ground and begins the conversation. During this pass over the tracking stations at Carnarvon and Honeysuckle Creek, Australia, the crew has scheduled a realignment of the inertial measurement unit, Program 52. Here they go.

CAPCOM - standing by.

SC Hello Houston, this is Apollo 9. We're reading you loud and clear.

CAPCOM Rog. You're coming in real good. And the SO65 on this rev over Africa has been cancelled due to weather. The one on the next rev coming up will still hold, however.

SC Okay, real good. Yeah, Africa has a lot of cloud coverage these days. (garble) It shows up better along the end of the Red Sea. They show up pretty.

CAPCOM Rog. Copy.

SC And we did not get the ones along those mountains.

CAPCOM Okay, thank you.

CAPCOM Apollo 9, Houston.

SC Go ahead.

CAPCOM Rog. We'd like to turn the fans off in H2 Tank 1. We're going to let the pressure drop down during

A/9 MISSION COMMENTARY, 3/11/69, GET 189:19, CST 06:19, 505/2

CAPCOM the day. Be looking at around 190, we hope.

SC Oh, very good. Fans are out in Tank 1.

CAPCOM And, Rusty, when you get a chance, we'd like to have you check your biomed leads going into your blue signal conditioner.

SC Okay, I'll give that a check right now. Would you say it again? The blue what, please?

CAPCOM (laughter) the blue signal conditioner. I couldn't say it the second time, either. I give up.

SC Okay, I want to ask you again.

CAPCOM That little blue box down there.

SC Roger.

SC Houston, I think that the blue leads are alright. They're - Were you reading them okay right just before we all sacked out.

CAPCOM That's affirmative, Rusty.

SC Okay, I think it's just the sensors.

CAPCOM Okay. We're getting short burps of good data and then long periods of erratic data.

CAPCOM And, Apollo 9, we'd like to have your S-band volume up. We'll be going over to Honeysuckle in about 20 seconds.

SC Okay.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 188:29, CST 0629, 506/1

PAO This is Apollo Control continuing to  
monitor the Carnarvon Honeysuckle pass.  
CAP COM Apollo 9 Houston with a couple of targets  
of opportunity.  
SC Stand by 1  
SC Ok, go ahead.  
CAP COM The first one is Cape Kennedy time 1 8  
niner plus 10 plus 23. Shoot 3 frames, 12 second exposure,  
should be right on the Nadir. Next target Bermuda 18 niner  
plus 14 plus 07, 3 frames 12 second interval and that's going  
to be real close to the Nadir might be about a mile off.  
SC Ok, Cape Kennedy 189 1023 3 frames, dump  
T of 12 seconds. Bermuda 189 1407 3 frames dump T 12 seconds.  
Both on the Nadir.  
CAP COM That's affirmative Apollo 9.  
SC Houston  
CAP COM Go ahead Apollo 9 Houston here.  
SC How's the cloud cover down there today  
around Texas?  
CAP COM I haven't been out since it's been day-  
light Rusty, let me check here. I understand there's broken  
clouds in our area.  
SC Ok  
CAP COM And we'll see you Mercury 40.  
SC Roger  
PAO This is Apollo Control. Although we're  
a few seconds out, actually about 3 minutes away from loss  
of signal at Honeysuckle, apparently the conversation has  
been terminated. Tracking ship Mercury will acquire Apollo 9  
at 40 minutes past the hour. At 188 hours 36 minutes ground  
elapsed time this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 188:40, CST 06:40a 507/1

PAO This is Apollo Control, 188 hours 40 minutes ground elapsed time. Just acquired at tracking ship Mercury for a pass of at least 11 minutes. We'll stand by for any air-ground during the pass over this ship. Here in Mission Control Center, the members of the White Flight Control Team are beginning to drift in for the handover from the Orange Team which has manned the sleep watch during the night. It appears spacecraft communicator Stu Roosa is about to call the crew again.

SC Okay, GET of 188:29:00 plus 00827 plus 00098 plus 01792.

CAP COM Rog. Would you read me the third one again please, Dave?

SC Rog, plus 01792 and that was to a nominal alignment we course aligned and that's why you get the big number there.

CAP COM Okay, I just wanted to make sure I was getting it right. Thank you.

SC Okay.

PAO This is Apollo Control. Some 5 minutes remaining in the pass over the tracking ship Mercury, fairly high elevation angle of 54 degrees. We'll continue to monitor for the duration of this pass over Mercury for any further conversation. (pause) Apollo Control, 2 minutes remaining in the Mercury pass. It doesn't appear there will be any further conversation but we'll leave the circuit up just in case.

CAP COM Apollo 9, Houston. One minute LOS Mercury Redstone 57.

SC Roger Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 188:50, CST 0650, 508/1

PAO                    This is Apollo Control and we have had  
LOS at the tracking ship Mercury. We'll be coming up on the  
tracking ship Redstone at 57 past the hour, overlapping Guaymas,  
Texas, MILA, Bermuda, tracking ship Vanguard, Canary Islands,  
running on through to 28 minutes past the hour, past the next  
hour. At 188 hours, 52 minutes GET, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 188:57:00, CST 0657, 509/1

PAO This is Apollo Control at 188 hours,  
57 minutes and the Redstone has acquired Apollo 9.  
CAP COM Apollo 9 Houston through Redstone you  
have a GO for 136-1.  
SC Roger on the go.  
CAP COM And Apollo 9 Houston, do you read?  
SC Roger, go ahead.  
CAP COM Roger. We've got you now for a nice  
long pass. We'll have you until two-eight or so and I've  
got an SO 65 update at your convenience.  
SC Houston, ready to copy the SO 65.  
CAP COM Roger, Apollo 9. Standby one.  
CAP COM Okay, Apollo 9, Houston. SO 65 update.  
Inertial angles 1800 296100 190 3744 1903000, orb rate -  
the first one is Austin 190 42 44 10 03 and the weather  
over Austin has broken clouds, but we want the pictures  
taken anyway. The next area is Charleston 190 47 10 08 03  
your orb rate ball 180 327.5 0, orb rate .066 and your orb  
rate data - your VWXYZ is the same as you used yesterday.  
I can repeat it if you wish or if you have it copied you  
can use that.  
CAP COM Apollo 9, Houston. Do you read?  
SC (Garbled.)  
CAP COM Hello Apollo 9. How do you read? Hous-  
ton.  
CAP COM Apollo 9, Houston. Do I have you now?  
CAP COM Apollo 9, Houston. Do you read?  
CAP COM Apollo 9, Houston through Mila. How  
do you read?  
SC I'm square now.  
CAP COM Roger. Evidentially we didn't make it  
at the last sight. Did you get my update?  
SC The last word that I got was Charelston.  
CAP COM Okay. Charleston is your second sight.  
190 47 10 08 03. Your orb rate angles 180 327.5 0, orb  
rate .066.  
SC Roger. Do we have Victor through Zoro?  
CAP COM Roger. I have those. They are the  
same as yesterday. Would you like me to read them?  
SC Negative. We have them.  
CAP COM Okay, and one other comment as you come  
across on the U.S. we'd like to get some 70-millimeter  
photos northward across the U.S. out of number 5 window.  
SC Roger.  
SC We're coming across backwards and up-  
side down though, Houston.  
CAP COM Roger. This was in connection with  
the SO 65 PAD.  
SC All right.

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 188:57, CST 0657, 509/2

CAP COM But you know I don't really think that's a requirement. If you just take us some good old pictures looking northward there that'll be all right.

SC Okay. We'll take some good old pictures looking northward.

CAP COM But as you will notice on the map this rev 121 you get up there quite a ways. That's really the pass we want them on.

SC Okay. Could you tell me what time we might get over Corpus Christi?

SC On this pass.

CAP COM You should be past it. You are not too far off the west coast of Florida.

SC Oh yes, I can see Cape Sandblast right now. I wanted to say hello to my friends down in Refurio, but it looks like I missed them.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 189:10, CST 710 510/1

CAPCOM Apollo 9, Houston.  
SC Roger, go ahead.  
CAPCOM Rog. Why don't you all think a little bit today how much in the flight plan tomorrow afternoon you would like to get squared away for reentry. We will be getting you up right on time the next 2 days, but we thought if you wanted, tomorrow you might want a few hours.  
SC Yes, we have some moving around to do and we would like to be in a pretty posture for reentry when we get up on reentry time.  
CAPCOM Why don't you kick it around a little bit and maybe give us an estimate in hours that you like for tomorrow afternoon. We will make allowances in the photo plan and so forth.  
SC Alrighty.  
SC And Houston, do we have enough time for the readback on the S065?  
CAPCOM That's affirmative.  
SC Okay, 200029610, all zips, 19037441930000 orb rate .066, local vertical angles, 180, 327.5, and 0. Austin, 19042441003, weather broken but take them anyway, Charleston, 19047100803.  
CAPCOM That is affirmative and your data that you load, you VWXYZ is the same as yesterday.  
SC Okay.  
PAO This is Apollo Control. Astronaut Ron Evans has relieved astronaut Stu Roosa at the spacecraft communicator's console.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69 GET 189:25 CST 0725 511/1

CAPCOM Apollo 9 Houston, 1 minute LOS, Tananarive  
at 42.

SC Hello there, young man.

CAPCOM Good morning.

SC How are you today.

CAPCOM Well I'll tell you. It looks like I'm  
going to have to get a flight to get any sleep.

SC Aw, come on now, stop picking on us.

CAPCOM Okay. Any excuse to get a flight,  
though.

SC Roger.

PAO This is Apollo Control at 189 hours 28  
minutes. Apollo 9 is out of range at the Canaries, next  
station to acquire will be Tananarive at 189 hours 41 minutes.  
During this last pass over the United States we updated  
the crew with some S065 photography experiment explanations,  
asking them to photograph Austin and Charleston on the next  
revolution, which would be number 121. Ron Evans is the  
CAPCOM at the present time. We'll come back up at Tananarive.  
This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 189:42, CST 742 512/1

PAO This is Apollo Control at 189 hours 42  
minutes. Apollo 9 is within range of the Tananarive station.

PAO This is Apollo Control at 189 hours 49  
minutes. Tananarive has loss of signal. Apollo 9 going  
through this station without conversation. Apollo 9's orbit  
now is 248 and one-half nautical miles apogee, 98 nautical  
miles perigee. Showing a cabin pressure of 4.9 pounds per  
square inch. Cabin temperature 70 degrees. The next station  
to acquire will be Carnarvon at 189 hours 56 minutes. This  
is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 189 hours, 57 minutes and Carnarvon has acquired Apollo 9.

CC Apollo 9, Houston through Carnarvon. I have one Hasselblad target of opportunity.

SC Go ahead Houston; this is Apollo 9.

CC Roger; your target will be Cape Blanc, oceanography 191 plus 00 plus 33, 5 frames, 25 second interval, and it's north 5 degrees; over.

SC 1910030, Cape Blanc, oceanography, 5 frames, 25 second intervals, 5 degrees North.

CC Roger. And Apollo 9, Houston. We've been noting that you've been averaging about, oh, 20 pounds of RCS per day, for the S065 landmark (break) was one of you. You still have about (break). You still have about 70 pounds above the SCS; RCS red line, and what we're saying is that you can just about double your average usage and still be in good shape, if you want to do some particular tracking on something.

SC Okay, very good. We've actually been throwing in a little particular tracking now and then too. I think the fuel usage that we've been having is probably all that we need; thank you.

CC Oh, very well.

PAO This is Apollo Control. That photo target is Cape Blanc - BLANC - it's on the west coast of Africa about 20 degrees north.

CC Apollo 9, Houston; we are coming up on Honeysuckle, S band volume up in about 30 seconds.

SC Roger. Roger.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 189:17, CST 0817, 514/1

PAO                    This is Apollo Control. Apollo 9 is in acquisition at the tracking ship Huntsville now. We've had continuous coverage since Apollo 9 was acquired by the Carnarvon station. We'll continue to monitor through the Huntsville pass.

PAO                    This is Apollo Control. The Huntsville and the Mercury have overlapping coverage on this 120th revolution. So our coverage will be extended several minutes by Mercury after leaving Huntsville.

CAPCOM                Apollo 9, Houston. In about 45 seconds LOS. Redstone at three-zero.

SC                    All right.

PAO                    This is Apollo Control at 190 hours, 25 minutes and Mercury has lost the signal. During this long pass CAPCOM Ron Evans advised the Apollo 9 crew they have been using about 20 pounds of Reaction Control System propellant per day - rather low usage. We told them that they still have 70 pounds of RCS propellant above the red lines for the best mode of RCS deorbit and we advised them that if they want to use more propellant for attitude control during photography that they can double - just about double - the usage that they had been experiencing. However, Jim McDivitt came back and said that they have been able to perform the photography within the usage to date and he doesn't think they need to use much more than they already have. The Redstone will acquire at 190 hours, 29 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 190:30, CST 830 515/1

PAO This is Apollo Control at 190 hours 40 minutes. Apollo being acquired at the Redstone now and we will have continuous coverage across the United States and most of the Atlantic down through the Canaries station.

CAPCOM Apollo 9, Houston through Redstone standing by. It will be a long pass this time.

SC Okay, Houston, Apollo 9.

CAPCOM Roger.

SC Hey Houston, what's the forecasted weather conditions on the east coast?

CAPCOM Roger, let me get you a good one for today there.

SC Okay, and in particular, I'm interested in whether we are going to get a good shot just north of Charleston.

CAPCOM Roger.

CAPCOM 9, Houston. From the indications we have down here, it's looking pretty good and it ought to be open up that way.

SC Real agreeable weather.

CAPCOM Rog.

PAO This is Apollo Control. Apollo 9 is approaching the coast of Mexico now. Very shortly we will be doing the S065 photography in the Austin, Texas, area, and then, shortly after that, the Charleston, South Carolina, area will be photographed.

SC Okay, three pictures of clouds over Austin.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69 GET 190:45 CST 0845 516/1

CAPCOM Apollo 9, Houston, I have a 16mm update.  
SC Okay stand by 1, I'll get ready to copy.  
CAPCOM Roger, standing by.  
SC Okay, Houston, go ahead and start.  
CAPCOM Roger, Target will be Africa, Gulf of  
Guinea to Matagaskar, 16mm, 75mm lens, 6 frames per second,  
CEX 368 film, start time 191 plus 03 plus 54, shoot south  
30 degrees for 14 minutes.  
SC Okay, Gulf of Guinea to Matagaskar  
16mm, 75mm lens, 6 frames per second, CEX 368, 191:03:54,  
south 30 degrees for 14 minutes.  
CAPCOM Roger, next one, target will be Gulf  
Stream, same camera same film, start at 192 plus 22 plus 00,  
shoot on track for 3 minutes.  
SC Okay, Gulf Stream 192:22:00 on track  
3 minutes.  
CAPCOM Okay, on 1 roll of that CEX 368 we'd  
like some interior photos. Use a stop meter at ASA 200,  
shutter speed 1/60th, use entire roll and mark the magazine  
for correct processing.  
SC Houston, we don't have enough film to  
do that. We still have some interior film. We only have  
2 full rolls of exterior and we want to save one for  
reentry, so we only have 1 to play with and it looks like  
it will take it for the Gulf of Guinea and Africa and the  
Gulf Stream.  
CAPCOM Oh, understand, I thought you had more than  
2.  
SC There's 2 (garbled)  
CAPCOM Okay, we're with you.

END OF TAPE

CC And Apollo 9, I have some numbers where you can start looking for a fuel manifold pressure decay, to push the secondaries in your RCS.

SC Okay, go ahead.

CC Roger. Alpha through Delta will be 48, 52, 44 and 48.

SC Okay, understand Houston; the onboard gage readout, is that correct?

CC That's affirmative, they'll be onboard gage readings - we will update them as we go along here a little bit more but that's where you can start looking for a fuel manifold pressure decay to switch.

SC Okay, you want us to switch them 170?

CC Apollo 9, Houston; I missed your last comment; say it again.

SC Roger, you want us to go ahead and bring on the secondaries in 170 PSI?

CC That's affirmative; 170 PSI.

SC Okay.

CC 9, Houston. With your earlier comment on fuel usage, we're predicting that you'll probably won't get to those cross over points today.

SC Okay, understand; probably won't reach them today, but we'll keep (garble).

CC Apollo 9, Houston; about 1 minute LOS; like to verify the attitude set switches in GDC.

SC (garble) IMU.

CC Roger; request GDC unless you have a real reason to put an IMU.

SC (garble) the last time I did a GDC set.

CC Roger. 9, Houston. In preparation to firing up the S band, like to do the LMP check list, page 214, the first 6 steps of the telecomm system powerup.

SC Okay, understand, the first 6 steps on 214 LMP checklist.

CC Roger.

PAO This is Apollo Control at 191 hours, 4 minutes and Canary Island Station has LOS. We've asked the Apollo 9 crew to take some 16mm movie footage from the Gulf of Guinea to the Island of Madagascar and we've asked for some footage of the Guld Stream. We also advised them of projected onboard gage readings at which time they can expect the fuel manifold pressure to start a slow decay. As the fuel gets lower, we don't expect to reach that point today, however, because the present fuel usage is quite low. The next station to acquire will be Tananarive at 191 hours, 9 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 191:16, CST 0916, 518/1

PAO                    This is Apollo Control at 191 hours,  
16 minutes. Apollo 9 is coming within range of the Tanana-  
rive station.

PAO                    This is Apollo Control at 191 hours,  
25 minutes. Apollo 9 out of range at Tananarive now -  
going through that pass without conversation. The Carnarvon  
station will acquire at 191 hours, 32 minutes. This is  
Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 191:32, CST 0932, 519/1

PAO This is Apollo Control at 191 hours,  
32 minutes and Carnarvon has acquired Apollo 9.  
CAPCOM Apollo 9, Houston through Carnarvon. I  
have an SO 65 update.

SC Okay, Houston. Standby one.  
CAPCOM Nine, Houston. While you are digging  
things out you might dig out your procedures book and I  
can update your high gain antenna test.

SC Okay. Why don't you give us the SO 65  
first.

CAPCOM Roger. You ready?

SC Roger. Go.

CAPCOM 180 00 289 90 yaw is all zips 192 09 30  
192 00 00, orb rate first sight Colorado River 192 14 33  
10 08, second sight Schneider, Texas 192 18 02 08 03, third  
sight Cumberland Plateau 192 21 11 08 and 03. Over.

SC Roger. 180 00 28990 all zips 192 09 30  
192 00 00, orbit rate Colorado River 192 14 33 10 08, and  
someplace in Texas 192 18 02 08 03, Cumberland Plateau  
192 21 11 08 03.

CAPCOM Roger. Readback correct. That's  
Schneider, Texas and your Victor through Zulu numbers will  
be the same as before.

SC Okay.

SC Okay. What do you have on the high  
gain S-band antenna?

CAPCOM Okay. Why don't we just copy these  
things down; if you have got a pad there to copy and then  
I'll go into the procedures and change of procedure itself.

SC Okay. Standby. All I need is to get  
a pad.

CAPCOM And while you are doing that we are  
going to be kind of skosh there between the end of the  
SO 65 and the first Carnarvon pass and also you have got a  
P52 realignment in there, so if we miss that Carnarvon  
pass we'll catch it over Hawaii.

SC Yes. We can get that - no problem.

CAPCOM Okay. Good.

SC Okay, go ahead with the PAD, Ron.

CAPCOM Okay. Platform is aligned out of plane  
to the north, voice comm will be VHF. Okay. Change high  
gain antenna test procedures as follows: -

SC Will you give me the PAD first or notes,  
Ron?

CAPCOM I'll give you notes first.

SC Okay. Standby. I got the PAD first.

Hold on.

CAPCOM Oh, I'm sorry.

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 191:32, CST 0932, 519/2

SC Okay. I've got the procedures book here now with our procedure in it. Will your notes follow the procedures so I can mark directly on it?

CAPCOM Okay. Let's go into that part first and then I'll give you some additional notes.

SC Okay.

CAPCOM Okay, in the procedures book you go on down to step 7 and your antenna angles are pitch minus 45 degrees, yaw is plus 90 degrees.

SC Okay, go ahead.

CAPCOM Okay. Delete step 8; perform step 9 at 193 plus 06 plus 05 and add high gain antenna track to reacquire.

SC As part of step 9, Ron?

CAPCOM Affirmative. At the end of step 9 there.

CAPCOM Do step 10 at acquisition which will be at 08 plus 05. Delete step 12.

SC Any more than that, Ron.

CAPCOM Affirmative. While I think about it, S-band volume up at four-two for Honeysuckle.

CAPCOM Okay. On step 13 - we'll do that 3 times. The first one at Carnarvon LOS - that'll be at 19 plus 40; at Hawaii AOS be 35 plus 22 and Hawaii LOS at 44 plus 09. And scratch steps 15 on.

SC Okay. Is that everything on the procedures then?

CAPCOM Okay. That's all of the procedures and like to get you set up in a Passive Thermal Control. And I can give you some numbers for that so that we can be in PTC as we are going through this test.

SC Okay.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69 GET 191:42, CST 0942 520/1

SC Okay, Houston, we're back with you now.  
Go ahead with the PTC.

CAPCOM Okay, establish orb rate by using PTC  
CMP checklist page 3-17. Okay, step 2: at 193 plus 06,  
pitch 352.00, roll is 352.0, pitch and yaw are all zeroes.

SC Okay, do you have any more, or do you  
want me to read all that back to you?

CAPCOM I have some more. New step 6 with  
step 7 of the CMP checklist as follows: Verb 24 noun 01  
enter 3125 enter 4 zips 2 enter 14713 enter. Step 7, verb 21  
enter 3176 enter 23163 enter, and that should be it.

SC Okay, Ron, I get that. For step 6 is  
only change is a 00002, and 14713, and the number on step  
7 is 23163.

CAPCOM That's right.

SC Okay, on that - I got, just a minute.  
Ron, I've got one more question. On the time you gave us  
there shouldn't that time be for step 7?

CAPCOM That's affirmative, should be on step 7,  
that time there, 193 plus 06.

SC Okay, thank you.

CAPCOM Glad you're checking us.

SC Okay, on the procedures, on step 7  
you've got the pitch of minus 45 and yaw of plus 90, delete  
step 8, perform step 9 at 193:06:05, and add after the  
gooseing step 9 high gain antenna track to REACT, on step 10  
that should be done at acquisition which should be at 0805,  
delete step 12, step 13 we're going to do 3 times, Carnarvon  
LOS at 119:40, Hawaii AOS at 23522, and Hawaii LOS at 4409.  
Delete everything beyond step 15, delete step 15 and beyond.  
Excuse me.

CAPCOM Affirmative, delete step 15 beyond the AOS  
and LOS times I gave you were 193 in minutes.

SC Right. Okay, understand the platform  
is going to be out-of-plane to the north, and we're going  
to use VHF voice for radio.

CAPCOM Roger, I'll give you Carnarvon LOS  
time is 193:19:40. Hawaii AOS is 193:35:22, LOS is 193:44:07.

SC Okay, understand the Hawaii LOS is at  
44:07 instead of 09.

CAPCOM Affirmative.

SC Okay, we'll look these over and if we have  
any questions I'll give you a buzz later.

CAPCOM Okay, except also note that on step 13  
there where we take those 3 times, copy them down after the  
antenna stops slewing.

SC Understand copy down after the antenna  
stops slewing.

CAPCOM Roger.

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 191:42 CST 0942 520/2

PAO This is Apollo Control. We go right into coverage at the Huntsville on this revolution. We'll continue to stand by.

PAO This is Apollo control continuing to stand by through the Huntsville. Most of the Australian pass was devoted to transmitting information to the crew concerning the S-band high gain antenna test which is scheduled over Carnarvon and over Hawaii in the 122nd revolution, about 193 hours at Carnarvon.

PAO We also passed up information concerning the next multispectral terrain photography test to be conducted over the United States on this present revolution. Areas to be photographed, Colorado River, Snyder, Texas and the Cumberland Plateau.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 191:57, CST 957 521/1

PAO This is Apollo Control at 191 hours 58 minutes. The tracking ship Huntsville has loss of signal. In this 121st revolution, there is a very short LOS time between the Huntsville and Hawaii, about a minute and a half total. We will continue to stand by for Hawaii acquisition. Apollo 9 has started it's slow maneuvering to get into the proper attitude for the multispectral photography, which will be performed over the United States during this pass. Hawaii is due to acquire at 191 hours 59 minutes. We should acquire at Hawaii within the next few seconds. We will stand by.

CAPCOM Apollo 9, Houston.

SC Go, Houston.

CAPCOM Rog. If you haven't guessed it yet, I guess you can see the purpose of this S-band antenna test is for testing the autoband react mode of this high gain antenna during PTC when the crew may be asleep on the way to the moon. So you can use VERB 64 to monitor but we don't want you to do any manual slewing to help the reacquisition between Carnarvon and Hawaii.

SC Okay, understand no manual operation. We will make it authentic by sleeping too?

CAPCOM No, no you've got enough sleep. You can just observe.

SC Okay.

CAPCOM Apollo 9, Houston, go.

SC Okay, Houston. I'll make it authentic, I guarantee you.

CAPCOM Okay.

SC Want our last gyro torquing angles?

CAPCOM Roger. Ready to copy.

SC 191, stand by, we are getting ready to start this maneuver. I'll get to you in a minute.

CAPCOM Okay.

SC While we are waiting here, be advised I have looked through the flight plan and I think if we go through tomorrow just as it is scheduled in the flight plan, we will be all right.

CAPCOM Very well. Sounds good then.

SC If we knock off at the time that we are supposed to knock off, we will have plenty of time to stow the spacecraft.

CAPCOM Okay, understand.

SC Okay, here are your gyro torquing angles, if you are ready.

CAPCOM Ready to copy.

SC 1912600 - 00232 + 00509 - 00010.

CAPCOM Roger, we copy that.

SC Okay.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 192:14, CST 1014, 522/1

SC Houston, Apollo 9.  
CAPCOM Apollo 9, Houston. Go.  
SC I think this is a pass of exceptional interest  
SO 65 pass. We had some real nice weather over the clouded areas.  
As a matter of fact Texas had a deck of clouds that looked like  
it came right up next to it and I think both the geologist and  
the weather man will really appreciate these because it shows a  
solid deck of clouds and a mirro shaft break that the land sticks  
out from underneath it. They ought to both get a good - a  
pretty good pass of it.  
CAPCOM Very, very good, by golly.  
SC And Houston, you got an uplink for us?  
CAPCOM Affirmative. Request for an ACCEPT and  
we have the ref mat standing by to send to you.  
SC Okay. You've got POO and ACCEPT.  
CAPCOM Apollo 9, Houston. We'd like you to  
verify your SPS heater and gaging main A and main B circuit  
breakers are open.  
SC Negative. SPS system heaters and gaging  
main A and main B circuit breakers are closed.  
CAPCOM Roger. We'd like to open them. We are  
not going to use PUGS for the deorbit burn.  
SC All right, they are at the OFF point  
right now.  
CAPCOM Roger.  
CAPCOM Apollo 9, the computer is yours.  
SC All right, go back to the mark.  
CAPCOM Roger.  
SC That was pretty snappy.  
CAPCOM They are still smiling.  
SC How are all you guys down there in that  
MOCR holding up? Are you in fatigue yet?  
CAPCOM Oh no. We're still in good shape.  
SC Good.  
SC Boy, I want those recovery guys to find  
a nice soft piece of water with no wind and no waves tomorrow -  
lots of sunshine.  
CAPCOM We're working on it real good.  
SC Oh, yes. I forgot one thing - a couple  
of helicopters too.  
CAPCOM Okay.  
SC Tell those guys on the Guadalcanal we're  
looking forward to seeing them.  
CAPCOM Okay. You're still thinking about the  
cake.  
SC Well, that and a few other things - and  
that too.  
CAPCOM Roger.

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 192:14, CST 1014, 522/2

CAPCOM Apollo 9, Houston.  
SC Go ahead, Houston.  
SC Go ahead, Houston.  
CAPCOM Roger. I've got some pointing data for  
you - if you want to take a look at Pegasus.  
SC Houston, Nine.  
CAPCOM Roger. You there now?  
SC Yes.  
CAPCOM Okay. At 192 plus 43 plus 09 with a  
roll at 357.8, pitch 179.9, yaw 326.4 you should see Pegasus  
passing through your COAS and it'll take about 45 seconds.  
It'll be passing from right to left. You will be trailing  
it by about 920 miles and you will be 77 miles below it.  
SC What was the roll?  
CAPCOM Roll is 357.8.  
SC Okay, at 192 43 09 - was that?  
CAPCOM Affirmative.  
SC Okay. The angles 357.8, 179.9, 326.4.  
Pegasus is passing right to left 920 trailing and 77 below.  
CAPCOM Roger.  
CAPCOM Nine, Houston. You've got about 150  
square feet of area on Pegasus so you might be able to get  
a pretty good look at it.  
SC Roger. Were those inertial angles or  
local vertical?  
CAPCOM Roger. Those are inertial angles assuming  
you haven't torqued the platform on around to the new ref  
mat we gave you.  
SC That's a good assumption at this point  
and be advised we have taken - we've taken 105 frames of the  
SO 65 now.  
CAPCOM Roger. One hundred and five frames.  
PAO This is Apollo Control at 192 hours,  
33 minutes. The Vanguard has Loss Of Signal. Ascension  
will acquire at 192 hours, 38 minutes. It will be during  
this Ascension pass that the crew will have an opportunity  
to try to take a look at the satellite Pegasus. We passed  
up the pointing information to them for this - advised them  
that it should pass through their COAS - Crew Optical Align-  
ment Sight - at 192 hours 43 minutes, 9 seconds. It should  
be in view for approximately 45 seconds. They will be  
920 miles - nautical miles - trailing, 77 nautical miles  
below. We advised them that Pegasus has 150 square feet  
of area, so they might get a good look at it - at that time.  
During this long pass across the United States the crew per-  
formed some more multispectral terrain photography. We gave  
them some additional information on the S-band high gain  
antenna test. That is coming up - starting at Carnarvon  
during this revolution. We want to simulate a lunar coast

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 192:14, CST 1014, 522/3

period when the crew might be asleep. We want to test the Automatic Reacquisition Mode of the antenna during Passive Thermal Control. Jim McDivitt volunteered that he could make it even more authentic by sleeping during the test. Ron Evans advised he thought Jim had enough sleep and Rusty Schweickart came back with the assurance that Jim probably would make it authentic by sleeping. Spacecraft Commander McDivitt also advised us that if we go through the flight plan tomorrow as it is presently scheduled, he believes the crew will have enough time to get ready for entry on Thursday. There has been some discussion earlier in the day; crew saying they'd like to do as much of the work as possible the night before so that they would not be pressed too hard on the time line zone reentry morning. They advised the crew of the recovery ship Guadacanal that they are looking forward to seeing them on Thursday, and Ron Evans accused them of still thinking about that 350 pound cake that awaits them on the Guadacanal. We'll be up at Ascension in about a minute and a half. We'll standby at Ascension to see what luck the Apollo 9 crew has in spotting the Pegasus satellite. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69 GET 192:37 CST 1037 523/1

PAO This is Apollo Control at 192 hours  
38 minutes and Ascension should acquire any second. We'll  
stand by.

CAPCOM Apollo 9, Houston through Ascension  
standing by.

SC Roger Houston, (garbled)

CAPCOM Apollo 9, Houston, I can't read you.  
You're in a keyhole right now.

CAPCOM Apollo 9, Houston, we might be able to  
read you now.

SC Say again, Houston, Apollo 9.

CAPCOM Roger, I missed everything you said there,  
Jim, we're in a keyhole on the S-band.

SC Okay, I said we are going to try to see  
if we can't see Pegasus. I was wondering how long we could  
expect to see it in view, how many minutes?

CAPCOM Would you believe 44 seconds to the -  
just to the COAS part of it at that attitude so you can see  
it a little bit longer than that going through the window.

SC Okay.

CAPCOM Apollo 9, Houston, we've been looking for  
some other things with a little more of a trailing angle.  
Seems like everything we've come across so far is about a  
90 degree crossing.

SC Oh, great, we're always out of phase.

CAPCOM Yes.

CAPCOM Apollo 9, Houston, about 30 seconds LOS.  
Tananarive at 53.

SC Roger, Houston, and we saw Pegasus going  
by. We were admiring (garbled)

CAPCOM Roger.

PAO This is Apollo Control at 192 hours 45  
minutes. Ascension has loss of signal. Rusty Schweickart  
reporting that the crew did see the satellite Pegasus during  
this pass. Communications were poor there, but we did  
understand that the Apollo 9 crew spotted the Pegasus. This  
Pegasus spacecraft was launched in May of 1965 aboard a  
Saturn I. Upon reaching orbit it deployed 2 large folding  
wing-like panels. It was launched to collect data on  
meteoroids. Spacecraft measures 96 feet from tip to tip,  
the center section 71 feet long. Pegasus is visible from  
the ground. It twinkles instead of reflecting a steady  
light because it is slowly tumbling in space as it orbits  
the earth. We're also looking for other satellites that might  
be in favorable position to Apollo 9. If they are located  
we will pass that information up to the crew to give them a  
chance to take a look at them. Next station to acquire will  
be Tananarive at 192 hours 52 minutes. This is Mission  
Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 192:52, CST 1052 524/1

PAO This is Apollo Control at 192 hours, 52 minutes and Apollo 9 is coming up on the station at Tananarive.

PAO This is Apollo Control at 193 hours, 1 minute. Apollo 9 has gone by Tananarive without conversation. Carnarvon will acquire at 193 hours, 8 minutes. Apollo 9 will be performing the S-band high gain antenna test during this Carnarvon pass, and will repeat the test again over the Hawaii station during this revolution. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 193:08, CST 1108 525/1

PAO This is Apollo Control at 193 hours 08 minutes. Carnarvon has acquired Apollo 9.  
CAPCOM Apollo 9, Houston, through Carnarvon standing by.  
SC Roger, Houston, Apollo 9.  
CAPCOM Roger.  
CAPCOM Apollo 9, Houston. Can you confirm with your own high gain antenna now?  
SC That's affirmative, we are high gain.  
CAPCOM Okay, it's coming through real fine.  
SC We've started passive thermal control now.  
CAPCOM Okay, we noticed that.  
PAO The Guidance Navigation and Control officer has just advised Flight Director Gene Kranz that Apollo 9 is in passive thermal control rolling slowly to control the thermal environment. That is part of this test.  
SC Houston, Apollo 9.  
CAPCOM Houston, go.  
SC Did you catch the time we started the PTC roll maneuver there?  
CAPCOM Let me see if GNC got it. Just a second.  
SC Okay, we know the time. I just wondered if you saw what time it was when we started.  
CAPCOM Roger, we got it at 193 plus 11.  
SC Okay, fine.  
CAPCOM One minute to LOS and when you come up to Hawaii there I'll give you the numbers to disable that 121 alarm for the landmark tracking thing.  
SC Very good. I'm ready.  
PAO This is Apollo Control at 193 hours 19 minutes. Apollo 9 is beyond the range of the Carnarvon station. The tracking ship Huntsville will acquire at 193 hours 24 minutes. During this pass at Carnarvon Apollo 9 has been involved with the S-band high gain antenna test. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 193:24, CST 1124 526/1

PAO This is Apollo Control at 193 hours, 24 minutes into the mission and the tracking ship Huntsville is acquiring Apollo 9.

PAO And the entire contingency of Kansas astronauts is at the CAPCOM console now. Astronaut Joe Engle has joined Ron Evans.

CAPCOM Apollo 9, Houston through Huntsville.

SC Houston, say again.

CAPCOM Roger, I have one target for passing across the States.

SC Say again that last (garbled).

CAPCOM 9, Houston. I have one Hasselblad target.

SC Okay, stand by.

SC Okay, go ahead.

CAPCOM Roger, Dallas/Fort Worth, geography, 193 plus 53 plus 11, 15 frames, 6-second intervals. That'll be north 20 degrees, over.

HUNTSVILLE Huntsville AOS, very weak signal.

PAO This is Apollo Control at 193 hours, 33 minutes. Apollo 9 is past the range of the Huntsville now. Hawaii will acquire in about 2 and a half minutes. During this Huntsville pass we asked the crew to take 15 photographs of the Dallas/Fort Worth area, during this upcoming pass over the United States. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 193:35, CST 1135 527/1

PAO This is Apollo Control at 193 hours,  
35 minutes. Apollo 9 about to tag up at Hawaii.  
CAPCOM Apollo 9, Houston through Hawaii.  
SC Go ahead, Houston, Apollo 9.  
CAPCOM Roger, I'll give you the disable, the  
121 alarm, and then I'll have the landmark tracking update  
for you.  
SC Okay, stand by.  
SC Okay, Houston, Apollo 9. Go.  
CAPCOM Okay, you disable it prior to going into  
P22 by verb 21 noun 01 enter, 1341 enter, and 0 enter. Okay,  
you want to enable it again after you're through with P22  
by verb 21 noun 01 enter, 1341 enter, and a 5 enter, so 5 is  
the nominal value.  
SC Roger, understand. To disable the alarm  
verb 21 noun 01 enter, 1341 enter, with a 0 enter. And to  
enable the nominal value is a 5 on address 1341.  
CAPCOM That's rog.  
SC Okay, you can pass the pad; I'm ready.  
CAPCOM Say again, Houston. I missed it.  
SC Say, go ahead with the landmark pad.  
CAPCOM Okay, landmark pad: ID 006 195:22:1500,  
NA on the FDAI and the shaft and trunnion. Your time of  
closest approach, 195:25:5300, and you'll be at - the target  
is 78 miles north.  
SC Roger, understand. ID 006 is 195:22:1500,  
closest approach 195:25:5300, target is 78 miles north.  
CAPCOM Roger, the next one.  
SC Go ahead.  
CAPCOM Landmark 130, 195:35:3100, TCA time  
195:39:0400, and it's 27 miles north.  
SC Roger, understand. 130, 195:35:3100;  
closest approach 195:39:0400, 27 miles north.  
CAPCOM Okay, and I've got some more pointing  
data now for a little better pass on the Pegasus.  
SC Say again the last of your (garbled).  
CAPCOM 9, Houston. Belay that; I want to re-  
check the times on it.  
SC Houston, 9. I'm sorry but there's a lot  
of static. Can you say again, please?  
CAPCOM Roger, we'll get your pointing data over  
Antigua, probably. We're not quite sure of the times yet.  
SC Okay, fine, thank you.  
FLIGHT CAPCOM, FAO reminds me not to disable the  
121 alarm until after they're through with their P52.

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 193:35, CST 1135 527/2

FLIGHT FIDO from FLIGHT. You want to update those times?  
CAPCOM Apollo 9, Houston.  
SC Houston 9. Go.  
CAPCOM Roger, for Redstone, be sure S-band antenna to omni and high gain antenna track switch to manual.  
SC Track to manual, omni S-band. Okay, do you want us to do that now, Houston?  
CAPCOM Affirmative, now.  
SC Roger, we're there.  
SC Houston, Apollo 9.  
CAPCOM Apollo 9, Houston. Go.  
SC Roger, do you want the data read back now on that S-band test?  
CAPCOM Affirmative.  
SC Are you through with the PTC yet?  
CAPCOM Say again on PTC.  
SC Are you through with the PTC or do you want us to continue?  
CAPCOM We have - Apollo 9, Houston. We have no reason to continue it.  
SC Okay, we'll go back to drifting along.  
CAPCOM Roger.  
SC Okay, Houston, here's the data on the S-band test.  
CAPCOM Roger, we're ready to copy.  
SC Okay, stand by one while I find my page there.  
CAPCOM Okay.  
SC Okay, at LOS at Carnarvon it was at 193:20:00 within a couple of seconds, and at that time the antennas were at a pitch of plus 30 and a yaw of 270, and after break lock they slued to a pitch of plus 45 and a yaw of 235, and stayed there. There was no tendency for them to go back to the reacq angles. Okay, Hawaii AOS was at 193:35:15 and at the first sign of signal strength the antenna appeared to return to the designated angles for reacq but then it got enough signal strength and went right past them and locked up at a yaw of 90 and a pitch of minus 70.  
CAPCOM Roger, we're with you.  
SC Okay, and LOS at Hawaii occurred early at 4250 and the antenna went right to the reacq angles of minus 45 and plus 90.  
CAPCOM Roger.

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 193:35, CST 1135 527/3

CAPCOM 9, Houston. We have that, and Rusty, while you're on the line there, on your EKG we're still not getting it, and so whenever you get a chance and no hurry on it, we'd like you to remove, clean, and reapply the sternal sensors, plus around these all three sensors on your chest at your convenience.

SC Okay, I'll see if I can't get Dr. Scott to perform another operation.

CAPCOM Okay, and I have some information on Pegasus right here.

SC Okay.

CAPCOM Okay, should be on the right side of your COAS at 194 plus 14 plus 10, and it'll leave the COAS at 194 plus 14 plus 40. Your inertial angles, roll, pitch and yaw: 288.3, 054.0 and 025.6.

SC Okay, Pegasus gets to the right side of the COAS at 194:14:10, leaves -

END OF TAPE

SC Okay, Pegasus is good for the right side of the COAS at 1941410, leaves the left side at 1941440, we are roll, pitch, and yaw 288.3, 54.0, and 25.6.

CAPCOM Roger. And you will be about 715 this time. And what we are trying to do is just prove that the first time we acquired it wasn't just luck and we still are looking for a different target to track so you can slip it into the computer and update the state vector and all those good deal things.

SC Oh, okay, great.  
CAPCOM And while you are in a copying mood there, I have about three targets of opportunity.

SC Okay. Could you start with the time first, Ron?

CAPCOM Okay.  
SC Go ahead.

CAPCOM Okay, 194 + 06 + 00, the Barbados area, oceanography, 3 frames, 20-second interval, that's north 30 degrees.

SC Okay.  
CAPCOM Well, we just passed one of them, you are over one right now, really. At the 30, 4 frames, 20 seconds, and at south 30 degrees Virgin Islands there.

SC Rog, we are getting movies of it right now.

CAPCOM Okay, good deal. You're ahead of us. And the other ones clobbered in, we found out, so that's it.

SC Okay, fine.  
SC Hey, Ron (garble).

CAPCOM Say again. I missed it.  
SC Did we just go over the recovery sites?

CAPCOM Stand by one, just a second.  
SC Where's the Guadalcanal? I was just looking down and I saw a great big ship down there. I just wondered if we happened to pass it.

CAPCOM I think you are way south of it.

SC Way south of it?

CAPCOM Affirmative.

SC Okay.

PAO Guidance and control officer just reported that Apollo 9 has loaded the Pegasus information into the digital autopilot. We're in contact through Antigua now for about another 3 minutes. This second attempt to see the Pegasus will come at Ascension Island acquisition again. However, there is an ARIA tracking aircraft in the area between Antigua and Ascension, so we may have continuous communications down through Ascension. That was Jim McDivitt talking about seeing the big ship, thought it might have been the recovery carrier, the U.S.S. Guadalcanal, but

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 193:58, CST 1158 528/2

of the recovery area.

PAO We will recap Pegasus information again.  
Acquisition time of 194 hours 14 minutes 10 seconds, it  
should appear in the right side of the crew optical align-  
ment sight at that time, pass out of the left side of the  
sight 30 seconds later. Range between the two vehicles  
will be 715 nautical miles, that is the slant range. Apollo 9  
will be behind and below Pegasus.

CAPCOM

ARIA 5, Houston Capcom. Go remote.

ARIA 5

Remote.

ARIA 5

ARIA 5 remote.

CAPCOM

Apollo 9, Houston through ARIA for

voice checks.

SC

Just a little (garble) but it'll do. How us?

CAPCOM

Rog, I think you are a little less

than readable.

SC

All right, another one, 1, 2, 3, 4, 5,

6, 7, 8, 9, Apollo 9 out.

CAPCOM

Rog, it was much better that time, Jim.

SC

Okay, and you are coming through pretty

good too.

END OF TAPE

CAPCOM And Apollo 9, Houston. Another voice  
check - S-band.  
SC Say again, Houston.  
CAPCOM Roger. I just wanted to - ARIA is  
sending S-band back to us now for voice checks.  
SC Okay.  
CAPCOM Loud and clear.  
SC Roger. We can hear you pretty well, too.  
CAPCOM Yes, I think they are working a little  
better nowadays than they used to be.  
SC Hey, I think they come in very handy.  
CAPCOM Concur wholeheartedly.  
PAO Apollo 9 is about a minute away from  
that Pegasus this time. And Ascension has acquired.  
CAPCOM Apollo 9, Houston. Any Joy?  
SC Roger, Houston. We got it. He went  
through the - he went to the diastemeter about a degree an  
a half low -  
SC And the same on the COAS, but on the  
COAS he was only about a half of a degree low.  
CAPCOM Okay. Half a degree low on the COAS.  
SC Right. But now it's in the right win-  
dow and it's probably not calibrated very well.  
SC He was a degree and a half in the left  
window which should be calibrated pretty good.  
CAPCOM Okay. We're a little curious on the  
times. How did the times work out there?  
SC Looks like you was like - about 10 sec-  
onds late.  
CAPCOM Okay.  
SC Boy, he's certainly moving.  
CAPCOM Yes, that's just about a 90 degree  
crossing there.  
SC Yes.  
SC Do you want us to rendezvous with him?  
CAPCOM Apollo 9, Houston. One minute LOS.  
Tananarive at three-zero, and Carnarvon four-four.  
SC Roger.  
PAO This is Apollo Control at 194 hours,  
22 minutes and Ascension has Loss Of Signal. Thanks to the  
ARIA aircraft between Antigua and Ascension we've been in  
contact with Apollo 9 since it was acquired by the Hawaii  
station, and the S-band communications through the ARIA  
were good. Apollo 9 crewmen getting their second look at  
Pegasus during this pass at Ascension. Range was 715 naut-  
ical miles at the time of that sighting. The crew is con-  
tinuing to do a great deal of photography - the targets of  
opportunity. We passed up a couple this time - the Barbados

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area and the Virgin Islands. The spacecraft was near the Virgin Islands area at the time we requested that and had already started photographing the area with the 16-millimeter motion picture camera. And we have asked Rusty Schweickart to - at his convenience to - clean the sternal sensors in his biomedical harness. We are not receiving EKG from Rusty. We passed up a couple of landmark tracking areas for the crew to track through the sextant and take marks in a navigational exercise. Landmark number 6 is the Point Loma lighthouse at San Diego. We don't have the identification yet on landmark number 130. We'll pass that along as soon as we do get it. And that was Dave Scott who asked if we wanted the crew to rendezvous with Pegasus. Tananarive will acquire the spacecraft at 194 hours, 30 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69 GET 194:30 CST 1230 530/1

PAO                    This is Apollo control at 194 hours 30 minutes. Tananarive has acquired Apollo 9. However, we have not yet put in a call nor have we heard from the crew. Identification on landmark 130 that's Guarico Dam, Guarico, near a city in Venezuela named Calabozo, spelled Calabozo. We'll stand by through Tananarive.

PAO                    This is Apollo Control at 194 hours 38 minutes. Apollo 9 is beyond range of Tananarive. The next station to acquire will be Carnarvon at 194 hours 44 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 194:44 CST 1244 531/1

PAO This is Apollo Control at 194 hours 44 minutes and Carnarvon has acquired Apollo 9.  
CAPCOM Apollo 9 Houston, standing by.  
SC Roger.  
CAPCOM Roger.  
CAPCOM Apollo 9, Houston, we're copying a pretty good sized middle gimbal there.  
SC Roger. We're sort of Moseying on over to correct attitude for landmark tracking.  
CAPCOM Okay, good.  
SC Good eye, though.  
CAPCOM Roger.  
SC You keep on us, Ron.  
CAPCOM We'll try that.  
SC It's going to cut the day when we don't see it.  
CAPCOM Okay.  
CAPCOM Apollo 9, Houston, you're on your own, Guam at about 57.  
SC Roger, Guam at 57. We'll keep an eye on it. When we come up over Guam see if he's been into it or not.  
CAPCOM Okay.  
PAO This is Apollo Control at 194 hours 55 minutes. Carnarvon has loss of signal. Guam will acquire Apollo 9 at 194 hours 57 minutes, about 2, 2 and a half minutes from now. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 194 hours 58 minutes and Guam has acquired Apollo 9.

CAPCOM Apollo 9, Houston. We are all smiling again.

SC Aha. We fooled you, didn't we? I want to know if there was anybody who placed any bets on it.

CAPCOM (laughter).

CAPCOM Apollo 9, Houston.

SC Go ahead, Houston, Apollo 9.

CAPCOM Roger. Pretty smooth about walking that around there. I have one more target of opportunity.

SC Stand by.

SC Okay, go ahead.

CAPCOM Okay, a time 1954332, it's the Amazon delta, oceanography, 5 frames, 10-second intervals, it will be north 35 degrees.

SC Okay, understand 1954332, Amazon delta, oceanography, 5 frames, 10 seconds delta T, north 35 degrees and be advised we kind of concluded after, unfortunately having made the mistake that the Barbados oceanography shot on the last rev should have been 30 south rather than 30 north, at least from our map here. Unfortunately, we didn't realize that until we had already taken up north.

CAPCOM Okay, let me see if you caught us again.

SC Yes, I'm not sure if that's right, Ron. They may have actually wanted the pictures well north of Barbados, but the Barbados were south of us.

PAO This is Apollo Control at 195 hours 7 minutes and Guam has loss of signal. Hawaii will acquire at 195 hours 12 minutes. We passed up another photographic target of opportunity to be performed, if possible, at 195 hours 43 minutes, the delta of the Amazon river. That byplay between the crew and astronaut Ron Evans at the end of the Carnarvon pass and acquisition at Guam concerned a gimbal angle on the inertial platform. The guidance officer here was watching closely on the ground but the crew was apparently maneuvering and the guidance officer was watching him get near the gimbal lock area and we warned him about that. If the spacecraft does go into gimbal lock, it tumbles the platform and it's then necessary to realine the platform. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 195 hours, 12  
minutes. Apollo 9 is about to be acquired at the Hawaii  
station.

CC Apollo 9, Houston through Hawaii.

SC Hello there.

CC Roger; we're both right on that Barbados  
thing; the Island is actually south but we wanted some pictures  
to the north for oceanography type things.

SC Okie Dokie, that's what you got; you got  
pictures to the north, and it's water and clouds.

CC Roger. And Jim on that second landmark  
tracking, the weather is a little bit marginal on that one.

SC Okay, I think our intrepid tracker can  
probably nail it down though.

CC Ahh, very good.

SC The marginal we handle routinely; the  
impossible we attempt.

CC Okay, got you. Apollo 9, Houston.

SC Go ahead Houston.

CC Roger; we're thinking of putting in a  
backup GDC aline at 196 hours there, just to let you know;  
I'll pass up some data on it a little bit later on.

SC Fine - okay.

SC And Houston, just north of us right now by  
about 70 or 80 miles there's a very, very symetrical cyclonic  
pattern of clouds out there. Anti-cyclonic; I'm corrected.

CC Roger.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 195:22, CST 1322, 534/1

SC Okay here Houston, Apollo 9.  
CAPCOM Apollo 9, Houston. Go.  
CAPCOM Apollo 9, Houston. Go ahead.  
SC Houston, Apollo 9.  
CAPCOM Roger. Go ahead.  
CAPCOM Apollo 9, Houston.  
SC Go ahead, Houston. Apollo 9.  
CAPCOM Roger. I have you now. I read you  
a while ago, but you weren't reading me.  
SC Roger, Houston. Apollo 9. How do you  
read?  
CAPCOM Loud and clear now.  
SC Okay. Got five good marks on Point  
Loma.  
CAPCOM Hey, very good.  
SC Gee, the surf looks great down there.  
CAPCOM Apollo 9, Houston. I think you have to  
proceed on your display now for us to get the mark data  
down here.  
SC Oh, okay. I'm going to go all the way  
through the program. Don't worry.  
CAPCOM Oh, okay. Very good.  
CAPCOM Apollo 9, Houston. I've got the roll,  
pitch, yaw and align angles for your GDC ALIGN there, if  
you want to copy.  
SC Okay. Go ahead.  
CAPCOM Roger. Roll align 246, pitch 315,  
yaw 051, the south set stars. We'd like to leave the CMC  
and IMU powered up for this alignment. Your GDC ball angles  
will be 180 180 and zero.  
SC Okay. I understand. Roll, pitch and  
yaw at 246 315 051, south set stars. Leave CMC, IMU powered  
up and GDC ball angles 180 180 zero.  
CAPCOM Roger. And once you get to your GDC  
align attitude can you hit us a VERB 06, NOUN 22 to compare  
the IMU angles with what we think they ought to be?  
SC Roger.  
CAPCOM Nine, Houston. That's VERB 06, NOUN 20  
instead of 22.  
SC Roger.  
CAPCOM Apollo 9, Houston.  
SC Go ahead.  
CAPCOM Roger. Can you record these and just to  
let you know what we think they ought to be. Roll ought to  
be 180.4, pitch 237.5, and yaw 0.5.  
SC Okay. 180.4, 237.5 and 000.5.  
CAPCOM Roger.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 195:33, CST 1333 535/1

PAO This is Apollo Control. Within a few seconds Dave Scott will start tracking this dam in Venezuela. He reports he got five good marks while tracking the Point Loma lighthouse in San Diego. He said the surf looks good there.

PAO Also during this pass over South America the crew will photograph the mouth of the Amazon River Delta. In the beginning of this day the Apollo 9 crew reported they had 200 frames of 70mm film remaining. That's out of a total on board of 880 frames.

PAO Antigua has acquisition now. We have another ARIA aircraft in the area between Antigua and Ascension. We'll attempt to acquire through the ARIA about 2 minutes after LOS at Antigua. And ARIA acquisition should carry us up to within 2 minutes of Ascension acquisition.

PAO Antigua has had loss of signal at 195 hours, 42 minutes. We should get acquisition through the ARIA tracking aircraft in approximately 1 minute. We'll continue to stand by and see how we make out through the ARIA.

END OF TAPE

APOLLO 9 COMMENTARY, 3/11/69, GET: 195:46 (1346) 536/1

POA                      This is Apollo Control, Apollo 9 is out  
of range of that ARIA; we did not converse with the crew.  
Ascension will acquire in about 2 minutes. We'll come back  
up then.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69 GET 195:51, CST 1351 537/1

PAO                    This is Apollo Control at 195 hours  
51 minutes and Apollo 9 is within range of Ascension Island  
now.

CAPCOM                Apollo 9, Houston, through Ascension.

CAPCOM                Apollo 9, Houston.

CAPCOM                Apollo 9, Houston.

SC                    Apollo 9 here, reading you loud and clear.

CAPCOM                Roger. I don't know if I mentioned it  
on that backup GDT aline we do not, I say again, do not want  
you to cage the IMU.

PAO                    This is Apollo Control at 195 hours 56  
minutes. Ascension has lost Apollo 9 signal. Tananarive  
will acquire at 196 hours 06 minutes. This is Mission  
Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 196:06, CST 1406 538/1

PAO This is Apollo Control at 196 hours,  
6 minutes. Apollo 9 coming up on the Tananarive station.

PAO This is Apollo Control at 196 hours,  
15 minutes. Tananarive has loss of signal. Apollo 9 will  
miss the Carnarvon, Australian station on this revolution.  
The next station to acquire will be Guam at 196 hours,  
33 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 196:33, CST 1433, 539/1

PAO This is Apollo Control at 196 hours,  
33 minutes and Apollo 9 is within range of Guam.  
CAPCOM Apollo 9, Houston through Guam.  
SC Roger. This is Apollo 9.  
CAPCOM Roger. We need your P22 data there.  
If you just call it up again I think we can get it.  
SC Okay. In work.  
SC Houston, we'd like to run this optics  
GDC align again on the next pass. We'll have to stay  
powered up until about 197 40 or something like that.  
CAPCOM Roger. We concur.  
CAPCOM And Nine, Houston. Have a target of  
opportunity.  
SC Okay. Go ahead.  
CAPCOM Roger. At time 197 13 00 - it will be  
Ecquador, geology, ten frames, 10 seconds on track.  
SC Okay. 197 13 00, Ecquador, geology,  
10 frames and 10 seconds on track.  
CAPCOM Roger.  
SC And Houston, Nine. Those are the right  
numbers for the second landmark.  
CAPCOM Roger. I guess - just go ahead and  
call P22. That 89 just won't quite hack it.  
SC Oh, okay. You want me to just read  
you the nav 89? You want the whole P22 again?  
CAPCOM No. Just call up P22 so we can get  
the mark data.  
SC Okay.  
SC How far would you like to go in P22?  
CAPCOM Just call it up. That's all we need.  
SC Okay. Fine. And it was sort of cloudy  
over there and I didn't get identification until we were  
just about overhead, but didn't get by part 2.  
CAPCOM Okay -  
SC So far, Houston, it appears the time  
overhead was off by almost a minute.  
CAPCOM Roger.  
CAPCOM Apollo 9, Houston.  
SC Go ahead, Houston.  
CAPCOM Roger. The computer is yours now and  
we'll delay the E MEMORY dump and state vector another rev  
here.  
SC Okay.  
CAPCOM And do you have any results at all on  
that GDC and ALINE?  
SC Yes. Just a minute.  
SC I guess we went through it. We learned  
a few things. I guess relative to history and how the pro-  
cedures have changed. We did it wrong the first time and

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 196:33, CST 1433, 539/2

we'll go back and do it right this time and then when we get back down we'll want to talk about it some.

CAPCOM Okay. I understand.

C Houston, this is Apollo 9.

CAPCOM Houston. Go.

SC We'd like to work out a - we'd like to use the procedure that we used about 4 or 5 years ago on this thing and see how it compares. Okay?

CAPCOM Okay. I don't know if anybody had got that procedure around. We'll see.

SC It all ends up the same way. We'll just use the same numbers and shoot it up the same way.

CAPCOM Okay. Very well.

SC We'll use the procedure and get you the right numbers. How does that sound?

CAPCOM That sounds good. And watch your gimbal lock as you are maneuvering around. That's all we have got to say.

SC Yes. It fits right in there, doesn't it?

CAPCOM Yes. Gets pretty close, I think.

SC You'll really have a good time watching this time.

CAPCOM Okay.

SC Houston, Apollo 9.

CAPCOM Houston. Go.

SC Roger. Can you get us another map up-date here?

CAPCOM Roger.

CAPCOM Here we go. Rev 124 at 196 plus 29 plus 12, right ascension 1517, longitude 112.6 east.

SC Okay. Rev 124 - 196 29 12 and the longitude is 112.6.

CAPCOM Roger.

PAO This is Apollo Control at 196 hours, 42 minutes. Apollo 9 beyond the range of the Guam station. Hawaii will acquire at 196 hours, 50 minutes. During this pass at Guam we asked the Apollo 9 crew to do some photography over Ecuador during their next pass over South America. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69 GET 196:52, CST 1452 540/1

PAO This is Apollo Control at 196 hours, 52 minutes into the mission, and Hawaii has acquired Apollo 9.

CAPCOM Apollo 9 Houston, through Hawaii.

SC Go, Houston.

CAPCOM Roger. Our cryo plan this evening is essentially the same. However, I guess you noticed that the exhaust temperature on fuel cell 01 has stayed pretty much constant today. So what we would like to do is essentially maintain the same power load without any large changes, either up or down. So in addition to the powered down procedure we had last night when you power down your SPS stuff, put in burner 03 on Main A and put the rendezvous transponder switch to POWER.

SC Houston, do you read Apollo 9?

CAPCOM Roger, loud and clear. How me?

SC You're a little broken. I understand that when we power down the IMU in the SPS you want us to put the rendezvous transponders switch to POWER and the burner 03 to Main A.

CAPCOM That's affirmative.

SC Okay, and on the cryo you want to let the pressure drop down between 190 and 200 on the hydrogen and then we're going to turn one of the fans on until it's time for number 1 I guess.

CAPCOM No, we're going to use tank 02 again tonight. Tank 02 fan ON just prior to going to sleep.

SC Okay, tank 02 fan ON tonight.

CAPCOM Roger.

CAPCOM And Apollo 9, Houston.

SC Go ahead, Houston, 9.

CAPCOM Roger. I guess RS on 65 count down here shows about 97, and you said 105. Can you recheck that?

SC Roger, we'll get it in just a second and do you have any biomed data on the LMP yet?

CAPCOM Roger, stand by.

CAPCOM Apollo 9, Houston, still looks the same down here on the LMP.

SC Looks the same, huh, well, he checked the retros and they are nice and damp and the retro case looks fine. Guess we'll work on it some more.

CAPCOM Okay.

PAO This is Apollo Control at 196 hours, 54 minutes. Hawaii has loss of signal, Redstone will acquire in approximately 2 minutes.

PAO This is Apollo Control. We have some tape from this Hawaii pass that we started into late. We'll play that for you now.

SC Please read me that last bunch of landmark tracks was with the telescope rather than the sextant (garbled)

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 196:52, CST 1452 540/2

CAPCOM Apollo 9, Houston, you faded on that  
one. Say again.  
Sc (garbled)  
PAO This is Apollo Control. The Redstone should  
acquire in 2 or 3 seconds.  
CAPCOM Apollo 9 Houston, through Redstone.  
SC Roger, Apollo 9, go.  
CAPCOM Roger I missed your last comment there  
in Hawaii.  
SC Oh yea I, I just mentioned that the  
second group of marks on the second, sight - for the marks on the  
second sight that were made from the telescope viced the sextant  
because of the visibility problem.  
CAPCOM Okay understand. Oh incidentally it  
looks like on that first set of marks the 121 alarm would  
not have rung anyhow even, even if we had not disabled it.  
SC Oh well, that's very interesting. Very  
good.  
CAPCOM Yes.  
SC Houston, I checked the SO-65 magazines  
and we are reading about 104 or 105.  
CAPCOM Okay, understand.  
PAO This is Apollo Control at 197 hours.  
Apollo 9's orbit is now 247.8 nautical miles Apogee, 98  
nautical miles perigee. The white team is in the process  
of handing over to the Gold Team. We estimate the change  
of shift news conference for 3:30 PM central standard time.  
CAPCOM 9, Houston.  
SC Hello there Alie, how are you?  
CAPCOM Fine Jimmy how are you tonight?  
SC Pretty good.  
CAPCOM If you're ready to copy, I've got some  
block data for you.  
SC Just a minute.  
CAPCOM Okay.  
SC Okay, go ahead.  
CAPCOM Alrighty, 1 2 3 Alpha +316 +1485 201 07  
09 3 ---

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 197:01, CST 1501 541/1

CAPCOM - 201070931471283bravo + 259 + 145020247  
153839129, detla charlie, - 220 - 160020435304829130 alpha  
charlie - 004 - 027020500375538131 alpha charlie + 120 -  
0325206350747791322 alpha + 264 - 028020813153769133 alpha  
charlie + 231 - 0589209413640441341 alpha + 286 - 068021116  
483622 and the SPS trims are pitch, -0.64, yaw, -0.94, and  
hold your readback for a minute.

SC Holding.

CAPCOM 9, Houston. I would like to give you  
some pointing data here. It's going to be coming pretty  
close here on this Pegasus.

SC Okay, have at it.

CAPCOM At 197 + 13 + 00, if you roll 00.89,  
pitch 178.4 and yaw 062.7, you will pick it up at about  
1100 miles, 4 minutes later, it will be into 100 miles and  
your closest point of approach will be about 67 miles below  
it, or behind it, I mean, 77 miles at the lowest, and 35  
miles to the right.

SC Well, how about that. Let's see if  
I got the numbers right. 1971300, that's the right time?

CAPCOM Affirmative. That's when it will be a  
thousand miles off, it really moves in.

SC I believe it. And then the roll, say  
again the roll, I missed that.

CAPCOM The roll was 8.9 degrees.

SC Okay, roll 8.9, pitch 178.4 and yaw  
62.7.

CAPCOM Yeah. I don't know if you will be  
able to track it in or not but it might be worth a try,  
try a little Kentucky windage there.

SC Okay, we've got a lot of windage up  
here.

CAPCOM Okay.

SC Hey, Houston, Apollo 9.

CAPCOM Houston, go.

SC Here we've been trying to avoid that  
red dot on the ball all day and look what you gave us for  
yaw.

CAPCOM Yeah, it's pretty close there.

SC We will watch it.

SC What kind of odds are you giving whether  
we go in it or not?

CAPCOM Well, the tracking is supposed to go  
the other way, and the yaw gets better.

SC Alrighty.

CAPCOM Apollo 9, Houston.

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 197:01, CST 1501 541/2

PAO                      And Apollo 9 apparently has gone over the hill out of range of the tracking station at Texas. The next station to acquire will be the site at Tananarive at 41 after the hour. The Gold Team has replaced the White Team and that last CAPCOM voice was that of Al Worden. At 197 hours, 8 minutes this is Apollo Control.

END OF TAPE

PAO                    This is Apollo Control at 198 hours, 17 minutes ground elapsed time. During the Change of Shift Press Conference, we taped about 3 minutes or so of air-to-ground while the spacecraft was passing over the tracking station at Tananarive, and also over the site at Guam. In both cases the communications with the spacecraft was less than desirable. Over Tananarive there was some reference made to the Pegasus Satellite at viewing attempt and, over Guam, because of the low elevation pass, the astronauts were fading rather audibly in and out. Anyway, we do have that tape and will play it back at this time.

CAPCOM                Apollo 9, Houston, through Tananarive.

SC                    Hey, this is Apollo 9.

CAPCOM                Roger, Apollo 9, Houston. I guess we have a few minutes here at Tananarive. We can get some of this stuff out of the way. I guess, just for planning purposes, when you get to Hawaii, we'll get the memory dump, and the state vector update, and consumables, and your PID readings. I guess while we are here at Tananarive we can get the block and readback.

SC                    Garble.

CAPCOM                Apollo 9, Houston, how do you read now?

SC                    Garble.

SC                    Reading a little better.

CAPCOM                Roger, Apollo 9. Understand. Reading a little better. Communications here are not too good. Did you get a chance to see Pegasus?

SC                    Houston, Apollo 9. We didn't get a chance to. We really didn't see it. We may have come close to it.

CAPCOM                Roger, Apollo 9, Houston. Understand.

CAPCOM                Apollo 9, Houston, through Guam. Dear Apollo 9, Houston, reading you fairly weak. I guess we could use some of this pass to tell you what we are going to do over Hawaii.

SC                    Okay, go ahead.

CAPCOM                When we get a clear signal over Hawaii we'll do a memory dump, then a state vector update, and if you've got them ready, I'll get your consumables and PRDs and I guess this is a good time to remind you of the waste water dump. We want you to dump to not more than 20 percent tonight. Not more than 20 percent and remind you of the CO2 change in the water chlorination and termination of Bat B charge.

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 198:17, CST 1617 542/2

SC Roger, understand. We'll terminate that B charge now and understand you want us to dump water to 20 percent.

CAPCOM That firmed it.

SC Okay. We'll be prepared to do an E memory dump, and then we'll go into a state vector update and as soon as we are through with that, we'll give you the consumables and PRD.

CAPCOM Yes, roger, Apollo 9. We'll pick you up over Hawaii at about 25.

SC Okay. Very good.

SC Houston, are you still there?

CAPCOM Apollo 9, Houston, Roger, we're still here, but we're reading you very weak.

SC Garble

CAPCOM Roger, understand that that VDP line was successful?

PAO We'll reacquire the spacecraft at 25 after the hour - in about two or three minutes from now. In the meantime, at 198 hours, 22 minutes, ground elapsed time, this is mission control.

END OF TAPE

PAO This is Apollo Control at 198 hours, 25 minutes. In a matter of a half minute or less we expect to acquire the spacecraft over the Hawaii tracking site, and at that time we would expect to have better comm with the Apollo 9 crew. So let's stand by here for the air-to-ground.

CAPCOM Apollo 9, Houston.

SC Go ahead, Houston.

CAPCOM Roger, we'll have to stand by for a few minutes on memory dump till we get through the keyhole. In the meantime, if you're ready on the consumables we'll take that.

SC We're ready; you ready?

CAPCOM I'm ready.

SC Okay, service module A, B, C, D: 52, 54, 45, 51. Bat C, pyro A and B: 36.9, 37.1, 37.1. And the injector temperatures, 5 Charlie and Delta: 4.9, 4.9. 6 Alpha, Bravo, Charlie, Delta: 4.8, 4.8, 4.9, 4.8. The PRD's: Commander, 3120; CMP, 6122; LMP, 8022.

CAPCOM Roger, copy. Consumables 52, 54, 45, 51, 36.9, 37.1, 37.1, 4.9, 4.9, 4.8, 4.8, 4.9, 4.8, and the PRD's: 3120, 6122 and 8022.

SC That's Charlie.

SC Hey, you want some angles on the GDC aline?

CAPCOM Okay, fire.

SC Okay, 180.36, 236.10, 359.78. And that was after the maneuver to 180, 180 zero, which took us like about 28 minutes.

CAPCOM Roger, understand. Those angles, 180.36, 236.10, 359.78.

SC That's Charlie. And you want your block data back?

CAPCOM Okay, we might as well go ahead and get that now.

SC Hey, before you get that, the maximum radiation going through the anomaly was .037 rads per hour.

CAPCOM Roger, understand the radiation survey reading was .037 rads per hour.

SC Righto.

CAPCOM Okay, you can give me the block data readback if you like.

SC All right. Are you ready now?

CAPCOM Yes.

SC Okay, 1273 Alpha, plus 316 plus 1485 2010709 3147. 1283 Bravo, plus 259 plus 1450 2024715 3839.

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 198:25, CST 1625 543/2

129 Delta Charlie, minus 220 minus 160 2043530 4829. 130 Alpha Charlie, minus 004 minus 0270 2050037 5538. 131 Alpha Charlie, plus 120 minus 0325 2063507 4779. 1322 Alpha, plus 264 minus 0280 2081315 3769. 133 Alpha Charlie, plus 231 minus 0589 2094136 4044. 1341 Alpha, plus 286 minus 0680 2111648 3622. With a pitch trend of minus .64 and a yaw trend of minus .94.

CAPCOM Roger, Apollo 9, Houston. Copy correct.  
SC Okay.  
CAPCOM Okay, and we're ready for the U  
memory dump if you'll give us the verb 74 enter.  
SC Okay, on my mark. 3, 2, 1, mark.  
CAPCOM Apollo 9, Houston at Redstone.  
SC Go ahead.  
CAPCOM Rog, we're not sure we got all that U  
memory dump, would you do it again for us please?  
SC Oh, yes, we'll do it again.  
CAPCOM All righty, that's very nice of you.  
SC Roger, you all set?  
CAPCOM All set.  
SC Roger, 3, 2, 1, mark.  
CAPCOM Apollo 9, Houston. We're ready to give  
you a state vector if you'll give us ACCEPT.  
SC Roger, you have ACCEPT.  
CAPCOM Roger.  
CAPCOM And Apollo 9, Houston. You might be  
advised that we're reading Rusty's biomed now okay. Looks  
like Dr. Scott's operation was a success.  
SC That's great. The operation was a suc-  
cess but the patient died. What we did was we took Rusty's  
sensors and moved them over on Dave. They figured he was  
the only one with a heart strong enough to beat through.  
CAPCOM No wonder the doctors are scratching  
their heads.  
SC Hey, ask the Flight Surgeon on duty there  
if he can unscramble all of our EKG's and he always knows  
who's hooked to which comm cable.  
CAPCOM Yes, that's right. He's been able to  
do that.  
SC Very good.  
CAPCOM He knows you guys better than you do.  
SC That's what bothers me.  
CAPCOM Apollo 9, Houston. On that waste water  
dump, maybe I didn't make it clear. They want you to dump  
so that you have no more than 20 percent in the waste water.  
Dump down to 15 to 20 percent so that -

END OF TAPE

CAPCOM On that waste water dump, I didn't make that clear. We want you to dump so that you have no more than 20 percent in the waste water. Dump down to 15 or 20 percent, so that amount of water left at reentry will be correct.

SC Okay, that's what we'll do. We'll dump down to between 15 and 20 percent.

CAPCOM All right.

CAPCOM Apollo 9, Houston. Your state vector is in, we verify it for you and you have the computer back.

SC Okay. Read you.

CAPCOM Apollo 9, Houston.

SC Go ahead.

CAPCOM Rog. One last question. We'd like to know how much of Redstone you have left.

SC I think we have about a hundred frames.

CAPCOM Roger. one hundred frames and we're about to lose you here at Redstone.

SC Okay.

CAPCOM Okay. We're still showing you in acceptor, Jim.

SC Okay. We'll get out in just a minute.

CAPCOM Okay, we'll be losing you in about a minute here at Redstone. I guess it's time for you fellows to get tucked in for the night.

SC Okay. We haven't eaten yet, so we'll be up for a while, so you can get hold of us.

CAPCOM Okay.

PAO It looks like the Apollo 9 spacecraft has gone over the hill at the Redstone. Next to acquire will be the tracking station at Tananarive at 17 after the next hour. That will be 199 plus 17. We don't expect much calm over that pass. As you heard, the astronauts will settle down to their meal and then, of course, go into the rest period. At 198 hours, 39 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

COMM

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 199:50, CST 1750, 545/1

PAO                      This is Apollo Control at 199 hours, 50 minutes ground elapsed time. During the pass over the Tananavive station, that was the last station that acquired the spacecraft, we had no communication with the crew. Earlier they had said that during that period of time they had planned to eat. We'll have acquisition at the Hawaii station in about, well at 1 minute after the hour or about 10 minutes from now and we'll tape that pass and if there is any communication between the air and the ground we'll play it back to you after the Hawaii pass. At 199 hours, 51 minutes GET this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 200:09, CST 1809 546/1

PAO This is Apollo Control at 200 hours, 9 minutes, ground elapsed time. We taped about 3 minutes of conversation - air-to-ground conversation between the Apollo 9 crew and ground here on this Hawaii pass which we just concluded and we'll play that for you now.

CAPCOM Apollo 9, Houston. Hawaii.

SC Roger. This is Apollo 9.

CAPCOM We see that you are not asleep yet, so we thought we'd give you a call and give you the update on the block data No. 20.

SC Okay. Stand by one.

CAPCOM All right.

SC Okay. Go ahead, Al.

CAPCOM Okay. It's on rev 127 and the updates are as follows: 127 Charley Charley plus 17 minus 1650201 21043082. End of update.

SC Roger. 127 Charley Charley 117 minus 165020121043082.

CAPCOM That's correct, Dave.

SC Okay. How's everything going down there?

CAPCOM Oh, it's going very quietly down here. How's it up there?

SC Oh, very quietly up here. We're just sort of regrouping and getting ready.

CAPCOM You're about ready to go night, night?

SC Well, we'll try to sort of get organized here so tomorrow night we can put everything in its proper place with a minimum of disturbance.

CAPCOM Dave, we'd like to confirm that you've got the H2 fans on in tank 2 and that you did do a canister change - CO2 cannister change.

SC Roger. Affirm. We did do a CO2 canister change on time and H2 fan - we haven't turned it on. We're going to turn it on just before we go to sleep.

CAPCOM All right.

SC Which will probably be in about 15 or 20 minutes.

CAPCOM Okay. We'll take a look into giving you an extra hour tomorrow.

SC No. I guess we'd just as soon get up on time tomorrow and sort of get going so we have an even day tomorrow.

CAPCOM Okay. We're with you.

CAPCOM Apollo 9, Houston. We'd like for you to go ahead and turn that fan on tank 2 now, if you would, please.

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 200:09, CST 1809 546/2

SC Very well. It's on now.  
CAPCOM Roger. Thank you.  
SC You are welcome.  
SC Houston, Apollo 9.  
CAPCOM Go ahead, nine.  
SC Hey, Al. We just pulled the flight plan out and took a look at it and there's really not much to do the first couple or three hours, so why don't you give us a ring about 209 in Carnarvon?  
CAPCOM Dave, we'll see if we can work that one out. It's okay from down here right now.  
SC Okay. One thing we'd like to make sure we do tomorrow, is get all the SO-65s done.  
CAPCOM Yes, you bet.  
SC All right. One more thing. If you can't find any targets of opportunity for the space ships, don't worry about it. We'll be able to take plenty of pictures.  
CAPCOM Okay. Copy that.  
SC Lots of things to take pictures of up here.  
CAPCOM Show Biz.  
PAO That 209 at Carnarvon reference, of course, was 209 hours into the flight while over the tracking station at Carnarvon. That's when they anticipate awakening the crew tomorrow morning. So, at 200 hours, 15 minutes into the flight of Apollo 9, this is Mission Control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 201:42, CST 1942 547/1

PAO                    This is Apollo Control at 201 hours, 42 minutes ground elapsed time. We've acquired the Apollo 9 spacecraft at the Hawaii tracking station on this, the 127 rev, and at that time the Flight Surgeon reported that the Command Module Pilot data on him has been transmitted back to Mission Control here in Houston. That would be biomedical data, and the data indicated that Dave Scott's heart rates were, oh, in the 45 beats per minute average, indicating that Scott evidently is sleeping. The Flight Director called some of the flight controllers for a status report on the spacecraft, and of the report back was everything looks normal. We'll next acquire the Apollo 9 at 202 hours, 18 minutes, or some oh, about 35 or so minutes from the present time over the Ascension tracking station. At 201 hours, 43 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 202:55, CST 2055 548/1

PAO                      This is Apollo Control at 202 hours, 55 minutes ground elapsed time. Apollo 9 at the present time is over China on the 128 revolution. The tracking station at Guam will acquire the spacecraft in about 7 minutes. Previously the tracking sighted Ascension Island - had the spacecraft, and on that particular track there was biomedical information transmitted down from the spacecraft to the ground on the Commander who is now asleep in the left couch, and the Command Module Pilot who is now sleeping in the right couch. According to the Flight Surgeon here at MCC, the data indicated that both astronauts were in the early stages of sleep. The systems on the spacecraft were performing normally, with some 6 hours and 2 minutes still remaining in the sleep period, or the rest period. At 202 hours, 57 minutes, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 20403, CST 2203, 549/1

PAO                    This is Apollo Control at 204 hours, 3 minutes ground elapsed time. Apollo 9, at the present time is just moving out of range of the Ascension tracking station. During its pass over the Ascension station, the surgeon here reported that the two Astronauts on which we have biomedical information, namely Dave Scott and Jim McDivitt, appear to be sleeping rather soundly, and the indications are that they have been asleep now or at least resting well and asleep lightly for the last couple of hours. The spacecraft systems all seem to be functioning normally. On this the 129 revolution, spacecraft will be moving over the west coast of Africa shortly. There are about 5 hours left in the rest cycle. Guam will be the next to acquire and that should be something on the order of 33 minutes from now. All systems are apparently functioning normally. At 204 hours, 4 minutes GET, this is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 20453, CST 2053, 550/1

PAO                      This is Apollo Control at 204 hours, 53 minutes ground elapsed time. Spacecraft at this time is just moving out of range of the tracking ship Huntsville, on this the 129 revolution. There is an increasing level of activity here in Mission Control as the orange team moves in to replace the gold team. Flight Director for the on coming shift is Pete Frank. The doctor reported that the astronauts are still sleeping soundly on this last pass, and the information that was down linked from the spacecraft indicated the systems were functioning normally and well. At 204 hours, 54 minutes GET, this is Mission Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 205:50,CST 2349 551/1

PAO                      This is Apollo Control, 205 hours, 50 minutes ground elapsed time. Apollo 9, just at the beginning of the 130th revolution, about one-quarter through that revolution, is presently over the Nile Delta in Egypt. The crew is still asleep. All systems are functioning normally on the spacecraft according to the telemetry read-outs on the ground. The spacecraft next will be acquired by the tracking station at Guam at 14 minutes past the hour; and at 205 hours, 51 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69 GET 206:50, CST 0050 552/1

PAO This is Apollo Control, 206 hours, 50 minutes ground elapsed time. Apollo 9 presently is over the South Pacific, nearing the end of the 130th revolution. The crew is still asleep at this time. The spacecraft analysis report is coming out of the back room of the Mission Control Center here on systems performance. The reports are getting shorter each issue. The general run of the comments are "All systems nominal." The next station to acquire Apollo 9 will be the Canary Islands station at 10 minutes past the hour; and at 206 hours, 51 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY,3/12/69,GET 207:50,CST 01:50a 553/1

PAO                    This is Apollo Control 207 hours 50 minutes ground elapsed time. Apollo 9 presently is midway through the 131st revolution and is just clearing the east coast of the island of Borneo, will come up on the tracking ship Hunts, as you were, on the tracking station at Honeysuckle, Australia at 7 in 7 minutes from this point followed by a pass over Mercury of about 9 minutes duration. The crew is still asleep at this time; it is anticipated they will be awakened at about 4 am Central Standard Time. The spacecraft continues to perform exceptionally well with no even minor problems at this time. And at 207 hours 51 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

A/9 MISSION COMMENTARY,3/12/69,GET 208:49:45,CST 02:49:45,554A/1

CAPCOM Apollo 9, Houston.  
SC Hello, Houston, this is Apollo 9.  
CAPCOM Boy, Dave, you sure do wake up in a  
hurry. I never have to call you more than once.  
SC Well, we're expecting you every morning.  
CAPCOM Well, good morning and all that good jazz.

END OF TAPE

A/9 MISSION COMMENTARY, 3/12/69, GET 208:50:45, CST 02:50, 554B/1

PAO This is Apollo Control. Let's join the conversation in progress.

CAPCOM We'll have to think up something jazzy to wake you up with tomorrow.

CAPCOM Hey, I've got a quick one here for you.

SC Go ahead, Houston.

CAPCOM Okay. You're over the Canaries now. When you come across Australia, you're going to hit it with a - it's going to be almost sunset, but almost enough light for a picture. I was wondering if you could get a picture. It's generally dark down there, and we don't get many chances. And this gives you about 30 minutes to get ready for it.

SC Rog. Houston, we'll do that.

CAPCOM Okay, if you've got something to write on now, I'll give you a time.

SC Okay, go ahead.

CAPCOM 209 plus 27 plus 11, 4 frames, 10-second exposures, shooting on the Nadir, and you're shooting the west coast of Australia, there, Berroom, Australia, and it's for Geology and Oceanography.

SC Okay, 209 27 11, 4 frames, 10-second intervals, on the Nadir. We can get that one.

CAPCOM Okay, real good, and like I say it's coming up - it will be a little sun angle, but maybe we can hack it, and at your convenience, we'd like to have inverter 3 off, and the rendezvous radar transformer off.

SC Okay, inverter 3 is off and I'll go down and get the transformer.

CAPCOM Okay, and we'd like you to turn the fans off in both H2 tanks.

SC Concurring H2 fans are both off.

CAPCOM Okay, and our good old RCS configuration for the day will be quads Baker and Charlie, and Baker Delta Roll.

SC Okay, Baker and Charlie and Baker Delta roll.

CAPCOM Okay, and make that H2 tank 1 fan on, please.

SC Okay, H2 tank 1 fan is on.

CAPCOM Very good, and you might whip up your old S-band volume, there. We'll have Madrid here for 4 or 5 minutes.

SC Okay, S-band is up.

SC Houston, how do you read Apollo 9?

CAPCOM I'm reading you loud and clear, Jim.

SC Okay, like you say, it wasn't getting out before, I guess I just didn't have all these things plugged in quite right. One of these things just came loose.

CAPCOM Maybe it's wearing out. Good morning.

A/9 MISSION COMMENTARY, 2/12/69, GET 208:50:45, CST 02:50, 554B/2

SC hello der.

SC Hey, I've got a little question. How come we almost never use quad A? At least it seems to be the least one that we require the least out of for service module RCS deorbit, yet we seem to have the most fuel in it.

CAPCOM Okay, stand by one, here and let me give you a good answer on that.

CAPCOM Okay, Apollo 9, the answer on that one is that you require the most out of that for an SPS deorbit and we're trying to hang on to the SPS deorbit capability.

SC Okay, that's a pretty good answer.

CAPCOM Okay, Apollo 9, we're going to - I've only got you for about another 3 or 4 minutes here at Madrid. And so, I don't think - I could get in a consumables update if you've got a handy pad for that.

SC Okay, all set. Go ahead.

CAPCOM Alright. Hours 209 42 10 42 12 38 13  
39 13 243 15 31 33 39 and your DAP red lines 25 31 34 34  
end of update.

SC Rog. 209 42 10 42 12 38 13 39 13 243  
15 31 33 39 25 31 34 and 34.

CAPCOM That is affirmative and that's correct.

SC Okay.

CAPCOM And Apollo 9, Houston, we'd like to start a battery A charge at 209 plus 25.

SC Roger, 209 plus 25, battery A charge.

CAPCOM That's correct and I'll wait until we get over Carnarvon for the rest of the block data. I need to get the block data and the rest of the flight plan update, so we'll probably then lose Madrid here within a minute. And it will be Carnarvon at 24.

SC Rog. You don't happen to have a handy map update, do you?

CAPCOM That is affirmative. Your map update: 208 34 44 73 degrees west.

SC Roger, that's pretty snappy. 208 34 44 73 degrees west.

CAPCOM Rog, Doc, and I meant to get that for you at - I had it all figured out here and blew it.

SC Oh listen, that's all right, looks like you must have a file there of a thousand things in front of you.

CAPCOM No, I had - I had just updated my map here to check that Australia bit. And we'll see you down there. I hope you make it before sunset.

SC Oh we'll make sure. We wouldn't miss Australia for anything.

CAPCOM Hey look at this rare opportunity you have. Australia in the daylight.

A/9 MISSION COMMENTARY, 3/12/69, GET 208:50:45, CST 02:50, 554B/3

SC How about that?

PAO This is Apollo Control. The crew was awakened during the middle of the Canary Island pass. And was furnished with the consumables update and given instructions for a photography assignment on the upcoming pass over Australia when, for the first time in the mission, that it will see parts of Australia in daylight. The Carnarvon-Honeysuckle pass will come at 23 minutes past the hour, followed shortly thereafter with about a 2-minute break to the tracking ship Mercury. At 208 hours 58 minutes GET, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 209:23, CST 0349, 555/1

PAO This is Apollo Control. 209 hours 23 minutes ground elapsed time. Apollo 9 is now Midway through the 132nd revolution and is just south of the island of Java in the republic of Indonesia. Coming up on Carnarvon, Australia tracking station, within a few seconds. We'll stand by for any conversation between mission control and the crew of Apollo 9. Flight director is down in the trench discussing some aspect of the mission with the flight dynamics officer. Here goes the call from Roosa.

PAO Spacecraft communicator Stu Roosa is conferring with flight activities officer on some last minute additions and flight plan notes prior to beginning communications here at Carnarvon. We'll continue to stand by until Roosa does call the crew.

CAP COM Carnarvon standing by

SC Roger, fine we're all set to take pictures.

CAP COM Very good. Looks like your in a race with the terminator.

SC Yeah, it sure does, it's getting dark pretty quick.

CAP COM Rog, I checked the sunset time on that. On the ground you'll be taking with about 2 minutes or a little over before sunset. We'll say a 5 degree sun angle.

PAO This is Apollo Control. Standing by over Carnarvon as the crew proceeds to take the assigned pictures in that area. Conversation is being held to a minimum till they do complete that picture taking assignment. We'll leave the circuit open for continuation of the conversation between spacecraft communicator Stu Roosa and the crew of Apollo 9.

CAP COM Apollo 9 Houston. Bring up your S band volume. We'll be going over Honeysuckle in about a minute.

SC Ok, looks like all those people down in Australia are probably still asleep.

CAP COM Well let me see, they shouldn't have gone to bed yet should they? It just got dark across there.

SC Oh that's the way the sun goes. It goes from east to west. I thought it went from west to east.

CAP COM Well I've got a gouge here. I can call up the display and I can watch the terminator move so I don't have to do any thinking.

SC Say would you send me a gouge up here.

CAP COM Rog, and well have Honeysuckle about 7 or 8 minutes. It might be a good place to get the block data at yall's convenience. When you get through looking across the main land there. And we've got you locked up on Honeysuckle now about 6 minutes.

SC Ok, you're loud and clear on old Honeysuckle today.

CAP COM You're coming in fine and clear.

SC Is it really only 3:30 in the morning in Houston?

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 209:23, CST 0349, 555/2

CAP COM            That's affirmative. I always hate to  
mention that, the time because I thought it might make you  
(laugh) harder to get up.

SC                If I'd just known then what I know now.

CAP COM            Come on now.

END OF TAPE

# New Sightings

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 209:33, GST 0333, 556/1

CAPCOM Apollo 9, Houston. We'd like to know if you happen to notice any stratification when you strew the CRYO's this morning.

SC Houston, we haven't done it yet, Stu.

CAPCOM Okay, very good. We've just seen some funnies on our last data pass there.

SC All I've done is turn off the H2 band and turn on H1 band.

CAPCOM Okay, I understand.

SC Ofcourse we've turned the transmolecular off too.

CAPCOM Very good. How about a crew status report if your up there, we'll make the surgeon happy. Just get that out of the way right off.

SC Okay, we each had about 7 1/2 hours sleep, and 1 vitamin pill, and the CMP had about 7 1/2 hours sleep and a vitamin pill, and the LMP had about 6 1/2 hours sleep and 1 vitamin pill.

CAPCOM Rog, copy all that, and good morning Rusty.

CAPCOM And Apollo 9, Houston. We're about 30 from LOS Honeysuckle. Mercury around 42.

SC Okay, I think we'll stop and have breakfast now.

CAPCOM All right. Sounds like a good idea.

PAO This is Apollo Control, not quite out of acquisition yet at Honeysuckle. Conversation will likely pick up again over Mercury in about 2 minutes. During the Carnarvon, Honeysuckle pass, the crew reported that the commander, James McDivitt had a total of 7 1/2 hours sleep, CMP, Dave Scott, had 7 1/2 hours, LMP, Rusty Schweickart, 6 1/2 hours, and each took 1 vitamin pill last night. Several cities in the southern portion of the United States weather permitting may have an opportunity to view Apollo 9. Starting at 5:23:31, 5 hours, 542 and 31 seconds am central standard time in Houston, the spacecraft will rise in the southwest, reach a maximum elevation of 8 degrees, and at 546, set in the east at 54931. Slant range at maximum elevation will be 692 nautical miles. New Orleans, a few seconds later, at 54254 am central standard time, spacecraft will rise from the south southwest, from maximum elevation of 11.9 degrees, will set at 55056 central time in the east. Slant range and maximum elevation will be 659 nautical miles. Atlanta, 64450 eastern standard time, the spacecraft will rise out of the south southwest, reach a maximum elevation of 9.3 degrees, at 64831, will set in the east southeast at 65214. Maximum slant range at maximum elevation will be 618 nautical miles. On the following revolution, Phoenix, 61450 mountain standard time, spacecraft will rise out of the southwest, reach a maximum elevation of 7 degrees, at 61831 will set in the east

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 209:33, CST 0333, 556/2

PAO - southeast at 62145. Slant range maximum elevation 711.5 nautical miles. Less than a minutes later, ElPaso, 71507, central standard time, the spacecraft will rise out of the south southwest reach a maximum elevation of 14.3 degrees at 71931, will set in the east at 72316. Slant range maximum elevation will be 481.1 nautical miles. We should have had acquisition at tracking ship Mercury at this time. The pass over Mercury will be some 10 minutes long, even though its not dead center over the ship. The passes in the southern hemisphere, particularly over the Australian stations and Mercury are fairly lengthy because the spacecraft is at apogee at this point and being higher provides a longer tracking time.

END OF TAPE

PAO                   Spacecraft communicator Stu Roosa is in a confab with other flight controllers here in Mission Control Center. We'll stand by until he keys his transmitter to resume conversation with the crew. Still standing by. In acquisition of tracking ship Mercury, next station following Mercury will be the Mila, Merritt Island, launch area tracking station at 9 minutes past the hour. Here goes Roosa's call, we hope.

CAP COM               Apollo 9, Houston through Mercury standing by.

SC                    Roger. (pause) Houston, Apollo 9.

CAP COM               Go ahead, Apollo 9.

SC                    Roger, our power was down a little bit there so we just put the transponder back on to keep that same power we would on the fuel cells.

CAP COM               Rog, copy.

PAO                   This is Apollo Control, some 2 minutes remaining in the Mercury tracking ship pass. The crew likely is breaking out their breakfast meals for this morning prior to settling down for the days flight plan activities. Been a real sparse amount of conversation over Mercury. Starting with Mila tracking station at 9 minutes past the hour there'll be a continuous tracking and communications pass all the way through Madrid 32 minutes past the hour; about 21 minutes duration altogether.

CAP COM               Houston one minute LOS we'll see you over the sunny Carribean around 10.

SC                    Okay, we'll be ready.

CAP COM               Rog.

PAO                   This is Apollo Control. Apparently that does terminate the conversation over tracking ship Mercury. Mila at 9:48 past the hour. At 209 hours 51 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/11/69, GET 210:09, CST 04:09a 558/1

PAO This is Apollo Control, 210 hours 09 minutes ground elapsed time. Apollo 9 is just ending the 132nd revolution. We'll begin revolution 133 within a few moments as it crosses the longitude of Cape Kennedy. We've just had acquisition at the Merritt Island launch area tracking station in Florida overlapping, of course, with Antigua, Bermuda, Vanguard on through to Canary and Madrid. A pass ending at 32 minutes past the hour. We'll stand by here as we await Stu Roosa's call to the crew.

CAP COM Apollo 9, this is Houston. We've got you through Mila standing by.

SC Roger, Houston. Hey ... one thing that we're a little concerned about here is this morning we're going to be dipping back into a magazine of film that was taken with a slightly faulty camera. On the EVA we took the 70-mm wide angle out with magazine 50 on it and we found out subsequent to the EVA that the super wide was keeping the shutter open too long or at least we think that it did so we ran off an extra 10 or so frames with nothing on them and now we're going to use the remaining 100 today so - and we wanna make sure that when that film pack gets back that the photo people know about it that the first part of the film, the first third, may be exposed different from the last third, ah for the last two-thirds rather.

CAP COM Okay, understand now. To make sure that we got that. That 70-mm and the magazine is echo.

SC That's affirmative. We're not really sure when the camera malfunctioned and so the first third may also be okay but we don't have anyway of knowing it. We know that the super wide keeps the shutter open for about 3 to 5 times as long as it should it looks like and so we're gonna need special handling on the first third of that roll of film.

CAP COM Okay, expect the super wide may have kept the shutter 2 to 3 times normal and on that same subject Rusty, we were just kicking around here a 16-mm magazine is the word I have that may have been exposed at a wrong setting during EVA. Is this correct?

SC Yeah, that's affirmative, Houston. One of the 16-mm magazines may have been exposed at the wrong setting.

CAP COM Okay, at your convenience would you like to give us that magazine identification so we could make sure that word gets out.

SC Okay, we'll have to find out what the number of it was.

CAP COM Rog. I suspect its probably buried down somewhere but anyway you'd like but we would like to know it so we could warn people.

SC Okay. Well it was - we took some of the stuff apparently set at 1/60th and the rest of it at 1/750th so it's gonna be a little tough figuring it out I think. Let me get the magazine ... for you.

CAP COM And Apollo 9, Houston. There are a couple of targets we'd like photographed on this rev if you're so inclined. One is around the Red Sea area about 15 minutes from now and the other one is about 17 minutes after it.

SC Houston. I believe the magazine letter was P, magazine Peter ... and we think about two thirds of it during the EVA and the first part of it was probably exposed at 1/60th of a second and the remainder at 1/250th.

CAP COM Rog, copy. You exposed two-thirds of it during the EVA and the first-third at 1/60th and the rest at 250.

SC Roger. They're the same subject material for it.

CAP COM Rog, copy. Thank you very much.

SC Okay. Okay go ahead with the update through ...

CAP COM Okay. The first one, time 210 plus 39 plus 34 7 frames, 16 second interval, zero degrees and this will be the Red Sea. Oceanography, the second one, time 2 plus 10 plus 52 plus 07, 3 frames, 29 second interval, you'll be shooting north of the Nadir 30 degrees. This is weather and should be a tropical depression up there.

SC Okay. Let me see if I got these right. 210:39:14, 7 frames, 16 second intervals, 0 degrees, Red Sea, oceanography. 210:50:07, 3 frames, 29 seconds, North 30, weather tropical depression.

CAP COM Okay. The time on the Red Sea is 39 plus 34.

SC 39 plus 34, Okay.

CAP COM And the time on the tropical depression is 52 plus 07.

SC 52 07, right.

CAP COM And Apollo 9, I have some block data. At your convenience I'll pass it to you. You're still good for about another rev and a half so no sweat on the time.

SC Okay lets ... now.

CAP COM Say again, Rusty.

SC Gee, I'm ready to copy ...

CAP COM Okay. I'll tell you what Rusty we're through the Vanguard now and it's a little static. Let's wait until we get handed over to Canaries. I think it would be better.

SC Okay.

PAO This is Apollo Control. Communications have been terminated during this pass over the tracking ship

APOLLO 9 MISSION COMMENTARY,3/12/69,GET 210:09,CST 04:09a 558/3

PAO Vanguard because of static. Pick up again in about 3 minutes as the spacecraft crosses into the Canary Island tracking station range. We'll continue to monitor the air-ground circuit for any possible conversation.

END OF TAPE

A/9 MISSION COMMENTARY, 3/12/69, GET 210:20, CST 04:20, 559/1

PAO This is Apollo Control continuing to monitor the spacecraft pass over Vanguard and on into the Canarys at which time it is anticipated that conversation will resume. Have a considerable amount of static in communications through the Vanguard. Yesterday the Vanguard had some problems with its COMSAT relay antenna and had to use an HF link. That problem may still exist and account for the static.

SC (static)

CAPCOM Okay, I have block data number 21, when you're ready to copy.

SC All set.

CAPCOM Reading 1352 Bravo plus 292 minus 0270  
213 16 11 3255 1362 Bravo plus 226 minus 0330 2145300 3332  
1371 Alpha plus 276 minus 0680 21619 5233 80 1384 Alpha  
plus 331 minus 1624 2185821 3232 1394 Alpha plus 331 minus  
1624220 3920 30 26 1404 Baker plus 286 minus 1640 22220  
10 3200. Would you bring up your S band volume here before  
I continue over into Madrid shortly? And pitch minus .64 yaw  
minus .94, end of update.

SC Okay, Stu, readback: 1352 Bravo plus  
292 minus 0270 213 16 11 3255 1362 Bravo plus 226 minus 0330  
214 53 00 3332 1371 Alpha plus 276 minus 0680 216 19 52 3380  
1384 Alpha plus 331 minus 1624 218 58 21 3232 1394 Alpha  
plus 331 minus 1624 220 39 20 3026 1404 Bravo plus 286 minus  
1640 222 2010 3200 pitch minus .64 yaw minus .94.

CAPCOM Rog. That readback is correct. Thank  
you.

SC Okay.

CAPCOM And, Apollo 9, about 1 minute LOS Madrid  
and

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 210:30, CST 0430, 560/1

CAPCOM - 1 minute LOS Madrid, and we'll see you  
over Carnarvon around 58.

SC Roger, Carnarvon at 58.

PAO This is Apollo Control at about a minute  
to LOS at Canary Islands, but apparently the conversation be-  
tween Stu Roosa and the crew of Apollo 9 has been concluded.  
Carnarvon at 57 minutes past the hour. At 210 hours, 31 minutes  
GET, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 210:57, CST 0457, 561/1

PAO This is Apollo Control. 210 hours 57 minutes ground elapsed time. We're coming up over the Carnarvon, Australia tracking station over lapping Honeysuckle for a 19 minute total duration pass of Apollo 9. We anticipate further conversation over these two stations. After Honeysuckle loss of signal there will be approximately a 2 minute dropout until actually more or like 1 minute dropout between Honeysuckle and tracking ship Mercury. The Mercury pass looks like about 12 minutes duration. Will stand by now for spacecraft communicator Stu Roosa's call to the crew over Carnarvon. He's now studying the acquisition time tables to determine when best to call the crew.

CAP COM Apollo 9, Houston through Carnarvon.

SC Roger, Houston.

CAP COM And Apollo 9 Houston, we'd like to use Alpha Charlie's roll today instead of Baker Dog as we passed up before.

SC Understand alpha Charlie roll instead of Bravo Dog.

CAP COM That's affirmative and just a little note on that, what we'd like to do is get into that secondary propellant tank on one of the quads and we think they'll probably be quad C and this won't affect any of our deorbits. We'll still have our SCS deorbit capability.

SC Ok. The action has been took.

CAP COM Very good. Thank you.

SC Say there worker of miracles. What's the bobbing picture at the surface in the recovery area?

CAP COM I can find that out for you. I have neglected to mention that subject so far here. I was going to wait until you brought it up.

SC I was afraid you were going to...

CAP COM And Apollo 9 Houston. I have you about another 6 1/2 minutes to Carnarvon here and I have 5 or 6 items on the flight plan update for today.

SC Ok stand by. Ok go ahead Stu.

CAP COM Ok the first one is at 212 plus 38 and I'll just make this comen now which will apply later in here. As you see it in your time line everything is shifted around 20 minutes or so due to the orbit so if it looks like night or day or something is off well that's the reason. But at 212 plus 38 we'd like to have a P51 P52 alignment to P52 to nominal and your T align is 216 plus 10 plus 00. Ok now at 214 plus 30 and just want to make sure we don't get confused here. I'm deleting the second SO 65 pass. The one that is shown for over Africa, now in your flight plan that's shown right around 215 but that is the pass, we're deleting that SO 65 pass due to weather. We still want the first SO 65 pass across the state and we'll have a pass for you later on that. Ok now, 215 plus 38 for 1 of P52 to rest mat. And at 217 plus 10 we'd like to have a COAS calibration. Now you gave us a real good alignment here with the COAS and I'm going to

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 210:57, CST 0457, 561/2

CAP COM change the shift to the flight plan people here. I can't find any good details on why we want another one, I think there's a requirement that says you want one the day before re-entry but it looks like you've probably got a good one but we'll stick that one in there 217 plus 10 and at 217 plus 50 we'll do some T22 land mark tracking. Your power down will be 218 plus 3 5 and at 219 plus 00 will have a fuel cell 02 purge and that's the end of it.

SC Ok 21238 T 51 52 a nominal 2161000. At 214 30 we want to delete the second SO 65 pass over Africa due to weather. We still want to keep the first one across the states. 21538 T52 to REFSMMAT 21710 COAS calibration, 21750 T 22 landmark track 21835 power down 2 and 18 00 fuel cell 02 purge.

CAP COM That's affirmative Rusty. Have you got em all. And I'd just like to ask a question on curiosity, I was wondering how that T and N panel worked out.

SC Oh that works great Stu. Good job on that.

CAP COM How about with the chrome attached. Does it fit in all right, you know we really needed a mount around that and I was wondering about the light leak around the edge.

SC Well I had trouble getting the verb down list out. It took me about 5 days to get that out and when I finally got that out I haven't had a chance to put the chrome back up.

CAP COM You mean it was jammed in there?

SC Yeah it sure was.

CAP COM That doesn't sound like it was so good.

Sorry about that.

SC Oh no sweat. I think we'll work that out when we get back.

SC Stu I have a question on the SO 65. Looks like we have many more frames of film left on the camera there than we have allocated for pictures today. I don't think we ought to come back with any film left in those cameras.

CAP COM Rog, copy Jim.

SC And I guess what I'm saying is that soon as we get through with those SO 65s on the program I think we'll just leave it in the window and take pictures until we run out.

CAP COM Yes we're going to use it all today and it's being planned that way.

SC Oh Ok fine.

CAP COM And Jim just to clarify it, this 16 mm roll taken during EVA that you expose 2/3 of it that is all that is been exposed on that roll. Is that affirmative?

SC That's affirmative. We're going to go take some Sun going down into the water pictures with the rest of it.

CAP COM Ok, very good so the rest of it will be exposed so but we're really looking at the first 2/3 of it on the EVA.

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 210:57, CST 04:57, 561/3

SC Affirmative  
CAP COM Ok, real good. We've got to make sure  
that's developed right.  
SC Roger.  
CAP COM And let's have S band volume up please.  
SC Affirmative, 1 through 50th all but the  
same subject matter.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 211:05, CST 0505, 562/1

CAPCOM Apollo 9, Houston.

CAPCOM Apollo 9, Houston.

PAO This is Apollo Control about 3 minutes remaining in the Honeysuckle pass, with about a minute drop out after Honeysuckle LOS until Mercury acquisition. Will continue to monitor the air-to-ground circuit. Likely won't be too much additional conversation during these passes, but we'll leave the circuit up just in case.

PAO This is Apollo Control. Apollo 9 presently is crossing just to the north of the island of New Zealand, and is midway through the 133rd revolution. About 10 seconds to LOS at Honeysuckle, acquisition at tracking ship Mercury will be at 17 minutes, 44 seconds just over a minute away. LOS Honeysuckle. We're going to leave the air-to-ground circuits open for acquisition Mercury, and any conversation that might take place over that ship.

END OF TAPE

# WEATHER DISCUSSIONS

A/9 MISSION COMMENTARY, 3/12/69, GET 211:17, CST 05:07, 563/1

CAPCOM Apollo 9, Houston, through Mercury.  
SC Rog. Houston, you're coming in five square.  
CAPCOM Reading you real good and we'd like to  
have the fan in H2 Tank 1 off at this time.  
SC Okay H2 tank fan 1 off.  
CAPCOM Rog. thank you and I have the temperatures  
in the recovery areas. Water temperature is 69 the air temperature is 64. That's as of 1000 Z this morning.  
SC Okay, they have the forecast with them  
for tomorrow, too, as far as temperatures or anything else  
goes?  
CAPCOM Well, we've got a forecast, yes. I  
suppose you're interested in that?  
SC The way you worded that you stimulated  
our interest.  
CAPCOM Okay, now I don't know what to say.  
CAPCOM Okay, here's the way it stacks up. I'll  
read it to you straight. 151-1 2000 scattered, variable  
broken, high broken clouds, 10 miles visibility, wind 310  
at 23 knots, waves 6 to 8 feet, swells 10 to 12 feet. How  
does that sound?  
SC Nice visibility.  
CAPCOM Hey, that was a beautiful answer. Okay,  
152-1 is 2000 scattered, 10 miles visibility, winds light  
and variable, waves 2 to 3 feet, and swells 6 to 7 feet.  
SC Hey, let's go there! Let's go there!  
SC Yeah, take a pick, Stu.  
CAPCOM Rog.  
SC Gee, you sure made that dramatic, Stu.  
SC Stu, which is the prime one?  
CAPCOM The weather I read you first was the  
prime recovery area.  
SC Are they stuck on sending that to be  
the prime one or are they going to shift it down one rev?  
CAPCOM This has not been decided yet, Jim.  
Of course that will come here within a few hours, but just  
reading the weather, I'm sure you can make that decision,  
also.  
SC Yeah. What kind of backup capabilities  
do we have if we don't get an SPS retro and have to do  
service module RCS retro for the following rev, where does  
that put us with respect to land? Will we still come down  
on the water?  
CAPCOM Okay, Jim, that's what we're hustling  
so much over here right now, and what's making the retro  
all grey-headed. We don't have one on the next rev in the  
Atlantic, so that's what gets us hairy, is the - that we  
go to the backup area here, which the weather certainly  
dictates. Within - that puts us into the Pacific for a

A/9 MISSION COMMENTARY, 3/12/69, GET 211:17, CST 05:17, 563/2

CAPCOM backup deorbit.

SC Okay. If we go into the Pacific, how does the propellant requirement change with respect to our anomaly for retro into the Pacific?

CAPCOM No real change, Jim, and I think we're looking, what? Around to Y, is it that - It's the backup landing area is in the Hawaii area.

SC How's the weather there?

CAPCOM We're checking that. We haven't got a real good hack on it yet, retro and recovery, we're hacking hashing that out right now, Jim.

SC Okay, that's the angle at which way we all want to go. I think you probably know which way we all want to go, too.

SC And consider the fact that we do have some Pacific experience up here, in case that's needed.

CAPCOM Rog. Copy.

SC I'll tell you one thing, I don't want to get in that part of the Pacific.

SC Hey, Stu, as far as the temperature is concerned, they might bright along some - on the recovery, they might bring along some fuzzy knickers. Ours are pretty thin up here.

CAPCOM Alright, copy that, Rusty.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 211:20, CST 0520, 564/1

PAO This is Apollo Control, approximately 2 minutes remaining of the Mercury tracking ship pass.

CAPCOM Apollo 9, Houston, we've still got about 2 minutes in this nice long pass, we'll be uplinking a state vector once we get you in Texas acquisition. I've got a NAV check, you can either copy it now, or there.

SC Oh, we've got a piece of paper here, we can still do it.

CAPCOM Okay, reading the NAV check. 2124000 minus 3282 plus 11997 2127.

SC Okay, 2124000 minus 3282 plus 11997 212 decimal 7.

CAPCOM That's affirmative.

CAPCOM And Apollo 9, Houston.

SC Roger. Go.

CAPCOM And rog. I guess just to close the loop on this discussion here, we'll have ship at 152-1 if and when you come down there, so I just thought I might toss you that in case your wondering. }

SC Yes, will it have the 350 lb. cake on it?

CAPCOM Yes, it will have a 350 lb. cake on it, at least that's the word I have.

SC Okay, great.

CAPCOM And we'll lose you here in about 10 seconds, and have you through Texas around 41.

SC Roger, did you say you've got the state vector in?

CAPCOM Oh, negative. I said we're going to uplink the state vector at Texas acquisition, and I've just given you the NAV check now.

SC Okay, thank you.

CAPCOM Rog.

PAO This is Apollo Control, we've had LOS at tracking ship Mercury. Next station to acquire will be the tracking station at Texas overlapping MILA, Bermuda, Antigua, Vanguard, Canary Islands, and Madrid for a total 26 minutes tracking. Texas coming up at 40 minutes past the hour, about 10 minutes from now. At 211 hours, 30 minutes GET, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 211:40, CST 05:40a 565/1

PAO This is Apollo Control, 211 hours 40 minutes ground elapsed time. Should have acquisition at this time with - through the tracking station at Corpus Christi. We're standing by for resumption of the conversation begun over tracking ship Mercury with additional flight plan updates, targets of opportunity for photography tasks and other assignments to the crew of Apollo 9 for the days activities. This particular stateside pass has a duration of some 26 minutes. The next stateside pass on revolution 134 will take in the tracking ship Redstone, the tracking station at Guaymas, Mexico and add perhaps another 15 minutes to the total time across the states and the Atlantic tracking ship Vanguard, Canary Islands and Madrid. Still awaiting the resumption of conversation between Stu Roosa here in Mission Control and the crew of Apollo 9

CAP COM Apollo 9, Houston. Through Texas.

SC Roger, Houston.

CAP COM And if you'll give us POO and ACCEPT we'll uplink your state vector and I'd like to ask you a question about P22.

SC Okay, you've got POO and ACCEPT and go with your question.

CAP COM Okay, Dave. What we're thinking of here is on this uplink into the CSM slot and leaving the vector as is in the LM slot and then prior to P22 shoving the vector from the LM into the CSM and doing a P22 on it to see how it can bring in the state vector rather than starting the P22 with a good vector.

SC Okay. I think that's probably a pretty good idea.

CAP COM By jove. I get one up then, okay. So this vector we're uplinking now will not Verb 66 it, it will be in the CSM slot.

SC You still with us, Stu.

CAP COM Rog. We got 'cha through Texas here now this will be a nice long pass.

SC Okay, you just faded. I guess then what we want to do is just prior to P22 is do a Verb 47.

CAP COM That's affirmative. Verb 47 and that's back over into the CSM slot and then let's see how the P22 does and then we'll give you a good vector in both slots at the end of it.

SC Sounds like a fine idea. How did those work out yesterday?

CAP COM Your fading way out on me, Dave.

SC I say, how did it work out yesterday.

SC Okay, we're breaking up here, too. I say again, how did the state vector updates work out yesterday?

APOLLO 9 MISSION COMMENTARY,3/12/69,GET 211:40,CST 05:40a 565/2

CAP COM            Okay. I don't really have that info, Dave, I wasn't here and I haven't talked to anybody that's got a good handle on how they went. I read through the transcripts and it looked like it went well. But, I can't answer your question specifically. We'll get an answer for you though.

SC                 Oh, don't worry about it. I was just curious. We can pick it up postflight. No sweat.

CAP COM            Okay, and Apollo 9 we are through with the uplink and we have not transferred it to the LM slot. The computer is yours.

SC                 Roger, thank you.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 211:50, CST 0550, 566/1

PAO This is Apollo Control, some 16 minutes remaining in this state side and Atlantic station Canary Island pass. Continuing to monitor the air to ground. Spacecraft communicator Stu Roosa is in a huddle, leaning over the console of the flight director Pete Frank. We'll leave the air to ground circuit open for any further conversation during the remaining 15 minutes.

CAPCOM Apollo 9, Houston.

SC Go Houston.

CAPCOM Okay, just to clarify this, I will have the exact times for you later, but talking of this P22 NAV updates here. When you do this verb 47, we'll have that over a site somewhere, so as soon as you do that we will then uplink a good vector into the LM slot, that way we won't leave you at any time without a good vector.

SC You don't think we can get our vector update properly, with P22, come on.

SC Look, Stu, I'm with you. Update is a good one.

CAPCOM Well now Dave, it's just your question there like we believe you can use that P37 but we'll still send your block data.

SC Oh, I was just kidding you. I'll tell you what, we'll have a contest to see who's state vector is the best after P22, okay?

CAPCOM Hey, I think that's a good lick.

SC I think I know who will win.

CAPCOM Oh, and Apollo 9, I have about 3 more targets here, we'd like to photograph. One of them is coming up in about 7 or 8 minutes. If you can't make it, well no sweat.

SC Go ahead.

CAPCOM Okay, the first one. 212 plus 04 plus 16, 4 frames, 7 second intervals. Zero degrees, this is of Morroco, for geology. Did you get that, it sounded to me like I faded out.

SC Say again.

CAPCOM Rog, did you get the first update? It sounded to me like I faded out on you.

SC Stu, we've got it.

CAPCOM Oh, okay. The second one is ... weather time, 2121056, 4 frames, 6 seconds exposure intervals, 0 degrees. And these are the old Tibesti Mountains here in Chad, and you are going to come over them this time, and our first one is 212 plus 16 plus 11, 7 pictures at 19 second intervals, 0 degrees. And this is with Ethiopia Rid Valley, studying up on the geology there, and the last one is 212 plus 19 plus 07, 3 pictures, 8 second intervals, 0 degrees, and this is geology and this is of

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 211:50, CST 0550, 566/2

CAPCOM - Somalia.

CAPCOM And that's all the update I have now.

SC Okay, thank you.

CAPCOM Rog.

PAO This is Apollo Control, some 6 minutes  
remaining now in the pass over Canary Islands tracking station -

END OF TAPE

A/9 MISSION COMMENTARY, 3/12/69, GET 212:00 CST 06:00, 567/1

PAO - station in Madrid. We'll continue to monitor air-to-ground circuit.

PAO This is Apollo Control. Some 3 minutes until loss of signal out of Madrid. Continuing to monitor air-to-ground for any further conversation.

PAO This is Apollo Control. We've passed the time for loss of signal at tracking station Madrid. Carnarvon at 33 minutes past the hour. Continuous coverage from Carnarvon through Honeysuckle, tracking ship Huntsville, on over to the Mercury for a total time of about 31 minutes. At 212 hours 07 minutes GET, THIS IS Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 212:53, CST 0633, 568/1

PAO This is Apollo Control. 212 hours 33 minutes ground elapsed time. Coming up on tracking ship, or as you were tracking station Carnarvon, Australia. Will have a rather lengthy pass because the spacecraft is in Apogee and at the higher altitudes the passes naturally last longer. Carnarvon overlaps Honeysuckle which in turn overlaps Hunstville on across to Mercury. Or it looks like approximately 31 minutes total time on this pass, it is almost as long as some of the longer stateside passes. We'll stand by now for the conversation here between Stu Roosa spacecraft communicator and the crew of Apollo 9. We've had acquisition at Carnarvon we'll leave the circuit open now to await the initial call.

CAP COM Apollo 9 Houston through Carnarvon.

SC Good morning Red.

CAP COM Rog,

SC How are they making out on the recovery position decision?

CAP COM Ok, there still working on it Jim. As far as I can tell I don't see there's much decision to be made just really concentrating on the RCS backup on a couple of revs later is the big planning right now.

SC Ok. Well that's kind of the way we felt too. there didn't seem to be much choice between those two sites. Are they putting down at 52-1?

CAP COM I cut you out there. I think you're asking about the ship and I thought that in a little bit the go yes the Guadalcanal should make 152-1 is the latest word I have here.

SC Ok very good.

CAP COM On that ship, it might be that's just some hastey info Jim. We'll have a good word for you just as soon as we can and the final decision has been made. But I guess it's touch and go and whether or not the ship actually gets there.

SC Ok, if none get to us maybe we can fly to it.

CAP COM Rog

SC We need that cake.

CAP COM Roger on the cake. And we're having a time down here on this P22 bit about the state vector. Had a little change of plans. Rather than do as we suggested before I guess the LM vector would be quite so far out but we're going to have you do your P22 on the vectors you're carrying now by then it will be graded enough. The mark should take affect and also the first cut at it is we're going to have to change the waiting in this, right now I don't believe the W matrix will take the P22 update but well give you some numbers MIT is working this out. They're real anxious to try this too.

SC Ok, very good. We'll go into whatever you like.

CAP COM Ok

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 212:33, CST 0633, 568/2

CAP COM           Ok, Jim I just got the word here. There's no doubt about the ship being at 152-1.

SC                 Ok, very good. Have them bring all the good weather they can with it.

CAP COM           All right or leave all the bad weather where it is I guess would be the best way.

SC                 Yeah that's even better. Have those guys been milling around out in those big heavy seas all of this time?

CAP COM           Yes, they sure have. Just a second here and I'll give you some info. That temperature - air temperature and water I got from you a while ago was from the Guadalcanal and I say it's 10 hundred V and at that time the waves were 4 feet. The swells were 14 feet and the ceiling was 2,000 feet, visibility 7 miles. Wind blowing 26 knots.

SC                 Wowie. I don't think anybody up here is good enough to say much for that.

CAP COM           Roger. And I believe everybody here agrees with that.

CAP COM           And Apollo 9. Houston. Would you bring up your S-band volume for Honeysuckle, please?

SC                 Roger.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 212:43, CST 06:43a 569/1

CAP COM And Apollo 9, Houston. Anticipate a ...  
on your H2 pressure.

SC Roger, Houston. Pressure one on the H2.  
PAO This is Apollo Control. Spacecraft is  
now crossing the Eastern Australia coast between Sidney and  
Brisborne about midway through rev 134. We're standing by  
to monitor any further conversation. We still have another  
15 minutes in this pass over the Honeysuckle station, the  
Huntsville and Mercury tracking ships. Continuing to stand  
by.

CAP COM Apollo 9, Houston. I have two more  
targets for you.

SC Roger, Houston. Just a minute.

CAP COM Rog.

SC Okay, go ahead Stu.

CAP COM Okay, time 213 plus 23 plus 54, 3 pict-  
ures, 20 second interval, shooting 45 degrees North, this  
is along the Georgia coast and it's for weather. The next  
one is 213 plus 27 plus 33, 3 pictures, 20 second interval,  
30 degrees South, this is of the Bermuda area, oceanography.

SC Okay. We got a bunch of master alarms  
here in the middle of that ... on the cryo press, Stu. Would  
you lemme give you what I got and you can fill me in on the  
rest. I got 213:23:54, 3 pictures, 20 second intervals of  
the Georgia coast, weather, I think you said North or South  
but I'm not sure.

CAP COM Rog, it's 45 degrees North.

SC Okay, 45 degrees North. And then another  
at 213:27:33, 3 pictures, 20 second intervals, 30 degrees  
South, Bermuda, oceanography.

CAP COM That's affirmative. I guess you had the  
right cut there when we were talking about the Georgia coast  
when you said South, I guess I should have said pardon the  
expression when I said 45 degrees North there.

SC ... guess I had the right cut there, you  
cut out.

CAP COM Okay, we'll see you Mercury at 47.

SC Roger.

CAP COM Disregard that. We'll be pickin' up the  
Mercury real soon. (pause) And Apollo 9 delay that ... time  
I gave you there, we've got you through the Huntsville now.

END OF TAPE

A/9 MISSION COMMENTARY, 3/12/69, GET 212:53, CST 06:53, 570/1

PAO This is Apollo Control. Some 10 minutes remaining in the pass over Huntsville and Mercury tracking ships. We'll continue to monitor the air-to-ground circuit for any further conversation.

CAPCOM And Apollo 9, this is Houston through Mercury, standing by. Have you for about 9 minutes.

SC Roger, Houston.

SC Huntsville in the works.

PAO This is Apollo Control. 8 minutes remaining in the coverage at tracking ship Mercury. Continuing to stand by.

PAO This is Apollo Control. Some 5 minutes remaining now in coverage at tracking ship Mercury. It's unlikely that the conversation will continue until we get into the stateside pass starting at tracking ship Redstone at 8 minutes past the hour, but we'll leave the line open for any further conversation.

CAPCOM That's affirmative Apollo 9. We'll have you through Mercury another 5 minutes.

SC Okay.

SC Just in case my kids are listening, tell them I'm growing a big beard for them.

CAPCOM Okay. Wilco.

CAPCOM Seems like you ought to bring that back so they could see it.

SC Seems that way, doesn't it? If you think you hear a lot of data down there, man you ought to be up here.

CAPCOM (laughter)

CAPCOM And, we just got another weather forecast in here, and it's just about the same. 151-1 is looking a little better, in fact the height of the swells are going down. Winds light and variable, and scattered clouds, 10 miles vis, 2 to 3 foot waves.

SC That's not bad. Get the swelling down.

CAPCOM Yeah, well, on the last several hours they've gone from 6 to 8 to 6, so they're going in the right direction.

SC That's nice.

SC Who do we have out there measuring them?

CAPCOM Well, I don't know if we've got anybody specifically on that stretch yet or not, Jim.

SC Okay. I thought maybe we had one of the destroyers down there.

CAPCOM Say again, Jim.

SC I thought maybe we had a destroyer down there.

CAPCOM We've got a bunch of ships out in there. Let me find out if - the closest point they're getting their

APOLLO 9 COMMENTARY, 3/12/69, GET: 212:53 (0653)

570/2

data from there.

CAPCOM            And along with that weather forecast, the  
151 looked just the same. No change in it, it's still looking  
pretty grim, it will pretty well have the decision going.

SC

Okay.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 213:00, CST 0703, 571/1

CAPCOM                   And we're about LOS Mercury, we'll see  
you at Redstone in about 4 minutes.

SC                        All right Houston, we'll be here waiting  
for you, with golden tones.

CAPCOM                   Okay, fine.

SC                        Hey, speaking of golden tones, where  
is golden throat these days?

CAPCOM                   I haven't seen old golden throat since I  
lost myself in this hole over here.

SC                        Alrighty.

PAO                      This is Apollo Control, we've had LOS at  
tracking ship Mercury. Coming up on Redstone at 8 minutes past  
the hour, for a very lengthy state side pass. Redstone, Guaymas,  
Texas, Grand Bahamas, Antigua, Vanguard tracking ship, Canary,  
and Madrid, and at 213 hours 5 minutes GET, this is Apollo  
Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 213:08, CST 708 572/1

PAO This is Apollo Control at 213 hours 8 minutes. Apollo 9 coming within range of the tracking ship Redstone. Gene Kranz and the white team have relieved Pete Frank and his orange team.

PAO Redstone has acquired. We will stand by.  
CAPCOM Apollo 9, Houston through Redstone. How do you read?

SC Loud and clear. Go ahead.  
CAPCOM Rog. I just wanted to tag up on the weather info, we don't have a specific ship at 152-1, Guadalcanal is probably heading that way shortly but it just comes from other ships in the area, radioed into Miami. I'm having a looksee how close a ship they have got to that area.

SC Okay, I just thought maybe we had one of our destroyers down there, just sitting there with bated breath waiting for us, but if not, thank you.

CAPCOM Rog.  
SC You don't have to press on any farther with it.

CAPCOM Okay, just for your info, the Guadalcanal is 16 hours from 152-1. It's also 18 hours 151-1. It's been covering the 137 dash one recovery area, so it's 16 hours out of 152-1, plenty of time to be there.

SC Okay, fine.  
CAPCOM And Dave -  
SC ... running around in circles.

CAPCOM Rog. And Dave asked a question about the tracking yesterday. The only thing that we checked in with MIT, the only thing they say is the tracking went well, but, you know, they are going to have take a while to analyze the data, and so forth.

SC Okay, no problem, I was just a little curious.

CAPCOM Rog, understand. That is about all I can tell you now.

SC Okay, well, we will see if we can't do it right again today.

CAPCOM Today, with this procedure, you will be able to get a first hack at it, to see how it goes.

SC Yeah, ought to be very interesting.

CAPCOM And I have the procedure that you will use to put in your factors in your W matrix and I can give you those any time.

SC Okay, stand by just one.

CAPCOM Rog. Lots of time, I just thought if you wanted to take them now or anytime later.

PAO This is Apollo Control. A final decision has not yet been made, but it's beginning to shape up at 152 dash 1, one revolution later than the original prime recovery zone and south of that zone. The weather is very good in that area. We expect a final decision shortly, but they say it's beginning to look more and more like we will go to 152 dash 1. If that decision is made, we will send the Guadalcanal toward that area very shortly. The recovery carrier is now halfway between 151 and 152 and we will be able to make either area by splash time tomorrow. Flight Director Frank has left his console. He has gone into a huddle with recovery, weather, and flight dynamics people. Flight Director Frank and his orange team will handle the reentry tomorrow. That will -

SC Apollo 9.

CAPCOM Go ahead, Apollo 9.

SC Okay. Go ahead with your procedures about with the 22, I'm ready to copy.

CAPCOM Okay. Before and after you do P22, do a VERB 83 so we can get comparisons before and after.

SC Okay.

CAPCOM Rog. Now we are going to load into the W matrix, and what the AUTO loads will do for you is give you a 10,000 foot and 10 feet per second and this is what we want, a VERB 24, NOUN 01 enter, 2004 enter, 137 enter, 762 enter.

SC Okay, understand set the W matrix at 10,000 and 10, with a VERB 24, NOUN 1 enter, 2004 enter, 137 enter, and 762 enter.

CAPCOM Rog. And a VERB 83 before and after.

SC That's a VERB 83 before and after.

CAPCOM Okay, have fun.

SC Okay. We will also reset that 121 alarm and then set it afterwards, okay?

CAPCOM Yes, real good. And you still have the procedure you used yesterday?

SC Yes, I've got it, thank you.

CAPCOM Okay.

PAO This is Apollo Control. The P22 that Stu Roosa has been discussing with the crew is the computer program used during the landmark tracking exercises.

SC Houston, Apollo 9.

CAPCOM Go ahead, Apollo 9.

SC Hey, on the night pass before landmark tracking, after we get through with the COAS calibration, how about another P52 to S-band to get the platform all tweaked up, okay?

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 213:08, CST 708 572/3

CAPCOM  
SC

Rog, that sounds real good.  
Okay.

END OF TAPE

CC And Apollo 9, Houston, you have a GO all the way to 152 dash 1.

SC Roger; go to 152-1; very good.

PAO This is Apollo Control; the decision has been made to go to 152-1, recovery area 152-1.

CC Apollo 9, Houston.

SC Houston; 9; go.

CC Okay Dave; and I just want to verify there again that we will do the P22 to the SCM vector that you have now and that 47 we will not do prior to P22.

SC Roger; we understand that.

CC Okay.

SC You want us to do mode 66 now or you just want to leave the other one in there?

CC We are going to uplink you a good one before we start; I guess that's probably your choice. Just a second; let's see what Guidance has to say about that.

CC Okay, Apollo 9, the Guidance said the same thing I did; your choice.

SC Okay.

PAO This is Apollo Control; preliminary coordination for 152-1; 23 degrees, 14 minutes north, 68 degrees west. And the preliminary deorbit time, 240 hours, 30 minute, 8 seconds. That is the time for ignition of the deorbit burn or 152-1. That would be 10:30 Central Standard Time. About 30 minutes and 8 seconds past 10 days even in this mission. These numbers will be refined later; retro is working on them now; as soon as we have the refined numbers, 400 K feet, and the chute times, we'll be back and give you those. Apollo 9's present orbit, 245 and one half nautical miles apogee; 98 nautical miles perigee. We'll continue to stand by during the stateside pass. This is Apollo Control; the bottom clock on the monitor identified 'IGN' as now counting to the new deorbit time. It's 27 hours, 4 minutes away.

CC Apollo 9, Houston.

SC Houston; 9, go.

CC Roger; we have made it official now; it will be 152-1, and the time for ignition on my mark will be 27 hours and 4 minutes. Mark.

SC Okay, we got that.

CC Okay.

SC Looks like it's 240 30 09.

CC Well, that's pretty close. It's really 08.

SC By George, I knew we'd mess up.

CC You did good work.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69 GET 213:28 CST 0728 574/1

PAO                    This is Apollo Control. Apollo 9 is  
in acquisition with the Canary station. We will continue to  
stand by for any air-to-ground.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 213:38, CST 738 575/1

CAPCOM Apollo 9, Houston.  
SC Roger, Houston, 9.  
CAPCOM Roger. We're showing quad charlie is approaching the switchover point there and if it switches over, we would like you to go back and use BD roll and disable AC roll, over.  
SC Okay, we'll keep an eye on it. We will go to BD roll, and you still want us to use the BC quads, right?  
CAPCOM That is affirmative.  
SC Okay.  
PAO This is Apollo Control at 213 hours 42 minutes. Canaries has loss of signal. Tananarive will acquire at 213 hours 54 minutes. During this pass over the United States, a decision was made to extend this flight one revolution. The prime recovery now 152 dash 1, Apollo 9 landing early in the 157th revolution. Deorbit time for this new landing zone, 240 hours 30 minutes 8 seconds. The coordinates, we're showing right now, these will be refined through the day after continued tracking, preliminary coordinates 20 degrees 14 minutes, north latitude, 68 degrees west longitude. The weather in this area is good and the recovery carrier U.S.S. Guadalcanal has started speeding toward this area and will be in the area. That deorbit time again is 240 hours 30 minutes 8 seconds. That's the time for ignition for service propulsion burn number 8, the deorbit burn. We do not yet have an estimated splash time. Get that to you as soon as we do. Also during this last pass over the United States, Apollo 9 continued with the photography, getting some weather pictures on the Georgia coast and some oceanography photographs of the Bermuda area. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69 GET 213:54 CST 0754 576/1

PAO                    This is Apollo Control at 213 hours 54  
minutes, and Tananarive is acquiring Apollo 9.

PAO                    This is Apollo Control at 214 hours 03  
minutes. Tananarive has loss of signal. Next station to  
acquire will be Carnarvon at 214 hours 09 minutes. This is  
Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 214:09, CST 0809, 577/1

PAO This is Apollo Control at 214 hours,  
09 minutes. Apollo 9 is coming within range of Carnarvon  
now.

CAPCOM Apollo 9, Houston through Carnarvon and  
I have an SO 65 PAD for you.

SC Roger. Standby just one.

CAPCOM Roger.

SC Houston, Apollo 9.

CAPCOM Houston. Go.

SC Roger. We tried taking a couple of  
photographs through the sextant here, then we took five of  
them. I don't know how they are going to come out, but we  
just thought we'd advise you.

CAPCOM Okay. Real good.

SC Okay, Houston. Go ahead with the SO 65  
PAD.

CAPCOM Okay. Inertial angles 180 00 262 00,  
yaw all zips 214 55 26 216 10 00, orb rate and your Victor  
through Zulu are the same as yesterday. First sight is  
Willmington at 215 00 26 20 03. Over.

SC Roger. 180 00 262 00, all zips, 214  
55 26 216 10 00, orb rate, Willmington 215 00 26 20 03.

CAPCOM Roger. Your readback is correct.

CAPCOM And Apollo 9, Houston. I have about  
seven targets of opportunity here. That'll take care of  
it for the day, I think.

SC Okay. Just a minute.

SC Okay, Houston. Go ahead and give us  
the time first.

CAPCOM Roger. 214 51 30, 7 frames 26 seconds  
on track; it's Mexico, geology. The time 214 54 46, 3 frames  
24 seconds, it's north 60 degrees Rocky Mountains, geology.  
At time 214 56 17, 3 frames 22 seconds interval; south  
30 degrees College Station, Texas, weather. At time 215  
21 05, 4 frames 20 seconds, north 45 degrees Gulf of Guinea,  
weather. At time 216 31 06, four frames 8 seconds on track,  
high plains, Lubbock, Texas, geology. At time 216 43 06,  
18 frames 20 seconds, on track, that's BOMEX, weather. At  
time 217 02 12, 9 frames 20 seconds, north 60 degrees, Cape  
Fria, southwest Africa, weather. And that ought to do  
it for the day.

SC Okay. Just a minute.

CAPCOM And we'll have S-band volume up at one-  
nine.

SC Roger. S-band up at one-nine.

SC Okay. Time 214 51 30, 7 frames 26 sec-  
onds, on track, Mexico, geology. 214 54 56, 3 frames 24 sec-  
onds, it's north 60 degrees Rocky Mountains, geology. 214  
56 17, 3 frames 22 seconds, south 30 degrees, College Station,

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 214:09, CST 0809, 577/2

weather. 215 21 05, 4 frames 20 seconds, north 45 degrees, Gulf of Guinea, weather. 216 31 06, four frames 8 seconds on track, Lubbock, geology. And 216 43 06, 18 frames 20 seconds, I've got BOMEX weather. 217 02 12, 9 frames 20 seconds, north 60 degrees, Cape somebody and weather.

CAPCOM Roger. And that BOMEX weather is on track.

SC Okay.

CAPCOM And that's Cape Fria, FRIA, in Africa.

SC Okay. Fine.

PAO This is Apollo Control. The Willmington referred to in the SO 65 photography experiment update is Willmington, North Carolina.

PAO And to review the photographic targets of opportunity for the day - Mexico, geology; Rocky Mountains, geology; College Station, Texas, weather; Gulf of Guinea, weather; the high plains around Lubbock, Texas, geology and the area referred to as BOMEX - that stands for Barbados Oceanographic and Meteorological Experiment. This is a joint experiment of NASA DOD and the Environmental Science Services Administration. It's in the Barbados Island area, and Cape Fria, southwest Africa, weather. We have overlapping coverage here between Honeysuckle and the tracking ship Huntsville. We'll continue to standby.

HUNTSVILLE Huntsville right at your wing.

END OF TAPE

APOLLO 9 COMMENTARY, 3/12/69, GET: 214:31 (0831)

578/1

CC Apollo 9, Houston; 1 minute LOS; Hawaii  
39.

PAO This is Apollo Control at 214 hours, 36  
minutes. Huntsville has loss of signal; Apollo 9 will be with-  
in range of the Hawaii station in about 3 minutes. This is  
Mission Control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69 GET 214:39 CST 0839 579/1

PAO This is Apollo at 214 hours and 39  
minutes, and Hawaii has acquisition of Apollo 9.  
CAPCOM Apollo 9, Houston, through Hawaii.  
SC Roger, this is Apollo 9. Go  
CAPCOM Roger, we'll have you now all the way  
up to about 10 minutes after the hour.  
SC Oh, very good.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 214:48, CST 848, 580/1

PAO This is Apollo Control at 214 hours 59 minutes. Apollo 9 over the United States now within range of both the Texas and the Merritt Island, Florida, stations. The crew busy getting set up for the multispectral terrain photography. There has been no air to ground yet, during this pass over the United States. We will continue to stand by and monitor.

PAO This is Apollo Control. Apollo 9's cabin pressure is holding at 4.9 pounds per square inch and we are showing a cabin temperature of 68 degrees Fahrenheit.

SC Houston, Apollo 9.

CAPCOM Apollo 9, Houston, go.

SC Roger. Could you brief me on what we are going to do with the S065 on the next pass?

CAPCOM Roger, stand by one.

CAPCOM Apollo 9, Houston.

SC Go ahead, Houston, 9.

CAPCOM Okay, on the S065 there will be taken some about 7 pictures over the U.S., about 40 of them over the Bomax area, and then we will pitch up and empty the cameras on the horizon and we will pass up the angles and that good deal stuff up to you.

SC Very well. Okay, very good. I was very afraid you might have some film left.

CAPCOM No, we are going to use it all. As a matter of fact, we will run up before we pitch up, I think, on one of the cameras, but we will just use the other cameras and have it on the horizon.

SC Okay, very good.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69 GET 215:08 CST 0908 581/1

PAO                    This is Apollo Control at 215 hours 11 minutes. The tracking ship Vanguard in the Atlantic reports loss of signal. The Canary Island station will acquire within about a minute and a half. At the crew's request we passed up some general information on the last S065 run, the multi spectral terrain photography which will be performed during the next revolution. We are now in the 136th revolution, the last part of this experiment will be performed during the last part of this revolution and the beginning of the 137th. We will pass up the detailed information to the crew probably over the Carnarvon station on this revolution. Generally we're looking for 12 exposures of the southwestern United States, 7 over the state of Georgia, 40 over the Barbados area, referred to as BOMEX, standing for Barbados Oceanographic and Meteorological and Experiment. We expect one of the cameras to run out of film during this BOMEX photography and then we'll ask Apollo 9 to pitch to the horizon and complete the film in the other cameras with photographs of the horizon. The Canaries station has acquired now. We will continue to stand by.

PAO                    This is Apollo Control at 215 hours 16 minutes. We've had loss of signal at the Canaries. The next station to acquire will be Tananarive at 215 hours 30 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 COMMENTARY, 3/12/69, GET: 215:30 (0930)

582/1

PAO                      This is Apollo Control at 215 hours, 30 minutes. Tananarive has acquired Apollo 9. This is Apollo Control at 215 hours, 39 minutes. Apollo 9 has gone through this Tananarive pass without voice communication. The next station to acquire will be Carnarvon at 215 hours, 45 minutes. Apollo 9 entered the nightside of this 136th revolution during the Tananarive pass. This is Mission Control-Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 215:45, CST 0945, 583/1

PAO This is Apollo Control at 215 hours, 45 minutes. Apollo 9 coming up on the station at Carnarvon now.

CAPCOM Apollo 9, Houston through Carnarvon.

SC Go ahead, Houston. Apollo 9.

CAPCOM Roger. We'd like to get a little more information on quad Delta switch over. So if you could use quads Charlie Delta for attitude control, right Bravo Charlie.

SC Okay. You want us to go with Charlie Delta now?

CAPCOM Affirmative. Charlie Delta for attitude control, continue with Bravo Delta roll.

SC Okay, check. Here it is: Baker Delta for roll.

CAPCOM Roger. Baker Delta for roll when you switch over.

SC Wait a second now. Do you want me to stay in Bravo Charlie now or do you want me to go to Charlie Delta now?

CAPCOM Roger. We'd like to go to Charlie Delta now for attitude control and then when you switch over go to BD for roll.

SC Okay.

CAPCOM Apollo 9, Houston. I have 2 SO 65 updates for you.

SC Okay. Standby just one.

SC Okay. Go.

CAPCOM Roger. 180 00 27470 all zips 216 23 00 216 10 00, it'll be orb rate; first sight southwest U.S. 216 27 15 20 15; second sight Georgia 216 34 40 20 07; third sight BOMEX 216 40 43 20 33.

SC Houston, are you there?

CAPCOM Roger. Go.

SC Okay. Ready for readback?

CAPCOM Affirmative.

SC Okay, 180 00 274 00 all zips 216 23 00 216 10 00, orb rate, southwest U.S., 216 27 15 20 15, Georgia 216 34 40 20 07; BOMEX 216 40 43 20 33.

CAPCOM Roger, Houston. Verify your pitch inertial angle, 274.70.

SC Roger, 274.70.

CAPCOM Okay and now for this deplete in the film there - what we want are some pictures of the horizon to see if we can get these different shades of blue that were observed in the Gemini program, and I'll give you some orb rate angles. I guess as soon as you finish up the last SO 65 just whip around in the orb rate ball at these angles. I'll give you the time, then you can deplete

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 215:45, CST 0945, 583/2

the film as soon as you get to the attitude.

SC Okay. Go.  
CAPCOM Okay. Your orb rate ball angles will be 180 27 - belay that. Pitch will be 25.7, yaw 0. Your time will be 217.03 00, and S-band volume up for Honeysuckle.  
SC Okay, you want a readback?  
CAPCOM Your sight there will just be the horizon.  
Deplete film and 10 second intervals.  
SC Okay. Ready, Houston?  
CAPCOM Affirmative. Go.  
SC Okay. For the film depletion -

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69 GET 215:55, CST 0955 584/1

SC Okay, ready, Houston?  
CAPCOM Affirmative, go.  
SC Okay, for the film depletion we used orbit rate angles, pitch for roll will be 180.0, pitch 025.7, and yaw 000. The time will be 67:03:00. We put the cameras on horizon, take pictures at 10 second intervals until the film is all gone.  
CAPCOM Roger, and Jim we're kind of short there. You'll probably be going into darkness right away, so as soon as you get the attitude just go ahead and start taking the pictures.  
SC Okay, we'll zip right up there.  
CAPCOM And I can give you some inertial angles if you want to check your orb rate and things.  
SC Okay, fine, go ahead.  
CAPCOM Roger. Inertial angles will be 18000 16970 and yaw 0.  
CAPCOM Apollo 9 Houston. I think we have good two way lock now.  
SC Okay, Ron, I got the 180 but I didn't get the pitch.  
CAPCOM Okay, the pitch will be 16970 and yaw 0.  
SC Okay, inertial angles are 180.0, 169.7 and and 00000.  
CAPCOM Roger, and those inertial angles will be good at 217:03:00.  
SC Okay.  
CAPCOM Apollo 9 Houston, approaching LOS. Possibility no voice Honeysuckle 01, if not Hawaii at 13.  
SC Okay, understand you might get us at Honeysuckle and you may not, and Hawaii at 13.  
CAPCOM Roger.  
SC Houston, Apollo 9 what's the last (garbled) torquing angle?  
CAPCOM Apollo 9, Houston say again.  
PAO This is Apollo Control at 216 hours 1 minute. Honeysuckle has lost the signal, however, the tracking ship Huntsville reports that it has regained voice capability. We will acquire at the Huntsville within a few seconds. During this -  
CAPCOM Apollo 9, Houston through Huntsville.  
CAPCOM Apollo 9, Houston through Huntsville.  
CAPCOM Apollo 9, Houston.  
COMM TECH Huntsville, Houston COMM TECH, net 01.  
COMM TECH Huntsville, Houston COMM TECH, net 01, confirm CAPCOM uplinking through your site.  
HTV Houston COMM TECH this is the Huntsville and you are very weak and lots of background noise.  
PAO This is Apollo Control at 216 hours 7 minutes. It doesn't appear likely that we are going to have

APOLLO 9 MISSION COMMENTARY, 3/12/69 GET 215:55 CST 0955 584/2

PAO                    much success in establishing communications through the Huntsville. Hawaii will acquire at 216 hours 12 minutes. We'll take the circuit down now. If we do have air-to-ground in the remaining couple of minutes at the Huntsville we will come back up. This is Mission Control Houston.

END OF TAPE

APOLLO 9 COMMENTARY, 3/12/69, GET: 216:11 (1011)

585/1

HTV Apollo 9 - Huntsville  
SC Hello there Huntsville, this is Apollo 9,  
how are you today?  
HTV Apollo 9, our HF links through Houston is  
out at this time, can I take any message for you for Houston?  
SC (garble) preparing to do SO 65 and every-  
thing else is okay.  
HTV Roger. (garble)  
SC (garble)  
HTV Apollo 9, Huntsville. We're going in the  
blind now, you're very bad here on HF link.  
SC (garble) appreciate all the help you guys  
have given us during the flight.  
HTV Thank you.  
SC Okay. (garble) for us, will you?  
HTV Roger; we have, and (garble) pretty close  
to the equator; it's pretty warm.  
SC Yeah, I know. (garble) up here.  
HTV Ah, you're getting closer to us.  
SC Looks like.

END OF TAPE

PAO                    This is Apollo Control at 216 hours, 12 minutes. Hawaii has acquired Apollo 9. There was some brief conversation just before LOS at Huntsville between Apollo 9 crew and the Huntsville. We could not read it here; we could tell that they were talking to the ship. We'll turn that tape over to the transcript; we'll stand by for any conversation at Hawaii.

CC                    Apollo 9, Houston.

SC                    Go ahead Houston; Apollo 9.

CC                    Roger. I'll take your torquing angles now if you want to.

SC                    Roger, stand by.

SC                    Okay, GET, 215 40 00; plus 00134 minus 00 017, minus 00105.

CC                    Apollo 9, Houston; roger, we copy.

SC                    Okay.

CC                    And I think I left you with the idea that the depletion on that SO 65 was pointed right at the horizon. Actually, the camera should be pointed 15 degrees below the horizon.

SC                    Okay.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 216:13, CST 1023 587/1

PAO                    This is Apollo Control at 216 hours 29 minutes. The crew of Apollo 9 busy with photographic tasks during this pass over the United States, performing both the S065 experiment and several photographic targets of opportunity.

CAPCOM                Apollo 9, Houston.

SC                    Rog, go.

CAPCOM                Roger. We had a little problem there in semantics with the scientists. Your orb rate pitch rate angle for the depletion time is really 040.7, the cameras are pointing at the horizon and your inertial pitch angle will be 184.7.

SC                    Rog, orb rate 040.7, inertial 184.7.

CAPCOM                Roger.

SC                    Okay.

END OF TAPE

CC Apollo 9, Houston; 1 minute LOS Ascension  
at 51.

SC Roger. Okay, Houston, we are busily  
snapping pictures for you.

CC Real good.

SC The States were really clear that time;  
we ought to really have some nice ones.

CC Hey, that's what we like to hear.

SC Trouble is we're supposed to be taking  
pictures of the weather out here and the ocean is clear as a  
bell.

CC Well, oceanographers will be happy then.

SC Yeah, just as long as we have the cameras  
pointing down, we're pleasing somebody.

CC Okay.

PAO This is Apollo Control at 216 hours, 44  
minutes and Antigua has LOS. Apollo 9 will be within range  
of the Ascension Island station at 216 hours, 51 minutes. This  
is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 216:53, CST 1053, 589/1

PAO This is Apollo Control at 216 hours,  
53 minutes and Apollo 9 is within range of Ascension.  
CAPCOM Apollo 9, Houston through Ascension  
standing by.  
SC Roger.  
CAPCOM Roger (garbled) -  
SC Excuse me, Ron. I cut you out. Say  
again.  
CAPCOM That's all right. You're pitching up  
a little bit. We got it.  
SC Okay.  
CAPCOM Apollo 9, Houston.  
SC Go ahead.  
CAPCOM Roger. It looks like we are going to  
get a pretty good tracking target on the ascent stage this  
evening. It's - the closes point of approach will be 222 hours  
and about 41 minutes. It's about an hour into your rest  
period there, but we plan to let you sleep an hour in the  
morning and kind of wonder what you thought about this.  
SC Sure. We'd like to track it.  
CAPCOM Okay. Real good. It looks like we'll  
go ahead and work it into the flight plan there and update  
you a couple of state vectors - both the CSM and the LM.  
Range will be out about 690 miles and we'll give you the  
gimbal angles to point the optics out of. We'll take a  
few marks and then we'll make a vector compare on it.  
SC Great. Very good.  
CAPCOM And we are tracking the ascent stage  
by a C-band radar and skin track so that's where we are  
getting our vector.  
SC Okay. How did that ascent stage hold  
up after we got out of it?  
CAPCOM Beautiful. The Commander's buss went  
down in about 7 hours - I think.  
CAPCOM Oh, by the way, the lighting looks like  
it's going to be about perfect for this tracking thing deal.  
SC Okay.  
CAPCOM Apollo 9, Houston.  
SC Go ahead, Houston.  
CAPCOM Roger. It looks like when you finish  
your landmark tracking there, what we plan to do is set you  
up in a PTC mode and we'll update the stuff for you here  
later on, but just keep it in the PTC mode then you can go  
ahead and get kind of squared away in there and we'll stay  
in PTC until we start on the tracking of the LM.  
SC Okay. We can also set ourselves up in  
30 to 40 degree deadband hold to keep it out of gimbal lock  
and that's what you want.

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 216:53, CST 1053, 589/2

CAPCOM No. We really want the data DAT on the PTC with the DAP driving it so we can get an idea on the fuel and pressure operations and what have you.

SC Okay. What kind of pitch and yaw dead-band are you looking for?

CAPCOM Roger. It'll be 20 degrees.

SC I'm not sure that PTC we have will set for 20 degrees, will it?

CAPCOM I think so, but we will get you over Tananarive - if not there Carnarvon.

SC Okay. How about checking into that, will you, please?

CAPCOM Okay.

PAO This is Apollo Control at 216 hours, 59 minutes. Apollo 9 is out of range at Ascension. Ron Evans advising the crew, during this pass, that we'd like to try to attempt to optically track the ascent stage of the Lunar Module - roughly six hours from now. Elapsed time of 222 hours, 41 minutes. At that time the ascent stage of the LM will be at a range of 690 miles from the Command Service Module. We'd like to track it through the optics, take marks, and then compare the onboard vectors with the vectors that we are getting here on the ground through C-band radar skin tracking the ascent stage. We'll have good lighting for this tracking attempt. It will come on the Gold Team of flight controllers shift. Gene Kranz and his White Team will be on an hour later tonight. They are due to break shift at 4pm Central Standard Time. The Gold Team will come on for a nine hour shift and then the Orange Team will come on and handle reentry of Apollo 9 tomorrow morning. PTC reference in this conversation over Ascension is Passive Thermal Control. During the next several sights we will be passing up additional information to the crew for this attempt to track the Lunar Module ascent stage. Tananarive will acquire Apollo 9 at 217 hours, 7 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69 GET 217:07 CST 1107 590/1

PAO This is Apollo Control at 217 hours 07 minutes and Tananarive has acquired Apollo 9.

PAO This is Apollo Control at 217 hours 15 minutes. Tananarive has loss of signal. Carnarvon will be the next station to acquire at 217 hours 21 minutes. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 217 hours, 23 minutes. Carnarvon has acquired Apollo 9.

CC Apollo 9, Houston through Carnarvon. I have a landmark tracking update.

SC Okay, Houston; we'll be ready for the landmark tracking in a minute; before you send us that data, be advised that we went into the darkness taking a picture of the dark horizon rather than the sunlit horizon; our plan is to continue around and finish up the film taking a picture of the sunrise, if that's okay with you. Now go ahead with your update.

CC Okay. That's fine with us.

SC And we're ready to copy the update.

CC Okay, update follows: Landmark ID: 005 217 59 15 00, on down to TCA time, 218 03 13 00, north 10 miles. Next one - ID, 065 218 10 38 00, TCA time, 218 14 05 00, and it's north 30 miles; over.

SC Okay - 005 217591500, 218031300 10 miles north; 065 218 10 38 00, 218 14 05 00, north 30 miles.

CC Apollo 9, Houston; your readback correct.

CC Apollo 9, Houston. Can you give us P00 and accept shortly for a state vector uplink?

SC Roger; as soon as we torque these angles you can probably copy that down now.

CC Roger; we have them.

SC Okay, we'll be torquing at 217:25:30.

CC Roger.

SC Houston, 9.

CC Apollo 9, Houston, go.

SC Did you want the numbers from the COAS calibration now, or do you just want them recorded for later?

CC If you have them, then go ahead and get them. If you have them, you can go ahead and get them.

SC Okay; I can give you - you've got P00 and accept now by the way.

CC Okay. Roger, copy.

SC Okay, and here are the two for today. 35981, 57239, 35977, 57296.

CC Roger, we copy.

SC Okay.

CC Apollo 9, Houston.

SC Go ahead, Houston.

CC Rog, if you can get it in there prior to P22 we'd like you to do a verb 83 and copy down R, R dot and theta, and then also hit a verb 83 after you've completed P22.

SC Okay.

PAO This is Apollo Control. The identification on those landmark tracking areas, number 5 is Santa

Catalina Island -

CAPCOM Go.

SC We have a question when you get around to having us track the ascent stage. Are you going to do anything on the dummy matrix?

CAPCOM Roger, stand by.

CAPCOM Apollo 9, Houston.

SC Houston, 9, go.

CAPCOM Roger, computer is yours. You have a good state vector on the LM slot and a deteriorated one in the CSM slot.

SC Okay, we'll plan to use the CSM slot for the updating on landmark tracking and then we'll take a look after that.

CAPCOM Roger, and we're still ginning up the procedure there on that tracking thing. We'll let you know on the W matrix.

SC Okay, very well.

CC Apollo 9, Houston. We'll see you at Guam at 36.

SC Rog, Guam 36.

PAO This is Apollo Control at 217 hours, 33 minutes. Carnarvon has loss of signal. Guam will acquire at 217 hours, 35 minutes. The identification of those landmark tracking areas: 005 is Santa Catalina Island off the coast of California, 0065 is the north tip of Point Quest, Q - u - e - s - t, Tortue Island, Haiti - that's T - o - r - t - u - e. We have an updated deorbit time from the Retrofire Officer of 240 hours, 31 minutes, 30 seconds. Projected time for reaching 400,000 feet, 240 hours, 44 minutes, 22 seconds. 05 g, 240 hours, 46 minutes, 50 seconds. Begin blackout at 240 hours, 47 minutes, 21 seconds. End blackout, 240 hours, 50 minutes, 45 seconds. Drogue chute deploy, 240 hours, 55 minutes, 5 seconds. Main chute deploy, 240 hours, 55 minutes, 53 seconds. Projected splash time, 241 hours, 0 minutes, 48 seconds. The coordinates of the aim point have not changed. They are 23 degrees, 14 minutes north; 68 degrees west. The coordinates for the 400,000-foot mark are 32 degrees 25 minutes north, 98 degrees 21 minutes west. That's in the Forth Worth/Dallas area, a little west of that area. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69 GET 217:36 CST 1136 592/1

PAO Guam has acquisition.

PAO This is Apollo Control at 217 hours 44  
minutes. Apollo 9 out of range at Guam. Hawaii will ac-  
quire at 217 hours 49 minutes. This is Mission Control  
Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 217:49, CST 1149, 593/1

PAO This is Apollo Control at 217 hours,  
49 minutes. Apollo 9 is within range of the Hawaii station.  
CAPCOM Apollo 9, Houston standing by through  
Hawaii.

SC Roger, Houston. Apollo 9. We are coming  
around (garbled). And be advised we took some pictures of the sun-  
rise. We only had two cameras running when we started and one  
ran out after about 3 or 4 frames, so we finished up with  
the other camera.

CAPCOM Roger.  
CAPCOM Apollo 9, Houston. Check your gimbal  
there.

SC Roger, Houston. Apollo 9. Thank you.  
CAPCOM Apollo 9, Houston. Just a little re-  
minder on that W MATRIX update.

SC Go ahead with your reminder.  
CAPCOM Okay, to update the W MATRIX change it  
to 10,000 feet and 10 feet per second - that we talked over  
this morning.

SC Roger. That's in work.  
CAPCOM Okay. Good.

SC Houston, Apollo 9.  
CAPCOM Apollo 9, Houston. Go.  
SC Turns out we were just taking clouds  
over the first landmark so we will have to try another one.

CAPCOM Okay. Can't get them all, I guess.  
SC Everything else looks pretty good inland,  
but there's a little low deck of stratus out there.

CAPCOM Roger. Understand.  
PAO This is Apollo Control. That was Dave  
Scott explaining they could not do the landmark tracking  
exercise over Catalina Island because of clouds. The next  
opportunity comes down over Haiti.

END OF TAPE

PAO This is Apollo Control. The Antigua station has acquisition of Apollo 9. Apollo 9 flying over the Caribbean area. Perhaps shortly we will get a report on this second attempt of landmark tracking today.

CAPCOM Apollo 9, Houston. About 2 minutes LOS and I have your PTC procedures and I will give them as flight plan updates.

SC Okay, ready to copy your PTC updates.

CAPCOM Roger. Perform CMP, page 3-17, 4 + .1 degrees per second. Your initial attitude, roll 0, pitch 231.7, yaw 0.

SC Okay, is that it, Ron?

CAPCOM Negative. Do step 7 at 218 + 35 + 00 and 218 + 40 + 00, change ADAPT deadband to plus or minus 10 degrees. I think you have that procedure on page about 327, your CMP checklist.

SC Right. Anything else?

CAPCOM Roger. Just about every rev thereafter we are going to want to try a different deadband, we will try to get 20 degrees, then 25 degrees, then we will give you a call on those.

SC Okay. Understand to perform - the procedure then is to perform the CMP 3-17 for +.1 degrees per second, initial attitude, 0, 231.7, 0, do step 7 and 218 3500, and 2184000 change ADAPT deadband to plus or minus 10 degrees.

CAPCOM Affirmative. And you will be kind of on your own. Now you can do any housekeeping things you want to do and we will update you for the tracking procedure here a little later on.

SC Roger, stand by for (garble).

PAO This is Apollo Control at 218 hours 20 minutes. Antigua has loss of signal. Ascension will acquire Apollo 9 at 218 hours 27 minutes. This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 218 hours, 27  
minutes. Apollo 9 being acquired at Ascension.

CC Apollo 9, Houston, Ascension; standing by.

SC Roger.

CC Roger; loud and clear.

SC Hey, Houston; 9.

CC Apollo 9, go.

SC Yeah, I guess that data isn't going to be  
much good to you on landmark tracking; there were clouds down  
there and I marked at a wrong target.

CC That ought to give us a pretty good error,  
anyhow.

SC Yeah, it ought to really give you a good  
error.

CC Okay.

SC Took a stratus back there - and the prime  
one - there was one that looked like the prime one, and just  
missed it.

CC You may have to break the spacelight I  
guess.

SC Yeah, I can give you latitude and longitude  
of a good one.

CC Okay; let's use that one.

SC Okay, stand by.

CC Is this the one you tracked?

SC Roger; stand by and I'll give you latitude  
and longitude; maybe you can put it together.

CC Okay, that'll help us.

CC Apollo 9, Houston. 30 seconds LOS,  
Tanarive 44; if not there, Carnarvon 59.

SC Roger, Tanarive 44, Carnarvon 59.

PAO This is Apollo Control at 218 hours, 34  
minutes. Apollo 9 out of range at Ascension. Acquisition  
time at Tanarive 218 hours, 43 minutes. This is Mission  
Control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69 GET 218:43 CST 1243 596/1

PAO                    This is Apollo Control at 218 hours  
43 minutes. Tananarive has acquired Apollo 9.

PAO                    This is Apollo Control at 218 hours  
51 minutes and Tananarive has loss of signal. The Carnarvon  
station will pick up Apollo 9 at 218 hours 58 minutes.  
This is Mission Control Houston.

END OF TAPE

PAO This is Apollo Control at 218 hours, 58 minutes; Carnarvon is acquiring Apollo 9.

CC Apollo 9, Houston, Carnarvon standing by.

SC Roger Houston, Apollo 9.

CC Roger, loud and clear Jim.

SC Houston, 9.

CC Apollo 9, Houston, go.

SC Okay, I'm going to give you the latitude and longitude of the point that we marked on our last pass and maybe you can make some good out of the data you got, okay?

CC Hey, very fine; we can use it.

SC Okay, I'm sure you can figure out what the point is when I give you the numbers. It's latitude 19.815, longitude of 73.416.

CC Roger. 19.815 and 73.416.

SC Roger, and it's on the western coast of Haiti there.

CC Roger.

SC And surprisingly enough, the OC 89 numbers that came up out of the computer were pretty close.

CC Well - amazing, real good, thank you.

SC Yeah - sorta like it identified an unknown landmark and then made it known, and figured out where it was; it did a pretty good job.

PAO This is Apollo Control at 219 hours, 5 minutes; Carnarvon has LOS. Guam will acquire Apollo 9 at 219 hours, 10 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69 GET 219:10 CST 1310 598/1

PAO This is Apollo Control at 219 hours  
10 minutes, Apollo 9 coming up on Guam.  
CAPCOM Apollo 9, Houston through Guam.  
SC Roger Houston.  
CAPCOM Roger, Dave. Your best admirer and  
2 little ones are watching you whip across the world here,  
now.  
SC Say again.  
CAPCOM I say your best admirer and 2 little  
ones are watching you whip across the world.  
SC Oh, very good. Say hello to them for me.  
CAPCOM You're saying it.  
SC As a matter of fact, tell them I'll be  
there for chow in a couple of days.  
CAPCOM She's nodding.  
PAO This is Apollo Control. Dave Scott's  
wife and children are in the viewing room here at the  
Control Center listening to this conversation between Dave  
and CAPCOM Ron Evans.  
SC Houston, Apollo 9.  
CAPCOM Apollo 9, Houston. Go.  
SC For your information right now we are  
demonstrating how to take out and remove the center couch  
at zero G in order to fill, I guess, one of the last DTO's.  
CAPCOM Real fine. Any problems at all with it?  
SC Oh, no, it's real easy. As a matter  
of fact, it's easier than it is down there.  
CAPCOM That's what we were hoping.  
SC We'll have some movies if Cecile B.  
McDivitt and this other fellow here can come out with the  
right production theme.  
CAPCOM I decline.  
SC What we really need are a couple of good  
editors.  
CAPCOM That's for sure probably.  
CAPCOM Apollo 9 Houston. PTC is looking real  
good so far. We'll see what happens when you come up  
perigee here.  
SC Okay, let us know when you want us to  
change dead bands.  
CAPCOM Will do.  
CAPCOM Apollo 9, Houston. Hawaii at 27.  
SC Roger, Hawaii at 27.  
PAO This is Apollo Control at 219 hours  
20 minutes. Apollo 9 is out of range at Guam moving over  
the Pacific toward Hawaii. That station will acquire at  
219 hours 26 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 219:26, CST 1326, 599/1

PAO This is Apollo Control at 219 hours,  
26 minutes. Apollo 9 is within range of Hawaii.

PAO This is Apollo Control at 219 hours,  
33 minutes. Hawaii has Loss Of Signal, however, Redstone  
will pick up here in about 30 seconds. The Flight Dynamics  
people are still working with these numbers in an attempt  
to track the ascent stage of the Lunar Module using the  
optics of the Command Service Module at about 222 hours,  
40 minutes - roughly. As soon as all the information is  
assembled we'll pass that up to the crew. Redstone has  
acquisition. We'll continue to standby.

CAPCOM Apollo 9, Houston. I can give you the  
times to change DAP deadband now.

SC Say again.

CAPCOM Roger. I can give you the times to  
change your DAP deadband.

SC Okay. You're coming through clear now.  
Go ahead.

CAPCOM Roger. At 220 plus 10 plus 00 change  
DAP deadband to 20 degrees.

SC Roger. Understand, 220 10 00 DAP dead-  
band to 20 degrees.

CAPCOM Roger, and at 221 plus 45 plus 00 change  
deadband to 25 degrees.

SC Roger, 221 45 00 deadband to 25 degrees.

CAPCOM Roger.

CAPCOM Apollo 9, Houston. I'd like to talk  
a bit about your cryo plan for tonight.

SC Okay. Go ahead.

CAPCOM Roger. It's the same as last night  
except your H2 tank pressure can go down to 180 to 200,  
and then we'll stir-up tank 1 fans tonight.

SC Okay. H2 tank pressure down to 180 or  
200 and we'll turn on tank one fan tonight.

CAPCOM Roger. Otherwise it's the same as last  
night.

SC Okay, and we'll give a report when we  
get everything done.

CAPCOM Okay.

END OF TAPE

APOLLO 9 COMMENTARY, 3/12/69, GET: 219:41 (1341)

600/1

PAO                      This is Apollo Control at 219 hours, 46 minutes. And the tracking station at Corpus Christi has LOS. Apollo 9 now in the orbits that sweep down across South America, missing all the tracking stations in the Eastern Test Range and in the Atlantic. The next station to acquire will be Tananarive. at 220 hours, 19 minutes. This is Mission Control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 220:19, CST 1419, 601/1

PAO This is Apollo Control at 220 hours,  
19 minutes. Apollo 9 coming within range of Tananarive.  
CAPCOM Apollo 9, Houston through Tananarive.  
CAPCOM Apollo 9, Houston through Tananarive.  
SC Go ahead, Houston. This is Apollo 9.  
CAPCOM Roger. Do you read well enough for a  
flight plan update?  
SC Roger. I believe so.  
CAPCOM Roger. When you are ready.  
SC Go ahead, Houston.  
CAPCOM Apollo 9, Houston. When you are ready  
I will GO with flight plan update.  
SC Roger, Houston. Go ahead with the  
flight plan update.  
CAPCOM Roger, 220 plus 48 block data, up 221  
plus 05 update state vectors 222 plus 25, maneuver to ascent  
stage track attitude 222 plus 50, power down IMU and SCS,  
terminate BAT A charge, waste water dump to 35 percent. I  
say again - 35 percent. Begin rest period. Over.  
SC Okay. How do you read Apollo 9, Houston?  
CAPCOM Roger. Pretty good now.  
SC We missed where you said 220 48. Would  
you say that one again, please?  
CAPCOM I'll send you block data.  
SC Okay, 220 48 block data, 221 05 update  
state vectors 222 25, maneuver to ascent stage track attitude  
222 50, power down IMU and SCS, terminate BAT A charge,  
waste water dump to 35 percent. Begin rest period. Over.  
CAPCOM Roger. Your readback correct.  
SC Houston, Apollo 9. What's the getup  
time in the morning?  
CAPCOM Roger. Your normal time on the flight  
plan was 232 plus 20, and we are thinking of making it  
233 plus 35 or 233 plus 50. That's about 7 and one-half  
prior to RETRO.  
SC Roger. Understand it will be 233 35.  
CAPCOM Affirmative.  
PAO This is Apollo Control at 220 hours,  
31 minutes. Apollo 9 is out of range at Tananarive. We had  
a flight plan update during this pass. Ask the crew to maneu-  
ver to the ascent stage tracking attitude at 222 hours, 25 min-  
utes. We are still looking for the tracking of that LM  
ascent stage around 222 hours, 40 or 41 minutes. And Apollo 9  
crew will fire down the spacecraft at 222 hours, 50 minutes  
and begin their rest period. Getup time in the morning -  
233 hours, 35 minutes. The next station to acquire Apollo 9  
will be Guam at 220 hours, 47 minutes. This is Mission Con-  
trol Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 220:47, CST 1447 602/1

PAO This is Apollo Control at 220 hours,  
47 minutes. Apollo 9 in acquisition at Guam.  
CAPCOM Apollo 9, Houston through Guam.  
SC Houston, Apollo 9, go.  
CAPCOM Roger, I'll take your block data over  
Hawaii. I'd like to talk over the P20 procedures now if you  
want to copy.  
SC Rog, let me get a pencil.  
SC Okay, go ahead, Ron.  
CAPCOM Okay, I'll give you the procedures, about  
six steps, and then I'll give you the dope on the ascent stage  
relative motion.  
SC Roger. Ready to copy.  
CAPCOM Okay, the first step is roll spacecraft  
to blank angle - I'll get that to you in a minute - second  
one, select normal P20 procedures with auto maneuvers starting  
CMP page 4-1. Mark as long as desired at 1 minute intervals  
and update LM state vector. Time of closest approach: 222  
plus 1 - Belay that; I'll start again - 222 plus 41 plus 46.  
You can call P20 anytime prior to closest approach but be  
careful of middle gimbal angle on verb 5918. If you call it  
too early that middle gimbal angle may be greater than 60 de-  
grees.  
SC Rog.  
CAPCOM And your current W matrix initialization  
is okay. And, actually, you can call P20 at 22 plus 35 plus  
30. Your range is about a 1000 miles at that time.  
SC Okay.  
CAPCOM Okay, your initial roll angle will be  
345.6.  
SC Okay, you ready for readback?  
CAPCOM Okay, go.  
SC Okay, the roll angle for initial acquisi-  
tion 345.6 with an auto maneuver in P20 - normal P20 - mark  
at 1 minute intervals, time of closest approach 222:41:46,  
and P28 time prior to closest approach, and we'll keep an eye  
on the middle gimbal angle. W-matrix is okay, and the range  
is a 1000 miles at -  
CAPCOM Apollo 9, Houston. Roger, your readback  
is correct.  
SC Okay, we'll give it a whirl.  
CAPCOM Okay, I've got some more dope here at  
your point of closest approach, on it.  
SC Yes, I was just going to ask you how close  
and this sort of thing.  
CAPCOM Okay, do you read me now still?

SC Rog, go.  
CAPCOM Okay, range will be 652 nautical miles, R dot 32, CSM will be trailing 603 miles. You'll be below 272 miles, and you'll be 117 miles to the right.  
SC Okay, understand closest approach 652 miles, R dot equals 32. That's what I heard. CSM trailing 603 miles, below 272, to the right 117.  
CAPCOM Roger, your LM HA is 3741.7 by 127.8.  
SC Roger, 3741.7 by 127.8. Hey, Ron, say again the R dot at closest approach.  
CAPCOM Roger, R dot is 32 feet per second.  
SC Okay, 32 feet per second.  
CAPCOM It's a pretty slow pass through there also. Looks like you'll have about 10 to 15 minutes of tracking there.  
SC Okay, say again what you said just before the 10 to 15 minutes of tracking.  
CAPCOM It goes pretty slow across the field of view.  
SC Okay, does it go right to left or left to right, or what?  
CAPCOM It will be going left to right.  
SC Okay, thank you.  
PAO This is Apollo Control at 220 hours, 55 minutes, and Guam has loss of signal. During this pass Ron Evans updated the crew on computer procedures to be used during the tracking of the lunar module ascent stage. Advised the crew that 222 hours, 35 minutes, 30 seconds the range would be 1000 miles between the two vehicles. The point of closest approach, GET of 222 hours, 41 minutes, 46 seconds. The range at that time 652 nautical miles. The range rate, 32 feet per second. At that time, the time of closest approach, the command module trailing the LM 603 nautical miles. Command module below the LM 272 nautical miles, and the command module 117 miles to the right of the ascent stage. Hawaii acquires at 222 hours, 38 minutes, 46 seconds, during this pass on which the tracking will be attempted. Redstone acquisition 222 hours, 45 minutes, 19 seconds. If the crew acquires early they should have 10 to 15 minutes of tracking on the ascent stage. And the marks into the computer during the tracking at 1 minute intervals. The orbital parameters for these two vehicles at the present time: the command and service module is in an orbit 245 by 98 nautical miles. The LM ascent stage: apogee is 3741.7 nautical miles, perigee 127.8 nautical miles. Hawaii will acquire Apollo 9 next in this revolution at 221 hours, 3 minutes, approximately 4 minutes from now. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 221:03, CST 1503, 603/1

PAO This is Apollo Control at 221 hours,  
03 minutes. Apollo 9 approaching acquisition at Hawaii.  
CAPCOM Apollo 9, Houston.  
SC Roger, Houston. Standby.  
SC Okay. We are ready to copy the block  
data.

CAPCOM I was afraid of that. I don't quite  
have it yet. Request POO and ACCEPT.

SC POO and ACCEPT we got.

CAPCOM Very well, and you won't quite have a  
Pegasus up there today and it's going to look like about  
a fourth magnitude star we think and my interpretation of  
the relative motion plot was wrong. The LM is going to be  
moving from your right to left, so the CSM will be yawing  
to the left.

SC Okay. Roger. Understand - right to  
left and we'll be going to the left.

CAPCOM Affirmative.

SC Hey, when we get back we'll have to  
talk about the PGC and where we stopped it. We stopped  
it a couple of times now and we'll get with you and get  
that all squared away. We have got the times.

CAPCOM Okay. Very fine. No problem.

CAPCOM Nine, Houston. I have a nav check that  
I can read up to you. This is a land nav check.

SC Okay. Go ahead.

CAPCOM Roger. Time 222 00 00 00 plus 0252  
plus 11936 0228. Over.

SC We understand. 222 00 00 00 plus 0252  
plus 11936 and 0228.

CAPCOM Roger. That H is really at 3,000 22.8,  
but the DSKY doesn't have room for it, or the PAD doesn't.

SC Okay.

SC Houston, Apollo 9.

CAPCOM Apollo 9, Houston. Go

SC Okay, there goes your uplink again.  
Your uplink had hung up there for a minute.

CAPCOM Apollo 9, Houston. We've got a bit  
of in and out of keyhole there in Hawaii. If we don't  
quite get it, we'll finish it at Redstone. Redstone AOS  
is at 09.

PAO This is Apollo Control. Hawaii has  
loss of signal but Redstone will acquire in about 45  
seconds. Over Hawaii Ron Evans informed the crew that the  
ascent stage should look about like a fourth magnitude star.  
He also told them that the ascent stage will be moving from  
Apollo 9 to right to their left.

CAPCOM Apollo 9, Houston

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SC Roger, Houston. Go ahead.  
CAPCOM Roger. We had a couple of lines wrong  
there due to keyhole, so we'll line by line to CSM, then  
go straight up with the LM state vector.  
CAPCOM Apollo 9, Houston. The computer is  
yours.  
SC Okay, thank you.  
CAPCOM Roger.  
CAPCOM Nine, Houston. How's your eyeball  
today?  
SC It's pretty good.  
CAPCOM Very well.  
SC We'll find that old fellow.  
CAPCOM We're counting on you.  
SC I hope. Dave is telling me the  
tracking light is back on.  
CAPCOM Right. Nine, Houston, super retro....

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 221:12, CST 1513 604/1

CAPCOM 9, Houston. Super AUTO is check for  
check and we are ready for vox 22.

SC Okay, ... shoot.

CAPCOM Roger. 141 charlie, charlie, + 174 -  
162022357432834142 charlie charlie + 078 - 169022532552832  
143 charlie charlie + 209 + 145022701063913144 charlie  
charlie - 258 - 162022851085825145 alpha charlie + 038 -  
032022913075534146 alpha charlie + 198 - 030123049074539  
1472 alpha + 293 - 030023226143813, your pitch trim -.64,  
yaw -.94.

SC Okay. What did you start with? 141  
charlie charlie?

CAPCOM Affirmative.

SC Okay + 174 - 162022357432834142 charlie  
charlie + 078 - 169022532552832143 charlie charlie + 209 +  
145022701063913 -

CAPCOM Faster.

SC Are you still with me?

CAPCOM Affirmative, faster.

SC Okay, 144 charlie, charlie -258 -1620  
22851085825145 alpha charlie + 038 - 032022913075534146  
alpha charlie + 198 - 0301230490745391472 alpha + 293 -  
030023226143813, pitch trim -.64, yaw -.94.

CAPCOM Roger, your readback is correct.

CAPCOM 9, Houston.

PAO This is Apollo Control at 221 hours 18  
minutes and the Guaymas, Mexico station has loss of signal.  
The next station to acquire will be Tananarive at 221 hours  
54 minutes. This is Mission Control Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 221:54, CST 1554 605/1

PAO This is Apollo Control at 221 hours,  
54 minutes and Tananarive has acquisition of Apollo 9.

PAO Here in the Mission Control Center the  
White Team is in the process of ending its last shift of this  
mission and handing over to the Gold Team. We're estimating  
the Change of Shift News Conference for 5:15 Central Standard  
Time.

CAPCOM Apollo 9, Houston through Tananarive.  
SC Hello there, Houston; how are you?  
CAPCOM Oh, rog. Mighty fine. The White Team  
bids you Sayonara and they will see you back at the ranch.  
SC (garbled).  
SC Houston, do you read Apollo 9?  
CAPCOM Apollo 9, Houston. Loud and clear. How  
me?

SC We're reading you. I'd like to thank -  
we'd all like to thank the White Team for all their efforts.  
CAPCOM Roger, we appreciate it.  
SC Tell that Flight Director that we still  
have that debriefing that we've got to go through.  
CAPCOM Okay, he copied.  
SC Hey, is the big white Flight Director  
there?

CAPCOM Say again.  
SC Is that big white Flight Director there?  
CAPCOM Affirmative, he's on the loop.  
SC Okay, tell him we better have that de-  
briefing.  
CAPCOM We concur and we will schedule it accord-  
ingly.  
SC Tally Ho.  
CAPCOM Roger.  
PAO This is Apollo Control at 222 hours,  
6 minutes. Tananarive has loss of signal. The only conver-  
sation during this pass, Ron Evans telling the crew that the  
White Team would see them back here at the Manned Spacecraft  
Center, and Jim McDivitt thanking the White Team and inform-  
ing Gene Kranz, the Flight Director of the White Team, that  
he wanted to have a debriefing after the crew got back. And  
that's spelled p - a - r - t - y. This is Mission Control  
Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 222:27, CST 1627 606/1

PAO                      This is Apollo Control at 222 hours, 27 minutes, ground elapsed time. The Gold Team has replaced the White Team this time. The White Director is Gerry Griffin and the voice of CAPCOM, that is the astronaut who will be talking to the Apollo 9 crew will be that of Al Worden. We are about some 11 minutes from acquisition at the Hawaii tracking station and it could very well be that prior to Hawaii acquisition, the crew of Apollo 9 will have begun to track the unmanned LM ascent stage. This is planned for this rev and the crew could pick up the LM as early as 222 plus 35, or two or three minutes before Hawaii acquisition. So, when they come into voice range, they may have acquired that unmanned LM and will have been in the process of tracking for some time. The tracking actually will consist of using onboard optics in an automatic mode which they will call Auto Optics. The point of closest approach will be at 222 plus 41 at which time the spacecraft, the Apollo 9 spacecraft, and the LM could be about 650 or so nautical miles apart. This entire track can take place between - over the Hawaii station as well as over the tracking ship Redstone. We also have our present tentative plans covering the return of the Apollo 9 crew to Houston after recovery sometime tomorrow. The plan, at the present time, reads something like this. Astronaut recovery, of course, will take place tomorrow and then the primary recovery ship, Guadalcanal, will steam toward Eleuthera Island in the Bahamas. The crew will remain on board the primary recovery ship overnight and after dawn, sometime after dawn, time to be determined, Friday morning which would make that March 14th, the Apollo 9 crew will leave the Guadalcanal and will fly via helo to Eleuthera Auxiliary Air Force Base. There a NASA gulfstream aircraft will be standing by and after some 10 minutes or so, which is about all that is required to trans to helos to the gulfstream they will depart for a flight of about one hour and one-half duration to the skidstrip at Cape Kennedy. There the gulfstream will be refueled and following the refueling, then the aircraft will take off and head for Ellington Air Force Base for what we presently project as a Friday arrival here in Houston. At 222 hours, plus 31 minutes, with the spacecraft approaching the tracking station at Hawaii, this is Mission Control, Houston.

END OF TAPE

PAO This is Apollo Control at 222 hours, 38 minutes into the flight. In a matter of some 25, 26 seconds or so we should have acquisition at the Hawaii tracking station. The - on the scribing plotter board, that 10 foot by 20 foot board in front of us, we have both the images of the LM - although in this particular case it looks like the ascent stage, or sorry about that, the descent stage - and the image of the command/service module, which incidentally just turned green indicating that we have acquisition. Let's stand by to monitor the conversation.

CAPCOM Apollo 9, Houston.

SC Go, Houston. This is Apollo 9.

CAPCOM Roger, just checking here with you.

We'll be doing - asking you for your E Memory dump here at about 51.

SC Okay, well we're tracking the LM right now and -

CAPCOM Okay, understand. How's it going?

SC Okay, we've got it.

CAPCOM Very good. Lot of smiles around here.

CAPCOM Apollo 9, Houston.

SC Go ahead, Houston.

CAPCOM Rog, we can let the E Memory dump go if you get in a time bind tracking the ascent stage there. We would like you to turn BAT A charge off now though.

SC Houston, Apollo 9. Say again; I missed that.

CAPCOM Okay, Jim. We can let the E Memory dump go if you get involved tracking the ascent stage but we would like you to turn BAT A charge off now.

SC Okay, battery A charge is off now.

CAPCOM All righty.

CAPCOM 9, Houston. We're watching the marks and they're looking good.

SC Say again, please.

CAPCOM Roger, we're checking the marks as they come in and they're looking good.

SC Okay.

PAO When Astronaut McDivitt reported that the crew was tracking the upper stage of the lunar module there was a momentary cry here in Mission Control of somewhat exaltation with Gene Kranz, who is the White Team Flight Director, crying out "Three out of three" with some degree of joy, some element of joy and happiness. Meaning, of course, that this was the third successful attempt at tracking a piece of space debris out of three tries. Yesterday

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 222:38, CST 1638 607/2

we attempted twice to track Pegasus and were successful, and of course, today we attempted once to track the LM upper stage and had some success. We did not, however, have much success on our third attempt to track Pegasus toward the latter part of the day yesterday. The astronauts attempted to sight the Pegasus satellite on their third attempt as they went past the Ascension tracking site yesterday in the evening, that is, the evening of Central Standard Time, but had very little luck. We're standing by to monitor any additional conversation between the ground and the crew.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 222:48, CST 1648 608/1

CAPCOM Apollo 9, Houston.  
SC Go ahead, Houston.  
CAPCOM Rog. When you lose the LM, we'd like  
you to do a verb 83 and tell us what range you are at.  
SC Okay. Right now, he's against the  
earth background and Dave can't see him. We've been  
marking him, but we just can't see him right now. Auto  
optics has been following him, but no more marks for the  
last four minutes or so.  
CAPCOM Okay, understand.  
SC I can get him every once in a while,  
but not long enough to get out of auto optics and take a  
mark. We'll have to process the last one before we call  
a verb 83 up anyway.  
CAPCOM Okay, Dave.  
CAPCOM Okay. You've got about two minutes  
to LOS, if you can do it before then.  
SC Okay. I'm picking him up every once in  
a while and maybe he'll get to a dark background in a little  
while where I can hold onto him.  
CAPCOM Okay, if we lose you here, we'll pick  
you up in Tananarvie.  
SC Yes. We'll pick up a verb 83 as soon  
as we get through the last mark.  
CAPCOM Okay, Dave.  
PAO Apollo 3 has moved out of range of the  
tracking ship Redstone at the present time heading toward  
the west coast of South America on this the 140th revolution  
on the flight of Apollo 9. At 222 hours, 51 minutes,  
ground elapsed time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 223:55, CST 1755 609/1

PAO This is Apollo Control at 223 hours, 55 minutes. During the change of shift press conference, the spacecraft passed over the tracking site of Tananarive and we recorded about two and one-half to three minutes of conversation between the Apollo 9 crew and astronaut Al Worden, who is CAPCOM here on the ground. We will play that tape for you, so roll the tape, please.

CAPCOM Apollo 9, Houston, through Tananarive.

SC Apollo 9. Do you read?

CAPCOM I read you loud and clear and just want you to know we are standing by at Tananarive and we expect to talk to you in Hawaii at 224:14.

SC Roger, 224:14. If you (garbled) we'll give you our power down (garbled).

CAPCOM Okay, Apollo 9, Houston here. We are reading you a little better and we'll go ahead and take some of your power down stuff now, if you have it.

SC Okay. Ready to copy now.

CAPCOM Yes, all set, Rusty.

SC Okay. Service Module A, B, C, D. 51544048, Bat C, Power A B 369370370, Injector 5.0 5.0, Off-scale high 5.0, 5.0, 4.9. Two IDs 312561278027 over -

CAPCOM Roger, Rusty, copy. 51544048, 369370370 50, 50, off scale high 50 49, 312561278027.

SC Roger, you missed one 5.0 in the injector. 4.9 was 6 delta.

CAPCOM Roger. We copied that.

SC Okay.

CAPCOM And while we have you on the line, did you get a range for LOS on the LM?

SC Rog. I got the figures for you on times. I didn't get you a good range because I can't (garble) along the P20, but those are the times for the first sightings to the last sightings and the beginning and the end of the mark.

CAPCOM Okay. We're running out of coverage at Tananarive and we'd better save it for Hawaii. See you there at 14.

SC Very well.

PAO With the spacecraft presently over China on this the 141st revolution, we expect to be back up at 14 after the hour or approximately 224 hours plus 14 when the spacecraft will be acquired by the tracking station at Hawaii. At 223 hours, 59 minutes, GET this is Mission Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, CST 18:14, GET224:14, 610/1

PAO This is Apollo Control at 224 hours, 14 minutes ground elapsed time. We expect to acquire the Apollo 9 spacecraft at the Hawaii sight in a matter of 10 or less seconds. And during that pass we will transmit a considerable amount of data to the crew, so we'll stand by for the air-to-ground.

SC Houston, Apollo 9.

CAPCOM Apollo 9, Houston here.

SC Roger, hello there. Houston how you read apollo 9?

CAPCOM Apollo 9, Houston reads you loud and clear. How are you doing?

SC Pretty good. I've got a couple of questions for you.

CAPCOM Okay.

SC Did you want us to leave inverter 3 on main A and ..... transformer on tonight like last night?

CAPCOM That is affirmative, Apollo 9.

SC Okay we configured that right.

CAPCOM Okay, we've got a question for you. Have you switched tanks on Quad Charley yet?

SC Negative.

CAPCOM Okay. We're reading a little low quantity, we just wondered.

SC No unless they've been inadvertantly opened sometime during the flight, they should still be closed and we have not switched them.

CAPCOM Roger, Apollo 9, Houston copy and you want to give me that LM LOS stuff now?

SC Okay, let me give it to you real quick here. The first sighting we had was at 222 25 55. It wasn't good enough to mark on but we did pick him up occasionally. The first mark was at 222 39 40. The last mark was at 222 45 40. Then we saw him ever once in a while until 222 51 43 and that was the last time we had any sighting at all.

CAPCOM Roger Apollo 9, understand you got your first sighting at 222 25 55. You didn't take a mark. You got your first mark at 222 39 40, and your last one at 222 45 40 and you had him in sight until 222 51 43.

SC Roge. The times we were not marking we would only get a visual on him maybe on 2 seconds out of every 30 or 40 so you couldn't really get him lined up to take a mark. But with the state vectors you have and with the machinery up there it really looked pretty good.

CAPCOM Roger, Dave understand. Would you give us a verb 66 and shift that state vector over now?

SC Okay here's your verb 66, and Houston Apollo 9, we have some information for re-entry .....

APOLLO 9 MISSION COMMENTARY, 3/12/69, CST 18:14, GET 224:14, 610/2

CAPCOM Roger, understand re-entry sto... go ahead.

SC Okay we have the, one of the large suits and center seat suit folded and the L shaped ... underneath the center couch. We have rubberized pressure suits and all 3 helmets .... on the floor between the L shaped AGS. And ..... dock side canisters on the front part of the LEV4. We're going to have two large bags of trash that'll probably be tied down in equipment bay and we'll give you more on that tomorrow. The rest of the spacecraft will be stowed essentially the same. The one exception being the food B1 locker B1, Bravo 1 that is lower equipment bay has just trash in it right now, and it will weigh somewhat less than it did at launch. Lockers L3 will be full of food. They'll have somewhat less than the food that was in them at launch but we'll stuff some trash in there and try to at least fill them up. As I mentioned earlier all the LM data is over at A1.

CAPCOM Roger, Apollo 9, Houston copy. Would you give us a verb 74 right now just--

SC Roger, verb 74 2 1 mark.

SC Houston, that's about all the data I have for retro. Essentially the spacecraft is still pretty much the same way it was at launch accept for the LM data in A1. The two pressure system or L shaped bag both of them on the floor and other pressure suit lying crossways in the LEV, just forward of the, .....

CAPCOM Roger, Apollo 9, Houston copy all that and the Gold team would like to say so long to you it's been fun working.

SC Say Gold team, we've enjoyed every moment with you and we'd sure like to thank you for all your help, and we'll see you at the de-briefing that.....

CAPCOM Roger, I think everybody's agreeable to that.

SC Okay, You've got a fine bunch of guys. Let me tell you.

PAO We believe that the spacecraft has gone beyond range of the tracking station at Hawaii. The astronauts of course will be doing some light housekeeping work now in preparation to settling down in their couches for the rest cycle. At 224 hours 22 minutes GET, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 225:05, CST 1905, 611/1

PAO                      This is Apollo Control at 225 hours, 5 minutes Ground Elapsed Time. We just passed out of range of the Ascension Island tracking station, and during the 3 or 4 minutes that we were within range at Ascension, the CAPCOM here in Houston, that would be Al Worden, tried to call the Apollo 9 crew. He placed a half dozen or so calls up to the crew, but there was no response. About this time the crew is in its - probably in its eat, eating cycle, and the belief here of course is that they have their head sets off and were either eating their meal or perhaps eating and stowing some of their food - eating their meal and stowing their food. At any rate, we did not have any air-to-ground with them although we did query them on a half a dozen or so occasions. The spacecraft systems look like they're okay according to the downlinked information. So at 225 hours, 6 minutes GET, this is Mission Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 225:05, CST 1905, 612/1

CAPCOM Apollo 9, Houston.  
CAPCOM Apollo 9, Houston through Ascension.  
CAPCOM Apollo 9, Houston.  
CAPCOM Apollo 9, Houston through Ascension.  
CAPCOM Apollo 9, Houston.  
CAPCOM Apollo 9, Houston.  
CAPCOM Apollo 9, Houston through Ascension.  
CAPCOM Apollo 9, Houston.  
CAPCOM Apollo 9, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 22609, CST 2009, 613/1

PAO This is Apollo Control at 226 hours, 9 minutes, ground elapsed time. At the present time, the spacecraft is over the Pacific Ocean, approaching the west coast of South America. It will take another 20 or so minutes before we are in range of a tracking station, in that case, it would be the station at Ascension. The spacecraft on this, the 142 revolution, is flying at an apogee or reaches an apogee of 244.3 nautical miles, and its low point is 98.1 nautical miles. It makes 1 rev around earth every 90 minutes, about 91 minutes. A little earlier, the Flight Dynamics Officer passed the following information onto the people at Mission Control here. He estimates now, that the descent stage will reenter the earth's atmosphere on March 16, around 8:00 PM, central standard time. At 226 hours, 11 minutes, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 227:13, CST 2113, 614/1

PAO                    This is Apollo Control at 227 hours, 13 minutes GET. About 35 minutes ago the spacecraft was over the, or over the Ascension Island tracking site. And at that time the ground received some information on, bio-medical information, on the Commander and Command Module Pilot who were in their couches and were beginning their rest cycle. The information was interpreted by the Flight Surgeon as follows. The astronauts were not asleep but were resting. At same time the spacecraft data was downlinked and the systems were working normally; no anomalies in any of the telemetry data that was downlinked. At the present time the spacecraft is just off the coast of China and will be within range of the tracking site at Guam. We do not anticipate any conversation since the crew are in their rest cycle. So at 227 hours, 13 minutes, this is Mission Control, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 22853, CST 2253, 615/1

PAO                    This is Apollo Control at 228 hours,  
53 minutes into the flight. Apollo 9 is over the Pacific  
Ocean at the present time, acquired by the tracking station  
at Guam. According to the information that is being downlinked,  
both the Commander and the Command Module Pilot are sleeping  
rather soundly at this time. On this the 144 revolution, with  
some 11 hours, 37 minutes remaining in the flight. At 228 hours,  
54 minutes, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 2303715, CST 003715a 616/1

PAO                    This is Apollo Control at 230 hours 37 minutes. The tracking ship Huntsville has the Apollo 9 spacecraft in acquisition at the present time and according to the information that's coming down from the spacecraft, all of the systems are working normally. The astronauts, according to the biomedical information, are in a rather sound sleep. We're about 9 hours 53 minutes from ignition time for deorbit and something less than 3 hours from the time when the ground will awaken the crew so that they can continue their preparations for re-entry. At this particular time we're experiencing a shift change here with the Orange Team, the one that will have the re-entry exercise, taking over from the Gold Team. All systems seem to be working - functioning normally, the spacecraft will next be acquired by the tracking ship Mercury at 42 after the hour or about 3 or 4 minutes from now. At 230 hours 39 minutes, this is Mission Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/12/69, GET 231:50, CST 0150, 617/1

PAO                      This is Apollo Control. 231 hours 50 minutes ground elapsed time. Apollo 9 presently is over India, about 1/3 of the way through the 146th revolution. 1 hour 44 minutes remain in the crew's sleep period. We're 8 hours 41 minutes away from the due orbit burn time. At 231 hours 51 minutes ground elapsed time this is Apollo Control.

END OF TAPE

A/9 MISSION COMMENTARY, 3/13/69, GET 232:50, CST 02:50, 618/1

PAO                    This is Apollo Control 232 hours 50 minutes GET. Apollo 9 presently is over Venezuela and has just begun the 147th revolution, and also has entered acquisition at the Antigua tracking station. The crew is still asleep at this time, with some 44 minutes remaining in the crew rest period. The retrofire countdown clock now shows 7 hours 40 minutes remaining. The time of retrofire will likely shift back and forth a few seconds one way or the other during the course of the morning as the stateside tracking begins to come in, and the spacecraft moves back onto the range. Following loss of signal at Madrid, Carnarvon will acquire the spacecraft at 35 minutes past the hour which should be the initial wake-up call over Carnarvon during this revolution. The crew will be quite busy during the morning getting all their numbers passed up to them from the ground. The maneuver entry numbers and so called pads where they copy down numbers from the ground, and they go through many tests of all their spacecraft systems that are vital to the entry maneuver. And at 232 hours 51 minutes GET, this is Apollo Control.

END OF TAPE

Wake UP  
(Alarm Clock)

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 232:35, CST 0335, 619/1

PAO This is Apollo Control. 233 hours 35 minutes ground elapsed time. Coming up on Carnarvon, Australia tracking station, spacecraft communicator Stu Roosa will give the crew a wakeup call during this pass. Apollo 9 presently is in an orbit measuring 98.2 nautical miles at perigee. 243 nautical miles at apogee. Spacecraft weight is now showing on the displays being 24 thousand 902 pounds. Standing by for the initial call during recent pass over Canary Islands during the last, during this revolution, revolution 147. Flight surgeon Ken Beers said that the crew roused briefly as he interpreted it. Sounds like Stu Roosa may be getting prepared to make his call.

CAP COM ring (alarm clock) The alarm clock just went off gentlemen.

SC Roger. I thought I heard a little ding-a-ling from Mr. Alarm clock.

CAP COM All right. Out of the sack troops, let's get to work. Today you come home.

SC Hot diggidy dog. I think we're all ready. Ok, what would you like to do?

CAP COM Ok what do you have in front of you?

SC Juice to off switch and me.

CAP COM Ok. Do you want to start with the consumables?

SC Ok, stand by.

SC All righty. Go with the consumables.

CAP COM Ok. 234 hours 42 10 42 12 33 13 38 13 1 niner 5 11 40 31 3 niner. Ok and your dap red line 25 31 34 34.

SC Roger. 234 4210 42 12 33 13 38 13 195 11 40 31 39 25 31 34 and 34.

CAP COM Rog and you've probably noticed there quad C is a little low. However we still have both dap and SCS capability using 4 jet 2 jet.

SC Ok understand.

CAP COM All right and one other comment before we get too far I like, the ah, just mention the dap is still cycling so when you get squared away on that I just want to let you know that the dap is still powered up.

SC Oh is it really. That's very interesting.

CAP COM Ok. And let me see. Oh one thing else I guess I just for your info on the battery is, we're computing you've got 71 hours on the water if that question ever comes up.

SC Ok. Take a look at our croup 48 right now.

CAP COM Ok. The story I have here Dave is that that which you need a verb 46 inter to really kill with that.

SC (garble)

CAP COM Say again please.

SC I put that in last night too.

CAP COM Oh. Ok, we'll have them take another look here then. Ok and I have some block data here for you.

SC Ok stand by. Ok go with the block data.

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 232:35, CST 0335, 619/2

CAP COM Ok and make sure your S band volume is up. We might pass over Honeysuckle before I finish up.

SC All right.

CAP COM Ok reading 1 4 8 1 bravo plus 2 5 6 minus  
0 6 4 0 2 3 3 5 3 3 7 4 1 4 8 1 4 9 1 Charlie plus 3 1 4 minus  
0 6 8 0 2 3 5 3 0 2 2 3 6 3 5 1 5 0 2 bravo plus 2 7 0 minus  
0 3 1 0 2 3 7 2 7 0 7 3 1 5 niner 1 5 1 1 Charlie plus 3 0  
niner minus 0 6 7 0 2 3 8 5 1 1 5 3 0 3 3 1 5 2 1 alpha plus  
2 3 3 minus 0 6 8 0 2 4 0 3 2 5 8 3 4 0 2 1 5 3 4 bravo plus  
3 3 6 minus 1 6 1 0 2 4 3 1 1 5 4 3 2 6 8 1 5 4 4 bravo plus  
3 1 0 minus 1 6 0 0 2 4 4 5 2 5 3 3 0 3 8 1 5 5. Ok I think  
I'm back with you again. I blotted out on that 1 5 5 didn't I?

SC Ah lost you on the longitude at 1544 bravo.

CAP COM Ok, longitude minus 1600 2445253 30 38  
1554 bravo plus 23 niner minus 15 niner 4246 350 niner 3337  
156 Charlie, Charlie plus 122 minus 1640 24811 2530 83 your  
pitch and YAW trims minus .64 YAW minus . niner 4 end of up-  
date.

SC Ok...

END OF TAPE

A/9 MISSION COMMENTARY, 3/13/69, GET 232:45, CST 03:45, 620/1

SC                    Okay, gee, since we're going to go that far, here you go. 1481 Bravo plus 256 minus 0640 233 53 37 4148 1491 Charlie plus 314 minus 0680 23530 22 3635 1502 Bravo plus 270 minus 0310 237 27 07 3159 1511 Charlie plus 309 minus 0670 238 5115 3033 1521 Alpha plus 233 minus 0680 240 3258 3402 1534 Bravo plus 336 minus 1610 2431154 3268 1544 Bravo plus 310 minus 1600 2445253 3038 1554 Bravo plus 239 minus 1594 2463 509 3337 156 Charlie Charlie plus 122 minus 1640 248 1125 3083 with a pitch trim of minus .64 and a yaw trim of minus .94.

CAPCOM                And, Rog, that's correct. Stand by one.

SC                    Okay.

CAPCOM                And read back your correct data.

SC                    Alright.

CAPCOM                And, since I was mean enough to wake you up with an alarm clock, I can give you some good news. The on-the-hour report from the Guadalcanal says there's calm seas, winds are 5 knots, visibility 10 miles, 2000 scattered. And there are some 5-foot swells with about a 10-second period and the ship is about 35 miles from the target point now.

SC                    Hey, that's a pretty good description of the kind of weather we like.

CAPCOM                Well, you put in an order; we strive to please.

SC                    You guys are absolutely outstanding.

CAPCOM                And let me see, we've still got you here for about another 2 minutes. Let me see, the daylight darkness as shown in your flight plan is off. It's slipped some. I might update you on that if you think that will help you any on your planning. I'll just call out this late one.

SC                    Okay, let me get the flight plans. Just a minute.

SC                    Okay, go ahead.

CAPCOM                Okay, well we've got you now in the nighttime coming across here, but you'll come out of this darkness pass just over Texas at about 23 - something like that. These times are just rough; I don't think you need them. And then you'll go back in Carnarvon darkness again right at 18; and that's at 235 plus 18, and come out over Guaymas around 54. Okay, and then you'll hit back in again at 236 plus 48 over Carnarvon; come back into daylight about 237 plus 25, and then darkness again at 238 plus 20 and daylight at 238 plus 55, and you probably should be all realigned by then, but I'll give you the last one here, 239 52 you'll go into darkness again, and you should come out just before the burn at 240 about 25.

CAPCOM                And we're going to have LOS here momentarily, and we'll pick you up over the Mercury here, and

A/9 MISSION COMMENTARY. 3/13/69, GET 232:45, CST 03:45, 620/2

CAPCOM stand by, I'll try to settle down here -  
oh in about 4 minutes.

SC Okay, fine.

PAO This is Apollo Control. It's getting pretty ragged at the edge of the Honeysuckle station there in the amount of static coming over air-ground. Tracking ship Mercury is about 2 minutes away. And this will be about an 11-minute pass across Mercury. It's likely the conversation will continue on feeding up to the crew all the necessary numbers for today's reentry program. Until this morning, the term wake-up alarm has been somewhat symbolic, or at least just a suggestion of a wake-up alarm. Generally the crew was awake, but this morning the alarm clock was real. Spacecraft communicator, Stu Roosa, used an ordinary electric alarm clock which he plugged in by his console and held it by the mouthpiece on his head-set and keyed his transmitter and turned on the alarm. Must be some kind of a space first. Mercury in 2 minutes or less. Today's flight plan, as revised here in Mission Control, calls for the update for the deorbit maneuver and also the numbers on the entry profile to be passed to the crew over Redstone, Guaymas, and Corpus Christi, Texas pass at 235 hours 50 minutes, that will be over the stateside pass after the one upcoming. In other words, we have 148. And at 237 hours over the Huntsville and Mercury, they are scheduled to test the entry monitor system, which is a display device inside the spacecraft cockpit which graphically shows the crew just exactly how the primary guidance and navigation system is performing in guiding the spacecraft through the entry profile. They will be aligning the platform - inertial platform at several points during the time down to retrofire. The retrofire clock is now showing 6 hours 30 minutes remaining until the entry maneuver. Ignition time is presently 240 hours 31 minutes 16.5 seconds, but as additional accurate tracking over the stateside passes comes in, the retrofire officer likely will change these numbers back and forth several times before they settle down. These changes will not be more than a few seconds one way or the other. And, as mentioned by Stu Roosa in his conversation with the crew over the Honeysuckle, the prime recovery ship Guadacanal is almost on station, perhaps a couple of hours steaming time out of the prime landing point, at -

END OF TAPE

PAO couple hours steaming time out of the prime landing point at 152-1. Standing by for Mercury conversation. Roosa's studying the acquisition tables, has his transmitter keyed, should be going on the air momentarily.

CAP COM 9, Houston through Mercury.

SC Rog, Houston. We have you. Go.

CAP COM Okay, we'd like to have inverter three off.

SC Roger. Inverter three off now.

CAP COM And also just to get squared away here in plenty of time, we'd like to ask you the question about two jet vs. four jet on the burn. The two jet would save around 3 to 4 pounds per quad or about 7 pounds total and just to make sure we don't foul retro up so he can start planning, how would you like to play that?

SC How much fuel do we have? We have quite a bit of fuel extra don't we?

CAP COM Ah, you're right on the redlines now, Jim. It's - it's, ah, right there. Yeah, ah, yeah this is quad Charlie, quad Charlie is right on the redlines, as you can see we passed just 33 and 34 is the DAP redline but you know this is within the raging uncertainty and so forth and so on. And that's --

SC Okay B and D are well up aren't they?

CAP COM Ah --

SC We'll do a two jet then, Stu.

CAP COM Okay, you'd like to do a two jet then?

SC Yeah, we'll do 18 second 2 jet on what

B and D I guess.

CAP COM Rog, Jim. We concur with that.

SC Okay, thank you.

CAP COM Thank you.

SC Hey, Stu, why didn't we get a - a drop in pressure and all that stuff is there any - do the guys on the ground think that maybe we have the secondary propellant fuel pressures open on quad C.

CAP COM That appears to be a good possibility as we told you it should have opened up. There's a plus or minus 6 percent on that doggone estimate so you - but still yet we should be down below that and so the feeling here is it's quite possible that that secondary valve is open.

SC Okay.

CAP COM We did a lot of talking about that here this morning and you know we had those funnies on that - on that separation there and we're - we're just not sure.

SC Yeah. That's sorta what I was thinking of too. Hey, have you done anything - any new information on our DAP here?

CAP COM No, we sure hadn't. You know to get us

CAP COM squared away down here to make sure we're readin' right, could you give us a Verb 46 Enter?

SC Okay. Yeah, here I'll proceed out of the Verb 48 then we'll give you Verb 46. Okay, here comes the Verb 46 now.

CAP COM Okay. Okay, that got us squared away, Jim, and we show the DAP in good shape.

SC You mean the DAP really was running then?

CAP COM All our data showed it was, yes.

SC I'll be darned. ... three way we ... verification on that one last night but maybe it didn't get in.

CAP COM Rog, copy.

SC Hey, Stu.

CAP COM Go ahead.

SC Yeah, we just decided to have a six-I verification on the DAP. You wanna add two?

CAP COM Okay. (pause) Okay, Apollo 9, Houston. I have you for another couple of minutes and before I lose you here at Mercury I guess I can cover a couple of changes here that we'd like in the flight plan.

SC Okay, stand by ... And by the way, you wanna come off the H2 fan two?

CAP COM Stand by. That's negative. We do not want it off, we'll leave it just like it is.

SC Okay, here go with your changes and I've got a question for you after you get through.

CAP COM Okay, why don't you go ahead and ask it Dave, we're gonna lose probably in about a minute and a half and I'll cover these changes when we see you over Texas at 20.

SC Okay, want to activate the primary boiler and if so you wanna reservice first and we've talked it over and decided we think it's a good idea to cold soak before we come down. What do you think?

CAP COM Rog. Copy two questions. One is whether you want to reservice the primary boiler before you activate it and you have decided you'd like to cold soak and we'll try to give you a recommendation on that.

SC Okay, fine.

CAP COM And we're approaching LOS here, troops, we'll see you about 20.

SC Roger, 20.

PAO This is Apollo Control. We've had loss of signal out of tracking ship Mercury. At this time between bites of breakfast, the crew should be powering up the spacecraft systems; primarily the inertial measurement unit, command module computer and the stabilization and control system. And during the next revolution, from now on through the end

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 232:55, CST 03:55a 621/3

PAO of this revolution essentially and the beginning of the next, they'll be conducting system verifications and testing to make sure that all the systems are tuned up properly for the job of bringing the spacecraft into the prime landing area. Be coming up on Texas tracking station 19 minutes past the hour. We're overlapping coverages Texas, Mila, Antigua, Bermuda, Vanguard, Canary Islands, Madrid ending at 40 -- would you believe I can't read the display -- looks like 44 minutes past the hour. And at 234 hours 07 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 234:19, CST 0419, 622/1

PAO This is Apollo Control, 234 hours, 19 minutes  
GET. Standing by here for the resumption of conversation between  
the spacecraft communicator Stu Roosa and the crew of Apollo 9.  
Now nearing the end of the 147 revolution, and as it crosses 80  
degrees west longitude, we'll begin revolution 148. That acquisi-  
tion at Texas, or atleast what the little spacecraft on the wall  
map showed when it changed colors. Standing by here for the call  
from Roosa to Apollo 9. This combined stateside pass over Texas,  
MILA, and so on through Madrid will run about 25 minutes. Roosa  
is getting all ready here to begin talking.

CAPCOM

Apollo 9, Houston. We have you in good lock.

SC

Rog, Houston, Apollo 9, we're still here.

CAPCOM

Very good, and on your questions, we concur with  
the cold soak, and on the water boiler, we say do not reservice it  
prior to bringing it up. The reason for this is we are not sure how  
much water is in there, and we would like to go ahead and bring it  
up and see whether it will dry out. It should dry out in the first  
day-night passes, and we'll be looking at it.

SC

Okay, so you want us to bring it up right now?

CAPCOM

That's affirmative, let's bring go ahead and

ing it on the line.

SC

All righty, here we go.

SC

Hey Houston, 9. Do you have one of those handy

dandy map updates around?

CAPCOM

Rog. Stand by one here, while I'm trying to  
locate that duty, I'd like to pass up the changes to you.

SC

Okay, standing by, thank you.

SC

Okay, go with your changes Stu.

CAPCOM

Okay, on your CO2 filter change at 206, or at  
the second line, should read 8 to B reuse 20 to B6.

SC

Roger, understand, 8 to B and reuse 20 to B6.

CAPCOM

Okay, now with the addition of the other REV,  
there is a lot of changes such as the time you do the star check  
and all that, which I really don't think you need, but I've got  
them all written out here and the times if you'd like to take  
that.

SC

No, I think what we're going to do is get the  
IV up and do a P51 and get it all squared away, and then the night  
side pass before the deorbit burn, we're going to get to the burn  
altitude early and make sure we get a good solid spot check, because  
the horizon probable won't be very good this part of the retro.

CAPCOM

Okay, real good, as to most of the flight plan  
changes I have here are just reflecting change in daylight and dark  
and the addition of the REV, so that's really all you need to change  
on your flight plan at this time, and we do have a couple of, would  
you believe changes to the entry check list I'd like to talk to  
you about.

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 234:19, CST 0419, 622/2

SC Well, I believe that. You've had about 10 days, and I'd be surprised if you didn't have a change.

CAPCOM Okay, and I found my map update here, if you want to take that too.

SC Okay, go with the map update, and we'll dig out the entree check list in the mean time.

CAPCOM Okay, REV 147 which is completing 2341536 longitude 107 west.

SC Rog. 2341536, 107 west, right.

SC Okay, go ahead with the entry check list then.

CAPCOM Okay, let's start here with page E1-1.

SC All right.

CAPCOM Okay, the first one - these are out now, but I'll just toss in the reminder of the very first line on channel 8, your heater gages and circuit breakers main A and main B. we want those open.

SC Okay, got that.

CAPCOM Okay, now your still under the SCS, the next to the last line, auto RCS select, the check list is showing 16 main B. We'd recommend the command module 1 main A, command module 2 main B, and AC roll main B.

SC Okay, I guess thats a must first, we'll do that.

CAPCOM All right, and now on page E1-6, right at the top right after C, you can just delete the sturing the tanks.

SC Okay, just delete step C, is that right?

CAPCOM That's affirmative, delete step Charlie.

SC Okay, go ahead.

CAPCOM All right, on page E1-13/14.

SC Go.

CAPCOM Okay, here is the 3rd line down, the second logic 2 on up, would like to have that moved just above -

END OF TAPE

A/9 MISSION COMMENTARY, 2/13/69, GET 234:29, CST 04:29, 623/1

CAPCOM We'd like to have that moved just above the mixed-in confirmed go for pyro arm, and essentially what we're trying to do here is make sure that you have your ELS to auto ELS logic on, and then when you throw the sex logic we know then, we're all squared away to give you a go.

SC Okay, Houston, understand, and read CB sequential arm 2 closed, ELS auto and ELS logic on and then sequential logic 2 arm up.

CAPCOM That's affirmative. Jolly good on that one. Now on page E2-1.

SC Okay, go.

CAPCOM And this I know you'll well aware of. I'm just talking again with our decision to go on the 2 jet ullage that drifts to 1 under the DAP 10102.

SC Okay, 10102. Go ahead.

CAPCOM Okay on page E2-3,

SC Go.

CAPCOM Alright, down here at minus 30 seconds, we'd like to - the first two lines there, we'd like to reverse the order of them. We'd like to have the tape recorder record high-bit rate forward, be first followed by average G on up-telemetry command reset and then normal.

SC Okay, so it will read this way: tape recorder record high-bit rate forward, and then average G on up-telemetry command reset and then normal.

CAPCOM That's affirmative. And, just for info, that's just to keep us from having to reacquire the data lock, there. Okay, and now over on page E2-6.

SC Go ahead.

CAPCOM Okay, we're showing AUTO RCS select command module 1 main B. Change that to read main A and this will agree with the configuration that we recommended over on the first page.

SC Okay, so it will read AUTO RCS select CM 1 main A.

CAPCOM That is affirmative.

SC Go ahead.

CAPCOM Okay, that's all I have.

SC Gee, that's not bad at all.

CAPCOM No, very good.

SC Okay, well, I guess everything else is squared away on that. We went through it last night and we don't have any questions on it. So if you see anything else, you can give a whistle.

CAPCOM Okay, we sure will.

PAO This is Apollo Control. It sounds like the crew of Apollo 9 will get back to their breakfast now, after getting an update to the entry checklist from spacecraft communicator, Stu Roosa. However, there's still almost

A/9 MISSION COMMENTARY, 3/13/69, GET 234:29, CST 04:29, 623/2

PAO 20 minutes remaining in the pass across the states, tracking ship Vanguard, Canary Islands, and Madrid. We'll leave the circuit open for any conversation that might take place.

PAO This is Apollo Control. Apollo 9 now in mid-Atlantic crossing the 40th meridian and longitude. And looks about another 15 minutes remaining until loss of signal at Madrid. Spacecraft communicator, Stu Roosa, is having an over-the-console huddle with the flight activities officer. We'll leave the circuit open for any further conversation during the stateside pass.

CAPCOM And, Apollo 9, Houston. I was a little surprised asking for that map update. Are you all going to be taking any pictures this morning.

SC Say, listen, we're the world's greatest spectators.

CAPCOM Okay, are you going to have your cameras out at all this morning, Jim?

SC No, we really don't have much in the way of film left, Stu. We've got about 15 frames on the Hasselblad left and we've got about, oh I think we have 3 film packs for the 16 mm and have about a quarter of a roll left on it. We do plan on taking pictures of the reentry. We have one film - roll on the 16 mm reserved for that.

CAPCOM Okay. The reason why I asked you, we've got a twist in here from Australia requesting some specific pictures and I wasn't even going to mention it to you. I thought on reentry day you wouldn't be interested, but if you've got a camera out coming across Australia. Why the people down there want some pictures.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 234:29, CST 0429, 624/1

SC That's ok. We've been trying to get a picture of this area too. When are we going to go across?

CAP COM Well let me check my terminator here. I think you're going to be in darkness but first in regards to your comment the other night, the first one is some pictures with a, of the light.

SC Ok, we'll see what we can do here. Give us the time.

CAP COM Rog, will do.

CAP COM Ok Jim. For the picture up first you might bring up you're S band volume here too, we'll be going over to Madrid.

SC Go ahead with the times Stu.

CAP COM Ok. We don't have your time now take, get first, it's going to be two revs from now and the best time it's putting you is up at about 238 plus 22 which looks like it's getting up toward the busy section.

SC Ok. We'll find out on the flight plan if we can get it we'll try to get it.

CAP COM Ok. Let me give you the exact time here. It'll be 238 plus 27 plus 33. That's your closest approach.

SC Ok will that be north or south track?

CAP COM It'll be just about over them. You'll have about an 82 degree angle on them so you'll be coming right over in about 226 miles.

SC Ok

CAP COM Ok Apollo 9. We've got about a minute here I believe off of Madrid. If you give us a crew status report. If not we'll catch you at Carnarvon at 1 1.

SC This is the commander. I had about 6 hours of good sleep about 1 hour of poor sleep and I took one actified.

SC I had some CMP and I had about 7 1/2 hours of good sleep and no, I had a vitamin pill yesterday.

SC All right and I had a vitamin pill too.

CAP COM Rog, I copy both.

SC Rusty had 8 hours of good sleep, 1 seconal, 1 actified, and 1 vitamin pill.

CAP COM Rog, understand. Thank you very much.

PAO And this is Apollo Control. Apparently we have had loss of signal through Madrid tracking station. Toward the end of that pass the crew passed up there sleep and pill report. Commander Jim McDivitt had what he described as 6 hours of good sleep and 1 hour of poor sleep, 1 vitamin pill. Command module pilot Dave Scott had 7 1/2 hours sleep, took 1 vitamin pill. Lunar module pilot Rusty Schweickart had 8 hours of sleep, took 1 seconal, 1 actified, and 1 vitamin pill. Also over the Canary Island station target of opportunity was passed up to the crew for a picture. At 238 hours 25 minutes over Perth, Australia. Apparently the citizens of Perth are going to incur another big light bill. They've requested

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 234:29, CST 0429, 624/2

PAO                    that a photo be made of the city with all the lights on. Perth in the past has served as sort of a beacon to orbiting space travelers. Several missions in the past in Mercury and Gemini they've purposely turned on all their lights. Perth is approximately midway of around the earth from Cape Kennedy and at the low point of the orbit as it swings down in the southern hemisphere. Coming up on Carnarvon and the next station at 10 minutes past the hour, Apollo 9 is over Central Africa, the Sahara Desert. Just begun revolution 148 at ...

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 235:10, CST 05:10a 625/1

PAO This is Apollo Control, 235 hours 10 minutes ground elapsed time. Carnarvon acquisition in about 20 seconds. Meanwhile, the spaceflight meteorology group of the ESSA weather bureau here in Mission Control headed up by Allan "Sandy" Sanderson. issued a weather forecast for the prime landing area which reads "light and variable winds are forecast with seas one to two feet and swells six to eight feet; skies will be partly cloudy with temperatures near 73 degrees; weather conditions will be excellent for the end of mission landing area" which is about 300 miles north of Puerto Rico. Standing by here for the Carnarvon Honeysuckle and Mercury pass. Carnarvon and Honeysuckle overlap for a total 18 minutes; then there's about a one minute 30 second dropout to tracking ship Mercury and another 11 minutes over Mercury. After Mercury some 6 minutes after LOS comes Redstone --

CAP COM --through Carnarvon standing by.

SC Roger, Houston, Apollo 9.

CAP COM Read you loud and clear.

SC Houston, Apollo 9.

CAP COM Go ahead, Apollo 9.

SC Ah, what quads you wanna use for the early part of the day? A and B or --

CAP COM Rog, copy. Stand by. (pause) Okay, Apollo 9, Houston. We're recommending that you just go ahead and use all of them for this since we won't really be using that much and we'd like to have all four on bringing up the platform.

SC Okay, you'd like to have all four the quads on when we bring up the platform?

CAP COM That is affirmative and you can just go ahead and leave all four on with the exception of the two jet ullage that we've already discussed.

SC Okay.

PAO This is Apollo Control. While Apollo 9 is just crossing the coast at about just north of Perth between Perth and Carnarvon, the west coast of Australia, we'll stand by to pick up any further communication between the spacecraft communicator here and the crew of Apollo 9. Meanwhile the span, or spacecraft analysis group, here in Mission Control, has issued report for 234 hour ground elapsed time on spacecraft performance --

CAP COM Would you bring up your S-band. We'll be going over to Honeysuckle in a couple of minutes.

SC Okay.

PAO Getting back to the span report that's one of the shortest on record. Most of the entries say performance continues to be nominal or no change, no change, no change. This includes Manned Spaceflight Network

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 235:10, CST 05:10a 625/2

PAO                    Communications, crew systems, electronic systems, propulsion and power which goes for the service propulsion system, reaction control system, batteries, fuel cells and cryogenics all parameters and nominal. Guidance and control - no change. Structures and thermal area - no change. So it looks like even though we're about 5 hours and 13 minutes plus away from retrofire, end of the mission, the spacecraft is ready to continue for an unknown period. We'll stand by here for the balance of the Carnarvon-Honeysuckle pass and the subsequent pass over tracking ship Mercury. Looks like spacecraft communicator Ron Evans is coming in to relieve Stu Roosa at the spacecraft communicator console. These men have been working some strange hours; somewhat out of synchronization with the rest of the flight control teams. Some 9 minutes remaining until Honeysuckle loss of signal. We'll leave the air-ground circuit open for any possible conversation the rest of this pass. (pause) That burst of noise is known as going through a keyhole.

END OF TAPE

A/9 MISSION COMMENTARY, 3/13/69, GET 235:20, CST 05:20a, 626/1

PAO This is Apollo Control. 5 minutes remaining in the Honeysuckle pass. Just heard a report from recovery that the ship, Guadalcanal, is now in station for landing area 152-1, ready and waiting with a 350-pound cake, which apparently has whetted the appetites of the crew of Apollo 9.

SC Go ahead, Houston, Apollo 9.  
CAPCOM Rog. Guadalcanal is on station and is waiting.

SC Very good, thank you.

CAPCOM Rog.

SC Houston, what are you talking to us through?

CAPCOM Stand by one, and I'll see what I'm uplinking. Wait, we're through Honeysuckle; it's got to be S-band.

SC Okay.

CAPCOM And, Apollo 9, Houston. Jim, since you were so agreeable about that picture of, particularly of Perth, there, that was - the data I gave you was for rev 150. You'll come within about 80 miles of it on the next rev around, if you'd like to take that time. If you think it's going to be feasible.

SC Okay.

CAPCOM Are you ready to copy?

SC We sure can see a lot of lights down on the city - down on the ground right now, Stu.

CAPCOM Rog. There's two cities - well, there's actually three; Sidney will be about 228 miles off your track the next time around, but Perth and Brisbane both are - Perth will be 80 and Brisbane 110, and sure like to get some pictures of those, if you can work it in.

SC Okay, just a second.

CAPCOM Rog. No sweat, it will be on the next rev.

SC Okay, why don't you go ahead and give us the data here, while we're doing nothing.

CAPCOM Okay, for Perth your time of approach, 236 plus 51 plus 36, and Perth will be 82 miles north of the track.

SC Okay, and what's the other one?

CAPCOM Okay, the other one will be Brisbane, PCA 237 00 plus 41, and it will be 110 miles north of the track.

SC Okay, very good, we're going to get them.

CAPCOM Okay, and I don't know if you can reach out 220 miles or not, but if you've got your camera out, I might as well give you one for Sidney, and that will wipe us out.

A/9 MISSION COMMENTARY, 3/13/69, GET 235:20, CST 05:20, 626/2

SC Okay, go ahead.  
CAPCOM Alright, Sidney RCA, 236 plus 59 plus 37  
and Sidney will be 228 miles south of track.  
SC Okay, we'll have two north and one south,  
is that correct?  
CAPCOM That is affirmative. And you'll hit  
Perth first, of course, by the time. We're going to leave  
here at Honeysuckle, see you over the Mercury around 31.  
SC Okay.  
PAO This is Apollo Control. We have had  
apparently loss of signal out of tracking station at Honey-  
suckle.  
CAPCOM Apollo 9, Houston, go. You're over the  
hill, I believe.  
PAO Apollo 9 did make one attempt to call  
back to Houston right at loss of signal at Honeysuckle.  
However, in about 1 minute and a half we should have acqui-  
sition through tracking ship Mercury. We'll leave the  
circuit up for resumption of conversation between the space-  
craft communicators here in Mission Control and the crew of  
Apollo 9.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 235:30, CST 0530, 627/1

SC Houston, Apollo 9.  
CAPCOM Apollo 9, Houston, go.  
SC Roger, would you tell the good people of  
Sidney, that we saw their lights about 5 minutes ago. A very  
beautiful sight.

CAPCOM

Good, mighty fine, thank you.

SC

Good morning Ron, how are you?

CAPCOM

Hey, fine shape, and all set to go.

SC

Very good.

SC

Where you going Ron?

CAPCOM

Hey, that's a good question come to think

about it.

PAO

This is Apollo Control, some 8 minutes re-  
maining on the tracking ship Mercury pass. Continuing to stand  
by as the spacecraft communicator Ron Evans is taking over for  
Stu Roosa. We'll resume conversation with the crew of Apollo 9.

PAO

This is Apollo Control, some 5 minutes re-  
maining in the Redstone pass. After Redstone LOS there will be  
as you were, a Mercury pass, some 4 minutes remaining after  
Mercury LOS, we'll be some 6 minutes out of tracking ship  
Redstone, which will be a very low elevation angle pass of about  
1 1/2 degrees. So it appears that Guaymas will be the first  
station of which the conversation will resume. We'll leave  
the air to ground circuit open and monitor any further conversation  
on the air to ground.

PAO

This is Apollo Control, about a minute

away from -

SC

Houston, about LOS -

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 235:40, CST 0540, 628/1

PAO This is Apollo Control. About a minute  
away from...

CAP COM Houston. About LOS. Will pick you up  
at Redstone 4 7.

SC Roger

PAO This is Apollo Control. We're still a  
few seconds away from Mercury loss of signal but apparently  
there will be no other contact with the crew of Apollo 9  
through Mercury. So at this time we'll take the line down.

SC Still want to read them?

CAP COM Affirmative, go.

SC Ok, GET was 235 34 00 minus 00 128 minus  
00 781 plus (static)

PAO This is Apollo Control. An attempt was  
made to pass down some numbers to spacecraft communicator  
from the crew as they went over the hill at Mercury. These  
were torking angles on a recent IMU alignment apparently.  
And the breakup there was caused according to the net work  
controller by loss of lock of the tracking ship Mercury's  
comsat relay antenna. We'll pick up tracking ship Redstone  
at 47 minutes past the hour, some 5 minutes from now and at  
235 hours 42 minutes ground elapsed time this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY. 3/13/69, GET 235:50, CST 0550, 629/1

PAO This is Apollo Control. 235 hours 48 minutes ground elapsed time. Should be in acquisition now according to the station tables on the displays in front of the control room here, with the tracking ship Redstone, which is about midway between Hawaii and the west coast of North America. Stand by for any conversation that might take place during this pass over the states. Continuous coverage. Redstone, Guaymas, Texas, Mila, Grand Bahama, Bermuda, Antigua, Vanguard tracking ship in mid-Atlantic, Canary Islands, Madrid. All of this overlapping coverage lasts until 17 minutes past the hour. Which looks to be about a total of 30 minutes. Ron Evans has replaced Stu Roosa as spacecraft communicator. Roosa has moved his head set, is taking a stretch and munching on a sandwich.

CAP COM Apollo 9 Houston.

SC Houston Apollo 9 go.

CAP COM Roger. We copied you're torquing angles and we'll have you all the way through Canaries LOS will be 19.

SC Ok and did you copy what type alignment it was?

CAP COM Negative

SC Ok we did a nominal to time 240 30 08 in order to get the type form outfitting plan.

CAP COM Roger, copy

PAO This is Apollo Control. Apollo 9 is nearing the end of the 148th revolution and shortly will cross directly over Mexico City. Monitoring the air-ground circuit for this stateside pass during which is scheduled updates to the crew on maneuver or deorbit. Also the entry numbers, once called an entry path. Such thing as bank angles, time to reverse bank, retro elapse time to begin black out in black out drogue deploy and main parachute deploy and so forth. We'll stand by with the circuit open to monitor any conversation during this first of about 3 more stateside passes until re-entry.

PAO This is Apollo Control. Flight surgeon Ken Beers is closely monitoring the heart rate and respiration rate.

CAP COM Apollo 9 Houston go.

SC Roger, our original flight plan schedule was for a H2 purge this morning and did you ask to do that?

CAP COM Stand by one minute.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 236:01, CST 0601, 630/1

CAPCOM Apollo 9, Houston. The fuel cells are looking good here, disregard H2 purge.

SC Okay.

CAPCOM Request 2 in ACCEPT, state vector, and target load and the REFSMMAT for you.

SC You've got it.

CAPCOM Roger, coming up.

CAPCOM Apollo 9, Houston. I have your maneuver pad.

SC Okay, stand by.

SC Okay, ready to copy Ron.

CAPCOM Okay, purpose 152-1 Alpha, 240311378 minus 01969 plus all zips plus 025850325003081011624888 minus 064 minus 094150261032900 minus 2990 plus 105362329, over.

SC Okay, 152-1 Alpha, 240311378 minus 1969 all zips plus 025850325003081011624888 minus 064 minus 094150261032900 minus 2990 plus 105362329, over.

CAPCOM Roger, that is correct.

CAPCOM Apollo 9, Houston, the computer is yours. You have a state vector charter load russ mat, and a verb 66 it.

SC Oh very well, that sound like a full days work thank you.

CAPCOM Roger, if you in a copying mood, I have your entree pad.

SC Okay, stand by one.

SC Okay, go ahead.

CAPCOM Roger, area, 1521 Alpha 046 plus 2325 minus 06800120152599615271603 minus 03177 the roll right 506019011556192923462433 plus 42 plus 075, over.

SC Okay, I've got 1521 Alpha 046 plus 2325 minus 06800120152599615271603 minus 03177 the roll right 506019011556192923462433 plus 42 plus 075.

CAPCOM Apollo 9, Houston, your read back is correct.

SC Houston, 9 again. Let me recheck the CO2 filter, would you. Which one was 20 supposed to replace, number 8 or number 9.

CAPCOM Stand by one there.

SC Okay, thank you.

END OF TAPE

APOLLO 9 MISSION COMMENTARY.3/13/69,GET 236:11,CST 06:11a 631/1

SC Houston, Apollo 9.

CAP COM Apollo 9, Houston. Go.

SC Ah, I think I've got it sorted out now.

You want to put 8 and 9 in and you want to take 20 out and put it B6 and take 1 out and put it in A3. Is that right?

CAP COM 9, Houston. I think that's - 9, Houston I think that's correct there but let me double check it with FDO. (pause) Apollo 9, Houston.

SC Go ahead, Houston.

CAP COM Okay, here's the way the cannister - the way I ... it. You put 8 and 9 in -- 8 in the B slot, 9 in the A slot and close the door and you take 20 and stow it in B6 and you take number 1 cannister and stow it in Alpha 3.

SC Okay, that's what I thought. We just wanted to make sure that we got the right ones going in the right place because surprisingly enough the CO2 cannisters were not marked for the flight.

CAP COM Rog, copy. (pause) Apollo 9, Houston. I have a comment for your entry update.

SC Houston, Apollo --

CAP COM Apollo 9, Houston through Canaries.

SC Roger. How do you read now?

CAP COM Rog, loud and clear. Your comment for your entry update there is that you put the 31.4 degree window mark on the horizon at 05G.

SC Okay, understand the 31.4 degree line on the window on the horizon at .05G.

CAP COM Roger, and you will lose your sextant star at 240 plus 16 plus 53.

SC Understand, we lose the sextant star at 240:16:53.

CAP COM Affirmative.

PAO This is Apollo Control, some 3 minutes remaining until Canaries loss of signal. We'll continue to monitor until LOS at Canaries for any further conversation.

END OF TAPE

A/9 MISSION COMMENTARY, 3/13/69, GET 236:12, CST 06:12, 632/1

PAO                    This is Apollo Control. We've passed the time at which we should have had loss of signal out of Canary Islands. Now to recap the barrage birage of numbers that was fired at the crew of Apollo 9; on the maneuver update, the crew was given the ignition time for the SPS burn number 8 our deorbit maneuver: 240 hours 31 minutes 13.78 seconds, total Delta V or velocity change in retrograde 325 feet per second, burn time: 11.6 seconds, command and service module weight before the maneuver, 24 880 pounds; then they were given a navigation star for onboard use with the Apollo sextant, start number 15 which in the Apollo list of stars is Serius in the constellation, Greater Dog, in the south celestial sphere. The star is also known as the dog star. Then the entry update included the - all the times after the maneuver, in which various events occur and the splash target coordinnance, which were: 152-1 Alpha, 23.25 degrees north latitude, 68 degrees even west longitude, range to go after 05g or the first deceleration sensing of 1201.5 nautical miles, inertial velocity at 05g 25 996 feet per second, retro elapsed time of 05g, that is, time after ignition and retro-fire, retro-elapsed time 05g 15 minutes 27 seconds retro-elapsed time of .2 or 2/10ths g 16 minutes 03 seconds, the degrees for right and left bank for backup stabilization control system entry right: 50 degrees and left: 60 degrees. The roll right or reverse bank would be at 19 minutes 01 second, after retrofire. Begin blackout at 15 minutes 56 seconds retro-elapsed time; end blackout 19 minutes 29 seconds after retrofire; drogue chute deploy 23 minutes 46 seconds retro-elapsed time; main parachutes out at 24 minutes 33 seconds retro-elapsed time. Tananarive tracking station at 32 minutes past the hour is the next station. Total time over that station is 6 minutes. We'll come back up at that time for any voice communications through that station. And at 236 hours 23 minutes GET, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 236:32, CST 0632, 633/1

PAO This is Apollo Control, 236 hours, 32 minutes GET. Coming up on Carnarvon as you were Tananarive tracking station, the Malagasy Republic, off the east coast of Africa. First pass of the day over Tananarive, we'll stand by for any possible conversation through that station, and take the circuit down if it appears there will not be any conversation. The spacecraft communicator Ron Evans is in a small huddle with some flight plans type around his console and may not talk to the crew through this station.

PAO This is Apollo Control, still standing by over Tananarive. This is a 6 minute pass over the station. It doesn't appear at this time the spacecraft communicator will call the crew, however, we will continue to monitor air to ground and leave the circuit up.

PAO This is Apollo Control, we are less than a minute away from LOS at Tananarive, and apparently there will be no attempt to contact the crew through Tananarive. Carnarvon at 46 minutes past the hour, overlapping Honeysuckle, Huntsville, Mercury. This pass appears to be 29 minutes long over those four stations. And at 236 hours, 38 minutes GET, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 236:51, CST 0632, 634/1

PAO This is Apollo Control. 236 hours 48 minutes Ground Elapsed Time. We're in acquisition over the Carnarvon, Australia tracking station. Standing by for conversation out of Mission Control with the crew of Apollo 9. E com just reported to flight that the primary evaporator just came on the line in the spacecraft. Primary evaporator removes heat from the systems as a sort of backup to the space radiators which are back in the service module. Boils water to dump heat over board.

CAP COM Apollo 9 Houston through Carnarvon.

SC Rog, Houston go.

CAP COM Ah rog, Dave. We're not getting any EKG on you and it looks something real simplified and other wise we'll just get by with your respiration.

SC Ok, I'll give it a quick check.

PAO This is Apollo Control. The crew of Apollo 9 should at this time be able to see the lights of Perth, Australia. The people of Perth have, are building up a large light bill again. They're just after sundown at this time in Australia or at Perth. Apollo 9 is midway through revolution 149th. Turning on the lights at Perth seems to be somewhat of a tradition. Continuing to monitor the air to ground circuit over Carnarvon, Honeysuckle, Huntsville and Redstone are as, over Mercury that is. ... der until LO...

CAP COM Apollo 9 Houston. Looks like you fixed the EK's either.

SC Say again.

CAP COM Roger. It looks like your EKG is good now.

SC Oh, Ok. I'll disconnect it.

CAP COM Roger.

PAO This is Apollo Control. While waiting for conversation to resume we might recap here the times for the retrofire maneuver at splash time. Ignition for SPS burn number 8, retrofire deorbit burn is now Ground Elapsed Time of 240 hours, 31 minutes, 14 seconds - or 10:31:14 CST. Splashdown anticipated at Ground Elapsed Time 240 hours, - standby - 29 minutes, 29 seconds thereafter which would be 241:00:43 or 11am and 43 seconds. Continuing to monitor the Carnarvon-Honeysuckle-Huntsville-Mercury pass.

CAPCOM Apollo 9, Houston. S-band volume up for Honeysuckle.

SC Roger. S-band up for Honeysuckle.

PAO This is Apollo Control. Apollo 9 is crossing the southern Australian coast at about Adelaide just north of Melbourn. We're continuing to monitor the air-ground circuit for two-way communications over these stations and we'll leave the line open until Loss Of Signal at Mercury.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 237:01, CST 07:01a 635/1

PAO Apollo Control here. Apparently the lack of conversation is due to the fact that the crew at this time is scheduled to do a Program 52, inertial measurement realignment at this time followed by a test of the entry monitoring system. We'll leave the circuit up to monitor any possible air-to-ground during this pass.

SC Houston, Apollo 9.

CAP COM Apollo 9, Houston. Go. Apollo 9, Houston. Go, we read you.

SC Houston, Apollo 9.

CAP COM Apollo 9, Houston. Go.

SC Ah, Rog. Did you get the general torquing angles?

CAP COM Negative. You went over the hill just before we got 'em.

SC Okay. GET of 237:05:30 minus 00395 minus 00223 plus 00534. And that's to the desired REFSMMAT that you sent up.

CAP COM Roger, we copy.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69 GET 237:11 CST 0711 636/1

PAO This is Apollo -  
CAPCOM Apollo 9, Houston, Roger.  
SC Did you want an E memory dump today?  
CAPCOM That's affirmative. Stand by and I'll  
give you a time on it.  
SC Okay.  
CAPCOM Apollo 9, Houston.  
SC Roger, Apollo 9.  
CAPCOM Roger. The computer was fired up all  
night so I guess we don't need E MEM - E MOD dump.  
SC Okay, very good.  
SC Houston, Apollo 9.  
CAPCOM Apollo 9, Houston, go.  
SC Houston, we were doing a DSKY lamp test  
there, and I had a reset at the end of the thing, got a  
212 alarm, which in our book says PIPA failed or PIPA not  
being used. Says do a PIPA bias check. What do you think  
about that?  
CAPCOM Apollo 9, Houston, I think that's the  
same thing we saw the other night when you did that, and  
we think it's normal, but stand by one.  
SC Okay.  
CAPCOM And 9, Houston, we're getting bi-sets  
down here any how, so PIPA bias check not necessary.  
SC Okay, I think - but you understand the  
question. we got a 212 alarm and I guess you can see it on  
the DSKY as well as we can so okay.  
CAPCOM Affirmative, we understand.  
SC All righty.  
CAPCOM Apollo 9, Houston.  
SC Go ahead, Houston, Apollo 9.  
CAPCOM Roger, we're sure that's a normal thing.  
It's the power supply that gets interrupted when you do that  
DSKY check, and all you have to do now is hit RESET.  
SC Good, we're very good at that arrow  
RESET.  
CAPCOM Okay.  
CAPCOM Apollo 9, Houston, we'll pick you up  
Redstone at 20.  
SC Roger, Redstone at 20.  
PAO This is Apollo Control. We have had  
loss of signal over the tracking ship Mercury, coming up on  
Redstone at 19 minutes past the hour, in about 3 minutes,  
for a fairly long pass over Redstone, Guaymas, Texas, Grand  
Bahama, Antigua, tracking ship Vanguard, Canary Islands,  
about 3/4ths of the way through revolution 149, and at 237  
hours 16 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

PAO This is Apollo Control, 237 hours, 19 minutes ground elapsed time. Some 50 seconds now to the tracking ship Redstone; this pass all the way through to Canary Islands station will end at 54 minutes past the hour. Almost 35 minutes of total tracking and communications pass - thank you. Spacecraft communicator Ron Evans passing out miniature American flags with a toothpick for a staff; flags are about an inch by an inch and a half. Everyone is propping them up on the tops of the consoles. We've had acquisition at the Redstone; standing by for conversation to resume.

PAO After this morning's alarm clock episode, one wonders whether the alarm clock will become part of the standard equipment in the mission control center here. Given a choice, I think soothing music would be more apropos to wake up than the gangle or buzz of an alarm clock. It was eyes left here for a few moments as a rather attractive young lady from the flight surgeon's staff support room came into the room briefly, and then back to business. Continuing to stand by here for air to ground communications to Apollo 9. 34 minutes total duration over this stateside Canary Island pass.

PAO This is Apollo Control - still standing by over tracking ship Redstone for the stateside pass. Countdown clocks are showing 3 hours, 5 minutes until ignition of SPS burn number 8 - deorbit burn - and 3 hours, 34 minutes until splash. Crew of Apollo 9 at this time, according to the flight plan, is completing final entry preparations and during this next revolution over Australia, plans to - or attempt to take photos of the city of Perth, with all the lights on. On the next rev, over Pretoria and Tananarive and Africa, they'll maneuver to the deorbit attitude, that is with the blunt end forward, or engine nozzle toward the direction of flight, and pitch down 31.7 degrees below the horizon. At this time they will conduct the star check through the sextant; the star being Sirius, a dog-star, and over Carnarvon the following tasks; they'll get a GO from mission control center here for the deorbit burn. Which now is scheduled for 140 hours, 31 minutes, 14 seconds ground elapsed time. We'll continue to monitor air to ground here for this stateside pass; there's a sparse amount of conversation that's taken place so far. Likely it will be busier in the succeeding revolution as we get nearer entry. Apollo Control monitoring air to ground.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 237:31, CST 731 638/1

PAO This is Apollo Control. Apollo 9 is crossing the Gulf of Lower California and is approximately directly over the tracking station at Guaymas, Mexico. Air to ground circuit is still open, monitoring this stateside pass.

PAO This is Apollo Control. This is one of the quietest stateside passes in memory except when the crew has been asleep. They have just begun revolution 150 as they cross the longitude of Cape Kennedy from whence the mission started some 10 days ago. Clock now showing 2 hours 53 minutes until retrofire, 3 hours 23 minutes -

CAPCOM Apollo 9, Houston. Go.

SC Okay. We are going to open our secondary propellant suit pressure valve in the service module RCS mode.

CAPCOM Roger, go ahead.

PAO The crew of Apollo 9 reported that they were going to go to the secondary SPS propellant tanks, or so-called Volkswagen tanks.

SC Apollo 9. We've opened the valve. You see any change of state in anything on the ground?

CAPCOM Negative, no change down here. Which is good.

SC Yeah.

PAO This is Apollo Control. Some 19 minutes remaining until loss of signal at Canaries. The air to ground circuit will be left up for the duration of this pass to pick up any possible conversation, although neither end of the circuit is very talkative at the moment.

PAO This is Apollo Control. Apollo 9 is now out over the tracking ship Vanguard in the mid-Atlantic with some 13 minutes remaining until loss of signal out at Canaries. The spacecraft has just begun revolution 150. Continuing to monitor air to ground circuit.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 237:46, CST 0746, 639/1

PAO This is Apollo Control. Some 7 minutes remaining in this pass until Canary Loss Of Signal. Among the sights in the Mission Operations Control Room here is a large half-eaten jar of kosher dill pickles from a delicatessen type snack that was had in the control room last night during the Gold Team shift. Continuing to monitor air-ground all the way through Canary Loss Of Signal. Lots of dead air this pass. That likely want be true for the next two passes over the states.

PAO This is Apollo Control. Recovery room plot now shows the Guadalcanal, landing platform helicopter ship, on station at the 152 dash 1 alpha target point. Weather forecast showing visibility 10 miles; winds variable to light; variable direction in light speed; wave height 2 to 3 feet. The Service Module impact point is predicted uprange of the spacecraft target point. It looks like about 140 nautical miles. Some four minutes left now in the Canary Island pass until Loss Of Signal. We'll stay with the air-ground circuit until Loss Of Signal at Canary and pick up again for possible communications through Tananarive and certainly at Carnarvon.

PAO This is Apollo Control. The Flight Dynamics Officer display, which shows a lot of numbers about the spacecraft's orbital shape and so on, now shows the spacecraft with a perigee of 98.1 nautical miles and apogee at 242.5. Present tracking shows that the spacecraft is very near perigee. Inertial velocity at this time is 25,815 feet per second. Spacecraft is calculated to weigh 24,888 pounds. Some two minutes remaining until Canary Islands Loss Of Signal. We'll stay with the circuit until that time.

CAPCOM Apollo 9, Houston. About 1 minute LOS. Tananarive at zero-seven. Sunset will be at two-zero.

SC

Roger. Thank you.

PAO This is Apollo Control. Apparently that does conclude any contact during this stateside pass. The crew at this time is likely quite busy storing away all the gear in the spacecraft getting the spacecraft cleaned up from a housekeeping standpoint. All loose items stowed. All the systems ready for the entry - which according to the countdown clock will come at 2 minutes and 37 seconds from now with ignition of Service Propulsion System burn number 8; followed by splashdown at 3 hours and 6 minutes from now. And at 237 hours, 54 minutes Ground Elapsed Time this is Apollo Control.

END OF TAPE

PAO This is Apollo Control at 238 hours, 6 minutes Ground Elapsed Time, coming up on Tananarive. Just had acquisition and we'll stand by for any conversation through that station. During the 10 days of this mission the crew of Apollo 9 have flown the spacecraft in approximately seven different combinations, starting out at orbital insertion when the command and service module and the lunar module were all still attached to the S-IVB third stage of the launch vehicle. Then at separation when they did their turnaround to dock with the lunar module it was command and service module only. After docking with the lunar module and extracting from the S-IVB, it was command and service module and lunar module combination. During the rendezvous sequence McDivitt and Scott were in the lunar module flying it out almost 200 nautical miles away from the command module. Then after jettisoning the descent stage right at the coelliptic sequence maneuver of the rendezvous, they had the ascent stage only manned. After rendezvous was complete and redocking with the command and service module there was a combination of the command and service module and the ascent stage docked. The ascent stage was then jettisoned and yet another combination - actually a repeat of the command and service module only - was flown for the last 5 days of the mission. And in about 2 hours and 22 minutes from now after the deorbit burn the service module will be jettisoned and the last of the combinations will be flown; that is, the command module only all the way through to splash point. Monitoring the air-ground now for any possible conversation through that station at Tananarive in the Malagasy Republic. It's unlikely there will be any conversation. Spacecraft Communicator, Ron Evans, does not appear to be readying a call but just in case we will leave the circuit open.

CAPCOM Apollo 9, Houston through Tananarive.  
SC Hello Houston, this is Apollo 9.  
CAPCOM Roger, if you turn H2 tank 2 fan on that  
may dump the pressure up in the H2 tanks there.  
SC Okay, you want the fan on in H2 tank 1.  
CAPCOM Tank 1 and tank 2.  
SC Okay, tanks 1 and 2 (garbled).  
CAPCOM Roger.  
SC Houston, you want the heaters on also to  
get the pressure up?  
CAPCOM Apollo 9, Houston. Say again.  
SC Roger, do you want the heaters on also to  
get the pressure up?  
CAPCOM Apollo 9, Houston. Negative.

APOLLO 9 MISSION COMMENTARY. 3/13/69, GET 238:06, CST 0806 640/2

PAO                    This is Apollo Control and apparently there will be no further conversation through Tananarive. We're about 29 seconds from loss of signal. Carnarvon at 22 past the hour, approximately 7 minutes from now, and at 238 hours, 15 minutes Ground Elapsed Time this is Apollo Control.

END OF TAPE

PAO This is Apollo Control, 238 hours, 22 minutes ground elapsed time. In acquisition at Carnarvon, Australia - standing by for resumption of any communications through Carnarvon. We'll have continuous coverage from Carnarvon through Honeysuckle and tracking ship Huntsville. For approximately 26 minutes until 48 minutes past the hour.

CC Apollo 9, Houston through Carnarvon.  
 SC Go Houston; Apollo 9 here; we're just doing our star attitude check at this time, and we're gonna follow that up with the last P52 to REFSMAT, and - we're standing by for our check list.

CC Roger, we copy. Tell Dave to watch out for a flare from Perth at 26, and don't mistake it for his sextant star there.

SC Okay. Houston, which direction is Perth from our track, north or south?

CC Roger - it should be 28 miles north.

SC Roger. Houston, Apollo 9.

CC Apollo 9, Houston, go.

SC Okay, 3 S's on the DSKY.

CC Roger, we copy.

SC And we're just a tad off on attitude.

CC Roger. I've got an oddball COAS star there, if Jim wants to look at it.

SC Okay, what is it.

CC P Y X I D T S, but it's a 4th magnitude star closest to Regor, on a line between Regor and Alphard.

CC And it should -

SC ...

CC Say again.

SC You really found -

CC We really found a good one. It should be about a half of a degree up and 1.7 degrees to the left.

CC Apollo 9, Houston; S band volume up for Honeysuckle.

SC Roger - Honeysuckle, and S band up. David came through on the last one; look at that, all balls.

CC Hey, beautiful; you guys are getting pretty good up there.

SC Well, we want to go out with a flash here. I'm going to hang it up right now.

CC Okay.

PAO That comment from the crew that they were getting an all zeroes reading was confirmed here on the ground by telemetry and this indicates that the alinement of the inertial measurement unit is perfect. We are standing by for the balance of this pass over Carnarvon and Honeysuckle, continuing over to the tracking ship Huntsville.

SC Houston, Apollo 9.  
CC Apollo 9, Houston, Go.  
SC How long before retrofire do we come on  
into daylight? I have a daylight horizzon - horizon - oh gosh.  
CC Roger, you have sunrise at 25, burn time is  
at 31.  
SC Okay.  
CC And 9, Houston, we moved over there a bit  
in our orbit, we'll use antenna Bravo for the deorbit burn.  
SC Okay, antenna Bravo for deorbit burn.  
CC And we'll still stay on Charlie for entry.  
SC Okay.  
PAO This is Apollo Control, still standing by  
over Honeysuckle, overlapping coverage to tracking ship Hunts-  
ville till 48 past the hour, approximately 14 minutes remaining.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 238:37 CST 0837 642/1

HTV Huntsville's valid two ways.  
PAO This is Apollo Control, some 6 minutes remaining in the AOS over the tracking ship Huntsville. We'll leave the circuit open to monitor the remainder of this pass. Between Huntsville loss of signal and Hawaii acquisition is about an even minute. Apollo 9 is a little past half way through the 150th revolution. Air-to-ground still open to monitor the remainder of this pass over the Huntsville.

PAO This is Apollo Control. We have had loss of signal over the tracking ship Huntsville, and we're coming up on Hawaii within a few seconds. Meanwhile, the weather situation in the prime recovery area zone where the land platform helicopter USS Guadalcanal is on station, they are reporting a ceiling of 2000 feet scattered clouds and another layer at 1200 feet, scatter broken, visibility 10 miles wind light and variable, waves 1 to 2 feet, swells 6 to 8 feet, air temperature 73 degrees, water temperature 75 degrees. We should be acquiring at Hawaii momentarily. During this Apollo 9 reentry it is anticipated that the highest temperature on the heat shield surface will be around 2700 degrees F. The highest heat shield temperature of a manned flight has been on Apollo 8 after lunar return at some 5000 degrees F. And the highest ever endured by an Apollo spacecraft heat shield was on Apollo 4, an unmanned flight, and the first use of the Saturn V launch vehicle where the temperature reached some 5100 degrees F. We have had acquisition at Hawaii and we will monitor the air-to-ground circuit for any conversation that takes place over that station. Hawaii, incidentally, overlaps tracking ship Redstone and all through the stateside stations for a very long pass ending at Canary loss of signal, as you were, we missed Canaries this time, Vanguard loss of signal at 22 minutes past the hour. Monitoring air-to-ground over Hawaii.

PAO This is Apollo Control. This stateside pass is starting out much like the last one, very quiet, very little conversation. The crew is probably quite busy at this time getting ready for the entry image, which comes at some 1 hour and 35 minutes from now when ignition time for SPS burn number 08, splash time 2 hours and 4 minutes away. We will leave the circuit open on the air-to-ground for any possible conversation across the states here.

CAPCOM Apollo 9, Houston.  
SC Roger, Houston, Apollo 9.  
CAPCOM Roger, we've been integrating your state vector and we'd like to update you another one. We'll do it in about 2 minutes at Redstone.

SC Okay, Okay, you've got POO and ACCEPT.

APOLLO 9 MISSION COMMENTARY 3/14/69 GET 238:37 CST 0837 642/2

CAPCOM  
SC

Roger, we'll do it probably at 58.  
Okay.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 238:57, CST 0857, 643/1

CAPCOM Apollo 9, Houston.  
SC Go ahead, Houston. Apollo 9.  
CAPCOM Roger. We had real weak signals back  
there at Redstone. We'll catch it up at Goldstone.  
SC Okay. Very good. Get it at Goldstone.  
CAPCOM Apollo 9, Houston. Request ACCEPT.  
SC Roger. You've got it.  
CAPCOM Apollo 9, Houston.  
SC Okay, Houston. Apollo 9.  
CAPCOM Roger. We'd like for you to whip through  
P30 and P40 again and reload those two programs. After -  
SC We've got a 2101 on the DSKY now flashing.  
Can you get in or are you through or what?  
CAPCOM Negative. We are not through yet. Soon  
as the computer is yours you can go into that. And I have  
a nav check there if you want it.  
SC All right. Standby.  
SC Okay. Go ahead with the nav check.  
CAPCOM Roger, 240 00 00 00 minus 3112 plus  
10039 2298. Over.  
SC Roger, 240 00 00 00 minus 3112 plus  
10039 2298 and just exactly are you uplinking on this mode?  
CAPCOM We are just uplinking a state vector.  
SC Okay. State vector uplink. I under-  
stand.  
SC Okay, that means we are going to have  
to reload P30.  
CAPCOM Affirmative.  
CAPCOM Apollo 9, Houston. The computer is  
yours.  
SC Okay. We have got it and we will go  
through P30 for you.  
CAPCOM Roger, and we just wanted to give you  
a little better hit record than you had in playing baseball  
a while back.  
SC Hey, we were real sorry in that ball-  
game. We should really be great today.  
CAPCOM That's right.  
SC Houston, Apollo 9.  
CAPCOM Apollo 9, Houston. Go.  
SC Okay, that gives us a tenth of a foot  
per second difference Delta VR, but I guess we can take  
that.  
CAPCOM Apollo 9, Houston. Say again. I missed  
it.  
SC I say that gives us about a tenth of  
a foot per second in Delta VR. but I guess we can take  
that.  
CAPCOM Roger.

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 238:57, CST 0857, 643/2

PAO This is Apollo Control. Apollo 9 presently is over north Texas about the Dallas-Fort Worth area and again on this stateside pass there is a very little amount of conversation going on, but the circuit will be left open for the remainder of this pass which ends over the Vanguard at 22 minutes past the hour - some 11 minutes from now. Apollo Control monitoring air-ground on Apollo 9.

PAO Apollo Control here. Apollo 9 is just starting revolution 151 - the last full revolution of this mission. Aboard the spacecraft the cabin pressure is now 4.9 pounds per square inch. Cabin temperature is now 70 degrees Fahrenheit. We'll continue to monitor air-ground for the duration of this pass.

PAO This is Apollo Control. Some 6 minutes remaining until Loss Of Signal through the tracking ship Vanguard. Conversation is being kept to a minimum between the ground here at Mission Control and the crew of Apollo 9, as the crew is busy getting the spacecraft ready for entry - which now is some one hour and 14 minutes away.

PAO Console tops and lapels are sporting many flags - small American flags passed out earlier in the morning by Spacecraft Communicator Ron Evans. We'll continue to monitor the air-ground circuit until Loss Of Signal at Vanguard.

PAO This is Apollo Control. Two minutes from Loss Of Signal at tracking ship Vanguard, in mid Atlantic. Standing by for the remainder of this pass.

CAPCOM Apollo 9, Houston. One minute LOS.  
Ascension three-zero.

SC

Roger, Houston.

END OF TAPE

APOLLO 9 COMMENTARY, 3/13/69, GET: 239:22 (0922)

644/1

PAO                      This is Apollo Control and we are right on the verge of loss of signal at the tracking ship Vanguard. Ascension Island tracking station coming up at 29 past the hour, approximately 7 minutes from now, and at 239 hours, 22 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

PAO This is Apollo Control 239 hours, 29 minutes ground elapsed time, coming into acquisition at the tracking station Ascension Island in the South Atlantic. We will stand by for any conversation as it takes place over this station; meanwhile at the recovery zone, 152-1, in the West Atlantic, Rescue 2 Aircraft is off the ground en route and an aircraft out of McCoy Air Force Base near Orlando, a radar aircraft, a Constellation, piloted by Col. Richard A. Naldreth of Parkersville, Pennsylvania is en route to a point south of the recovery station of the Guadalcanal, it will in turn sweep the incoming track of Apollo 9 with its radars to get a leg up on the fix, or the landing point, and the trajectory of the spacecraft.

CC Houston through Ascension.  
 SC Go Houston, Apollo 9.  
 CC Roger Jim - your altimeter Delta H is minus 100 feet and your sea water temperature is 75 degrees and the air temperature is about 75 degrees - mighty fine.  
 SC Great. We put on two sets of long underwear too, just expecting it to be cold.  
 CC I missed it there.  
 SC I said we even put two sets of long underwear on just so we'd be warm under water.  
 CC Roger; I don't think it'll be necessary.  
 PAO This is Apollo Control; the recovery helicopters aboard the Guadalcanal are now estimated to take off from the deck at 10:51 Central Standard Time; be on station for Apollo 9 splashdown. Rescue 2 is in the air, en route to its station, out of Kinnley Air Force Base in Bermuda. It's piloted by Captain Thomas L. Stinstrum of Bloomfield, Conn.  
 SC Apollo 9.  
 CC Apollo 9, Houston, go.  
 SC Roger. We are ready to add up our logic here and need to report.  
 CC Roger; stand by.  
 CC Roger; you can go ahead and turn your logic switches on.  
 CC You've got about 2 minutes.  
 SC Okay - ELS logic on aut coming on.  
 ELS to auto - sex logic coming on.  
 CC Apollo 9, Houston - you are GO for pyro arm.  
 SC Roger, go for pyro arm.  
 CC One minute to LOS - Tananarive at 43 and if not there Carnarvon at 58.  
 SC Roger.

APOLLO 9 COMMENTARY, 3/13/69, GET: 239:29 (0929)

645/2

SC Houston, if we fire the RCS command RCS  
pressurization out, can you still support?  
CC Apollo 9, negative. We'll catch you at  
Carnarvon.

SC

Okay.

PAO

This is Apollo Control coming up on LOS  
at the Ascension Island Tracking Station - all of the surface  
vessels in the recovery force are on station at this time, other  
aircraft in the air en route to the recovery area. The ARIA  
1 or as you were, ARIA 4, and ARIA 6 aircraft, these are Apollo  
range instrumented aircraft based at Patrick Air Force Base,  
ARIA 4 piloted by Major Frank E. Cane, Jr., and ARIA 6 by  
Captain T. L. Cherryholmes. Later on, as the spacecraft comes  
into the atmosphere and is on the last leg of the entry profile,  
an aircraft, KC 135 aircraft, not an ARIA, called an ALOTS,  
with the code name "Glow worm 123" - the ALOTS is an acronym  
for Airborne Lightweight Optical Tracking System; it's a  
camera pod on the outside of the aircraft, it'll fly on head  
on toward the spacecraft trajectory and when they lock on they  
will do a hard right turn, and attempt to track the spacecraft  
with the camera until, of course, they lose sight of it. This  
was done during Apollo 8, as an experiment, and, it was a night  
entry, and entry in darkness, and was readily spotted. They  
are not too sure they will be able to spot Apollo 9 in daylight  
however. Next station Apollo 9 will cross over will be the  
Tananarive station on the Island of Madagascar, Malagasy  
Republic, 43 minutes past the hour. And at 239 hours, 36 minutes

END OF TAPE

PAO This is Apollo Control 239 hours 43 minutes ground elapsed time. Apollo 9 is coming up on the tracking station at Tananarive, about an 8-minute pass. At this time, the crew, according to the flight plan, is maneuvering to the deorbit attitude, which is rolled over, heads down, as you were heads up, blunt end forward on our engine nozzle toward the direction of flight, and pitched down 31.7 degrees below the horizon. On station at the prime recovery zone is the tracking, as you were, the prime recovery ship Guadalcanal, at this point is at 650 nautical south southwest of Bermuda, 830 nautical miles east southeast of Cape Kennedy, 311 nautical miles northwest of San Juan, Puerto Rico. This point is some 464 nautical miles south of what was to have been the prime recovery zone prior to the extension by one revolution of this mission, because of weather. The aircraft mentioned earlier that are in route to the recovery zone, Rescue 1, will be on station 150 nautical miles uprange of the prime recovery ship and approximately 100 nautical miles north of the ground track. Rescue 2, both of these incidently, are HC130 Herky birds, Rescue 2 will be 150 nautical miles downrange of the ship and 100 nautical miles north of the ground track. Airboss, flying a helicopter, will be generally orbiting the prime recovery ship and directing operations out there. The radar Constellation, out of McCoy Air Force Base, will be located 50 to 60 miles north of the ground track and a beam of the target point. Standing by here over Tananarive for any possible conversation at this time. However, since the crew is maneuvering to reentry and deorbit attitude, it is unlikely there will be a great deal of conversation. Countdown clock shows 44 minutes 53 seconds remaining until ignition, and 1 hour 14 minutes until splashdown. We will leave the circuit open here to monitor any possible conversation through Tananarive.

PAO This is Apollo Control, about 3 minutes remaining in the Tananarive pass. Carnarvon at 58 minutes past the hour, some 10 minutes from now. During the Carnarvon pass, Mission Control Center will pass up to the crew a GO-NO/GO for the deorbit burn, which takes place over Hawaii. We are standing by over Tananarive.

PAO This is Apollo Control. We have had loss of signal at the Tananarive station and Carnarvon coming up at 58 minutes past the hour, about 7 minutes from now. At 239 hours 51 minutes ground elapsed time, this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 239:58, CST 0958 647/1

PAO This is Apollo Control at 239 hours, 58 minutes Ground Elapsed Time. Coming up on the Carnarvon, Australian tracking station at which station the crew of Apollo 9 will be given a GO/NO-GO for deorbit burn. And we're standing by for -

CAPCOM Houston through Carnarvon.  
SC Roger, Houston, Apollo 9 here. Are you ready to support the arming and firing of the command module RCS pressurization?

CAPCOM Roger, we have a good lock on now. You can go ahead.

SC Roger, ELS is coming to R & O. ELS logic on O. Next logic 290. Do we have a GO for arming the pyros now, Houston?

CAPCOM Affirmative, GO for arming the pyros.  
SC Houston, CM RCS press mark. Looks like we got both of them, Houston.

CAPCOM Roger, they're looking good here.  
SC Pyros coming off, Houston.

CAPCOM Roger.  
PAO Apollo Control here. The recovery ship Guadalcanal reports Miltown conditions at the prime recovery zone. Guadalcanal will be orbiting the target point so that the distance that Apollo 9 comes down from the ship is really rather meaningless in terms of accuracy. The distance from the target point will be the meaningful number. In other words, how well was the aim. We'll continue to monitor the Carnarvon pass here and cut in on any air-ground. And some earlier flights -

CAPCOM Apollo 9, Houston, go.  
SC Are we going to retrofire over Hawaii?  
CAPCOM Affirmative.  
SC Okay, so we can expect a voice countdown.

CAPCOM Affirmative.  
SC Very good.  
SC I have 29 minutes on my mark. Mark.  
SC We're right with you.

CAPCOM Okay. Next time it's your turn.

SC Roger.  
CAPCOM Apollo 9, Houston. We've dumped the tape recorder, rewound it, and it's yours now.

SC Roger.  
CAPCOM And 9, Houston. We'll have you through the Huntsville until 23. Pick you up at Hawaii at 25.  
SC Very good.

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 239:58, CST 0958 647/2

SC Right now we're just sort of holding,  
getting ready to enter P40. We'll enter there about T minus  
12 or so.

CAPCOM Roger.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69 GET 240:06 CST 1006 648/1

CAPCOM Apollo 9, Houston, you are looking good down here, you are GO for deorbit.

SC Roger, Houston, Apollo 9, we look pretty good from up here, too. And we're ready.

CAPCOM Apollo 9, Houston, about 1 minutes LOS, the Huntsville at 14.

SC Roger, we'll see you at the Huntsville.

CAPCOM Roger.

PAO This is Apollo Control. We have had loss of signal at the Carnarvon, Australia tracking station. We will pick up again at the Huntsville at 14 minutes past the hour, some 4 minutes away. Meanwhile, word has come in that air rescue aircraft has been scrambled out of Kinley Air Force Base to go to the assistance of a Canadian ship, the Ghislain, which is without power and is in danger of sinking. The ship is located at 37 degrees North, 60 degrees West, which is just east of the Island of Bermuda. Getting back to the subject of the ship position relative to the target point or splashdown, some of the Gemini flights were pretty close to the target point. For example, Gemini 9 was .38 miles off the target point. This mission was flown by Tom Stafford and Eugene Cernan. Next closest was Gemini 12, 2.6 nautical miles off the target point. Jim Lovell and Buzz Aldrin flew that mission. Next was Gemini 11, 2.65, almost the same distance off the target point. That was Gordon and Conrad, Dick Gordon and Pete Conrad. Gemini 10, 3.4 nautical miles off the target point, Mike Collins and John Young. Mercury flights MA8 and MA9, Walter Schirra and Gordon Cooper, respectively, were both some 4 or 5 miles off from the ship. These, however, were pure ballistic entries with no lift such as the Gemini and Apollo spacecraft have. During the entry the crew will be using a display device called an Entry Monitor System which gives the crew 6 visual cues to monitor the output of the Primary Guidance and Navigation Control System. Among these are the 05 G light, which denotes the start of deceleration, the first sensible deceleration 5/100ths of a G, the roll stability indicator, which shows the direction in which the spacecraft lift if applied, the spacecraft has a lift much like a pie plate thrown by a child in that it sort of skips in the atmosphere to some degree from having an offset center of gravity, and by controlling this lift and rotating the spacecraft and thereby the lift vector, the length of the entry can be controlled. Also in the entry monitor system is a display called the corridor verification indicator, which is not meaningful in Apollo 9, as used on lunar returns. We've had acquisition at the Huntsville. We'll continue to monitor here and cut in as the conversation commences. Also in the entry monitor system is a range of DETLA-V display, which shows the range

APOLLO 9 MISSION COMMENTARY, 3/13/69 GET 240:06, CST 1006 648/2

PAO                    in nautical miles to the predicted splash point. Also, the DELTA-V or thrust change velocity change during thrusting. the flight monitor plots G's and velocity, that is acceleration and speed on a visual graph against known values. The entry scroll shows the range to the impact point or splash point graphically in the form of a lift profile. The Entry Monitor System display is on the commander's panel, the left side of the spacecraft, just above his flight director attitude indicator, which in an aircraft would be called an 8 ball. The helicopters are being deployed at this time from the Guadalcanal, getting on station for this recovery operation. We're 16 minutes now away from ignition for the SPS deorbit burn. After the deorbit burn, in which they will be pitched down 37.1 degrees, the spacecraft will yaw 45 degrees for the separation of the service module. Let's listen to the conversation.

CAPCOM                Apollo 9, Houston.

SC                    Go ahead, Houston, Apollo 9.

CAPCOM                Roger, loud and clear, Jim. The helos are just now lifting off the flight deck of the carrier.

SC                    Houston, Apollo 9 here, I can't read you.

CAPCOM                Roger, nothing important. How now?

SC                    You are very weak, Houston.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 240:06, CST 1016 649/1

PAO This is Apollo Control standing over Huntsville. Some 5 minutes remaining over Huntsville, slight overlap of Guam, pretty much to the south of Guam. There will be about a minute break between LOS Huntsville and Hawaii acquisition. We are 12 minutes away from retrofire, continuing to monitor the air to ground circuit. As the retrofire burn is completed, and the service module is separated with a yaw of 45 degrees to get the service module out of the way to avoid any recontact and then the crew rolls over heads down with a pitch up of some 33 degrees, relative to the local horizontal for the entry profile. Monitoring air to ground now over Huntsville.

PAO This is Apollo Control. The radar aircraft out of McCoy Air Force Base is now on station to track Apollo 9 as it comes smoking back into the atmosphere, some 2 minutes away from loss of signal at Huntsville, tracking ship Huntsville, and coming up on Hawaii, some 9 minutes away from that retrofire.

PAO This is Apollo Control. Two of the Hercules HC130 aircraft, Rescue 1 and Rescue 2, on station in the prime recovery zone, reported radio contact, S-band radio contact, with Apollo 9, during the preceding revolution, revolution 151, which portends good communications, hopefully, during the entry phase, while on the chutes. Airboss, the man of station in charge of all the recovery operations, aircraft, involved in recovery aircraft preparations is in the air. It's piloted by lieutenant Commander James A. McGee, of Atlanta, Georgia. Copilot is Lieutenant Paul A. Nelson of Green Bay, Wisconsin. In the crew are antisubmarine warfare technicians, Kenneth H. Flenner of Rogersville, Tennessee and John M. Lovelady of Fort Worth, Texas. Six minutes away now from deorbit burn, 36 minutes away from splash. Should have Hawaii acquisition in mark, right now. Should have AOS.

CAPCOM Apollo 9, Houston through Hawaii, standing by.

SC Roger, Houston, Apollo 9 here. We're going up on 6 minutes.

CAPCOM Roger, mark 6 minutes.

PAO That SPS burn number 8, the one to deorbit Apollo 9, will be a 325-foot per second retrograde burn of 11.6 seconds duration. Mission Operations Control Room is getting a little quieter now as we come down to the wire here, less than 5 minutes now from ignition.

PAO Apollo range instrument range aircraft 4 and 6 are on station. It's reported that the gimbal

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 240:06, CST 1016 649/2

motors for the large SPS engine have been turned on. This a ground readout. The aircraft which will attempt to photograph the Apollo 9 command module during the reentry pass by flying head on into the path uprange is on station. This aircraft is called Gloworm 123, it's a KC135 with a camera pod mounted on the side of the fuselage. Air to ground circuit is strangely quiet as the crew is getting into deorbit attitude, some 3 minutes 12 seconds away from deorbit burn. We will leave the circuit open for any conversation.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 240:28, CST 1028, 650/1

PAO Black out is predicted to begin 15 minutes, 56 seconds after ignition. Come out of black out at 19 minutes, 29 seconds with drogues out at 23 minutes, 46 seconds. Main chutes deploy at 24 minutes, 33 seconds after ignition of SPS burn number 8. Splashdown at 43 seconds past the hour.

CAPCOM Mark two minutes. You are looking good.

SC Roger.

PAO All the recovery helicopters aboard the Guadalcanal have been deployed from the deck and are on station waiting for splashdown of Apollo 9.

CAPCOM Sixty seconds mark.

CAPCOM Mark 15 seconds.

PAO AND CAPCOM Ten, nine, eight, seven, six, five, four, three, two, one - RETRO fire.

CAPCOM Ignition confirmed.

CAPCOM And we've had cutoff confirmed.

SC Houston, Apollo 9. Burn looks good up here nulling residuals and the EMS Delta V was minus 18.2.

CAPCOM Roger. Minus 18.2, and we have the residuals.

SC Okay.

PAO Eleven point eight seconds burn time.

SC Dignals are zero.

CAPCOM Roger.

CAPCOM Nine, Houston. High speed tracking shows it's a good burn. Mighty fine.

SC Roger. It felt good.

PAO Current tracking out of Hawaii now shows the height at 163 nautical miles, velocity 25,198 feet per second and dropping.

PAO Perigee predicted at minus 4.2 miles.

PAO Spacecraft has gone to separation attitude according to the Guidance Navigation and Control Officer, who is reading the spacecraft's attitude on telemetry.

CAPCOM Nine, Houston. I'll give you a time hack at 3 minutes.

SC Standing by.

CAPCOM Mark - three minutes.

SC Thank you.

PAO Velocity now 25,194 feet per second. Altitude 163.5 nautical miles.

PAO Twelve minutes from beginning of black out.

PAO We've had arming of the pyrotechnics to cause separation of the Command Module from the Service Module.

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 240:28, CST 1028, 650/2

PAO We've had seperation of the Command Module from the Service Module. Service Module is traveling off now at some 45 degrees away from the flight path of the Command Module to avoid any recontact possibilities.

PAO Main busses on the spacecraft are showing 27.7 volts DC.

CAPCOM Apollo 9, Houston. You're looking good down here.

SC Roger, Houston. We're seperated now and moving our reflector up at this time.

CAPCOM Roger.

PAO Tracking shows present heighth 118 nautical miles. Present position 3259 north, 12725 west - off shore California.

END OF TAPE

PAO All aircraft in the recovery area are on station. The helicopters off the Guadalcanal and the rescue aircraft out of Kinley Air Force Base, the ARIA, Apollo Range Instrumented Aircraft, out of Patrick Air Force Base, all are on station. Height has now dropped to 96.9 nautical miles. Present position 33:40 north by 115:52 west, just crossing the California coast about the Los Angeles area. Some 6 minutes away from beginning of blackout.

PAO Present -

CAPCOM 9, Houston. I have a postburn update.

SC Roger. Go ahead.

CAPCOM Plus 12091 25 996 1525 1601 minus 03256 roll right 50 60 1900, and I'll get the rest a little later.

SC Roger.

PAO That first number passed to the crew of Apollo 9 was the range to go from the point at 05 g of 1209 nautical miles, and the velocity at that point 25,996 feet per second. 61 nautical mile altitude. Should be encountering 400K, 400,000 feet, which is a sensible atmosphere at this time. Some 2 minutes away from beginning of blackout.

CAPCOM Apollo 9, Houston. I have time to begin blackout.

SC Go ahead.

CAPCOM 1553 1928 2346 2433.

SC Okay, I'll read the whole thing back.  
1209.1 25996 1525 1601 minus 03256 right 50/60 1900 1553  
1928 2346 2433.

CAPCOM 9, Houston, your readback correct.

PAO That last group of numbers involved times for beginning and end of blackout, drogue deploy and main parachute deploy.

PAO A rather noisy circuit at this time; still about 40 seconds away from the predicted time for beginning of blackout which is 15 minutes 53 seconds after retrofire. End of blackout is predicted at 19 minutes, 28 seconds after retrofire. Drogue parachute deploy predicted at 23 minutes, 46 seconds, and main parachutes at 24 minutes, 33 seconds. On the water at 43 seconds after 11 AM Central Time. Mark, beginning of blackout, as predicted. Standing by here for spacecraft Apollo 9 to come out of blackout. This is some 3 minutes from now. Hopefully, communications will be reestablished through the relay aircraft orbiting around the Guadalcanal. Those communications will be fed through this circuit as they become available. Right now it's a waiting game. Quite a few of the off-duty Flight Controllers have drifted into the Control Room here.

END OF TAPE

PAO Quite a few of the off duty flight controllers have drifted into the control room here and have plugged in, standing where they can find room to monitor the entry of Apollo 9. Most of them have put in 10 long, hard days on their respective shifts and want to see this thing through. Less than 2 minutes now to end of black out. Present altitude according to Texas tracking, 34 nautical miles, present position 26.49 north, 76.29 west. Less than a minute now from coming out of black out - present height 30 nautical miles crossing the east coast of Florida. Coming up on end black out at predicted time. Mark; predicted end time of black out.

CC Apollo 9, Houston.

PAO Retrofire officer John Lewellyn is estimating they are going to be right on the target point.

CC Apollo 9, Houston.

PAO It is reported that the radar aircraft out of McCoy does have radar contact at this time.

CC Apollo 9, Houston.

PAO Present height, 23.7 nautical miles. Coordinance 23.58 north, 68 -

NETWORK Houston, capcomm, go remote.

PAO Remoting through the ARIA aircraft.

CC Apollo 9, Houston, through ARIA.

SC Roger. Apollo 9 here.

CC Roger, Apollo 9, we can just barely read you.

SC (too weak)

PAO Some two minutes away from drogue deployment. Drogue chute deployment. 19 nautical miles altitude. It is reported that the Guadalcanal crew did hear a sonic boom as the Apollo 9 spacecraft came into the atmosphere. Contact by the McCoy radar aircraft was 236 nautical miles range. 7 minutes away from splash mark.

CC Apollo 9, Houston through ARIA.

SC (too weak) Apollo 9, ready to read.

CC Ahh, Roger, Apollo 9, Houston, go.

SC Okay, present 23.26 minus 68.01 and it looks like we're about a mile off.

CC Roger - real good - I have chutes in about 10 seconds.

SC Okay.

PAO Very good communications through ARIA; should have confirmation of chute deployment shortly. Drogue chute deployment that is. Present altitude showing, well, it just disappeared off the display - delay that. Main chute should be going out at this time; Guadalcanal reports a contact at 308 degrees bearing from the ship. Crew at the Guadalcanal apparently has heard a double sonic boom as Apollo 9 smoked back into the atmosphere.

PAO The Guadalcanal was on a northerly heading just south of the target point. Standing by for resumption of communications through the relay aircraft; should be getting AIRBOSS shortly as -

PAO We have voice contact from the Guadalcanal to Apollo 9.

PAO Recovery 3 helicopter has visual contact. And it's visually in sight from the carrier. Big cheer went up here in the missions operations control room; as they saw it on the tube; estimate now 3 miles from the ship.

AIRBOSS I have 3 main chutes; they are (garble) Approximately 2 miles from the command module and his altitude is 2500 C approximately it's in there. Apollo 9, Apollo 9, AIRBOSS here; if you read me, we'll get a second AIRBOSS: we're currently coming down from about two thousand. AIRBOSS (garble)

SC Go ahead.

AIRBOSS Roger. I have (garble) Roger; I have you in spite of it and we have no contact with the command module. Apollo 9, AIRBOSS; we're getting you a little bit broken; Recovery 3 is circling you at this time; you're looking real good; give me your status rate.

SC We're all right fine; we're okay.

AIRBOSS Roger, understand; the crew is in good shape. That's correct. Apollo 9, this is AIRBOSS; we're not reading you, stick your propellant dump - stand by.

PAO And we have splash $\frac{1}{2}$  At 53 seconds past the hour - big cheer and a lot of clapping going on here in mission control.

AIRBOSS Control, AIRBOSS - Parachute has been jettisoned, capsule is reading stable one at this time. Looking good.

PAO The spacecraft is now in stable 1 - that is apex up.

AIRBOSS Looking good.

PAO Aircraft - the spacecraft is now in stable 1 - that is apex up.

AIRBOSS Control, AIRBOSS. Control, AIRBOSS. (garble) Use 1 HF.

PAO This is Apollo Control - splashdown time was at 53 seconds past the hour - which is some 10 seconds later than they predicted splash time of 43 seconds past the hour. The estimated range from the carrier to the spacecraft of some 3 nautical miles - however this does not mean necessarily that the spacecraft was 3 miles off the target point. The carrier Guadalcanal was steaming toward the target point from the south. Recover 3 is going to drop a flare at the spacecraft.

END OF TAPE

PAO - cigars are beginning to sprout out of everyone's mouth here in Mission Control. The apex cover and the drogue parachutes are reported near the spacecraft, a considerable amount of jubilation in Mission Control. Standing by here for a word of swimmers in the water. Swimmers are now being deployed from recovery 3 helicopter, 4 miles dead ahead estimate from the Guadalcanal. The Recovery 3 helicopter is piloted by Commander George M. Rankin, Jr., of Bethesda, Maryland, copilot Lieutenant Rufus O. Edison, Jr., of Laurel, Mississippi, the crewmen are antisubmarine technicians David E. Morris of Dallas, Texas, and Steven K. Hanigan of East Meadow, New York. Underwater demolition team members, or swimmers, who will be dropped. About 2 minutes away from dropping the swimmers. These swimmers are gunners mate second class Cecil Eubanks, Port Arthur, Texas; Seaman Richard B. Perry, Derry, New Hampshire; Seaman Clay P. Rhyne, of Clinton, Maryland.

RECOVERY 1 Airboss, Recovery 1. I'm going down for 330 (garble). The apex cover is off the head, over.  
AIRBOSS Roger. Recovery 1, are you circling this time?

RECOVERY 1 Negative, we are ... from the north ...  
AIRBOSS All right. Recovery 2, the apex cover is over near the smoke light.

RECOVERY 2 Okay, pick up.  
AIRBOSS Fine.  
(garble)

PAO Amazingly good communications between the relay aircraft and the spacecraft, also the helicopters. PAO Guadalcanal steaming north toward the spacecraft some 3 miles dead ahead. First swimmer in the water out of Recovery 3. All three swimmers are now in the water. Among their chores will be deploying the flotation collar, plugging the earphones so they can talk with the crew of Apollo 9.

AIRBOSS Recovery 3, give me all you've got on antennas.  
(garble)

PAO Recovery 3 reports the spacecraft is somewhat scarred but looks rather good.  
AIRBOSS - from here, how about the apex cover lanyard?

RECOVERY 3 This is Recovery 3 (garble)  
AIRBOSS Roger.  
AIRBOSS ..., this is Airboss. Standby, upright-  
ing bags are not deployed.

SC You haven't got the ... spacecraft.  
RECOVERY Roger, 9. (garble) before deploying the  
... uprighting. Recovery 1 says ... apex cover.  
(garble)

PAO Quite a myriad of voices coming over  
the loops out there through the various relays, all of which  
are being passed into the air to ground circuit here in Mis-  
sion Control. Apparently, it's pretty much of a routine  
recovery exercise. The spacecraft is in Stable I. apex is  
up, no need for the flotation bags.

(garble)  
PAO The flotation collar is now being attached  
by the swimmers from Recovery 3. These swimmers again, gun-  
ners mate second class Cecil Eubanks of Port Arthur, Texas;  
Seaman Richard B. Perry of Derry, New Hampshire; and Seaman  
Clay P. Rhyne of Clinton, Maryland.

AIRBOSS Recovery 1, Airboss.

RECOVERY 1 Go ahead, Airboss.

AIRBOSS Roger. Turn the apex cover - attached  
to the raft, go ahead -

PAO The flotation collar is almost deployed  
to the spacecraft. Communications is getting somewhat noisy  
at this time. We will continue to monitor the relay cir-  
cuits.

AIRBOSS This is Airboss. Negative. You worry  
about the apex cover.

RECOVERY Roger.

PAO It is reported that the Guadalcanal is  
approximately 1 mile from the spacecraft and no doubt slow-  
ing down, so as not to overrun the position.

RECOVERY And I've got a nice cake waiting for you.  
Have anything you want.

RECOVERY (garble) the collar is on at this time  
and they are securing the collar at this time.

AIRBOSS Roger, 5165, stand by.

SC Airboss, this is Apollo 9.

AIRBOSS Go ahead, Apollo 9.

SC I've (garble) uprighting bags (garble)

AIRBOSS Stand by.

CONTROL Control, Airboss. Apollo 9 wants to  
know whether or not to pop the uprighting bags, the collar  
is attached at this time.

PAO The collar, flotation collar has been  
attached to the spacecraft at this time and the three swim-  
mers from the underwater demolition team out of Recovery 3  
helicopter are standing on the flotation collar.

RECOVERY 3 Recovery 3, Airboss. The collar inflated yet?

AIRBOSS Recovery 3, negative. Just got it secured.

PAO Recovery 3 helicopter still hovering over the spacecraft after having unloaded the swimmers earlier for the flotation collar deployment. This Mission Control Room here has quite suddenly gotten rather crowded. Program people, off-duty flight controllers, everyone sprouting a cigar out of their mouth.

SC Airboss, this is Apollo 9.

AIRBOSS Apollo 9, this is Airboss. You are okay, belay your uprighting bags, the collar is inflated around you at this time.

SC Roger.

PAO We have confirmation that the flotation collar has been inflated at this time.

AIRBOSS Recovery 3, the collar is fully inflated and they are getting ... at the present time. The command module is riding very nicely in the water and all appears to be real good.

AIRBOSS Recovery 1, what's your status?

RECOVERY 1 This is Recovery 1. We are -- apex cover is sort of unlatched at this time. I have a - we should had ... apex cover.

AIRBOSS Roger. Control you copy?

CONTROL I copy.

PAO Still monitoring the conversation with Airboss 1 on scene.

AIRBOSS - Airboss. Do not deploy your uprighting bags, over.

SC Roger, Airboss.

AIRBOSS Recovery 3, you copy Apollo 9?

RECOVERY 3 (garble)

AIRBOSS Guadalcanal Control, be advised that Apollo 9 --

SC Do not deploy uprighting bags?

AIRBOSS Apollo 9, that affirmative. We do not want you to deploy the bags.

SC Roger.

CONTROL Rhyne, this is Control. Have you (garble)

SC Hello, this is Apollo 9. You really look good to us.

CONTROL Roger. You look pretty good to us too.

... did you dump your fuel on the way down?

SC Roger, that firm, on the way down.

CONTROL Real fine.

AIRBOSS Recovery 3, two of the ... are securing ... on the collar (garble) just put the others up now.

APOLLO 9 MISSION COMMENTARY, 3/14/69, GET 240:03, CST 1103 653/4

RECOVERY 1 This is Recovery 1. The swimmers have called for another ... second man off the water. We are going to have some... on it... we can't get the thing in the ...

AIRBOSS Roger.

RECOVERY 3 Recovery 3, the Guadalcanal is a quarter of a mile.

AIRBOSS We see. She's still coming in. Recommend you move to starboard.

PAO Here is Mission Control everyone is standing up watching all the big screens in front of the Control Room where commercial television has the spacecraft floating in the water, a 10 by 20 Eidphor background projectors in the television picture.

AIRBOSS That's affirmative, go on, over.

RECOVERY Roger, swimmers, go ahead, over.

AIRBOSS Boss, (garble).

RECOVERY Airboss still needs the swimmers.

CONTROL Roger.

RECOVERY ... to Airboss, over.

AIRBOSS Swimmers, okay.

CONTROL Loud and clear, Airboss. They are trying to talk to you and they are talking to Apollo 9. This is Control.

(garble)

END OF TAPE

APOLLO 9 MISSION COMMENTARY 3/13/69 GET 241:20 CST 1120 654/1

AIRBOSS                    Apollo 9, Apollo 9, secure your SARAH  
beacon. Over.  
SC                         We have already secured the beacon.  
SC                         Beacon is off.  
AIRBOSS                   Roger, thank you. I need (garbled)  
for my radio.  
REC                        AIRBOSS, we have 2 seven-man rafts in  
the water now.  
PAO                        Among the people here in Mission Control  
observing the activities out in the area of the Guadalcanal  
are Dr. George E. Mueller, the office of Manned Space  
Flight, Associate Administrator for Manned Space Flight,  
NASA headquarters; Samuel Phillips, Apollo Program Director;  
Mr. George Hage, Apollo 9 Mission Director; Dr. Robert R.  
Gilruth, Director of the Manned Spacecraft Center; and it  
looks like the viewing room behind Mission Control is quite  
full of people, quite a few astronauts down around CAPCOM's  
console including Pete Conrad, Deke Slayton, Stu Roosa,  
Al Bean. All of the medics are lined up around their  
console. We'll rejoin the AIRBOSS/Spacecraft communications  
in progress.  
REC 1                      This is Recovery 1. Over 2 pieces of  
some material that came out over the apex cover.  
AIRBOSS                   Roger.  
REC 1                      A plastic type liner.  
AIRBOSS                   Roger.  
HELO 1                     This is Helo 1. (garbled) we'll  
get back down on it if we can.  
AIRBOSS                   (garbled) Roger.  
PAO                        The voice identifying itself as AIRBOSS  
is owned by Lt. Commander James A. McGee of Atlanta, Georgia,  
pilot of the AIRBOSS aircraft. Swimmers out of Recovery 1  
still are apparently keeping the apex cover, which enclosed  
the parachute deck, still keeping it afloat.  
AIRBOSS                   (garbled) now the first life raft. Now they are  
being secured to the collar at the present time.  
REC                        This is Recovery. We feel its safe and I believe  
the hatch will be opened.  
REC                        Apollo 9, Apollo 9. (garbled)  
REC                        Control, Recovery 3, the hatch is now  
open on Apollo 9.  
AIRBOSS                   Recovery 3, roger.  
REC                        The first astronaut is now egressing  
from Apollo 9 into the liferaft and he has his water wings  
on.  
AIRBOSS                   Roger, got him tally ho.  
REC                        First astronaut is in the water - in  
the raft.  
AIRBOSS                   Roger, air control, roger.

APOLLO 9 MISSION COMMENTARY, 3/13/69 GET 241:20 CST 1120 654/2

REC 3                    This is Recovery 3. Second astronaut is  
egressing from Apollo 9.

AIRBOSS

Control here, roger.

PAO

Astronauts McDivitt, Schweickart and  
Scott presently egressing the spacecraft into their raft.  
Some amount of laughter here as one of the rafts turns over,  
not the one the crewmen are in, but one of the empty ones  
flips over on top. Downwash from one of the helicopters  
apparently caused the raft to flip over.

PAO

Two out, one to go. Now that the crew  
is out of the spacecraft the communications through the  
AIRBOSS will cease. We'll continue to give reports from  
the Guadalcanal as the crew is brought on to the ship and  
later the spacecraft. All 3 crewmen are now in rafts.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, GET 241:30, CST 1130, 655/1

PAO Still standing by here for crew pick up and consequently - or subsequently - the pick up of Apollo 9 Command Module.

PAO They are presently establishing a circuit out to the Guadalcanal from the White House. The swimmers are now securing the Command Module hatch, closing it from the outside.

PAO Recovery Aircraft 3 flown by Commander George M. Rankin, Jr. of Bethesda, Maryland, is apparently making a run to pick up the crewmen. They're lowering the basket now to pick up the first crewman. Everyone in Mission Control still watching the three big 10 by 20 foot screens - all three of which have the same picture from the commercial television on board Guadalcanal. First attempt in getting the crewmen in the recovery hoist apparently was aborted. Recovery 3 still hovering over the spacecraft attempting to get the recovery hoist and cage out to the rafts without crowning anyone in the head. The down wash from the helicopter makes things a little more complicated in that it disturbs the water - makes the spacecraft drift a little more and consequently away from the recovery sling. There goes one crewman in the sling - hanging on for dear life - like the flying trapeze. Considerable amount of guffhawing here as all this takes place. Someone commented it's like a Max Sinnett comedy.

PAO This is Apollo Control. We'll come up again as the crew is on the Guadalcanal and the spacecraft is recovered. At 241 hours, 40 minutes Ground Elapsed Time and 1 hour and 9 minutes after RETROFY this is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, CST 11:46 AM 656/1

PAO                    This is Apollo Control. All three crewmen are aboard the recovery helicopter and are anticipated to be on board the Guadalcanal within a few moments. Announcement of the postrecovery press conference times will be forthcoming. This is Apollo Control.

END OF TAPE

APOLLO 9 MISSION COMMENTARY, 3/13/69, CST 11:50 AM 657/1

PAO                      This is Apollo Control. In the large center screen here in Mission Control, a three-color patch for Apollo 9 has been projected on the screen and it brought a rousing cheer from everyone in the Control Room here. There must be 150 people crowded in here. A lot of handshaking going on; a lot of cigar smoke wafting up to the ceiling. We're waiting now for the crew to leave the helicopter on board the Guadalcanal. The helicopter touched down on deck about 10 minutes prior to 12 o'clock Central Standard Time. The Management Press Conference will take place in the Manned Spacecraft Center main auditorium at 12:15, followed immediately thereafter with the Operations people in a second press conference. This is Apollo Control signing off.

END OF TAPE