This is the Gemini News Center with a 9:30 a.m., EST status report on the Gemini 12 countdown and the overall Gemini 12 mission. In a matter of minutes, actually 9:43 a.m., EST, the Gemini spacecraft count will begin. The backup pilots for the Gemini 12 mission, Astronauts Gordon Cooper and Gene Cernan are now standing by at the blockhouse, and in a matter of minutes, they'll be boarding the Gemini spacecraft at the 100 foot level to start their prelaunch checkout of the spacecraft. The backups will remain in the spacecraft and be ready to report to the prime pilots, Astronauts Jim Lovell and Buzz Aldrin when they report on the scene this afternoon. Lovell and Aldrin are still asleep at this time. The plan, according to the astronaut countdown, is to awaken them at 11:30; however, if they do awaken earlier than that, they will get up at an earlier time. We will keep close watch on this, but our advisories right now are that the two astronauts are still asleep. To cover some of the highlights of what has transpired thus far, all is going very well with the countdown at this time. We brought the propellants aboard the Gemini Launch Vehicle starting at 2:53 a.m., EST, this morning, and completed the propellant loading in 3 hours and 21 minutes. The range in Agena countdown started, this was the real start of the countdown, at 4:23 a.m., EST, at T-680. The Atlas standard launch vehicle countdown came in at 8:23 a.m., EST, or the T-440 mark in the count and as we mentioned at the start of this status report, the next highlight comes up in

just several minutes when the spacecraft count begins. We've already been informed by phone just a matter of a few moments before coming up with this announcement, that the Test Conductor definitely intends to start this count. We can consider that the Gemini 12 count will start on time at T-360, 9:43 a.m. As we reported, the backup pilots, Cooper and Cernan, will be going aboard the spacecraft shortly to start their preliminary checkouts. So all is going well at this time of the Gemini 12 countdown. We'll be coming up with several more reports over the next hour or so from here in the News Center, and then the reports of Mission Control will begin at approximately 11 o'clock, 11 a.m., EST, this morning. During the still early part of the count at that time, the reports will be coming up about every half hour or so until we get deeper into the count. Obviously, if any problems arise, they will be reported either from here in the News Center or from Mission Control as rapidly as we know they have occurred. All is going well with the Gemini 12 countdown at this time, and just about at this point now, the Gemini spacecraft countdown starting. This is the Gemini News Center.

END OF TAPE

This is the Gemini News Center at Cocoa Beach. The countdown with the spacecraft of the Gemini 12 mission was picked up right on schedule at 9:43 this morning and all goes quite well leading to our planned liftoff times of 2:08 this afternoon and 3:46. Our formal announcements from the Mission Control Center at Cape Kennedy are scheduled to start about 11 o'clock, but as of now, the countdown proceeds quite well and repeating it again, we did pick up the spacecraft count at 9:43 this morning. This is the Gemini News Center.

END OF TAPE

This is Gemini Launch Control. We are at T-289 minutes and counting. That is T-289 and counting on the Gemini 12 mission, and all is going well with our simultaneous countdown at this time. The count actually started about 6 and a half hours ago with the beginning of the range countdown and will wind up with some nine different functions in the simultaneous countdown as we get closer to the planned Atlas/Agena liftoff. As reported, all is going well at this time. We also have a satisfactory weather forecast both here in the Cape area and around the world track. Astronauts Jim Lovell and Buzz Aldrin, the prime pilots, got up about 23 or 24 minutes ago, actually at 10:30 a.m., EST. The astronauts got up. We received confirmation that they did retire earlier this morning at one a.m. They went to bed at one a.m., and got up at 10:30 this morning. Meanwhile, their backup pilots, Astronauts Gordon Cooper and Gene Cernan are aboard the Gemini 12 spacecraft making preliminary checks, at the 100 foot level at Complex 19. At Complex 14, where we have the Atlas/Agena being checked out, the crew is gearing up for the start of some of the major propellant loading that is conducted during the final phase of the countdown. Coming up about seven minutes from now, the crew will start loading the hydrozine fuel aboard the Agena second stage. This will be followed by roll back of the gantry service structure and then they will load the acid oxidizer aboard the Agena. A little further on in the count, the final phase of the propellant loading for the Atlas/Agena,

the loading of the liquid oxygen aboard the Atlas first stage will begin. All systems going well. To repeat, the prime pilots are up, they got up at 10:30 a.m. EST. They will start their physical examination about 11:30, 11:30 a.m., EST, and have breakfast about 10 minutes later or 11:40 a.m., EST. Now at T-286 minutes, 52 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. We are at T-255 minutes, 26 seconds and counting on the Gemini 12 count. All going well both at launch complex 19 with the Gemini 12 and launch vehicle, and at complex 14 with the Atlas/Agena. At this point at complex 14, we are just finishing up the loading of the hydrazine fuel aboard the Agena second stage. We are loading some 4000 pounds of fuel aboard the Agena this morning and all is going well. We expect to get a report shortly that this has been completed. About 12 minutes from this time, once we get the report for the Agena fuel loading has been completed, we'll start rolling back that gantry service structure at the pad. It will rolled back to its fall back position -- this takes about 30 minutes -- then the crew will be ready to load the oxidizer, the red-fuming nitric acid that is used as an oxidizer for the Agena in the second stage. In the meantime, the prime pilots for the mission, Astronauts Jim Lovell and Buzz Aldrin, are up at their crew quarters at the Kennedy Space Center. They will be going down the hall to start their final physical examination just a couple of minutes from now. This will be followed by breakfast in the crew quarters. They'll have about ten guests for breakfast, we'll give you a report on the guest list shortly. All going well at this point in the count, 254 minutes, 3 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control at T-245 minutes and counting. T-245 and counting, all still going very well with our simultaneous countdown for Gemini 12. At this time, the prime pilots, Astronauts Jim Lovell and Buzz Aldrin, have gone down the hall from their crew quarters at NASA's Kennedy Space Center to take their final physical examination. This will take about ten minutes or so. The examination will be given by Dr. Norman Pincott. We'll get a report from Dr. Pincott following the examination. When the examination is completed, the two pilots will sit down for breakfast. They will have the usual astronaut menu of filet mignon, steak, and eggs, toast and coffee, and juice. The two pilots got up at 10:30 a.m., EST, this morning after about 9 and a half hours sleep. In the meantime, their backup pilots, Astronauts Gordon Cooper and Gene Cernan, are aboard the Gemini 12 spacecraft at complex 19. They've now been in the cockpit about two hours making the preliminary checks, and they'll be ready to report to the two prime pilots later in the countdown when they come to the pad. Also at complex 19, we're gearing up to bring in the final major part of our simultaneous countdown. That is the start of the Gemini Launch Vehicle countdown which will begin some three and a half minutes from this time. When the so-called GLV does come into the count, we'll then have some nine countdowns going simultaneously leading up to the launch of the Atlas/Agena and the Gemini 98 minutes later. At complex 14, our count is still going well with the Atlas/Agena. The crew is monitoring

the progress of the removal of the gantry service structure at this time. This is about a 30 minute operation to get the service structure back to its fallback position. Then they'll be ready to clear the pad area and start loading the oxidizer aboard the Agena second stage. This is the red-fuming nitric acid that is used with the hydrazine fuel to give us our engine burn on the Agena. All systems going well at this time. T-242 minutes, 46 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control at T-230 minutes and counting. All still proceeding very well with Gemini 12 count at this time both at launch complex 19 with the Gemini launch vehicle and spacecraft, and at complex 14 with the Atlas/Agena, and at the crew quarters at the Kennedy Space Center, Merritt Island. The prime pilots, Jim Lovell and Buzz Aldrin, are now sitting down to their breakfast. As reported earlier, they'll have the usual astronaut fare of filet mignon, eggs, toast, coffee and juice. They have ten guests this morning for breakfast, Chief of the Astronaut Office, Alan Shepard is joining them; two of the scientist astronauts - they are Owen Garriott and Ed Gibson - and seven of the newest team of pilot astronauts who were named last April. We will give you their names rapidly here, and we'll have them available throughout the day. The seven new astronauts who are attending the breakfast are Bruce McCandless, Don Lind, Al Worden, Jack Swigert, Ron Evans, William Pogue and Vance Brand. Those are seven of the newest selected pilot astronauts. They were selected last April and they are joing the prime crew for breakfast. Meanwhile, the backup pilots, Gordon Cooper and Gene Cernan, still aboard the Gemini 12 spacecraft making their checks. All their reports coming back to the blockhouse says, good. The whole countdown, all nine elements of the simultaneous countdown, are all going very well at this time. We also have a go from the weatherman. The

prediction is for satisfactory weather here at the Cape and around the world track. Weather conditions will be satisfactory for the flight with a forecast at Cape Kennedy of partly cloudy skies, winds from the southeast at ten knots, a sea state offshore of two to three feet and an expected forecast of about 80 degrees at launch time. Weather is acceptable all throughout the rest of the world track. We are go at T-227 minutes, 45 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control at T-221 minutes and counting. We are proceeding and all is still well with the Gemini 12 countdown at this time. While the prime pilots, Astronauts Jim Lovell and Buzz Aldrin, enjoy their breakfast at the crew quarters at the Kennedy Space Center, their backup pilots, Gordon Cooper and Gene Cernan are still hard at work at the 100 foot level at complex 19 making the preliminary checks of the Gemini 12 spacecraft. The two backup pilots are participating in a test of the spacecraft computer at this point, joined by the blockhouse a short distance from the spacecraft itself. At launch complex 14 with the Atlas/Agena, we now have the gantry service structure rolled back and the crew is making the preliminary preparations to load the acid oxidizer aboard the Agena second stage. We'll be loading some 10,000 pounds of the acid to complete the overall propellant loading of the Agena. The final phase of propellant loading for the overall vehicle will come a little later in the count with the loading of the liquid oxygen aboard the Atlas first stage. This will continue down to the final moments before the Atlas/Agena liftoff scheduled for 2:06 -- correction, 2:08 p.m., EST, this afternoon. All still going well at this point at T-219 minutes, 35 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control at T-210 minutes and counting. T-210 and counting. All still proceeding well with the overall countdown at this time. At launch complex 14 the Launch Vehicle Test Conductor has given a go to start the loading of the acid oxidizer aboard the Agena second stage, the final phase of the propellant loading of the second stage Agena. At the crew quarters at the Kennedy Space Center, Merritt Island, the prime pilots, Astronauts Jim Lovell and Buzz Aldrin, are still enjoying their breakfast at this time and are due to depart from the crew quarters at about 35 minutes past the hour and proceed to the ready room at launch complex 16 where they will don and check out their space suits and stand by to be called to complex 19 at about the 125 minute mark in the countdown. The backup pilots, Astronauts Gordon Cooper and Gene Cernan, now have left the spacecraft at the 100-foot level of complex 19. They have been there just a little less than three hours checking out the spacecraft. The reason they leave at this point in the count is in preparation for the pressurization of the Gemini Launch Vehicle which will be coming up in about 20 minutes. We do evacuate that White Room area while we pressurize both stages of the Gemini Launch Vehicle with nitrogen and following that, the backup pilots and the White Room crew will return to the 100-foot level to make the final preparations for the arrival of astronauts Lovell and Aldrin. All still going very well with our countdown at this time, T-208 minutes, 24 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control, T-200 minutes and counting. T-200, all still proceeding well with the simultaneous countdown for Gemini 12. We are now about an hour and five minutes away from the planned Atlas/Agena liftoff -- correction, about an hour and 45 minutes away from the Atlas/Agena liftoff which is scheduled for 2:08 p.m., EST. We are continuing to load some 10,000 pounds of the acid oxidizer aboard the Agena second stage. The report from the blockhouse at complex 14 is that the loading of the oxidizer is going well. We expect the prime pilots, Jim Lovell and Buzz Aldrin, to be departing from their crew quarters at the Kennedy Space Center in about 12 minutes from this time. They will then proceed to the ready room at complex 16 and make their final preparations for the flight and standby to be called to complex 19. All systems still going well at this point, now at T-199 minutes, mark. This is Gemini Launch Control.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/11/66, 11:33 A. M. CST

This is Gemini Launch Control at T-190 minutes and counting. Just about a minute ago the prime pilots, Astronauts Jim Lovell and Buzz Aldrin, departed from their crew quarters and are now leaving the Kennedy Space Center and proceeding toward the ready room at Launch Complex 16. When they arrive at 16 they'll make their final preparations donning their suits, having final checks of both their sensors and the suit circuits themselves, then will stand by awaiting the call to the pad. They're due to depart from Complex 16 to go to their Gemini 12 spacecraft at about the 125 minute mark in the count. We mark the time of their departure as 31 minutes past the hour. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control, T-179 minutes and counting. All still proceeding very well with our simultaneous countdown for Gemini 12. This has been the report we've had all morning. Since the count was picked up early this morning, there have been no problems in our countdown thus far. Astronauts Jim Lovell and Buzz Aldrin should be just about arriving at the ready room at complex 16 at this time. They departed their crew quarters at the Kennedy Space Center a matter of some 12 minutes ago. On their arrival at the ready room, they will get an immediate status report on the overall countdown. They will be told that the status for Gemini 12 is very good at this time. We are now about an hour and 24 minutes or so away from the Atlas/Agena liftoff, the first of the two launches planned today in the Gemini 12 mission. At launch complex 14, the control of the countdown clock has now been given to the control of the Launch Vehicle Test Conductor at pad 14. This means that the launch vehicle Test Conductor at 14 will be the one to clear any holds from this time down to the Atlas/Agena liftoff. We have a very complex countdown in operation at this time, some nine different countdowns all operating simultaneously. As a result, the so-called control of the clock is a very vital factor. It now has reverted to pad 14 where we are making our final preparations for the Atlas/Agena launch. All systems still looking good. We are at T-177 minutes, 24 seconds and counting. This is Gemini Launch Control.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/11/66, 11:54 A. M. CST

This is Gemini Launch Control at T-169 minutes and counting. T-169. Our countdown continues to go very well at this time. The backup pilots, Astronauts Gordon Cooper and Gene Cernan, are now back aboard the Gemini 12 spacecraft at the 100-foot level of Complex 19. They returned to continue their spacecraft checkout after we completed the hookup of the destruct packages aboard the vehicle and pressurized the two stages of the Gemini Launch Vehicle with nitrogen. The pad area was cleared while these two activities were in process. They have been completed and the backups are now aboard making their final checks. The Flight Director, Mr. Glynn Lunney in Houston, has come aboard to make a status check. All appears to be going well as far as the overall operation, the overall simultaneous countdown for Gemini 12. The prime pilots, Astronauts Jim Lovell and Buzz Aldrin, are in the ready room at Launch Complex 16 making their final preparations. T-168 minutes and counting. This is Gemini Launch Control.

END OF TAPE

This is Mission Control Houston. We are standing now in the Gemini count at T-158 minutes and 53 seconds, and T-663 minutes and 50 seconds in the Atlas Agena launch count. Around the Manned Space Flight Network we have one minor problem with a high frequency transmitter out at the Canton Island voice remoting station in the Central Pacific. However, it is estimated this will be repaired at 12:30 p.m. CST. Meanwhile all of the recovery ships are reported to be on station waiting to support the Gemini 12 mission. An initial feet wet time or the time that the spacecraft will cross the beach at Cape Kennedy has been passed along as 45 seconds after liftoff. We'll switch now to launch control at the Cape.

This is Gemini Launch Control. At this point in the simultaneous countdown all still going well here at the Cape. In process at Launch Complex 19, the backup pilots Astronaut's Gordon Cooper and Gene Cernan still making their checks of the spacecraft and they'll standby to give a report to the Prime Pilots' Jim Lovell and Buzz Aldrin when they come aboard. At Complex 14 we are getting ready for the final phase of our propellant loading, that is, loading liquid oxygen aboard the Atlas first stage. We will actually start this about 17 minutes from this time, but we will have about a 10 minute showdown period to prepare the complete system for the extremely low temperatures

encountered with the liquid hydrogen, some 297 degrees below zero. The so called launch preps are in process at 14 now, all going well on our simultaneous countdown. T-157 minutes 10 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control at T-149 minutes and counting. T-149 and counting, all proceeding very well with our simultaneous countdown. At Complex 14, the crew has been making final preparations to the liquid oxygen loading which will start about 8 minutes from this time. We'll be loading some 18,400 gallons of liquid oxygen aboard the Atlas first stage this afternoon to complete the overall propellant loading of the vehicle. The hydrocarbon fuel was loaded aboard the Atals first stage several days ago. All systems look good to start the liquid oxygen loading. They have just made a status check in the blockhouse and have received a "Go" to start this key sequence. We'll load the liquid oxygen aboard at a high rate, up to 95 percent level, and then continue to top it off during the remainder of the countdown, because the liquid oxygen is such a -- at such an extremely low temperature at -297 degrees. It continues to boil off as we feed it aboard the vehicle. As a result, we continue to top off the supply until the two minute and ten second mark in the countdown, when the boiloff vent closes and we should, at that point, have 100 percent supply of liquid oxygen onboard the vehicle. Also, in effect at this time is the guidance command test with the Atlas/Agena. This is a simulation of the powered flight of the Atlas/Agena vehicle. That is, the booster engine sustainer separation and ignition and performance of the Agena second stage. It is a test between the radio command guidance system and the blockhouse crew with the launch vehicle to insure that it will

respond to the radio command guidance commands during flight. We are now at T-147 minutes, 11 seconds and counting, all still going well. This is Gemini Launch Control.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/11/66, 12:24 P. M. CST

This is Gemini Launch Control coming up at T-139 minutes and counting. We're now about 44 minutes away from the planned Atlas/Agena liftoff scheduled for 2:08 P. M. Eastern Standard Time. All our checkouts still going very well at Complex 14 with the Atlas/Agena and Complex 19 with the Gemini Launch Vehicle and spacecraft. At Pad 19 the backup pilots, Gordon Cooper and Gene Cernan, still aboard the spacecraft making their final checks. They'll be standing by for the prime crew, Astronauts Jim Lovell and Buzz Aldrin, when they come aboard a little later in the count probably about 15 minutes from this time. The backups will give a report to the prime pilots on the status of their spacecraft. From the way the checkout has gone, this report should be a very good one. At this point, Cooper and Cernan are participating in some final checks of the spacecraft fuel cells with the spacecraft Test Conductor in the blockhouse. At Complex 19 we have - correction, Complex 14 - we have begun the loading of the liquid oxygen supply aboard the Atlas first stage. As reported earlier, we'll be loading some 18,000 gallons of "lox" aboard today to complete the propellant loading. This lox loading sequence will go all the way down in the count to two minutes and ten seconds when the boil off valve closes and at that point we should have our 100 percent supply onboard. All systems still going well. About 12 minutes from

now, Astronauts Jim Lovell and Buzz Aldrin should get the word from the blockhouse to come from their ready room at Pad 16 to their Gemini 12 spacecraft at the 100-foot level at Complex 19. All systems still going well at 137 minutes, 20 seconds and counting. This is Gemini Launch Control.

END OF TAPE

Shepard at Launch Complex 16. The crew, Aldrin and Lovell are in the final stages of the suiting process. They will be coming out in approximately 10 minutes to go from here to Pad 19. Everything has been going smoothly so far. The boys are in excellent shape. They are particularly pleased with the launch weather which as you all can see down here is beautiful. We have heard of no problems at all on either of the two launch vehicles and as far as we are concerned the launch from this point of view will go on schedule. Do we have any questions?

QUESTION - What time did they get to bed last night and how did you (garble)

Shepard - They went to bed last night about 1:00. They were spending most of the time after dinner in the evening looking over the Flight Plan again. Once they get so throughly trained for a flight it is pretty hard to keep them away from it and any spare time they sit down and look over the checklist one more time and look over the Flight Plan one more time. There is no such thing as becoming too familiar with the Flight Plan, particularly on a detailed flight. So they went to bed about 1 and got up around 10:30 today and we resumed the countdown ever since.

QUESTION - Did they stay in their quarters all that time?

Shepard - Yes. That is correct.

END OF TAPE

This is Gemini Launch Control. We are at T-125 minutes, four seconds and counting. All still proceeding very well with the Gemini 12 simultaneous countdown at this time. We are standing by to await the departure of the prime pilots, Jim Lovell and Buzz Aldrin, from their ready room at Complex 16. They should be leaving shortly. They will come over to Launch Complex 19, go directly up to the 100 foot level and the so-called White Room where the hatches for the Gemini 12 spacecraft are located. They will be greeted among others by their backup pilots, Gordon Cooper and Gene Cernan, who will give them a final report on the status of their spacecraft. From the count, as far as the spacecraft has been concerned thus far, and as a matter of fact, the complete hardware we have at both Pads 14 and 19, all has been going well and it is expected that is the report the primes will receive. They should be departing shortly. We are now about 29 minutes away from the planned Atlas/Agena liftoff with all going well. At Complex 14, some final telemetry checks of the overall vehicle taking place. Now 124 minutes and counting. The astronauts have just come out of their ready room at Complex 16, Jim Lovell and Buzz Aldrin. They are boarding the transfer van, and in a matter of minutes, should be at the base of the pad at Complex 19. Now at T-123 minutes, 42 seconds and counting. This is Gemini Launch Control.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/11/66, 12:43 P. M. CST

This is Gemini Launch Control at T-120 minutes and counting. All still going well as Astronauts Jim Lovell and Buzz Aldrin, the prime pilots, now have arrived at Complex 19 and are on their way up the elevator to the White Room. The White Room is located at the 100-foot level. After they get a quick report on the status of their spacecraft from their backup pilots, Gordon Cooper and Gene Cernan, they'll be ready to come aboard. This is due in the countdown about four and a half minutes from this time. To repeat, Astronauts Jim Lovell and Buzz Aldrin now at the Pad. We're about 24 minutes away from the planned Atlas/Agena liftoff. They have now arrived in the White Room and they are being greeted by the crewmen in the White Room at this time. They have turned in two very large tickets that were given to them as they came up the ramp at the base of the complex at Complex 19. These two tickets were admittance tickets marked Admit One and each one of them had the printing of a ferris wheel on them outlining the complete history of the Mercury and Gemini flights thus far with the names of the crewmen who participated. There is also a sign that has welcomed the crewmen in the White Room which says as follows in large block letters: "Notice: last chance, no reruns, show will close after this performance." We're now at T-118 minutes, 30 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control, T-116 minutes 25 seconds and counting. Some 21 minutes away now from the planned Atlas/ Agena liftoff which is due to occur at 8 minutes past the hour. Just a matter of moments ago, Astronauts' Jim Lovell and Buzz Aldrin went over the hatch and are now aboard the Gemini 12 Spacecraft. Just prior to their going aboard, each was presented with a little gift by the crewmen in the White Room. Buzz Aldrin was presented with a rather king size replica of a slide rule. This partly was in tribute to the fact that he is in fact Doctor Aldrin, that is, he has a Science Doctorate. Also a tribute to the fact that he paid quite a bit of attention to even minute details during the checkout of the Gemini 12 Spacecraft. Jim Lovell was presented with a large copy of a Flight Plan indicating that there had been several changes to the Flight Plan during their final preparations while they were here at the Cape. They are now aboard,the hatches should be closed about 10 minutes - 15 minutes from this time. We will standby to see when that occurs. In the meantime at Launch Complex 14 with the Atlas/Agena all is still going well. We're in the process of the final range safety command check between the Air Force Eastern Test Range and the blockhouse and the Atlas/Agena Launch Vehicle. That is, checking that the destruct system

aboard the Atlas/Agena will be acceptable for the flight. All systems still looking good, we are now at T-114 minutes 56 seconds and counting. This is Gemini Launch Control.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/11/66, 12:53 P. M. CST

This is Gemini Launch Control. T-110 minutes and counting in our overall simultaneous count. T-15 minutes away from the planned Atlas/Agena liftoff. It's due at eight minutes past the hour. All systems still going very well at both pads in the checkout of both vehicles and the Gemini 12 spacecraft. Astronauts Jim Lovell and Buzz Aldrin are now aboard the Gemini spacecraft and in the process of getting checked in and the various plugs connected. Some of the first checks they will make will be a communications check with the spacecraft Test Conductor in the blockhouse and "Stoney" the Capsule Communicator, who is one of our newest astronauts, Astronaut Stu Roosa. He spells his name, R o o s a. Following that there will be some final medical checks to ensure that we are getting satisfactory readouts from the sensors that both pilots are wearing. Meanwhile at Launch Complex 14, our countdown still continuing to go very well. We've received confirmation that two key tests during this final phase of the count has been completed. That is the Range Safety Command Test, the check of the destruct system of the vehicle, and an autopilot system check which we actually swivel those engines at the base of the Atlas vehicle in response to commands from the autopilot to ensure that they will perform properly during the powered phase of flight. All systems still looking good at 108 minutes, 34 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-105 minutes and counting. T-10 minutes and counting for the Atlas/Agena. We have just closed Buzz Aldrin's hatch and this was just followed by Jim Lovell's hatch also being closed. Both hatches are now closed and we are in the process of locking them up at the 100 foot level at Launch Complex 19. This came about 4 and one-half minutes early in the countdown, but this is the way the count has been going, excellently all day and the hatches are now closed. We will start our preliminary checkouts with the pilots. Down at Launch Complex 14, the Launch Mission Director, Merritt Preston, has just conducted a final status check of our launch readiness to fly the Atlas/Agena. All reports came back "Go" and this was the order that was given to the Launch Director at Complex 14. All systems still looking good. We are now some nine minutes away from the Atlas/Agena liftoff. It is due at eight minutes past the hour. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. We are T-100 minutes and counting. T-5 minutes and counting for the Atlas/Agena. The reports are coming rather fast now from both blockhouses on the rapid series of activities taking place. Astronauts Jim Lovell and Buzz Aldrin checking in with their communications checks and giving readouts of their biomedical sensors. Meantime, at Launch Complex 14, the Agena second stage, now has gone on internal power. That is, on its own batteries, and we are starting the last -- final five minutes of the count. Some of the highlights coming down from here will be the telemetry system of the Atlas going on internal power at three minutes and 30 seconds. We close that liquid oxygen boiloff valve at two minutes and 10 seconds. This will give us our complete load of liquid oxygen aboard the vehicle. Some 18,000 gallons. Now coming up on 99 minutes and counting in about two seconds. Mark 99 minutes and counting. T-4 minutes for the Atlas/Agena. As we come up to 98, the time will be five minutes past the hour. We will attempt to count that down for you. We are now three minutes and 47 seconds away. To continue down the latter stages of the countdown over about the last minute and a half, the launch vehicle test conductor in the blockhouse has been monitoring a series of ready lights on his console. There are about 20 of them and they will turn from yellow to green as these particular final events click off. We wind up at about the 19 second mark in the count. The test conductor presses the automatic sequencer switch, and we go on automatic sequence which is

completed with the ignition sequence of the first stage of the Atlas at the 4 second mark in the countdown with liftoff at zero. Now nine seconds away from three minutes and five minutes after the hour. 4, 3, 2, 1, mark. T-3 minutes and counting. Five minutes after the hour. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control, T-2 minutes and counting. T-2, all going well as the rapid series of reports are continuing to come in from the blockhouse at Complex 14. The liquid oxygen boiloff vent valve now has been closed. We now have a launch vehicle at Complex 14 standing about 103 feet and weighing some 267 thousand pounds. Now one minute and 38 seconds away from the planned liftoff. The Launch Vehicle Test Conductor now monitoring his lights and we'll get a rapid sequence of reports as these ready lights come on. All systems still looking good. We are now one minute and 22 seconds away from the planned Agena launch. Astronauts' Jim Lovell and Buzz Aldrin standing by in their spacecraft at Launch Complex 19 for the Atlas Agena launch. At T-1 minute and 10 seconds all systems still looking good. The water for the flame bucket at Pad 14 has been turned on it will start pouring out some 30,000 gallons a minute. T-1 minute and counting. T-60 seconds and counting. All systems still looking good. The sequence still continues to command. We have an Agena ready light, we have a range safety ready light, the final ready light has just come on. T-45 seconds and counting. All systems still looking good. T-40 seconds and counting. The crew continues to monitor in the blockhouse. Recorders

are now at the fast speed. T-30 seconds and counting, T-30. All our sequent lights appear to be on, T-24 seconds and counting. T-20 seconds and counting. T-15 seconds and counting, the sequencer is in we are on an automatic sequencer at this time. T-10, 9, 8, 7, 6, 5, 4, 3, we have ignition.

We have liftoff at approximately 8 minutes and o second past the hour. Everything appears normal up to now, in the Agena launch. Flight Dynamics Officer reports everything is looking good from his standpoint. We have an official liftoff time of 7 minutes 59 seconds past the hour. Tracking plot of the Agena Launch is following quite closely to the plotboard here in Mission Control. Some 2 minutes 11 seconds after liftoff we will have the booster engine shutdown. Range Safety says that everything is green. We are 1 minute 15 seconds after liftoff here. We are approximately 13 miles in height now, downrange is 12 miles. T+1 minute 45 seconds, everything is still looking good. Twenty miles downrange. Looks good for a booster engine cutoff. BECO or booster engine cutoff has been confirmed, now the 47,000 pound thrust sustainer engine will push the Agenad to near insertion speed, where upon the Agena propulsion system will place the Agena into orbit. This Atlas Launch Vehicle was the same type of Launch Vehicle which orbited four men and one somewhat apprehensive chimpanzee named

Enqs during project Mercury. We are now at 2 minutes 50 seconds after Agena liftoff. Some 105 miles downrange, 56.6 miles altitude. We are coming up now on 50 percent of the required velocity for insertion; 143 miles downrange, 70 miles altitude. Mark, 50 percent required velocity for insertion. 179 miles downrange, 77.9 miles altitude, - 200 miles downrange. All incoming data looks good according to the Flight Dynamics Officer. 260 miles downrange, 96 miles in altitude. Four minutes 29 seconds after liftoff. Flight Dynamics advises the Flight Director that we are looking good for sustainer engine cutoff. We've had confirmation of sustainer engine cutoff. Flight Director Glynn Lunney's comment here was that this was a great Atlas. Separation of the Agena from the Atlas has been confirmed. We are now 410 miles downrange, 124.5 nautical miles in altitude. (PAUSE)
495 miles downrange, 136 miles in altitude. We have had the secondary propulsion system initiated. The primary propulsion system should ignite in a few moments. We've had confirmation of primary propulsion system ignition. Speed looks good we are now 592 miles downrange at an altitude of 147.8. We've also had confirmation that the shroud covering the docking collar in the upper end of the Agena has been separated successfully. Guidance looks good for insertion into orbit. This primary propulsion system engine has a

thrust of some 16,000 pounds. Seven minutes and 10 seconds after launch. We are now at some 75 percent of the required velocity for insertion at 756 miles downrange, 157 nautical miles altitude. 810 miles downrange. Flight Dynamics says all data coming in looks real good to him.

END OF TAPE

Eight minutes and ten seconds. 910 nautical miles downrange, 160.9 nautical miles altitude. Apparently the Agena is right down the slot on the desired azimuth and the crossrange errors are quite negligible. The intended launch azimuth of the Agena was 83.32 degrees which is slightly north of east. Coming up on Primary Propulsion System cutoff. We're now a thousand and 60 miles downrange. We've had Primary Propulsion System cutoff. Flight Dynamics Officer advises Flight Director, Glynn Lunney, that they've had a good cutoff and everything looks good. We've had the antenna boom extended on the Agena. We're now at ten minutes and six seconds after Agena launch. Apparently we've got a perfect bird here in the Agena target and we're now standing at T-84 minutes and 47 seconds in the Gemini count. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston. T-77 minutes and 58 seconds into the Gemini count and T+17 minutes and 9 seconds after Agena liftoff. All of the events in the Agena launch were on schedule and comments around the mission control room here were beautiful. Apparently it was a very perfect launch, our initial tracking data through the Antiqua station of the Eastern Test Range, show that our orbit stands with a perigee of 159 nautical miles and apogee at 163 nautical miles. We switch back now to Launch Control at the Cape.

This is Gemini Launch Control. Now at T-77 minutes, 17 seconds and counting. During this excellent performance of the Atlas/Agena during its powered flight, Astronauts Jim Lovell and Buzz Aldrin have been busy at work in the spacecraft doing some of their preliminary checks. However, they were kept abreast of the major highlights and were told that we appear to have a very good Agena in orbit for them. During this period, after the hatches were closed, the two pilots proceeded to purge the spacecraft completely to its 100 percent oxygen atmosphere and did a series of other communication tests prior to the test that they are involved in right now. Both of them, and that's a final check of the switches in the spacecraft. A complete checklist of the switches to ensure that all of them are in the proper positions. Both Lovell and Aldrin, are reporting to the spacecraft test conductor on the location of all their switches. Our countdown continues to go well with the Gemini Launch Vehicle. The primary work during these

last ten minutes or so; however, has been primarily concerned with the spacecraft and the work of Aldrin and Lovell. About ten minutes from this time, the remaining crewmen who are in the White Room at the 100 foot level will depart leaving the spacecraft area free and ready a short time thereafter to start lowering the erecter at Complex 19. All systems still going well with the Gemini countdown. T-75 minutes, 49 seconds and counting. This is Gemini Launch Control.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/11/66, 1:33 P. M. CST

This is Gemini Launch Control. We're at T-70 minutes, one second and counting. All systems still going well with our Gemini countdown at this time. Astronauts Jim Lovell and Buzz Aldrin are participating in further tests with the Gemini spacecraft in the blockhouse at Complex 19. In the meantime, the crew that has helped support the two pilots during the final phases of the preparations now have cleared from the so-called White Room at the 100-foot level. Lovell and Aldrin now alone in their spacecraft aboard the 100-foot level and we are starting to gear up for the retro erector lowering which is due in about the 55 minute mark in the count some 14 minutes from now. However, with the count going very well it is possible this key event might occur a little bit earlier. We'll stand by to get further word from the blockhouse. In the meantime, the GE Burroughs Radio Command Guidance System which guided the Atlas/Agena into - the Agena - into its excellent orbit now has switched trades, if you will, back to support the Gemini Launch Vehicle. We have the same Radio Command Guidance System, the same techniques used to guide the Gemini Launch Vehicle on its powered phase of flight. Coming up shortly will be a key guidance command test with the Gemini Launch Vehicle which will simulate the complete ascent run of the launch vehicle working with the Guidance System, the two on the pad and the Launch Vehicle itself. All systems looking good. We are standing by for the next major event, which will

be word on the erector lowering. T-68 minutes, 30 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Mission Control Houston at T-62 minutes 57 seconds before Gemini lift-off. In our status of the world wide tracking network, we have one minor problem with radar system at Bermuda. However they can work the mission. Meanwhile, out at Canton Island, the high frequency transmitter apparently is not repairable in the near future. They have an estimated time of repair of 22 November. However this is not a mandatory item for the mission and will cause no problems. The Agena Target Vehicle at the present time is over the South Central portion of the continent of Africa and will come over the Carnarvon, Australia tracking station in approximately 19 minutes. We will switch now to launch control at the Cape.

This is Gemini Launch Control at the Cape. 52 minutes and counting. All systems still looking good. We have just gone through a status check at the blockhouse to determine how we stand as far as lowering the erector is concerned and all the crewmembers in the blockhouse reported they were ready for it. It is due about 5 minutes from this time. Astronauts Jim Lovell and Buzz Aldrin have been notified to expect the 138-foot erector will be coming down shortly. Just prior to this event we have opened the prevalves in the first stage of the Gemini Launch Vehicle. This permits the oxidizer or some oxidizer to flow into a stand pipe in the first stage system. The purpose of this stand pipe to

help supress possible vibrations that we could get in flight. This is the so-called "pogo" effect and this particular test has already been completed. We are now at T-61 minutes 8 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-57 minutes, 48 seconds and counting. A matter of about 30 seconds ago, we received a report from the blockhouse, that the erector was starting to move. It is in the process of now being lowered. This is done through a winch system at the complex that eases the erector down into its place for launch. This will take about eight minutes. The astronauts were appraised of it just prior to the first move of the erecter and we are still in a "Go" condition as far as the mission is concerned at this time. We are now aiming for a liftoff time for the Gemini Launch Vehicle -- that is a liftoff time of 46 minutes and 30 seconds after the hour. That is at 3:46 and 30 seconds, the Gemini liftoff. This should give us a hold time at the T-3 minute mark of about three minutes and 27 seconds. Once again, to repeat the planned launch time, 3:46 and 30 seconds p.m., EST. We are now at T-56 minutes, 43 seconds, as the erecter continues to come down. This is Gemini Launch Control.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/11/66, 1:54 P. M. CST

This is Mission Control Houston. We're now at T-48 minutes, 57 seconds and counting on the Gemini count. Meanwhile, the Agena target vehicle is some 46 minutes and 13 seconds en route. It will come over the Carnarvon, Australia tracking station in approximately four minutes from now. Apparently, everything looks, still looks real good with the Agena target vehicle. For the progress of the Gemini count we switch now to Launch Control at the Cape.

Gemini Launch Control at the Cape. We're now at T-48 minutes 22 seconds and counting. All still proceeding very well with the Gemini countdown. Astronauts Jim Lovell and Buzz Aldrin still making final checks in the spacecraft. They will start making some preparations shortly for a static test of the spacecraft Propulsion System which will come about 15 minutes or so from this time. In the blockhouse itself the crew continues to monitor various major functions particularly concerned with guidance at this point but all is still going well. We also have reaffirmation of a go from the weatherman with a weather forecast here at the Cape of partly cloudy conditions, winds from the southeast at ten knots and an offshore sea state at the Cape of about two to three feet and an expected temperature of about 80 degrees. All systems still going well. T-47 minutes, 29 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control at T-41 minutes and counting, T-41. We are still proceeding and we still have a good countdown at this time. The backup pilots' for Gemini 12, Astronauts' Gordon Cooper and Gene Cernan, now that they have left Complex 19 are here in the Mission Control Center where they will monitor the rest of the countdown and the early stages of actual flight. At Complex 19 itself the count still going well. Coming up shortly will be the programmed sequence test, one of the final checks of the primary and secondary flight controls for both the spacecraft and the Gemini Launch Vehicle. Also tied in on the test will be the crewmen in the blockhouse. During this test we actually do swivel or gimbal those engines in the Gemini Launch Vehicle in response to commands from the Guidance System. The astronauts are getting up in the spacecraft for a static test of the spacecraft propulsion system, where we actually fire the small thrusters on the spacecraft. That will be coming up about 15 minutes from this time, but they are going through some preliminary work in preparation for it at this point. We are now at T-39 minutes 50 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Mission Control, Houston. At T-34 minutes and 57 seconds in the Gemini 12 count. Meanwhile, the Agena target vehicle, now over the Carnarvon, Australia tracking station, has been in flight one hour and 16 seconds. The weather picture around the world shows that it is pretty well satisfactory for the first couple of days of the Gemini 12 mission. Across the Atlantic, during the first pass, we'll encounter extensive cloudiness and showers between the latitudes 50 and 60 degrees. In the mid-Pacific landing zone, northeast of Honolulu, the skies are partly cloudy and winds east 15 knots and seas 4 to 5 feet. In the west Pacific landing zone southwest of Tokyo, partly cloudy skies, winds northeast at 10 knots and seas 3 feet. The Eastern Atlantic landing zone, which is some 300 miles west of the Cape Verde Islands, partly cloudy skies, winds are out of the northeast at 15 to 20 knots, and seas 4 to 5 feet. In the primary landing zone in the western Atlantic, which is some 300 miles east of Miami, partly cloudy skies, winds north to northeast at 15 to 20 knots, seas are running 4 to 6 feet with heavy swells. At T-33 minutes, 25 seconds, let's switch now to Launch Control at the Cape.

This is Gemini Launch Control. And our checkout continues at Complex 19, still going well as it has all this afternoon and all this morning.since the count actually picked up. There have been no problems thus far in the general countdown or specifically with

the Gemini spacecraft itself. Just as we passed the 35 minute mark in the countdown, the master operations control system came into play. This is the automatic sequencer at Complex 19. However, it is not fully automatic until we get down to the T-5 mark in the count. From T-5 minutes down, it does become a complete, automatic sequence on the final checkout and leading up to the ignition of the Gemini Launch Vehicle. Prior to that time, the sequencer commands some 10 actions and monitors the performance of some 25 other functions as we continue to countdown. In the Gemini 12 spacecraft, Astronauts Jim Lovell and Buzz Aldrin continue to make their preparations for the so-called static fire of the spacecraft propulsion system. That is the orbit attitude maneuvering system which is used to power the spacecraft in orbit. We have some eight 25-pound thrusters that ring the adapter section of the spacecraft and we will test them in a matter of some five or ten minutes from this time. We are a little bit ahead on our countdown in certain activities at this time, mainly because the count has been going so well. Now at T-31 minutes, 49 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-28 minutes and counting. T-28. Our propulsion test with the Gemini spacecraft is in progress at Launch Complex 19. We are testing the small 25 pound thrusters that ring the adapter section of the Gemini spacecraft. We tested out - test out these thrusters in the modes in which they would operate in orbit. Those are the modes that are used to maneuver the spacecraft in orbit. The sequence goes as follows: We apply yaw left, pitch down, yaw right, pitch up, yaw left. This is a good test of these thrusters. The test is in progress at this time. It is being monitored by Astronaut Jim Lovell and Buzz Aldrin in the spacecraft and the crew in the blockhouse. In the meantime, with the Gemini Launch Vehicle itself, we are making one of the final checks, the malfunction detection system of the vehicle itself. All is going well with the test at this time. Now coming up on T-27 minutes and counting. This is Gemini Launch Control.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, NOVEMBER 11, 1966, 2:23 pm CST
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This is Gemini Launch Control, T-20 minutes and counting, T-20. All still going well at this point. We have completed our testing of the Orbit Attitude Maneuvering System, the propulsion system of the Gemini 12 Spacecraft and it appears to be very satisfactory. In the meantime the Flight Director Mr. Glynn Lunney has informed the Cape of the time he wants the Gemini Launch Vehicle to ignite. That is T-0 in the countdown and the time he gave is 46 minutes and 30 seconds after the hour. We will get liftoff about 3.2 seconds or so after we get the ignition. So our liftoff will be 3 seconds after 46 - 30 seconds after the hour, which will mean a hold time at the T-3 minute mark in the count of about 3 and one-half minutes. To repeat, we will have a built in hold at the T-3 minute mark in the count. The duration of the hold about 3-1/2 minutes. Aiming at an ignition time or T-0 of the Gemini Launch Vehicle at 46 minutes and 30 seconds after the hour. Our window in which to launch, that is, to make a third or fourth revolution rendezvous will end at 48 minutes and 53 seconds after the hour. So our complete window goes from 46 minutes and 30 seconds after the hour to 48 minutes and 53 seconds after the hour. Our checks are continuing in the blockhouse at Complex 19, they all appear to still be going well at this time. Now at T-18 minutes 24 seconds and counting. This is Gemini Launch Control.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/11/66, 2:29 P. M. CST

This is Gemini Launch Control, T-14 minutes and counting. T-14. With the Agena spacecraft in orbit now just travelling over the earth south of Hawaii, we are continuing our count here at Complex 19. All systems still are go. The Launch Vehicle Test Conductors just made a status check with all the various recovery elements, the recovery forces that are in the immediate Cape area, and these Department of Defense forces primarily all report that they are ready for the mission. Coming up will be a data link test of the Guidance System of the Gemini Launch Vehicle. This is between the ground guidance and the vehicle itself. We also have the launch vehicle Test Conductor confirm that we will have a built in hold at the T-3 minute mark in the count. The exact time of the hold coincided with the launch will be three minutes and 29 seconds. The countdown then will be resumed. We'll be aiming for a T-0 or ignition of the Gemini Launch Vehicle at 46 minutes and 30 seconds after the hour. Liftoff will come about three seconds thereafter. Now T-12 minutes, 50 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control at T-9 minutes and counting. T-9 and all aspects of the mission still looking good at this time. The Agena 12 spacecraft in orbit now southeast of Hawaii as it starts to make its approach to the west coast of the United States. Our latest ephemeral data, that is the apogee and perigee of the Agena spacecraft gives us the following numbers: an orbit of 163.6 by 159 nautical miles. Repeat: 163.6 by 159 nautical miles. A period of 90.48 minutes, 90.48 minutes. And the Agena has an inertial velocity of 17 294 statute miles per hour. This data will be applied here at the Cape and from the computers in Houston to give us the proper numbers for the guidance system, the Gemini Launch Vehicle and the spacecraft computer. The final update will come just after we resume our countdown after the 3-minute hold. Under this launch plan we will be launching on a flight azimuth of 100.6 degrees. At this point in the countdown, all still going well. Astronauts Jim Lovell and Buzz Aldrin has been advised to close in and lock their visors. They have reported this is complete. The spacecraft test conductor informed them that they were all set and wished them a good flight. Both pilots expressed their thanks. We are now at T-7 minutes 26 seconds and counting. We will have a built-in hold, a planned built-in hold at the 3 minute mark in the hold. We will hold for 3 minutes and 29 seconds in order coincide our launch with the now orbiting Agena. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control at T-6 minutes and counting. All systems still going well. We'll be coming up in about three minutes into our builtin hold. A major highlight occurring at the blockhouse at this time, a final status check of all aspects of the mission. The crewmen are now reporting back "Go" as their various systems are called out. All systems still functioning normally at this time. The Gemini 12 spacecraft now is on complete internal power. About two minutes ago it went on the power of its fuel cell system within the spacecraft itself. The final go will be given by Mission Director Bill Schneider and his turn will be the last one after he hears a report from all the other elements. A status report is still in effect at this time and all are reporting go. Now T-5 minutes, eight seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. We are about to go into our hold, just a second away. Mark. T-3 minutes and holding. T-3 minutes and holding. This hold will last three minutes and 29 seconds. We'll resume our countdown at 43 minutes and 30 seconds after the hour aiming for a T-0 or ignition of the Gemini Launch Vehicle at 46 minutes and 30 seconds after the hour. This will coincide our launch with the orbiting Agena spacecraft in order to help us to accomplish the planned third revolution rendezvous between the Gemini 12 spacecraft with Astronauts Jim Lovell and Buzz Aldrin and the orbiting Agena. We are now in the hold and the crew in the blockhouse as well as the crew in Houston are monitoring the various systems. All systems are still go at this time. Holding at T-3 minutes, this is Gemini Launch Control.

END OF TAPE

This is Gemini launch control....we are about to resume our countdown...mark T-3 minutes and counting T-3. We are on a complete automatic sequence at launch complex 19 at this time. Astronauts Jim Lovell and "Buzz" Aldrin have made final communications checks. We have also received a clearance from Air Force Eastern Test range to launch. As reported earlier we'll be launching on a flight azmith of 100 point 6 degrees. T-2 minutes 35 seconds and counting. This is Gemini Launch Control.

END OF TAPE

Gemini Launch Control at T-2 minutes and counting, T-2. All systems still go with the Gemini Launch Vehicle and spacecraft at this time. The Launch Vehicle and the spacecraft have received the proper updates, that is, the proper parameters for flight. These were the final versions fed to the Launch Vehicle and spacecraft just after we resumed our countdown on the T-3. Coming up at this point in just a matter of seconds from now, the Launch Vehicle will go on complete internal power. That is it's own battery power. Our countdown will continue down automatically to the zero mark when those two engines in the first stage will ignite, when they build up some 77 percent thrust the vehicle will be released for flight. They'll have a total of some 430,000 pounds of thrust with the Launch Vehicle on the pad. Now at T-1 minute and 9 seconds and counting. Another key test during the final phases that was just completed was a test - a final test of those engines in the Guidance System, and as we actually gimbaled those engines a final test of swinging them to insure they responded to the Guidance System. Now coming up on 50 seconds, MARK T-50 seconds and counting. The crew in the blockhouse now monitoring their consoles during these final phases. All reports come back good at T-40 seconds and counting. T-35, the prevalve has been opened

to permit the propellants to come down toward the chamber. There is only one valve which will open at zero. T-25 seconds and counting. T-20 T-15 seconds and counting. It is quite in the blockhouse as we continue to monitor at 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0. We have ignition.

And we have liftoff. Liftoff is approximately 46 minutes 36 seconds past the hour. The roll program has gone in which twist the Launch Vehicle over to a launch azimuth of approximately 100.6 degrees. The clocks are in sync, now the pitch program has begun. This will pitch the vehicle over to horizontal flight in a gradual manner to put it into a launch window of some 87 nautical miles high. Let's eavesdrop now on the air to ground conversation between the crew of Gemini 12 and the Flight Controllers on the ground.

HOU Mark, 50 seconds.

SC Ready to go.

HOU Roger, roger. You are looking good.

SC Houston, 12. Pressure holding at 5.75.

HOU Roger

Plot looks real good here in Mission Control. We are approximately 7 miles downrange and 10 miles in altitude.

HOU Mark, 1 plus 40.

SC 02

HOU Roger

Flight Dynamics says all data looks good on the Gemini 12 launch. Mission Control is go for staging.

SC All systems go for staging.

HOU Roger you are go for staging on the ground. Staging will occur at 2 plus 30.

SC DCS updated

HOU Roger, DCS

SC (garbled)

Initial steering on the second stage of the Gemini Launch Vehicle looks good. A perfect staging.

HOU You got good second stage thrust 12.

SC Roger.

Flight Dynamics says it is right down the middle.

SC Houston that delta p lights out now.

HOU Roger. You are steering right down the (garble)

SC Man this is a pretty good visual simulation here.

HOU How do you like that?

We are now some 193 miles downrange at an altitude of 70.4 nautical miles. Flight Director Glynn Lunney is polling the various positions here in the Mission Control Center. Everybody says go.

SC Houston, Gemini 12 (garbled)

HOU Roger, you are go here on the ground.

The plots in the - the trajectory plotboards on the front of Mission Control here are following almost on the money. Even better than simulations. Coming up on point 8, that is, when 80 percent of the required velocity for insertion ....

HOU Standby for point 8, 12.

SC Roger

HOU Mark, point 8.

SC Roger.

Coming up on second stage engine cutoff.

SC SECO

HOU Roger, ~~SECO.~~

HOU Roger, 12, you are go for IVAR

SC (garbled) 704

HOU You are go.

SC (garbled) 00032

HOU Roger.

SC Address 94, we used plus 00014

HOU Copy

We are now at 6 minutes 44 seconds after liftoff.

SC Bearing (garbled) 28 forward, 8 left.

HOU Roger understand 24 forward, 8 left. Is that correct?

SC 28 forward.

HOU 28 forward, roger copy.

The reference to 28 feet per second forward refers to the so called IVAR, or Insertion Velocity Adjustment Routine. Wherein the crew of the spacecraft will tune up the orbit after a second stage engine cutoff to take out any small under speed quantities in the launch vehicle. IVAR is another one of the many acronyms in the space business. However, these acronyms are quite accurate and make for a very concise conversation on the air to ground loops and other conversations here in the Control Center. We are now at 7 minutes 53 seconds after liftoff.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/11/66, 2:55 P. M. CST

HOU 12, Houston. Nominal one bravo.

S/C Roger, Houston.

Not much conversation between Gemini 12 and the ground at the present time. We're waiting for initial measurements on the Gemini 12's orbit. All the data incoming to Mission Control looks very good. This is Gemini Control Houston at nine minutes 48 seconds after liftoff.

HOU 12, Houston. You're in a 87 by 152.

12, Houston. You're in a 87 by 152.

Now one minute to LOS.

We're coming up on Loss of Signal at the Antigua station in the Eastern Test Range. As you heard on the air-to-ground the present measurements of the Gemini 12 orbit is 87 nautical miles perigee with a 152 nautical mile apogee. This is Mission Control at 11 minutes, 7 seconds after liftoff.

END OF TAPE

This is Mission Control Houston, 13 minutes 59 seconds after lift-off. Gemini 12 is well on its way into its 4-day mission the last of the Gemini Program. The official lift-off time was 46 minutes 33 seconds past the hour. We will now play back the taped voice communication between the Flight crew and the ground controllers during the launch phase.

10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1

ignition. Lift-off.

S/C Roll program.

FLIGHT Roger, roll.

S/C Pitch program.

FLIGHT Roger, the pitch. (PAUSE) Mark 50 seconds.

S/C ...

FLIGHT Roger, roger, you are looking good.

S/C This is 12 here. Gemini pressure holding 5.75....

FLIGHT Roger. 204633. Mark 1 plus 40.

S/C Mode 2.

FLIGHT Roger.

S/C ...

FLIGHT Roger.

S/C 12. Go for staging.

FLIGHT Roger, you are go for staging on the ground.

S/C DCS update in.

FLIGHT Roger, DCS.

S/C Okay.

FLIGHT You are looking good here 12.

S/C Lights... Gemini needles are going out nicely.

FLIGHT Roger. You got good second stage thrust off.

S/C Roger. All of them. Houston that delta P light is out now.

FLIGHT Roger, copy. You are steering right down the pipe.

S/C Man, this is a pretty good visual simulation.

FLLGHT How do you like that?

S/C ...

FLIGHT Roger, you are go here on the ground.

This is Mission Control Houston. We are now at 19 minutes 31 minutes after lift-off in the Mission of Gemini 12. We are standing by now for our acquisition at the Ascension Island tracking station in the South Atlantic. This will be a voice remoted conversation, that is, if there is any conversation between the crew of Gemini 12 and the spacecraft communicator, Pete Conrad, here in the Control Center.

No conversation as yet. We are still standing by. Pete Conrad is putting in call now. Let's listen in.

FLIGHT Gemini 12, Houston.

Gemini 12, Houston Cap Com. Over.

Gemini 12, Houston.

FLIGHT Gemini 12, Houston.

No response as yet from the crew of Gemini 12. But we will stand by.

FLIGHT Gemini 12, Houston. Gemini 12, Gemini 12. Houston on UHF. Over.

We have only got 3 minutes left in this pass over the Ascention station. Pete Conrad meanwhile, periodically puts in calls to Gemini 12. We are still standing by for any response.

FLIGHT 12, Houston. Give me a call on UHF-2 if you are reading me. Gemini 12 Houston.

END OF TAPE

HOU Gemini 12, Houston.

This is Mission Control again. Apparently, the contact between the spacecraft through the Ascension station is unsuccessful over VHF or UHF. We're one minute, a little less than one minute, to Loss of Signal at Ascension. Perhaps we'll be more successful through the Tananarive station later on. This will come at 34 minutes past the hour. Among the guests watching the liftoff from Mission Control here in the viewing room were the following: Ambassador Llewelyn Thompson who is Ambassador Designate to the Soviet Union, Ambassador George V. Allen, Director of the Foreign Service Institute, and a number of other State Department officials. At T plus 25 minutes, 32 seconds this is Mission Control.

END OF TAPE

This is Mission Control, Houston, at 34 minutes and 3 seconds after liftoff. At about this time, we should be acquiring the spacecraft from the Tananarive voice remoting station on the island of Madagascar. We are standing by now for any air-to-ground conversation between the crew of Gemini 12 and Pete Conrad here in Mission Control Houston.

HOU Tananarive, Houston.

Tananarive, Houston.

TAN Houston, Tananarive, go ahead.

HOU Tananarive, Houston. Go remote UHF.

TAN Roger. Tananarive, remote.

HOU Gemini 12, Gemini 12, Houston Cap Com through Tananarive, go reentry antenna, how do you read?

S/C This is 12. Read you loud and clear, now, Houston over.

HOU Roger. Did you have a comp problem or was it us?

S/C We didn't locate any problem here. Over Ascension, we tried -- we thought you were broadcasting, but we couldn't hear a thing.

HOU Okay, well we had a low pass at Ascension. Are you ready to copy your NC-1?

S/C Roger, ready to copy. We are on reentry antenna right now. We first heard your transmission on adapter antenna. Do you want us to stay in reentry?

HOU Yes, let me get the NC-1 to you and then we'll play with your radios.

S/C Go ahead, ready to copy.

HOU Roger. NC-1 - 49 + 40, Delta V - 66.6, Delta T - 1 + 28, yaw - zero, pitch - zero. Address 25 - 00666; address 26 - address 27 - all zeros. Thrusters aft,-maneuver posigrade.

S/C Roger, got it. Do you want to repeat GETB? ... + 40, Delta V - 66.6 feet per second, time = 1 + 28 seconds, yaw zero, pitch zero, address 25 - 00666, ...

HOU Okay that burn time was 49 + 40, I didn't get your copy, but I think you have it right.

S/C Roger, time = 49 + 40.

HOU Roger, your orbit is 87 by 146.

S/C Roger, understand the orbit ... by 146.

HOU Okay, now go back to adapter antenna there and give me a call please.

S/C Houston, Gemini 12 on the adapter antenna, do you read?

HOU Okay, I read you loud and clear. I think our problem was you low pass at Ascension. You can remain on adapter antenna and how's everything going?

S/C Roger, one small anomoly on the liftoff. Our secondary number two engine when we went up to about ... 5000.

HOU Okay.

S/C Can't we go on up to a higher level during the high G?

HOU I didn't copy that, would you say it again please?

S/C ...(garbled)

HOU You are breaking up pretty badly. You can pass it to Carnarvon.

CRO Yeah, Gene. That's secondary O_2 is closed and the other secondary O_2 is open for a flight burn.

HOU Okay.

This is Mission Control Houston. Apparently there will be no more con -- no further conversation between the Mission Control here and the crew of Gemini 12 through the Tananarive station. The numbers you heard being passed to the crew were for the first translation maneuver, the so-called phase adjust maneuver, which will occur at 49 minutes, 40 seconds after liftoff, which will be approximately one minute from now. As you were -- ten minutes from now. This will be a 66.6 feet per second posigrade burn. It will raise the perigee from the present 87 nautical miles to 119 nautical miles. For each two feet of energy added to an orbit, the orbit will be changed 180 degrees around by approximately one mile, from where the maneuver was made. At 40 minutes and 13 seconds after liftoff, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston 49 minutes 53 seconds after liftoff. The spacecraft is now in electronic contact with the Carnarvon Australia tracking station and the spacecraft communicator at Carnarvon has confirmed that they have begun the first translation burn for the later rendezvous with the Agena target vehicle. We are standing by for some conversation. The telemetry to the ground has indicated that the burn is now under way. This will be the 66.6 feet per second posigrade burn using the after firing thrusters on the Gemini space craft. Carnarvon has reported C-band track. We'll stand by to go live when we have direct conversation between the spacecraft communicator and the crew of Gemini XII. As of now there has been no attempt to call the spacecraft. Data from the tracking at Carnarvon has begun filter in to the Control Center here in Houston. We are still standing by for the spacecraft communication communicator at Carnarvon to put in a call to the spacecraft. Apparently they don't want to begin conversation while the crew is making this first burn. Again, this is the first phase adjustment maneuver to get the rate of closure between the Gemini XII spacecraft and the Agena target vehicle in to their proper relationship. The next maneuver is at approximately one hours and 44 minutes after liftoff, the so-called corrective combination maneuver. Carnarvon spacecraft communicator has just raised the crew let's join the conversation...

CRO Okay standing by for your go for 15 dash 1.

S/C Roger Gemini XII

CRO Go ahead...

S/C Would you report mark command at apparently our time?

CRO Okay, we'll do that.

S/C Gemini XII we'll go

CRO Roger, radiator is "go"...all systems are "go" here on the ground. You're go for 15 dash 1 Alpha. I give you mark GET at 54 minutes.

S/C Roger.

CRO 5 4 3 2 1 mark..this is 54 minutes.

S/C Roger (garbled)

CRO Say again 12.

S/C Roger, do you have some information on an out-of-plane burn?

CRO That's affirmative. You are "go" for your onboard solution for the plane change.

S/C Roger

CRO Okay, would you give me a PQI please.

S/C Roger PQI reading 85 percent.

CRO Roger.

HOU Carnarvon Flight. Gemini main OBC...., please. Carnarvon from flight.. Gemini main OBC please. Carnarvon from flight...

CRO Go ahead flight Carnarvon..

HOU Did you copy that send us a couple of Gemini mains and some OBCs....

HOU Carnarvon from flight...Did you copy?

This is Mission Control Houston again. Spacecraft Gemini 12 is still over the Carnarvon, Australia tracking station but the conversation on air to ground is relatively quiet now. You heard the PQI readout propellant quantity remaining. They now have 85 percent of their onboard thruster propellant still in the tanks. Since it is rather quiet pass here, this first pass over Carnarvon station we'll switch now to the Press Conference at Cape Kennedy. At 56 minutes 40 seconds after liftoff.....

END OF TAPE

This is Mission Control Houston. One hour, 18 minutes and 20 seconds after liftoff in the flight of Gemini 12. At the present time the spacecraft is over the Hawaii tracking station. Earlier, it was reported that the Carnarvon, Australia pass was completely nominal from all standpoints, systems, and crew. A few figures here on heartbeat rates. At one minute after liftoff the command pilot rates ranged between 120 and 126 beats per minute, and on the pilot, they ranged from 82 to 110. Earlier in this pass over Hawaii, the crew reported that there were no leftover numbers or residuals on their out-of-plane burn. In other words, they burned it right down to the zero point on their inertial velocity indicators. We have the tape of the early portion of this pass over Hawaii which we will roll now.

S/C Hawaii, Gemini 12. Just completed the out-of-plane burn and the residuals are nulled.

HAW Roger, thank you. We are going to start an accelerometer bias check at this time.

S/C Roger, understand. We are in prelaunch.

HAW Roger, thank you.

S/C Hawaii, this is 12. We are in the process of rotating back to zero, zero, zero. We are going to have to stop the rotation here shortly.

HAW Roger. As soon as you get the zero down, would you let me know and we'll start the accelerometer bias check at that time?

S/C Roger.

Roger, go ahead.

HAW Roger, 12.

S/C Hawaii, 12.

HAW 12, Hawaii.

S/C Roger. How much longer will this check go?

HAW We are just about to complete it here.

HOU After your next summary, we're satisfied, Hawaii.

HAW 12, Hawaii. That completes the accelerometer bias check.

S/C Roger, thank you. We're still yawing up somewhat.

HAW Roger.

We're showing him rolled over to about -- looks like 60 degrees and pitched up to about 50 degrees there.

HOU Roger.

HAW And for the yawing, he's correcting it now.

HOU Rog.

HAW 12, Hawaii. One minute to our LOS.

S/C Roger, Hawaii.

HOU And we'd like a Gemini LOS main please, Hawaii.

HAW Wilcox.

Looks like we've had LOS of the Agena.

HOU Roger.

HAW And we have a breakup with Gemini.

HOU Roger.

HAW Cryo O_2 tank pressure is going down, its right around 700 or maybe slightly under. They may have neglected to turn the heater on.

HOU Okay, we'll take a look at that when we come up.

HAW Roger.

This is Mission Control Houston. That winds up the pass over Hawaii station. In approximately two minutes, we'll start the first stateside pass over the -- starting with the California station and going down through the stations in the Eastern Test Range. At one hour, 24 minutes and 7 seconds after liftoff, this is Mission Control.

END OF TAPE

This is Mission Control Houston. Spacecraft Gemini 12 has come in contact with the Mission Control Center here through the California station. Let's join that conversation now. Standing by for further conversation between Gemini 12 and the ground.

Guymas remote, California local.

CAL California is local

This is Mission Control again. Let us back track a bit for the first portion of the stateside pass and get the first 40 seconds of contact between the California station and Gemini 12.

HOU ..... 002 pressure and we're standing by. We'll pass you the maneuvers when we get them.

SC Roger. Thank you, we're reading 550 on cryo 002 we'll ..... We have a solid lock on now, first range we're able to read out after the accelerometer bias was 235.52 miles.

HOU Roger. Looks like the radar meets respect.

SC I guess so.

HOU 12, Houston, you're accelerometers require no update. Everything looks good.

SC 12, roger.

That completes the first portion of this pass. We're standing

by for further communications between Pete Conrad here in Mission Control and Gemini 12.

This is one of the quietest first stateside passes in any mission we've had in quite some time. We're still standing by for conversation between Pete Conrad and the crew of Gemini 12.

Still standing by. Apparently the crew is involved with some onboard computations for some of their later maneuvers toward rendezvous with the Agena Target Vehicle. Pete Conrad said he is a little hesitant to talk to them at the present time but they are still standing by though. Before the state-side pass is completed we should have some additional conversation.

Texas remote, Guaymas local.

TEX Texas remote

GYM Guaymas local.

HOU 12, Houston.

SC Go ahead Houston, 12 here.

HOU Roger would you turn your ATM off.

SC Roger.

HOU Thank you.

HOU 12, Houston

SC This is 12 go.

HOU Roger. Your cutoff will be 16 percent.

SC Roger, 16 percent to cutoff and

we're standing by for our CSI and CDH updates.

HOU Roger, she's coming to us now. We'll be right with you.

Texas local.

END OF TAPE

HOU 12 Houston

S/C 12 "go"

HOU Roger, I have CSI ready for you.

S/C Ready to copy.

HOU Roger. GETB 01 + 47 + 52 Delta V, 7 point 6 Burn time Delta T 00 + 10 Yaw 10 right P pitch 27 up address 2500067 address 2690035 address 27 90011 thrusters aft posigrade up south:

S/C zero Y at zero one plus 47 plus 52 Delta V 7 point 6, duration 00 + 10 Yaw 10 right pitch 27 up, 25 is 00067, 26 is 90035, 27 is 90011, aft....

HOU Roger, that's a charlie on that posigrade up and south.

Roger and I have CDH for you if you are ready to copy.

S/C Roger, go ahead with CDH.

HOU Roger, GETB 02 + 22 + 54, Delta V 49.9 Delta T 01 + 06 Yaw 1 right pitch 4 up address 25 00498 address 26 90035 Address 27 90007 thrusters aft maneuver is posigrade up south

S/C Roger, Houston. CDH at 02 + 22 + 54 Delta V 49.9; durations 01 + 06; yaw 1 right 4 up; 25 is 00498, 26 is 90035;27 is 90007 thrusters

HOU Roger that's charlie.

12 Houston. 12 Houston.

S/C Houston 12, go ahead

HOU Roger, the temperature is going up on your frog eggs if you can get to the thermal cover without interferring would you put it on, please?

S/C Roger.

HOU Thank you. And 12 this is Houston, Could you give us a report on your left and right windows please.

12 Houston. Could you give us a report on your windows when you have a chance please.

S/C Roger,Pete...We got smudging.....staging still there adjusted the covers...the windows aren't bad though right now they are pretty good.

HOU Okay, thank you.

S/C Frog eggs are tucked in nicely.

HOU Thank you.

12 Houston. We have about one minute to LOS Your Delta H looks like 10 miles.

S/C Roger. Understand a 10 mile Delta H.

HOU Roger standing by.

END OF TAPE

This is Mission Control Houston. One hour, 47 minutes and 11 seconds after liftoff. Apparently we've had loss of signal at the Antigua station of the Eastern Test Range. Our next station coming up will be the Ascension Island station at one hour, 52 minutes after liftoff. This is a voice remoting station through Houston. We'll stand by for any possible conversation through this station. This is Mission Control Houston, out.

END OF TAPE

This is Mission Control Houston one hour 52 minutes 58 seconds after lift-off of Gemini 12. We are standing by for acquisition by the Ascension Island station, voice remoted through Control here in Houston. There will not likely be too much conversation. Spacecraft communicator, Pete Conrad, just put in a call saying he is standing by. The conversation will likely consist of a report by the crew of Gemini 12 that their last maneuver. Let's join that conversation now and stand by.

FLIGHT Gemini 12, Gemini 12, Houston standing by through Ascension.

S/C ...

FLIGHT Say again 12.

Gemini 12, Houston.

S/C This is 12, go ahead.

FLIGHT Roger, would you check your Agena control power circuit breaker and see if it is in the on position, please?

S/C ...

FLIGHT Say again, it is on, is that correct?

S/C ...

FLIGHT Could you say it again, slowly. You are broken up a little.

This is Mission Control Houston again. Apparently that is the extent of the conversation between Houston and the spacecraft Gemini 12 through the Ascension station. We are coming up on the Tananarive voice remoting station, which will occur in approximately 9 minutes. Pete Conrad just advised of the crew through the Ascension station that they have one minute until LOS. However, that likely will be the extent of the conversation. At 2 hours 33 seconds after lift-off, this is Mission Control Houston.

END OF TAPE

This is Gemini Control at two hours, nine minutes, 23 seconds after liftoff. At the present time we are waiting acquisition by the Tananarive voice remoting station. Tananarive does have acquisition at this time. There likely will not be too much conversation between Houston through the Tananarive station with the crew of Gemini 12. They're coming up in approximately 13 minutes on the coelliptical maneuver which will be 49.9 feet per second in a posigrade direction. Let's switch now to live air-to-ground.

HOU Roger

While we're waiting for further conversation between Pete Conrad here in Mission Control and the crew of Gemini 12, the translation maneuver or making the orbit coelliptical with that of the Agena, will take place at two hours, 22 minutes and 54 seconds after liftoff. The purpose of this maneuver is to raise the perigee to some 150 nautical miles. This in turn will place it in - the spacecraft - in an orbit of some ten miles lower than the Agena, and at this time will be trailing the Agena by some 60 nautical miles. We're still standing by for any further conversation from Houston through Tananarive to the spacecraft Gemini 12.

(PAUSE)

HOU Gemini 12, Houston. One minute to LOS, standing by.

S/C Roger, Houston.

S/C Houston, Gemini 12. We've got visual contact through the sextant at an access of 85 miles.

HOU Roger, 12, copy.

This is Mission Control Houston. We're coming up on - I think we have had Loss of Signal at the Tananarive voice remoting station. That was very sparse conversation but apparently the crew is very busy in calculating their next maneuvers for the rendezvous. The next station to acquire will be Carnarvon at two hours, 25 minutes after liftoff which will be approximately nine minutes from now. At two hours, 17 minutes and two seconds after liftoff this is Gemini Control.

END OF TAPE

This is Mission Control Houston at 2 hours, 25 minutes, and 3 seconds after liftoff. We've just had acquisition by the Carnarvon, Australia tracking station and we'll stand by now to join that conversation as it happens.

S/C ..00495.

CRO Okay, copy. We'd like a PQI also.

S/C Roger, PQI this time is reading 75 percent.

CRO Seventy-five, roger.

HOU Carnarvon from Flight.

CRO Go ahead, flight, Carnarvon.

HOU Did you read his 25, 26, and 27?

CRO Roger, 25 - 00495, 26 - 90065, 27 - 90001.

HOU Copy, thank you.

CRO Rog.

CRO Carnarvon has C-band track.

HOU Roger.

Could we have a Gemini main, please?

CRO Roger.

HOU And OVC's every 60 seconds.

CRO Roger, we're trying to do that. We're getting intermittent PCM-1 sync.

HOU Okay.

CRO No valid data yet. Radiators look go.

HOU Rog.

We still have some four minutes and 20 seconds of this Carnarvon pass remaining. We'll standby.

S/C We received our lock on our radar lockon at about 64 miles. Our radar powered circuit breaker is on. And we don't seem to be able to get anything on the encoder.

CRO Roger, stand by. Okay, we show you locked on here on the ground. We show you also at nav mode rather than rendezvous.

S/C We're on the nav mode. We're waiting to be sure we have a lockon.

CRO Okay. The Agena's receiving you evidently he's getting no indication of that.

S/C We're getting fluctuation in the analog ...(garbled)

HOU Carnarvon from flight.

CRO Go ahead.

HOU Do you want to read back what he said there? I'm having a hard time reading him.

CRO Yeah. Okay, he said the -- he's lost radar lock at about 64 miles.

HOU Got that.

CRO And he's trying to maintain lock again or get lock again, but he can't seem to get it. It is fluctuating a little bit, but we're receiving an L-band coder lockout down on the ground.

HOU Did he say his power circuit breaker was stopped?

CRO He says its closed, its okay.

HOU Closed, okay.

CRO We show that the Agena is receiving him. But there's nothing going back to the spacecraft, evidently. We've got a good RF power level/output indicating the transponder is okay also.

HOU Say again.

CRO I say the RF power level looks good.

HOU Okay.

CRO And that indicates the transponder is okay.

HOU Yes. As far as you can tell.

CRO Rog.

HOU Carnarvon, would you send us an Alpha summary please?

CRO Roger.

Gemini or Agena?

HOU Gemini.

CRO Rog.

HOU Carnarvon, flight.

CRO Go ahead.

HOU How does the AC look? Frequency? And voltage?

CRO Stand by.

Four minutes to LOS. How are you doing?

S/C Roger, still no lockon. We are getting a fluctuation on the analog still. It's going

back and forth, but we haven't had any lockon.

CRO Okay.

S/C Other than that, everything's okay.

CRO AC voltage is okay, flight.

HOU Roger.

And we need a contigency EZ on the Agena.

CRO Roger.

[illegible] This is Mission Control Houston again. At 2 hours, 32 minutes and 3 seconds, we've had loss of signal at Carnarvon, Australia tracking station. The spacecraft will be acquired by Hawaii at 2 hours, 49 minutes after liftoff, which will be some 15 minutes from now. We are still about an hour from the velocity match maneuver which essentially means rendezvous. This is when the spacecraft will match the velocity of the Agena and then move in quite slowly at some one to two feet per second for station-keeping and subsequent rendezvous or docking I should say. At 2 hours, 32 minutes, 44 seconds after liftoff, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston 2 hours 49 minutes and 55 seconds after liftoff. We're coming over the Hawaii station with both spacecraft at the present time. And waiting for contact between the spacecraft communicator at Hawaii with the crew of Gemini XII. At the present time the so-called co-elipticity, that is the average distance between the spacecraft Gemini XII and the Agena Target Vehicle ranges in altitude variation between 9.4 miles to 10.0 miles, which is .6 of a mile out of perfectly circular. Let's switch now to live air to ground and see what is said.

AFD Hawaii Cap Com AFD

HAW Go ahead AFD

HOU Okay, when you get your message they forgot to amperes GETB so please read up the GETB.

HAW GETB, okay. Let me see we need GETB..yeah we need to read up the whole works up here is that right?

HOU AFD away..

HAW GT 12 this is HAW, we have TM solid on you.

S/C Roger Hawaii, wish we had LOS solid on the Agena.

HAW You still having negative luck with all of that, huh?

S/C Posi..we're proceeding with a radar failure.

HAW Okay, if you have the opportunity at the present time to try some commands to see if you command

capability.

S/C Roger, go ahead.

HAW Okay, what we would like for you to do is give us SDP dim and break that's command 211 and 201.

S/C When you're ready go. Mark. Negative MAP light.

HAW Okay we have the function.

S/C Okay would you give us 201.

HAW Roger, sending 201. Mark.

S/C Negative MAP light.

HAW Roger, we have MAP on the ground. We also have (faded out) We're showing that command capability is working fine here on the ground.

S/C Roger, are you showing that we do have the dipole selected?

HAW That is affirmative. We do have the dipole selected.

S/C .....try a spiral

HAW Yeah, go ahead give it a try.

S/C Well, it doesn't look like that one was too good. That didn't help out too much.

HAW Okay, go ahead and go back to dipole. Your commands are going through fine.

S/C Yeah, we're getting a more steady lock on when we are on the spiral it looks like.

HAW Okay, stand by and I'll see what they want to do.

Whether they want to stay on spiral or dipole
Is he getting range and range rate?

S/C Dipole is the best right here.

HAW Still not getting any range information right?

S/C Well, it is intermittent. Let's see, right now I've got the latest one it's 34.58 miles.

HAW 34 point 58 is that right?

S/C Roger. That agrees approximately with our angle. Our angle is about 16 degrees, we've got visual on it now both to the sextant and the optical sight.

HAW Okay. Go ahead flight.

HOU We're just copying.

S/C Our angle is going to be a little bit later than nominal on that TPI.

HAW Okay.

HOU Frank, lower your set.
Hawaii from flight.

HAW Go flight

HOU You better read them up that TPI backup, GETB and the forward up down right and range and range rate.

HAW Rog. XII I have your TPI backup information when you are ready to copy.

S/C Ready to copy, go ahead.

HAW Okay, GETB 30551; Delta T 026, Delta V 22.8 forward Delta T 010; Delta V 3.2 up; Delta T

0.08; Delta V 2.7 right. Okay, your range will be 24.7 miles range rate 95 feet per second, at point charlie.

S/C Roger, understand GET a burn 30551; 22.8 forward 3.2 up; 2.7 right, range at point C is 2.47 95 feet per second.

HAW Roger. Okay, we've completed a tape on that. Would like to have some more information on your co-elipticity.

S/C Go ahead.

HAW Okay, it will be at 9 point 4 nautical miles to 10 point zero nautical miles and that will be almost at TPI or at time 3:04:27. 10 zero will be at that time.

S/C Roger, understand. What will be at TPI?

HAW 10 zero

S/C That's the 10 zero.

HAW Roger understand. The apogee would be at TPI.

S/C That's affirmative.

HOU HAW from flight

HAW Go flight

HOU The data is showing that the computer is accepting the radar data, how does it look to them now?

HAW It's okay, the information we're getting here on the ground is showing that the computer is accepting the radar data, how does it look to you now?

HOU Data is looking fairly reasonable are you showing a steady pass now...gotta go now remote.

HAW Think it's worth a try.

Flight?

HOU Less than a minute now.

Hawaii will have LOS in less than a minute now.

HAW Roger. What do you think about all that flight?

HOU Say again.

HAW Rog. He isn't really sure up there, he is standing by to see whether we should go in a rendezvous mode or stay in NAV.

HOU You're about 30 seconds to LOS.

HAW I don't think we have enough to know that it is working so we better stay in NAV.

HOU Okay, flight recommends that you stay in Nav. with it.

S/C Roger, we agree.

HOU Okay. I don't know we may have a little contact going here.

HAW We've had LOS with Gemini, flight.

This is mission control Houston, at 2 hours 58 minutes 31 seconds after liftoff. We have had LOS at the Hawaii tracking station. And within the minute we should have first contact through the California station which will be voice remoted from Pete Conrad here in Mission Control. And the second stateside pass of this mission. We're standing by for this first contact. Spacecraft Gemini 12 is nearing the end of its second revolution in this

four day mission. The last in the Gemini series. California is getting geared up to begin the reception and transmission with the spacecraft. We are standing by for acquisition of signal. Let's join the conversation now through the California station. The.....

END OF TAPE

HOU Let's join the conversation now through the California station. See how well it is operating and see if it will be of any help to you during your braking period.

S/C Roger.

(dead air)

HOU Guaymas remote - California local.

GYM Guaymas is remote.

CALIF California is local.

We are standing by here in Mission Control for additional conversation. Coming up on the terminal phase initiation at three hours and five minutes elapsed time which is approximately three minutes from now. This will be some 23.1 feet per second posigrade along the line of sight toward the Agena target vehicle. The spacecraft should be trailing the Agena by about 20 miles. The crew will make this maneuver when the Agena is at some 26.8 degrees elevation angle. We are still standing by here for additional conversation between the ground. Hopefully we will hear the actual burn and their comments about the thrusting.

HOU Texas remote - Guaymas local.

TEX Texas remote.

GYM Guaymas is local.

S/C Don't want to give any significant lock-up.

HOU Roger. Have you burned TPI.

S/C Sure, TPI was an on-board burn of 22 forward and 3 up was burned at .. when did you burn three up Buzz. Burned at 2 + 05 + 48.

HOU Okay, 12 say again, you burned 22 forward, did you burn the three up or not.

S/C Negative.

HOU Okay, you burned 22 forward, no out-of-plane and nothing up at 03:05:48 is that correct.

S/C This is 12, we burned 22 forward.

HOU Okay.

END OF TAPE

This is Mission Control Houston. Fairly silent stateside pass. We're still standing by for additional conversation. You heard the readouts of the last maneuver, the terminal phase initiation, 22 feet per second forward and an elapsed time of three hours, five minutes, 48 seconds. The crew apparently is still having intermittent lock on with the radar. They went briefly to the spiral antenna and are now back to the adapter antenna. However, the ground stations are getting confirmation of radar commands and so on. We're standing by for any additional conversation from the ground. We'll continue to monitor air-to-ground.

HOU 12, this is Houston.

S/C Go ahead Houston.

HOU As best as we can tell on the ground, it is updating correctly, oh, within eight seconds every once in awhile then to 40 seconds and I don't know what you're reading in the cockpit, but it doesn't look too good on the ground.

S/C Houston, first correction is two up.

HOU Roger, first correction two up.

S/C And Houston, we're getting no range rate or range analog at all.

HOU Okay, you getting anything out of the computer?

S/C Occasionally intermittent whenever we get a lock.

HOU Okay, and would you turn the encoder off, please,

we want to update the Agena.

S/C Roger.

S/C .....angle..... 393.

HOU Say again, 12.

S/C 29.51.....range rate.

HOU You're very intermittent, 12. Would you repeat?

S/C garbled

S/C We're now getting good radar data.

HOU You say you're getting good radar data?

S/C Affirmative. We're now getting good radar data.

HOU Okay. We were in the process of switching stations there and we couldn't read you too well.

S/C Okay, eight seconds to ...stand by for a midpoint angle... You might have known it, there's not a star in the sky up here. You still have inertial needles, don't we, Buzz?

HOU 12, this is Houston. You can put the encoder back on and you are transmitting UHF on intercom there.

S/C Roger. Roger, we're on VOX. Tell us if we're coming through clear enough.

HOU Okay, you're coming through. And would you leave the encoder off, please?

S/C Encoder's off.

HOU Thank you.

ANT Antigua AOS.

S/C Okay, we want three degrees at a minute and a half.

S/C That looks pretty good. Acq lights are showing up good.

S/C Range is coming in now on the analog but that range rate is lousy.

S/C Yes. Still nothing on the range rate here.

S/C Angle track is out of this world. Three seconds to reading.

S/C ...like she might be drifting.

S/C a little fast, huh?

S/C Got the stars now?

S/C ... drifting light?

S/C Thank you.

S/C I have a new star...66. Stand by for pitch.

S/C On my mark.359. 346. Okay, run three up.

S/C That's it now?

S/C That's right.

S/C That looked pretty good on the plot there. A little outside.

S/C You'llknow for sure when the range is valid.

S/C .... field of radar.

S/C Field of radar?

HOU	12, Houston. We show you're getting a little solider on the radar.
S/C	Roger, Houston. We are - range looks like it might be pretty good. Range rate is lousy.
HOU	Rog.
S/C	Ten seconds to reading.
S/C	Roger.
S/C	Now check the yaw on it this time, Jim.
S/C	Okay, rog. 31.
S/C	Range is 8.36.
S/C	Very good.
S/C	Yaw is 3591.....stand out very nicely. Got a star path out there now.
S/C	Good.
S/C	Got a range rate of 79.
S/C	Very good.
S/C	Sure is a bright acq light.
HOU	12, Houston. One minute to LOS. You can go encoder on.
S/C	Roger.
HOU	Have fun.
S/C	Okay, fifteen seconds to our midpoint.
S/C	Will be 70, 7.3, 74 feet per second. Range rate is okay now.
S/C	Range rate looks.....

This is Mission Control Houston at three hours, 21 minutes, 34 seconds after liftoff. We've had loss of signal at the - over the Eastern Test Range. We'll have acquisition by the Ascension Island station within about nine minutes. We'll stand by to come back on the air with any conversation with Houston through Ascension. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, 3 hours 29 minutes and 4 seconds after Gemini 12 liftoff. We are waiting now the acquisition of signal at the Ascension Island tracking station and conversation between the spacecraft communicator Pete Conrad here in Mission Control and the crew of Gemini 12. The actual rendezvous in this mission will occur at - during the pass over the Tananarive voice remoting station and we'll have a brief gap between the Ascension station and the acquisition at Tananarive. We will bring you the conversations over both of these stations as they occur. Let's standby now and wait for Pete Conrad to give the crew a call through the Ascension station.

HOU Gemini 12, Gemini 12,Houston standing by at Ascension.

SC (garbled) 2-1/2 degree burn.

HOU Gemini 12, Houston standing by through Ascension.

SC Roger Houston.

SC 6 feet per second (garbled) (garbled)
OK you can thank us we have brains. (garbled)
Need some space for them. (garbled)

This is Mission Control Houston again. The quality of the transmission through the Ascension station is so poor that we'll drop off of this pass and pick it up again over Tananarive and

hopefully it will be a little better quality at that time and we should be approaching rendezvous while over the Tananarive station. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, at three hours, 45 seconds after lift-off. We are now in contact with Gemini 12 through the Tananarive voice remoting station. Actually they should have completed their velocity match or breaking maneuver at this time. The docking itself will take place over the Indian Ocean prior to acquisition by the tracking ship Coastal Sentry which is South of Japan. Let's join the present conversation between spacecraft communicator Pete Conrad and Gemini Spacecraft.

HOU Gemini 12, Houston. Would you go to "push to talk" please.

S/C Hold it a minute Houston.

Okay, I got it finished now.

HOU Gemini 12, Houston, would you go to "push to talk" please.

HOU Gemini 12, Houston is standing by at Tananarive.

S/C Okay, ... (garble)

HOU Say again 12.

S/C Starting to roll around a bit. (garble) (broken transmission).

Hey, I think the old, I think (garble).....

Whew, what a burn.

HOU 12, Houston, would you go to "push to talk" please.

S/C (Broken transmission)

HOU 12, Houston, Do you read.

S/C Man, that baby is bright.

Alright, now let's see, let's get around to

see where we are going ... straight up aren't we. .... (garble) dark side any more.

HOU Gemini 12, Houston

S/C .... and the time....

HOU Gemini 12, Houston. Do you read.

S/C ... forward. Okay.

HOU Gemini 12, Houston

S/C .... time ... (garble).

HOU Gemini 12, Houston.

HOU Gemini 12, Gemini 12, Houston

S/C I still don't know what they ask about. ..... the Agena.

HOU 12, Houston.

HOU Gemini 12, Houston

HOU Gemini 12, Gemini 12, Houston

S/C Go ahead, pull around so I can see what the lights look like.

HOU Gemini 12, Houston

S/C 12,.... was lousy.... (broken)

HOU Gemini 12, Houston

S/C Gemini 12.

HOU Go to "Push to talk" will you and you are GO for docking.

S/C (garble)

HOU 12, this is Houston, one minute to LOS, you are GO for docking.

This is Mission Control Houston. As you heard the crew of Gemini 12 are in the so called "locks mode" on their transmitter, that is, the intercom is tied into the transmitter so that when they talk, they are actually transmitting to the ground. However, this prevented the spacecraft communicator here in Mission Control from reaching them. We will standby for the acquisition by the tracking ship Coastal Sentry for a word on the actual docking which should take place over the Indian Ocean within the next few moments. This is Mission Control Houston at 3 hours, 53 minutes, 49 seconds after liftoff.

END OF TAPE

This is Mission Control Houston at 4 hours 9 minutes and 3 seconds after lift-off. Spacecraft Gemini 12 and the Agena still undocked. Are now passing over the tracking ship Coastal Sentry, south of Japan. Let's join in on that conversation now.

HOU CSQ, what percentage on PQI 57?

CSQ Say again, Flight.

HOU What is the PQI readout - was that 5 - 7

CSQ 7

HOU 6 - 7

CSQ 7

HOU Great. Is he docked, CSQ?

CSQ That is negative, Flight.

HOU Okay, are you satisfied with the Agena?

CSQ Both vehicles are go.

HOU Okay, let him know that.

CSQ Okay. Gemini 12, CSQ.

S/C Roger, CSQ.

CSQ We are giving you a go for docking.

S/C Roger, thank you.

CSQ And I want to send you a TX. Do you want to place your TM switch to command and your

CSQ adapter C-band to command?

S/C TM to command, adapter C-band command.

CSQ Stand by for your fuel cell purge.

S/C Roger.

HOU CSQ, Flight.

CSQ Go ahead, Flight.

HOU Let me know when he docks.

CSQ Roger.

HOU And would you send us a Gemini main, please.

CSQ Gemini main.

HOU Roger.

CSQ Okay. Flight, CSQ.

HOU Go ahead.

CSQ We show the Agena in pitch, yaw rates high and we think that should be low. Rate low rather than rate high.

HOU That is correct, CSQ, it ought to be low, but why don't we just wait until we get docked there.

CSQ Roger. Flight, CSQ.

HOU Stand by.

S/C CSQ, this is 12.

CSQ Go ahead.

S/C We are docked.

CSQ Roger. Did you copy Flight?

HOU Roger.

CSQ Would you give me a cryo O_2 and H3?

S/C Roger.

CSQ Okay, would you give me an .... reading on page 2?

S/C Roger....now and the pressure is reading 550.

CSQ How about O_2?

S/C O_2 reads 97 percent and we are exactly ... psi I will pump it up a little.

CSQ Roger, and 1 minute until LOS.

S/C Roger.

CSQ You can turn your encoder back on.

S/C Roger.

This is Mission Control Houston. We have had loss of signal of Gemini 12 from the tracking ship Coastal Sentry. The actual time of docking was at a ground elapsed time of 4 hour 13 minutes and 53 seconds. The next station to acquire will be the Hawaii station at a ground elapsed time of 4 hours 25 seconds - 25 minutes which will be approximately 9 minutes from now at T+4 hours 16 minutes and 16 seconds, this is Mission Control Houston.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, NOVEMBER 11, 1966, 7:12 pm CST

This is Mission Control Houston at 4 hours 25 minutes and 53 seconds after liftoff on the Gemini 12 mission. We're standing by for acquisition of Gemini 12 Spacecraft - apparently still docked with the Agena, over the Hawaii tracking station. There should be a certain amount of conversation between the Spacecraft Communicator at Hawaii and the crew of Gemini 12. The Spacecraft Communicator is putting in a call now, let's join that conversation.

HAW — Mighty fine, you're looking good from down here. Have you completed gyrocompassing?

SC — Roger have completed gyrocompassing, we are now BEF, Agena 000.

HAW — Roger, very good.
We have one question, we had LOS at CSQ before you had completed your purge, how did the rest of the purge go?

SC — Roger, purge appeared to be normal in all respects.

HAW — Roger, very good.
Flight looks like computer is still on should I remind him that it's scheduled to go off about this time?

HOU — Say again Hawaii.

HAW Roger, the computer is still on should I remind him that it is scheduled to go to the prelaunch and then off at about this time.

HOU Just mention to him that the computer is still on.

HAW OK.

12, Hawaii. We're showing that the computer is still on.

SC Roger, computer coming off at this time.

HAW Roger.

SC We'd like to leave it on for the undocking here and then we'll turn it off right after that.

HAW Roger, you broke up there for a few seconds will you say again?

SC Roger, we'd ~~like~~ to leave the computer on until we've completed the undocking which we are going to start right away and then we'll turn the computer off.

HAW Roger, very good.

AFD Hawaii Cap Com, AFD, how is the tape dump going?

HAW It is in process at the present time, we have good solid TM should be no problem with it though.

AFD Roger

HAW Tape dump is completed.

HOU Roger.

HAW 12, Hawaii.. We show that you are undocked at present.

SC Roger Hawaii, we are sitting out about 2 feet away from the vehicle.

HAW Roger.

SC Hawaii this is 12. Please inform the people that the loop on the Agena tether is deployed and looking good.

HAW Roger.

HOU Houston, copy.

HAW 12, Hawaii will have LOS in about one minute.

SC Roger Hawaii.

HAW Hawaii has had LOS of both vehicles.

This is Mission Control Houston. We've had loss of signal from both the Agena Target Vehicle and the Gemini Spacecraft at the Hawaii tracking station. However, we've got something like one minute or less till acquisition by the California station from which Pete Conrad will talk to the crew. The spacecraft is nearing the end of its third revolution. During this state-side pass Pete Conrad will discuss with the crew a suspected problem in the Agena primary propulsion system. Apparently there was some erratic data during the insertion burn of the Agena. However, this is being - this data is being looked at very closely by Air Force and Contractor personnel and the

decision as to what modifications will be necessary will come up after these discussions. Let's join now the conversation between Pete Conrad and the crew during the stateside pass.

HOU .....turn your X-ray on when you are ready.

SC Roger will do.

END OF TAPE

Just prior to joining the conversation here between the Mission Control Center and the Gemini 12, the report was received from the crew that they are now undocked. There are several dockings and undockings by both crew members during this period of the mission. We'll stand by now for further communications between spacecraft communicator "Pete" Conrad who tonight is wearing his cap presented him aboard the Wasp at the conclusion of Gemini XI. The blue cap with the "scrambled eggs" on the brim and the Gemini XI "Pete" insignia on it. We're standing by for further conversation.

CONRAD You letting "Buzz" fly that thing now?

S/C What say Houston?

CONRAD I said, you letting "Buzz" fly that thing now?

S/C Yes, we're all having plenty of opportunities. He hasn't used up his share of the fuel yet.

CONRAD Yeah, watch him, he's a time hog.

S/C I'm seeing that. We're right around to the tail end of the Agena now, looking right up the engine.

CONRAD You can really put that thing where you want to can't you.

S/C Roger and did you get the word about the Agena tether. It's solid and waving in the breeze.

CONRAD Yeah, we got the word.

HOU Guaymas remote California local.

GYM Guaymas remote

Calif	California local
HOU	12 Houston
S/C	Go ahead Houston.
CONRAD	We seem to have a little problem with the frog egg experiment and they would like the pilot to reach up there and "jiggle" the electrical connector to the box while we're looking at you.
S/C	Roger, will do. We'll "jiggle" the electrical connector.
CONRAD	Thank you.
S/C	Just getting a chance to do some flying.
CONRAD	Say again.
S/C	I just had a chance to do some flying.
CONRAD	Sorry about that.
S/C	What electrical connection did you have in mind.
CONRAD	The one that goes in to the back of the box.
S/C	Okay, it's being pushed and pulled.
CONRAD	Okay.
FD	Texas remote Guaymas local
HOU	Texas remote
GYM	Guaymas local
HOU	12 Houston
S/C	Go ahead
Conrad	Roger, Jim, we have seen an anomaly in the PPS engine when it was being burned into orbit and

we're still going over the data right now. And the problem appears to be one that indicates possible turbine pump trouble and we're going to give you a "go" a little bit later whether you can make the PPS burn or not. We'll keep you advised and we're still looking at the data right now.

S/C Roger, understand a problem in the turbine right now....until you want us to go later on.

Conrad That's affirmative.
12 this is Houston we have about one minute to LOS, you got anything?

S/C Negative Houston, we're coming in to position now.

CONRAD Okay this is the last time we'll talk to you through the states, Have Fun.

S/C Roger, thank you for your cooperation.

CONRAD You're welcome. And 12 this Houston you can turn your quantity.....(faded out)

END OF TAPE

HOU 12, this is Houston, you can turn your quantity - cryo quantity switch to OFF now.

S/C Roger, thank you Houston, has my wife had that baby yet.

HOU Yea, I think so, it was during some flight. I talked to both of them and they are extremely pleased with your rendezvous.

S/C Who turned the radar off.

HOU Joe Shea said he didn't.

S/C Tough luck.

This is Mission Control Houston. That winds up the Stateside pass on this third revolution. The spacecraft will begin its fourth revolution in a few moments as it crosses the longitude of Cape Kennedy. There will be a very low elevation angle pass over the tracking station Rose Knot which is hove to off the West coast of South America. The pass will only last some three minutes and thirty-two seconds, We will standby for any conversation during that pass. At 4 hours, 47 minutes and 33 seconds after liftoff, this is Mission Control Houston.

END OF TAPE.

RKV RKV...

HOU Roger.

RKV We show them as being spacecraft free.

TM is breaking up pretty bad.

AFD, RKV.

AFD Go ahead.

RKV Okay, our TM doesn't look very good at all.

AFD Roger.

RKV Our TM completely out of contact with him.

AFD Roger, you can forget about the tape dump, then.

RKV Roger. Gemini 12, RKV. Gemini 12, RKV.

S/C Gemini, RKV.

RKV Okay, we are having a little bit of trouble locking up on your TM. I will give you some information while I have got you though.

I would like to confirm that your X-ray is on.

Do you copy?

S/C ...RKV.

RKV Gemini 12, RKV. Did you copy?

Gemini 12, transmit in the blind. I would like to confirm that you have the X-ray in the on position...and I would like to advise you that the experiment time for Mike 408 is nominal.

RKV We have LOS minus 1 Gemini 12.

S/C Roger, stand by. We are having a little trouble with the control.

RKV RKV, Flight. He has pitch and roll high, excessive ...fuel high. He reports he is having a little bit of control trouble. We have not had real good telemetry as yet on Gemini.

HOU Roger.

RKV He is configured FC-1 000.

HOU Copy. His problem was in roll?

RKV Pitch and roll are still high. We have LOS Agena.

HOU Roger.

...07 cryo O_2 tank pressure is reading 674 psi.

HOU Roger. Send us an LOS main?

RKV Roger roger.

HOU And would you give us a read back on what the crew said to you, as for their control problem.

RKV Roger, all he reported was that he was having control problems and never did get good contact with me and we never did get good telemetry.

HOU Roger, copy.

RKV AFD, RKV.

HOU Go ahead, RKV.

RKV They were undocked. Spacecraft free and rigid.

HOU Roger, understand. Can you make a tape playback on that conversation and send us in verbatim what they said?

RKV Roger, will do.

HOU Roger. RKV Cap Com. AFD.

RKV AFD, RKV.

HOU Roger, send us a Gemini Alpha.

RKV Roger. On its way.

HOU Roger. RKV, Flight.

RKV Flight RKV.

HOU Were they undocked your whole pass?

RKV That is affirmative, Flight, undocked the whole pass. I believe the only comment they made at all and this is the only transmission I have from them that they were having a slight control problem.

HOU Okay, and what did you see on the ground.

RKV Okay, we show the spacecraft to be free and the cone was rigid. The vehicle was within deadbands. Pitch horizon sensors were off-scale high, roll horizon sensors were off-scale high and the position was within the deadband on the Agena.

HOU You said pitch and roll horizon sensors were off-scale high, but that you were within deadbands?

RKV That is affirmative. And it looks like we have some pretty healthy heart rates.

HOU Say again.

RKV It looks like we have some pretty healthy heart rates. Copy?

HOU Yes,.but you were still within deadbands?

RKV That is affirm. That was according to the position gyros.

HOU Say again.

RKV That was according to the position gyros.

HOU Okay, let me come back to you RKV.

END OF TAPE

This is Mission Control, Houston, at 5 hours 20 minutes 50 seconds after liftoff. Spacecraft Gemini 12 at the present time, is over the Tananarive remoting station. Let's cut in now and join the conversation.

S/C Secondary roll gyro. Got it back again and we've docked here towards the end of the night. We've only got about 4 minutes of M-408 experiment which we're doing now and we've just completed that will be it.

HOU Roger, did you confirm that you had a primary rate gyro problem or what?

S/C No, we didn't. We set back the primary rate gyro. What we might have done, in the night docking was to steer the Agena since we were not in the regional position but was actually rotating around, and we had to let it tap itself out for awhile and then we came back in.

HOU Okay, you were in FC-1, huh?

S/C Yes, I confirm FC-1 and it looks like a slight disturbance with that Agena if we don't get docked because of the radar.

HOU I see. Could you give us a PQI reading and also would you check you're cryo O2 pressure please.

S/C Cryo O2 is reading about 660 PSI and the PQI is reading about 56 percent. We're a little low and

contemplating forgetting about the second docking practice to save fuel.

HOU Roger, we concur. Are you satisfied with your control system now?

S/C Roger, it appears that our control system is adequate at this time. We're not too sure. We're still in the flight path and occassionally disturb the Agena. We're trying to fly with the Agena and it makes us feel like we might have had a control valve.

HOU Okay.

S/C Houston, 12

HOU Go ahead. Go ahead 12, this is Houston. Gemini 12, this is Houston, go ahead.

S/C Roger, Houston, we are contemplating another docking just to try our control system again. The Agena doesn't seem to be maintaining its position to accurately, and we noticed that in the daylight. It moved about 40 degrees off .

HOU Okay. Are you still in flight control mode 1?

S/C Roger, we are in flight control mode 1.

HOU 12, this is Houston. Gemini 12, Houston.

S/C Go ahead, Houston.

HOU Roger, Jim, when it gets off like that in FC-1, it doesn't come back very fast, why don't you go to FC-2 and gyro compass to your head and set up the commands

to gyro compass in FC-2 to what you want?

S/C — That sounds like a pretty good idea.

HOU — 12, this is Houston. Have you been using rate command for your station keepings and dockings, or did you do them at pulse or what?

S/C — This is 12. We've been using pulse and on our final docking maneuver we went to rate command. That's when we thought we had the discrepancy. While we were undocking and trying to figure out what was wrong, we went to rate command to see what the situation was.

HOU — Okay. When you undock, are you using your maneuver thrusters to undock with?

S/C — That's affirmative.

HOU — Okay. Listen, we found that if you undock, don't touch anything, just send the undock command and the TDA will shove you out, and you don't have to use any control at all. You can just set it in rate command, and hit "undock", and it will push you out just fine. You may be disturbed at FC-1 with your forward firing thrusters.

S/C — Roger. We read you.

HOU — 12, this is Houston.

S/C — Go ahead.

HOU Why don't you go ahead and gyro compass in FC-2 and see if that's doing the job for you and that you get it all back to where it should be.

S/C Roger, will do.

HOU And then, you can go ahead and do your undocking again if you feel that you have the fuel and I recommend that if you do it this time, when you send the undock command, just let the TDA push you out. You don't need to fire the forward-firing thrusters to back out of there.

S/C Roger.

HOU What we'd like you to do when you undock, is do it over the CSQ, which will be your next station. Just back on out to assure yourself that your control systems are okay and then you can go back and redock.

S/C Roger.

HOU Gemini 12, Houston.

S/C Go ahead Houston.

HOU We have one minute to LOS, and before you undock, we will give you GO for that over the CSQ. We'd like to look at you a little bit.

S/C Roger. Take a look at the Agena too.

HOU Yes, that is what we're doing. I think if you'd been backing out using your forward firing thrusters in FC-1, you might upset the Agena.

TAN Tananarive, LOS

This is Mission Control, Houston. 5 hours 29 minutes and 30 seconds

after liftoff. We've had loss of signal at the Tananarive remoting station. The next station to acquire the spacecraft will be the tracking ship, Coastal Sentry. And at ground elapsed time of 5 hours 42 minutes. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston 5 hours 41 minutes and 59 seconds after liftoff. We're momentarily expecting contact with the tracking ship Coastal Sentry and we'll stand by here to listen in on that conversation at it occurrs. Still got a few seconds yet to acquisition. The spacecraft is still docked with the Agena Target Vehicle and during this pass over the CSQ there will do an undocking and run some tests on the control systems of both the spacecrafts. They have acquisition aid contact from the CSQ at this time. They have solid telemetry both vehicles from the CSQ. Still standing by here for voice communication between the CSQ and spacecraft Gemini XII. Both vehicles are "go" on the ground, there's still no voice communications. We're standing by for the communications between the CSQ and the spacecraft Gemini 12.

S/C Come in CSQ

CSQ Go ahead.

S/C Roger, you're right the sensors on the Agena are in high gate

CSQ Roger.

S/C That's low gate flight not high gate, low, low gate.

CSQ Okay .

S/C Gemini 12 CSQ
This is low CSQ

CSQ Roger. Both vehicles look good. We would like to go ahead and undock and like to do it slowly.

S/C Roger, be informed that 44 and 30, we just got on two fuel cells Delta P light

HOU Roger.

S/C What's your onboard pressure now?

HOU Well, let's solve that one first. CSQ.

CSQ Roger.

HOU How do the fuel cells look to you?

CSQ We're looking at them right now.

HOU Would you send us a summary please Gemini soon.

CSQ Roger, we'll send you another main.

S/C CSQ this is 12 do you want us to undock over your station.

CSQ Let's take a look at these Delta P lights first.

S/C Okay

HOU Does it look alright to you CSQ?

This is flight CSQ....come in CSQ

CSQ Come in flight go ahead

HOU Okay, the O_2 and H_2 pressure differential is okay. We can't tell the O2 to water.

CSQ Okay, do you have any bi-levels ?

S/C That's affirmative.

CSQ What are they saying?

S/C They're both on.

CSQ Which ones?

S/C That's Baker Baker 03 and Baker Baker 04

HOU	Okay , CSQ can you verify unit 2 SPS temps
	Baker 271
S/C	Roger
CSQ	PCM counts
S/C	CSQ Gemini XII
CSQ	Go ahead XII
S/C	Roger, the fuel cell Delta P just went up
	No change in the Delta P area
CSQ	What was it?
S/C	That was it.
CSQ	Roger, both H2s are reading about point 55 and
	H_2O readings are both one to two or about 2.1
	point 15.
HOU	Roger
CSQ	Roger, copy.
HOU	Affirmative.
HOU	CSQ flight
CSQ	Go ahead flight. Proceed with the undocking
	and take a look at the control system.
HOU	Baker 271 reads 88
	88
CSQ	Agena PCM count.
HOU	Roger, and CSQ we need another Gemini main.
CSQ	Roger.
HOU	Bill, did you tell them to go ahead with the
	undocking in the control system.

CSQ Roger, I've got something here I don't quite understand flight. Give me a chance about 30 seconds or so.

Flight CSQ

HOU Go ahead

CSQ Okay, I've got indications that all the attitude maneuver thrusters, I've got the vent lights on in all cases maneuver and attitude thrusters.

HOU Then that means the power switch is off doesn't it?

CSQ Roger.

HOU Okay, let's get this undocking under way so we can get an evaluation at you or at Hawaii.

CSQ Okay, you going to do it at Hawaii.

HOU No, have them go ahead and do it and see how it looks to them.

CSQ Okay. 12 CSQ

S/C CSQ 12

CSQ Go ahead and undock.

S/C Roger.

HOU How does it look CSQ?

CSQ He's still docked.

HOU 30 seconds to LOS Gemini 12

S/C Roger, we're doing this as fast as we can.

CSQ Flight CSQ

HOU Go ahead

CSQ You want to hold off this undocking until Hawaii?

HOU Yes, let's hold it off.

CSQ 12 this is CSQ

S/C This is 12 Bill

CSQ Let's hold off on the undocking until you get to Hawaii.

S/C Roger, we're holding off till Hawaii.

END OF TAPE

This is Mission Control Houston at 6 hours 1 minute and 13 seconds after lift-off. We are approaching now the Hawaii tracking station. We should acquire in the next few seconds. Meanwhile, the decision has been made here in Mission Control to omit the primary propulsion system burn of the Agena target vehicle which would boost the combined vehicles to an apogee of some 400 nautical miles. The earlier mentioned problem with the engine turbo pump is apparently of enough concern to where it has been decided not to continue with this portion of the flight plan. The secondary propulsion system unit 2 of the secondary propulsion system will be used at a ground elapsed time of approximately 7 hours 5 minutes, in retrograde, some 54 feet per second delta V. This will place the spacecraft in proper phasing for the solar eclipse Sunday morning. However the hatches will remain closed during this experiment or during the eclipse and there will be no ultraviolet photography possible. Let's join the Hawaii-to-spacecraft Gemini 12 conversation at this time.

S/C Roger, be informed that while we are under Agena control flight control mode 1, that we have actually rolled about 15 degrees during this pass between CSQ and Hawaii.

HOU Roger, Okay.

S/C Roger, we will commence with the undocking.

HOU Okay. Hawaii, Flight.

HAW Go Flight.

HOU He said he rolled 15 degrees in flight control mode 1.

HAW We concur on the ground here too.

HOU Does he think it is an Agena problem? Did he have the OAMS off?

HAW Yes, he had the OAMS off, there is no doubt about it.

HOU And he rolled 15 degrees in flight control 1?

HAW That is affirm. Strictly out of the Agena.

HOU And how is pitch and yaw?

HAW They look good from here. It looks like it is just roll.

HOU Okay, any way of telling what you think it might be?

HAW Okay, we have got an indication of spacecraft free.

HOU What?

HAW It looks like he starting to undock.

HOU Okay.

HAW No, we don't know what it is yet, Flight. Gyro 2 turned back on. On the spacecraft. No thruster firing on the spacecraft at all.

HOU Roger, Hawaii.

S/C Hawaii, this is 12. Undocking successful.

HAW Roger, very good.

S/C I was able to give our control a slight workout before we redocked to see if there is anything wrong.

HAW Okay, we are standing by.

S/C Touchdown. Down firing thruster.

HOU Hawaii Com. Flight. Send us Gemini continuancy Alpha's during the control exercise.

HAW Okay.

HOU How does it look to you?

HAW Looks good, doesn't seem to be any problems at all.

HOU What is the Agena doing? Holding in roll?

HAW We had quite a lot of thruster firing on jet no. - that is still off on roll. The Agena thinks it is coming back in now.

HOU Okay.

HAW It looks like we are going to miss our dump on the Agena here.

HOU Okay. Can you send us a couple of Agena sums please?

HAW Which kind? A lot of yaw left activity here at the present.

HOU Where? Spacecraft or Agena?

HAW Spacecraft. No, it is looking okay.

HOU What control modes is he using now? Hawaii.

HAW We are showing rate command.

HOU Okay.

HAW Okay, we are going to send reset timer reset command.

HOU Okay.

HAW 12 Hawaii. At the present time we are transmitting reset timer reset to the spacecraft - I mean to the Agena.

S/C Roger.

HAW Okay, you can turn your encoder back on.

S/C Encoder was on, Hawaii.

HAW It was? Oh Oh, we have indication on the ground that it wasn't. Flight we are not showing encoder lock at all on the ground. We sent the command and it was verified.

S/C The encoder has been on.

HOU He said the encoder was on?

HAW Yes, it is obvious it isn't at all or at least it isn't locked on.

HOU Okay, he thinks the encoder is on from the switch and we are getting commands through.

HAW Hold on. The control mode looks real good.

HOU Okay.

HAW 12, Hawaii, you might be advised that our command got into the Agena okay.

S/C Roger, you feel there is anything wrong with our encoder?

HAW Yes, it kind of begins to look that way.

HOU Well, he has had satisfactory control with it has he not, Hawaii?

HAW Well, I don't know whether he has done any controlling recently. I will check right here. 12, Hawaii. Have you done any controlling recently, oh oh, it locked now.

S/C Say again, Hawaii.

HAW We are showing encoder locked at the present time.

S/C Okay, roger. We concur.

HAW Roger. Okay.

HOU What does he concur with, that it is on?

HAW Yes, he concurs it. Apparently he did have it off.

HOU Okay.

HAW Pitch horizon sensor showing off-scale low.

HOU Okay, is he satisfied with the control system?

HAW 12, are you satisfied with the control system?

S/C Roger, we checked it out and pulse and rate command and the control system is go.

HAW Okay, it looks like you turned it back off.

HOU Okay, would you tell them about the PPS.

S/C ...control system is off.

HOU And the SPS phasing for the eclipse.

HAW Okay. 12, Hawaii. You are no go for the present time on the PPS burn. Instead of doing that we are going to do an SPS retrograde burn of approximately 54 feet per second at an elapsed time of 5 - 7 hours 5 minutes and this is to rendezvous with eclipse at roughly 16 hours.

S/C This is 12. Let me see now. We are no go at the present time for a PPS burn and we are going to do a retrograde SPS burn at about 7 hours 5 minutes to rendezvous with ....

HAW That is roger and it will be a 54 foot per second burn.

S/C Okay. Roger, the eclipse sky goes after all.

HAW Yes, it kind of looks like it.
I don't know Flight, we are still a little unhappy with this Agena.

HAW Thinking about it. We are thinking about it some more.

HOU What do you mean?

HAW Oh, it looked like it was coming back in but it seems to be wondering around. 12, Hawaii, we will have LOS here in about another 30 seconds.

S/C Roger, Hawaii.

HOU Ask him how he likes the Agena. Are you talking about the roll axis?

HAW Does the Agena look stable to you from where you are?

S/C This is 12...

HAW LOS Flight.

This is Mission Control Houston. We have had loss of signal at Hawaii station. The apparent problem in the control system seems to have been resolved as being either the thrusters from the Gemini during the undocking causing the Agena to move about a bit or physical bumping of the Agena by the nose of the spacecraft which caused the erratic attitude indications on telemetry at the tracking ship Rose Knot at the beginning of this last revolution. As further flight plan updates come along we will pass them up to you on the exact times of the secondary propulsion system burn during the upcoming pass over the tracking ship Rose Knot. There is an eat period scheduled at 6 hours 11 minutes and 33 seconds after lift-off. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, six hours, 27 minutes after liftoff. We have had electronic contact with the spacecraft Gemini 12 from the tracking ship Rose Knot. Flight Director Glenn Lunney at the present time is issuing instructions to the spacecraft communicator on board the RKV for passing up to the crew. Let's join that conversation now.

HOU 425 is 90430, the VM word, the index 531 and from LSB to MSB 000 100 101 000 000.

RKV Roger, I'll read back.
531 000 100 101 000 000.

HOU Roger. Have your man confirm that that is 43 feet a second , have the crew toggle in and verify it.

RKV Roger, Roger.

RKV Okay, we have both vehicles in GO and heading 000 .... Agena.

HOU Say again RKV.

RKV We can tell the Agena is 000, FC-2, both vehicles GO.

HOU Roger

RKV Gemini 12, RKV

S/C Go ahead RKV, 12 here.

RKV Okay, I have information for your burn, ready to copy.

S/C Roger, standby one.

RKV Is that an SPS Unit 2 burn on the Agena.

HOU That's right, that's affirmative SPS Unit 2.

RKV Roger, Purpose - horizontal retrograde burn GET 07 05 06, Delta V 43 feet per seconds. Delta T 51 seconds. 2590430, thrusters SPS unit 2. Your VM word that you toggle in will be 531 000 100 101 000 000. Did you copy.

S/C Roger. Understand the purpose of the burn is a horizontal retrograde SPS. GET of the burn is 07:05:06, Delta V 43 feet per second, Delta T 51 seconds. 2590430, thrust 26270, thrusters SPS Unit 2. Maneuver and retrograde VM word 531 000 100 101 000 000.

RKV Roger, you copied correct.

HOU Have him go ahead and load the VM and verify it.

RKV Roger, would you load the VM and verify it.

S/C Roger.

RKV ... garbled ... on dock. S-Band wide, purge is low. 000.

HOU Have him gyrocompass around after they've got that loaded. Gyrocompass around to 180.

RKV Alright Gemini 12, RKV. Would you have that VM ordered in, would you gyrocompass around to 0180.

S/C 12, Roger.

S/C RKV, Gemini 12, the VM word is in if you detected.

RKV Roger.

HOU Verify that word RKV.

RKV Will do Flight.

RKV Roger, it checks Flight.

HOU Roger. Can you verify this 43 feet per second.

RKV Negative Flight, we have not verified that yet.

HOU Have somebody do that.

HOU RKV, Flight.

RKV Go ahead Flight.

HOU Has he started to bring it around yet.

RKV Roger, Flight, he's bringing it around now.

HOU Okay, what flight control mode.

HOU What flight control mode are you in RKV.

RKV Standby Flight. He is not in proper mode, he is in S-Band now.

HOU Say again.

RKV He is not in a proper mode, he is in S-Band Wide.

HOU Okay, is he coming around.

HOU RKV is he..

RKV (garble)

HOU Say again.

RKV He's is a control mode for plus 90.

HOU Okay.

RKV He is coming around to plus 90 then he will go to 180.

HOU Okay, does it look like it's going alright.

RKV Roger, Flight.

HOU Okay

RKV 12, RKV, (garble) minus 1, VM checks on the ground.

S/C Roger, VM checks on the ground.

RKV Okay

S/C We are gyrocompassing around now.

RKV Flight, reset that VM to 42.62.

HOU Roger.

RKV He says he is gyrocompassing now. They are off scale low. He looks like he is doing alright now, Flight.

HOU Okay.

RKV LOS on Gemini, this is RKV.

This is Mission control Houston, we have loss of signal from the tracking ship Rose Knot of both spacecraft. The next station to acquire will be the Tananarive voice remoting station in some 20 minutes from now. We'll come back up at that time with the conversation between the spacecraft communicator here and Mission Control and Gemini 12. At 6 hours, 36 minutes and 12 seconds after liftoff, this is Mission Control

END OF TAPE

This is Mission Control Houston at 6 hours, 56 minutes and 4 seconds after liftoff. We're standing by now for a voice remoting from Mission Control here in Houston through the Tananarive tracking station. Pete Conrad is now putting in a call to the spacecraft through Tananarive. Let's join the conversation now.

TAN — Tananarive, over

S/C — Roger, this is 12.

HOU — Okay, I've got a little word for you here. After you're burn, we'd like you to, at your convenience purge fuel cells no. 2 then fuel no. 1, and you can go ahead after you purge and power down. We intend to give you your flight plan update for the rest of the evening at the CSQ and if you're ready I'll give you node update here.

S/C — Roger, 10... We're having some trouble with gyro compassing the Agena. It doesn't seem to want to hold.

HOU — Okay, are you in flight control mode 1 or 2?

S/C — It's been going from 60 to 30 degrees either side of the proper heading.

HOU — Okay, are you in flight control mode 1 or 2?

S/Ce — Flight control mode 2.

HOU — Okay. Does he think it's satisfactory for the burn?

12, Houston. Has it been doing this in flight control mode 2?

S/C That's affirmative. It does the same thing in flight control mode 1.

HOU Okay. You're trying to tell me that you don't think it's satisfactory to do the burn. Is that correct?

S/C Say again?

HOU I say, you're indicating to me that you don't think it's satisfactory to do the burn.

S/C That's affirmed with the Agena control. Right now, she's just rolled 40 degrees to the left of the proper heading.

HOU Did you say roll or did it yaw?

S/C Sorry, yawed 40 degrees and rolled about 15.

HOU Rolled about 15?

S/C Affirmed. We used the gyro compass alright in the right direction but then it overshoots when we get it settled down, it then starts to drift off about 30 or 40 whether we're in flight control mode 1 or 2. On the burn, I think we could probably do it with the spacecraft flight command. Over.

HOU Okay, why don't you quickly go to gyro compassing at the proper heading there is FC-7 once. And see if it holds in FC-7.

S/C Roger.

HOU 12, Houston.

S/C Go ahead Houston.

HOU How's FC-7 doing?

S/C We're trying to get it back to the proper heading with spacecraft control so I'll put FC-7 initial mode.

HOU Okay, now when you say get it back to the proper heading, are you satisfied that you got a good platform alignment?

S/C Roger, we have a good platform alignment just out the window here.

HOU Okay. 12, Houston.

S/C Go ahead.

HOU Okay, we only have about 2 minutes and 30 seconds on this pass. If it doesn't look good in flight control mode 7, we want you to make the burn with your OAMS system, but set up 41.5 fps for the OAMS.

S/C Do you want us to use our OAMS fuel to set up this burn?

HOU Say again.

S/C Do you want us to use to use our OAMS fuel to set up that burn?

HOU — That's affirmative. On your computer set up 41½ feet per second in address 25, vice the number of feet per second giving you in the velocity meter load.

S/C — Roger. If we burn SPS, what do you want us to have in address 25?

HOU — We passed you. We would appreciate it if you could get into FC-7 before this pass is over. We've got 1 minute and 30 seconds. We'd like to know which way you're going to go.

S/C — Roger. We're in flight control mode 7 right now, and it looks like it's holding within about 5 degrees

HOU — Okay, 12. Is is oscillating 5 degrees?

S/C — Negative, it seems to be holding pretty steady right now.

HOU — Okay. Because in FC-7 it should be locked in tighter than a drum. Okay, we only have 30 seconds. What do you think?

S/C — We're going to purge flight control mode. We're going to purge into SPS. Standby.

HOU — Okay, just use your checklist there, attitude control, rate command and the power switch off. She gets away from you, take it over with the Gemini.

S/C Affirmed.

This is Mission Control Houston at 7 hours and 4 minutes 50 seconds after liftoff. We've had loss of signal through the Tananarive voice remoting station. We're coming up now on the time that the secondary propulsion system burn is scheduled. Mark..they should begin the burn at that time. We'll have confirmation of this burn and the results during the pass over the Coastal Sentry later on in this rev, which is due in about 13 minutes from now. This is Mission Control Houston.

This is Mission Control Houston at 7 hours 18 minutes 54 seconds after lift-off. We have just now come into the acquisition area of the tracking ship Coastal Sentry for what may be the last pass of the evening in which the crew will still be awake. They are going to bed about an hour earlier than previously scheduled so that they can get awake 2 hours earlier in the morning for the eclipse which will occur at 16 hours 2 minutes ground elapsed time. Let's tie in now with the conversation between the spacecraft communicator aboard the Coastal Sentry and the crew of Gemini 12.

CSQ — Agena is go.

HOU — Say again.

CSQ — The Agena is go.

HOU — How does it look to you. In attitude all right?

S/C — This is 12 say again.

CSQ — Gemini 12, CSQ.

S/C — CSQ..

CSQ — How did the burn go?

S/C — Roger, we burned the Agena...we burned it in flight control mode 7 with the Agena control. Address 8 shows is with the platform it was not aligned at rendezvous. ... zero zero zero 1281300 028 82 reads minus 0019. Yaw attitudes real good.

S/C We have recaged the platform to the Agena attitude now. Looks like it was about 2 or 3 degrees off. And all the attitudes are quite well now.

CSQ Roger. Flight, CSQ.

HOU Go ahead.

CSQ Okay, attitude is 01800.

HOU 01800? What flight control mode is he in?

CSQ FC-1

HOU Okay, and does the vehicle look all right. Holding its attitude about right?

CSQ It looks good right now. We want to keep a good look on it.

S/C CSQ, Gemini 12. Can you tell us whether it was a VM shutdown or whether we shut it down...

HOU Say again.

CSQ Did you turn the encoder off?

S/C Encoder off.

HOU Another Gemini main please.

CSQ 12, CSQ.

S/C CSQ, 12 go ahead

CSQ Have a lock up date and flight plan update for

CSQ you when you are ready to copy.

S/C Roger, stand by a minute. This is 12, ready to copy.

CSQ Okay, here it is 6-3 Aplha, 08 35 01, 19 plus 17 24 plus 50. All bank angles..80 roll right 100. The weather in all areas is good and a SEP maneuver is required for all areas. Area 7-3 Bravo. 10 10 47, 18 plus 49, 24 plus 36, area 8-Alpha Charlie, 11 06 38, 20 plus 04, 22 plus 44. Area 9-Alpha Charlie 12 40 24, 20 plus 06 22 plus 41. Area 10-2 Bravo. 14 14 08, 20 plus 04, 22 plus 39. Area 11-Alpha Charlie. 15 50 31, 19 plus 59, 23 plus 53. Area 12-Alpha Charlie 17 26 18, 19 plus 48, 24 plus 38. Do you copy?

S/C This is 12, I copied the updates.

CSQ Okay, and I have a flight plan update for you.

S/C Roger, go ahead.

CSQ 57 plus 30 start sleep period, 8 plus 05 ground ...S-12 door will be opened, 14 plus 20 ground ECS S-12 door closed and locked. 14 plus 40 end of sleep period. 14 plus 42 flight plan update over Canary. Do you copy?

S/C Roger. I have copied ... 8 plus 05 S-12 open and 14 plus 20 S-12 closed 14 plus 40 sleep, 14plus 42 flight plan update.

CSQ Roger, we realize you have been busy today, but have you had a chance to drink any water.

S/C Roger, we have had some water and drank about 8...water.

CSQ ..Charlie.

S/C A sub for the brownies.

CSQ Roger.

S/C The pilot finished everything and that is..

CSQ How much water?

S/C The gun is now reading 814. Do you by any chance have our inertial reading?

CSQ Stand by.

HOU 715.

CSQ Say again Flight.

HOU 715.

CSQ We don't read you Flight. Say again.

HOU 7 1 5.

CSQ Roger.

HOU CSQ Flight

CSQ Go ahead Flight.

HOU Ask him if the purge went all right and is he powered down.

CSQ 12, CSQ

S/C CSQ, 12, go.

CSQ Did the purge go all right?

S/C We haven't had enough time yet. Sorry.

We are coming up on LOS.

HOU Have them go ahead and do that.

CSQ Flight, CSQ.

HOU Go ahead.

CSQ I didn't have enough time Flight, he is

LOS.

HOU Okay, was he still - what was still on at your

LOS?

What equipment.

CSQ The computer was on, he was rate command,

HOU Was the platform on?

CSQ Platform was on.

This is Mission Control Houston at 7 hours 27 minutes and 48 seconds after lift-off. We have had loss of signal on both spacecraft over the tracking ship Coastal Sentry. We will be coming up overrHawaii at - in approximately 10 minutes from now. We will stand by to see if there is any further conversation before the crew takes their rest period for the night. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston at 7 hours 37 minutes and 4 seconds after liftoff. We have just now come in to the acquisition area of the Hawaii tracking station with both the Gemini spacecraft and the Agena Target Vehicle. We are standing by now for conversation between the spacecraft communicator and Hawaii and the crew of Gemini XII. This will likely be their last pass over a station in which they are awake, or at least they will go in to a rest period shortly thereafter. Let's join that conversation now.

HAW Roger, we've got a bunch of items we would like to clean up here. First of all I would like to get started is a purge. We are also showing 02 to H2 Delta P lights on.

S/C Roger, we have just completed a purge. We are in the process now of powering down both Delta P lights are on...Would you believe that.

HAW Roger, we sure would.

S/C Okay, mighty fine, on that.

HAW Get the readings onboard.

S/C I've seen this light before.

HAW Yeah, yeah. What we'd like to know is the last time you reported the readings you gave us some information on them and at the time was the Delta P on when you gave the readings?

S/C Roger, it was.

HAW What are they reading now? Could you give us the readings again then?

S/C Roger, on section 1 the H2 now reads about .70 and the H_2O reads 2.2.

HAW Roger, copy.

S/C On section 2 point 65, for the H2 and H_2O is about 2.1.....2 point 1 5 .

HAW Roger Thank You

S/C Seems to be within the limit, I'm not sure why the lights are on.

HOU Yeah, it looks good here.

HAW That's the way it was the last time too.

HAW Thanks a lot, we're looking in to it, it's kind of a wild one.

S/C Roger.

HAW I notice you have your encoder off so we're going to send a command to the Agena to reset the emergency timer.

S/C Roger. go ahead.

HOU Okay.

HAW Okay, we've got it. I guess there is no need to turn the encoder on is there. Since he's already separated.

S/C Roger, ready to turn the encoder back on.

HAW Roger, go ahead. Is he docked?

HOU Hawaii we need some summary from you and a contingency charlie in the Agena.

HAW Roger

HAW Hey Bud is he still docked, I was under the impression they had already separated.

HOU No, he should be docked. Why should he be separated?

HAW Oh, that maneuver was done with the spacecraft in a docked configuration.

HOU Affirmative....that's alright Hawaii let's see if we can get the rest of this done on this pass. How about the PQI and the purge? Did he get the purge in yet.

HAW That's firm, he's completed it.

HOU Okay, PQI before he goes to sleep.

HAW Okay, could we get the PQI Gemini 12?

S/C Roger, PQI is 55 percent.

HAW Roger copy 55. Thank you.

S/C Anything else.

HOU We need some Agena summaries from you.

S/C We'll send them, which kind do you want? What would you like?

HOU We need Agena main and charlie.

S/C Agena main and charlie, Rog.

HOU Okay, everything look alright for the night?

S/C Yes, it sure does. 02 tank pressure is up around 900.

HOU Roger.

S/C That should be good.

HOU How does the ACS look on the Agena?

S/C Within bands and holding.

HOU Okay

S/C Yeah, we're showing the PPS gas that's B059 as 2 point 06 thousand PSI. It's on a 1218

HOU Roger.

Hawaii from flight, is he powered down and what is the pump configuration?

HAW He's got both B pumps on. He is powered down.

HOU Hawaii from flight.

HAW Go flight

HOU Okay why don't you give them our best for the night.

HAW Gemini 12 Hawaii

S/C Go ahead Hawaii.

HAW Roger, it's been kind of a busy day thanks much that about does it and flight says to tell you Good Night.

S/C Thank you and glad the flight gave us a Delta P light , we feel lonely without them up here.

HAW Oh yeah.....

HOU LOS hawaii minus one.

HAW Roger....

This is Mission Control Houston. We have loss of signal from the Hawaii tracking station. The crew of Gemini 12 have been given a "go" for sleep. It is highly unlikely that any of the subsequent passes during the night will be any conversation however, we will be monitoring the passes for spacecraft conditions. Systems conditions as indicated telemetry. At 7 hours

46 minutes and 2 seconds after liftoff, this is Mission Control.

END OF TAPE

This is Gemini Control. The Gemini 12 spacecraft is approaching the west coast of South America at this time at 8 hours 3 minutes 38 seconds into the mission. To recap, during the day the primary propulsion system burn was scrubbed, the Agena due to the probability of a bearing malfunction which would cause the turbo.. fuel-turbo pumps to overspeed. Therefore, the high apogee over the United States is out. The OAMS was burned a short while ago to enable the spacecraft to phase in order to get the solar eclipse pictures at 6:50 am CST tomorrow morning. The flight director, Glenn Lenney declared the sleep period as of 7 hours 44 minutes into the mission , which is approximately 1 hour early. We estimate they will arise 1 to 2 hours early tomorrow morning. After they get up at an earlier time then we originally calculated, they will be in phase hopefully to acquire the eclipse photography. We did accomplish during the day, rendezvous and docking which was one of the major aims of our flight, Gemini 12. They did accomplish the M-408 experiment which is to measure radiation around the spacecraft, while going through the South Atlantic anomaly At 8 hours 5 minutes 15 seconds into the mission, this is Gemini control.

END OF TAPE

This is Gemini Control. Nine hours, 23 minutes, 32 seconds into the mission of Gemini 12. Hawaii has lost signal with Gemini 12 at nine hours, 18 minutes into the mission. There has been no voice contact with the Gemini 12 astronauts since the sleep period was declared seven hours, 44 minutes into the mission. The Black team has now gone off duty. The Blue team is now on duty here at the Control Center. Gene Cranns is acting as Flight Director. We have Deke Slayton sitting in as Cap Com with astronaut Bill Anders asisting. During the night this team will recalculate the flight plan for tomorrows activities. The S-12 experiment, the micrometero-rite collection experiment door has been opened at sometime shortly after 11:00 o'clock Central Time this evening by a ground signal. At 11:45 this evening, 45 minutes pass the hour, Costal Sentry reported that both crew men are asleep. Hawaii reports that Gemini and Agena look good from telemetry and that if the Agena is rolling, it is rolling very slowly so it appears to be stabilized. The weather forecast for tomorrow appears to be in the dash one or primary area off the East coast of America, 8 to 10 foot swells, 5 to 7 foot waves, 25 knot winds, the ceiling is forecast to be 1000 foot scattered. This is acceptable, but not too good in that area. In the East Atlantic, in the West Pacific and in the Mid-Pacific landing area, the weather appears to be good and is forecasted to remain good through tomorrow. At 9 hours, 25 minutes, 41 seconds into the mission of Gemini 12, this is Gemini Control.

END OF TAPE

This is Gemini Control. Ten hours, 3 minutes, 31 seconds into the flight of Gemini 12. Ascension has lost the signal of Gemini 12 spacecraft, ten hours and one minute into the mission. There has been no voice contact with the astronauts in the sleep period. The sleep period has been going on now for approximately two hours, twenty minutes. Astronaut Lovell's heart rate is 64 beats per minute. Astronaut Aldrin's heart beat is 58 beats per minute. The breathing rate for Astronaut Lovell is 12 per minute and for Astronaut Aldrin it is 12 per minute. Both astronauts were reported asleep at one hour and five minutes ago. Information has reached us that tomorrow morning when the endeavor to take eclipse photography, the position will be 6.5 degrees South, 82.1 degrees West. That puts them right at the coast of South America. That will happen 16 hours, 2 minutes, 3 seconds into the mission of Gemini 12. This is Gemini Control.

END OF TAPE

This is Gemini Control at 11 hours 3 minutes 31 seconds into the flight of Gemini 12. The position of the spacecraft is approaching the Rose Knot ship off the South American coast. We still have no voice contact with the astronauts in the sleep period. They have been in the sleep period now for approximately 3 hours and 20 minutes. Astronaut Lovells heartrate is 48 beats per minute. Astronaut Aldrins heartrate is 50 beats per minute. The breath rates are: Lovell 14 per minute, Aldrin 14 per minute. Doctor Hawkins, the NASA doctor on duty here in the Control Center, advises that they are both sleeping soundly. The apogee at this time of the spacecraft in 153.8 miles, the perigee is 139 miles The Gemini 12 spacecraft, as we said, is in the sleep period; however, it's quite evident here in the control center that nobody here is sleeping. Gene Kranz, acting as flight director, and the staff support rooms are busily engaged in updating the flight plan for tomorrow. At 11 hours 4 minutes 51 seconds into the flight of Gemini 12, this is Gemini Control.

END OF TAPE

This is Gemini Control, 12 hours 3 minutes 31 seconds into the mission of Gemini 12. We're in the 9th revolution over China approaching the eastern coast of China. Coastal Sentry ship will acquire the spacecraft with telemetry at 12 hours 4 minute 46 seconds into the mission. We still have no voice contact with the spacecraft, still being in the sleep period. They have been in this sleep period now for some 4 hours 20 minutes. We assume that they have been asleep for at least 3 hours and 5 minutes since the Coastal station confirmed that fact 3 hours and 4 minutes ago from readouts. They are still docked on the Gemini. We have a report that a low pressure area is being watched by the National Hurricane Center at Miami. At 5:30 EST this morning an aircraft will investigate this low pressure area to make a determination on it and see what it actually is. We know that the predicted weather for tomorrow in the -1 or western Atlantic area should be about 2,000 feet broken. We should have about 25 knot winds. We should have 8 to 10 foot swells with 5 to 7 foot waves. This is acceptable, but not most desirable for a landing situation. At 12 hours 5 minutes 15 seconds into the mission of Gemini 12, this is Gemini Control.

END OF TAPE

This is Gemini Control, 13 hours 3 minutes 34 seconds into the mission of Gemini 12. The position of our spacecraft now is approaching the west coast of Africa. Our Ascension tracking station will acquire in less than 1 minute from now. We still have no voice contact with the crew. The sleep period began 5 hours 20 minutes ago. For a short recap on the first days activities in Gemini 12 flight, we did accomplish rendezvous and docking, a main objective in Gemini 12. We accomplished M-408 experiment, which is a Beta Spectrometer. To measure radiation while the spacecraft is going through the South Atlantic anomaly, that was accomplished. The crew went to sleep one hour early - or correction, their sleep period 1 hour early. Also, during the first day of this mission, we did not have a primary propulsion system burn on the Agena which would have heightened our apogee to some 400 nautical miles over the United States for photographic reasons. We did not have that due to the probability of the fuel turbo pump varying malfunction. Therefore, we will not have that high apogee photography on the mission. We did have a secondary propulsion systems Agena burn in order to phase the Gemini 12 to be in position where the Solar Photography at 16 hours and 2 minutes into the flight. At this time, the apogee of Gemini 12 is 154 nautical miles, the perogee is 139 nautical miles, approximately. The crew will arise at approximately 14 hours 42 minutes or 1 hour 40 minutes from now. The eclipse photography at 16 hours and 2 minutes into the mission should be accomplished approximately 3 hours from now. After that, they will engage in the preparation and then the accomplishment of

the first standup EVA, or extra vehicular activity for astronaut Aldrin. This should last some 2 hours 18 minutes during which time, he will accomplish the S-13 experiment which is a photographic experiment to photograph star fields for the purpose of investigating ultraviolet regions in these star fields. After that, they will close the hatch, repressurize the spacecraft and go on with the mission. There is a low pressure area being watched by the National Hurricane Center approximately 1300 nautical miles southeast of Cape Kennedy at positioning of 24 degrees north, 60 degrees west. That is on the eastern edge of our prime or -1 landing zone. The weather forecast for that area for tomorrow, is 2,000 feet scattered 8 to 10 foot swells, 5 to 7 foot waves and 25 knot winds. This is not obviously an ideal landing condition. It is acceptable, however. At 5:30 am this morning eastern standard time, an aircraft will fly out to investigate the area we just mentioned in our -1 landing area. We had no further word on the condition of that area other than what we just said that is a low pressure area which is being watched by the National Hurricane Center. At 13 hours 7 minutes 47 seconds into the mission, this is Gemini Control.

END OF TAPE

This is Gemini Control, 14 hours, three minutes, 31 seconds into the mission of Gemini 12. Gemini 12 spacecraft is now over the Pacific Ocean. It's in its tenth revolution. The Rose Knot will acquire in some 20 minutes from now. We still have had no voice contact with the astronauts. We're informed by the doctor on duty here at the Control Center that they are still in a sleeping state. They have been in sleep period for six hours, 20 minutes now. They're due to arise some 40 minutes from now -- 14 hours, 42 minutes into the mission. When they do arise, they will get prepared to accomplish the eclipse photography at approximately 16 hours, two minutes into the mission or two hours from now. Presently the heart rates stand at Astronaut Lovell -- 15, Astronaut Aldrin -- 12 per minute. Breath rate is Lovell -- 50, correction breath rate is Lovell -- 12, Aldrin -- 12. After they accomplish the eclipse photography, we will go in immediately to EVA preparations; and after that, the EVA will be accomplished. We do not have times on that as yet. We hope to by a few minutes from now. At 14 hours, five minutes, 9 seconds into the mission of Gemini 12, this is Gemini Control.

END OF TAPE

This is Gemini Control, 14 hours, 41 minutes, 31 seconds into the mission of Gemini 12. The Gemini 12 spacecraft is approaching the coast of Africa -- the west coast of Africa. It will come in the acquisition area of Canary Islands at 14 hours, 42 minutes, 30 seconds or less than one minute from now. At this time, it is planned to wake the crew up and to update their onboard systems for a burn -- an SPS Agena burn -- secondary propulsion burn to phase the spacecraft with the solar eclipse and pass on further information. We will now stand by for astronaut voice contact with the Canary Islands tracking station.

CYI	Canary says TM solid both vehicles.
HOU FLT	Roger. We're go. Roger, Canary, have at it.
CYI	Gemini 12, Canary Cap Com. Gemini 12, Canary Cap Com. Gemini 12, this is Canary Cap Com.
S/C	Canary, this is 12. You're loud and clear. How me?
CYI	I hear loud and clear. Good morning. Did you have a good sleep.
S/C	Oh, so so. Not bad.

CYI Ok. Could you turn your encoder on, please. We're going to update the VM mode for a burn.

S/C Roger.

CYI OK. We have a long flight plan update for you. I hate to give it to you when you first wake up. Let me know when you're ready.

S/C Roger, Canary. This is 12. Ready to copy.

CYI OK. First of all, I'd like to check the positions of your spectrometer switches.

S/C Roger. X-Ray is on, and the Beta is .....

CYI OK.. Would you turn both of them to the off position, please.

S/C Roger. They're both off.

CYI OK. We got a good VM word in your ... you can turn the encoder back on. And I'll give you your Agena maneuver update here. The purpose is eclipse phasing. The GETB is 15 16 18. Delta V is 15.0. Delta TB -- 18 seconds. Thrusters for SPS -- unit two. Maneuver GDA forward posigrade. Over.

S/C Roger. Understand. Eclipse phasing. GET a burn 15 +16 +18. Delta V -- 15.0. Delta TB -- 18 seconds. Thrusters SPS unit two. GDA

forward posigrade.

CYI — OK. Now here comes the flight plan update, and if I don't get it all to you, we'll pass it over KANO. OK. Here's your eclipse procedure. The camera configuration -- the 16mm Maurer -- we want the 18mm lens -- F2 at 1/50 seconds, six frames per second. Use S0368 film. The 70mm Maurer -- S.95, S 29 back. No filter. On the super-wide Hasselblad. Use 80mm lens at S 11 at 1/250 range infinity. Film S0368.

HOU FLT — OK, Bill. Make sure he's copied so far.

CYI — OK. Have you copied so far, 12?

S/C — Roger. Except for one thing. We don't have an 80mm lens on our Hasselblad.

CYI — OK. I'll go on with the rest of it, and we'll get back to that. Did you copy that, Flight?

HOU FLT — Affirmative.

CYI — OK. The procedure is prior to the eclipse, command pilot install the window filter, and the pilot install the opaque sleep shade. Put the ACS off and align the spacecraft on the sun. Do you copy?

S/C — Roger. We have that.

CYI — OK. At 15:48, you'll have sunrise. At 15:51:33 enter penumbra. At 16:00 -- 16mm Maurer on. At 16:01:44 -- start total eclipse. Take the following as possible with the 70mm Maurer. A -- one minimum time exposure. B -- one one-second exposure and C -- one four-second exposure.

HOU FLT — OK. See if he copied, Bill.

CYI — Did you copy up to this point?

S/C — Roger. Say again the time after sunrise.

CYI — OK. 15:51:33 you enter penumbra. That should put 5:51:33 penumbra.

S/C — Roger.

CYI — OK. At 16:01:52 end total eclipse. Maneuver spacecraft to photograph ground shadow. Pitch down 25°, yaw left 135°. Keep sun off windows. D set the 16mm Maurer to S16 1/200, range infinity. One frame per second.

S/C — Roger. Say again after 16mm Maurer.

CYI — OK. Set at a depth 16. Your time will be 1 1/200. Your range infinity. One frame per second.

HOU FLT — OK, Bill. I think you're going to ...

CYI — ... 16mm Maurer F16 1/200. Infinity. One frame per second.

S/C — Roger.

CYI — Track and photograph the moon's shadow with your 16mm and your Hasselblad.

S/C — Roger.

CYI — This sets your TX. Ok. About 30 seconds here to LOS, so I'll keep reading.

HOU FLT — Cut him off, Com Ted. Kano remote. Canary local.

KNO — Kano's remote, and we have acquisition.

HOU FLT — Gemini 12, Houston Cap Com, through Kano. Are you reading?

S/C — Roger. Go ahead, Houston. This is Gemini 12.

HOU FLT — Roger. Continuing your update at 16:10:33 -- exit penumbra. Set up spacecraft 000. Agena 0 180 0. Do you copy?

S/C — Roger. 16:10:33 -- exit penumbra. Spacecraft 000. Agena 0 180 0.

HOU FLT — OK. On 02 usage -- is slightly ahead of schedule, and with your concurrance, we'd like to make this SPS burn with your platform powered down. Over.

S/C Roger.

HOU FLT OK. We'll be giving you a flight plan update at Canary at 16:16, and at your convenience, can you take your S3 thermo cover off.

S/C Roger. We'll take the frog egg cover off.

HOU FLT OK. Now I'm standing by for a GE time hack at 14:51:30. Mark. 14:51:30.

S/C Roger. We're right on.

HOU FLT OK.

S/C Houston, This is 12. We still have both Delta P lights on.

HOU FLT Roger. We understand, and as far as your superwide goes, leave the lens you have. Go with the other settings.

S/C Roger. That's for taking the shadow. Take them with the same thing?

HOU FLT Roger. Leave the lens you have on there and leave the settings we gave you.

S/C How about turning off the fuel cell Delta P circuit breaker.

HOU FLT Standby. You're go for your burn. Do you want to check your water heater circuit breaker?

S/C — How about turning on some fuel cell Delta P circuit breakers so we can turn the lights off.

HOU FLT — Stand by. We'd like to keep them off unless it's bugging you too bad.

S/C — ....

HOU FLT — We've got 30 seconds to LOS. And I say again on your super-wide Hasselblad -- use the lens you have, use your updated settings.

S/C — Roger. Understand.

HOU FLT — That ought to keep you busy.

KNO — Kano has LOS.

END OF TAPE

HOU ...Mark. 14:51:30.

S/C Roger, we're right on it.

HOU Okay.

S/C Houston, this is 12. We still have both Delta P lights on.

HOU Roger, we understand and as far as your super wide goes, leave the lens you have. Go with the other settings.

S/C Roger, that's affirm. By taking the shadow, take them at the same setting.

HOU Roger, with the--leave the lens you have on now and leave the settings that we gave you.

S/C All right. How about turning off the fuel cell Delta P circuit breaker.

HOU Stand by. You are go for your burn. You want to check your water heater circuit breaker?

S/C How about turning off the fuel cell Delta P circuit breaker, so we can turn the lights off?

HOU Stand by.

We'd like to keep them off unless its bugging you too bad.

S/C We'll leave it the way it is right now.

HOU Okay, you've got 30 seconds to LOS. And I say again on your super wide Hasselblad, use the lens you have, use your updated settings.

S/C Roger, understand.

HOU That ought to keep you busy.

KNO Kano has LOS.

This is Gemini Control. We started with a conversation between Canary Islands updating the spacecraft and the crew. Canary Islands lost contact and we ended with Kano going remote and Bill Anders here in the Houston Control Center finishing their briefing for the update. During this time, they passed up camera configuration for the solar eclipse photography. They indicated that prior to eclipse, the command pilot will install window filter and the pilot will install an opaque sleep shade. This will be done obviously with doors closed, not in an EVA situation. They gave the times as entering the penumbra or the light shadow area as 15 hours, 51 minutes, 33 seconds into the flight; at 16 hours, they'll turn the 16 mm Maurer camera on. At 16 hours, one minute, 44 seconds, they'll start the total eclipse photography. At 16 hours, one minute, 52 seconds, end the total eclipse photography. They will track and photograph the Moon's shadow, with the 16 mm Maurer and the Hasselblad, also, after this. They will exit the penumbra, or the light shadow area, on the other side at 16 hours, 10 minutes, 33 seconds into the flight. The crew was also advised that the O_2 usage onboard is slightly ahead of schedule, and it is our desire to leave the platform powered down for the SPS burn. We had an indication

from the crew, when they were awakened by Canary Islands that they had a good sleep, it was not bad, sort of so-so. We also have an outlook on the weather. In the Atlantic area, the outlook for the tropical Atlantic west of longitude 35, the Caribbean Sea and the Gulf of Mexico, a low pressure system with an extensive area of cloudiness and showers about 800 miles northeast of Puerto Rico continues this morning and this will be investigated again later in the morning by reconnassaince aircraft. Elsewhere around the world, conditions seem to be fine and normal. At 14 hours, 56 minutes, 11 seconds into the mission, this is Gemini Control.

END OF TAPE

This is Gemini Control; 15 hours, 3 minutes, 30 seconds into the flight of Gemini 12. We have just given you the update and the astronaut contact with Canary Islands and with Astronaut Bill Anders here at the Control Center. They have been updated for the Agena secondary propulsion system burn, which should take place at 15 hours, 16 minutes, 18 seconds into the mission with a velocity change of 15 feet per second. This should affect the apogee, but in a very minor way. Not more than seven or eight miles. This is a phasing maneuver, so the Gemini 12 spacecraft will be in a position to take photographs of the solar eclipse. We have a long dry spell in front of us now between contacts. We do not reach another contact point with the Gemini 12 spacecraft until 16 hours, 5 minutes, 54 seconds into the mission, which is one hour from now roughly. Until that time, we assume that the updates are sufficient and the pilots have sufficient knowledge now from the ground from the Flight Controller to accomplish the mission of taking the solar eclipse photography. They will take that photography before we have contact with them in Antigua. At 15 hours, 5 minutes, 2 seconds into the mission, this is Gemini Control.

END OF TAPE

Gemini Control Houston. Fifteen hours, 33 minutes into the flight of Gemini 12 now. Gemini 12 is currently making a pass on the southern part of the Pacific Ocean. We will have no contact with Gemini 12 until Antigua, which will be at some 16 hours, 5 minutes into the mission. Presently in Mission Control, we are in the process of the change of shift. Cliff Charlesworth, the Flight Director for the green team is currently being briefed on our status by Gene Kranz, who has operated with the blue team most of last night's activities. We should have had our second phasing burn with the SPS by this time, some several minutes ago. However, we will not be able to ascertain just how that burn went until after our solar eclipse photography and at the time when we establish acquisition at Antigua. Flight Surgeon advises that the crew slept well last night. Both members of the crew, Jim Lovell and Buzz Aldrin, having some six and one-half hours of reasonably sound sleep. At 15 hours, 35 minutes into the mission now, this is Gemini Control, Houston.

END OF TAPE

Gemini Control Houston. Fifteen hours, and 58 minutes now into the mission of Gemini 12. Jim Lovell and Buzz Aldrin are now in their tenth revolution in this flight of Gemini 12. We are about four minutes away now from our attempt to rendezvous with a 52-mile wide shadow on the ground, the solar eclipse. This of course is a narrow corridor when you consider that the spacecraft is speeding along in the order of 300 miles per minute. This gives us about seven seconds or so of total eclipse time. Now the Gemini 12 should be in the light shadow of the eclipse and we expect that Jim Lovell has installed his Polaroid window shade at this time. He has a slot at the bottom from which to shoot through. When we reach our total eclipse at 16:01:44 GET, we are going to take the following if possible with the 70 mm Maurer. That will be one one-second exposure and one four-second exposure at 16:01:52;after we go out of our total eclipse, we will maneuver the spacecraft to photograph the ground shadow. At 15 hours -- or 16 hours into the mission, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston 16 hours, 5 minutes into the flight of Gemini 12 now. We are nearing the range of Antigua tracking. Antigua should acquire at about 54 seconds. Fifty-four seconds after the minute, that is. Or some 10 seconds from now. We'll be standing by for that pass awaiting any contact that we might have with the crew which will update us as to their activity with regard to the solar eclipse activity. You will note on the display -- the display that is in Mission Control now, we have an artist concept of what the eclipse might very well look like at this time.

HOU Gemini 12, Houston Cap Com through Antigua, over.

S/C Roger, Houston, this is 12.

HOU Roger, how did the eclipse photography go?

S/C Well, we hit the eclipse right on the money.

HOU Very good. When you get the Agena squared away, we'd like to have you turn the encoder off. We'd like to do a tape dump and a -- reset the timer.

S/C Roger. We were unsuccessful in picking up the shadow, Houston. We couldn't pick it up by the time we got around the eclipse.

HOU Roger. We figured it would be a long ways off, but let me know when you get the Agena lined up.

S/C Roger.

HOU If you can't get it here, we'll get it over Canarys. And if you have a chance, we'd like to know was the H_2O heater circuit breaker on and is it on now?

S/C H_2O heater circuit breaker is on.

HOU Okay, and in case you are worried about it, we had the S-12 door closed prior to waking you up. We are sorry we didn't tell you that over Canarys.

S/C Say again.

HOU We had the S-12 door closed by DCS prior to waking you up and we are sorry we didn't tell you that over Canarys.

(dead air)

Gemini Control Houston. We are still undergoing the Antigua pass. As you heard Jim Lovell say, they hit the eclipse right on the money. However, they probably did not acquire the shadow after they passed through the total eclipse. The ground advised Gemini 12 that the S-12 door was closed.

(dead air)

HOU Gemini 12, Houston Cap Com.

S/C Go ahead, Houston.

HOU Roger. We got about 30 seconds to AOS. You got your encoder on before we could terminate the dump. Would you send TM off zero 3 zero and TM on zero 2 one?

HOU Do you copy?

S/C Roger.

Gemini Control Houston. We've had a loss of acquisition at Antigua. At 16:20 GET, the Gemini 12 crew is scheduled to enter their eat period. At 16:55 over Carnarvon, we will receive a Go/NoGo for 30 dash 1 landing area and purge the fuel cells. At 17:30, we'll start standup EVA preparation. And at 19:43:30 sunset time, the first night standup EVA will begin. At sunset, and that is at 19:43:30 GET. At 16 hours, 15 minutes, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 16 hours, 17 minutes into the flight of Gemini 12 now. We are standing by at the present time as spacecraft Gemini 12 passes over Canary and we are standing by for any conversation that might transpire with the crew. They are contacting the crew now.

S/C Roger.

CYI Okay, have a notal update and the flight plan updates for you when you are ready to copy.

S/C Roger, go ahead.

CYI Okay, your notal update time 16:05, rev 11 - 71.0 degrees west, right Ascension, 11 + 32. Okay, your flight plan update, from 16:20 to 17:30, eat period. 16:55 at Carnarvon, you'll have a Go/NoGo for 30 dash one, purge the fuel cells, section one and section two. We'll give the cryo O_2 and H_2 readout at that time. And they'll give you block 3 PLA update. At 17:30 start EVA -- standup EVA preparation. At 17 + 45 at Antigua, we'd like the S-3 heater on. At 19:43:30, sunset, first night standup EVA. S-13 Gamma Cassiopeiae, yaw 87 degrees north, pitch 30 degrees up. Have you copied so far?

S/C Roger.

CYI Okay, at 21:13:31, sunset, second night, S-13 ... Yaw 150 degrees north, pitch 45 degrees up.

And we have a note here, due to the change in the orbital period, activities in the flight plan have shifted forward approximately one-half hour at 17 hours GET, and have shifted forward about an hour at 24 hours GET.

S/C Roger, understand.

CYI Okay, that is the end of the flight plan update. I'd like to get a water gun count from you.

S/C Roger, water gun is 863.

CYI Copy 863. Okay, 12, you are go down here on the ground. We'll be standing by.

S/C Roger, thank you very much. We'll be eating.

CYI Roger.

HOU Canary Cap Com, Houston Flight.

CYI Come on in, Flight.

HOU Roger, could you ask the crew if they took any water during the night?

CYI Roger.

HOU I mean prior to waking up, I guess, is the question.

CYI Okay. 12, Canary.

S/C Go ahead.

CYI We'd like to know whether you took any water during the night at all? That is prior to waking up.

S/C Roger. Perhaps 10 count.

CYI Roger, copy. Copy, Flight?

HOU Roger, thank you.

CYI Flight, Canarys.

HOU Go, Canarys.

CYI We've completed the tape dump.

HOU Okay thank you.

HOU Canary Cap Com, could we have an Agena contigency India, please.

CYI Roger, coming up.

HOU Canarys, could we have an Agena LOS main, also.

CYI Roger.

Gemini 12, Canarys, about a minute to LOS.

S/C Roger, Canarys.

CYI Houston Flight, Canary Cap Com.

HOU Go Canarys.

CYI Okay, we've had Gemini LOS and Agena LOS. Both vehicles are go.

HOU Roger.

Gemini Control Houston. Sixteen hours, 26 minutes, we've just had loss of signal with Canary. The next station to contact Gemini 12 will be Carnarvon and this will be at 16 hours, 54 minutes, 43 seconds GET. Weather advises that the weather conditions this morning for the flight of Gemini 12 remain satisfactory and in most areas of prime concern, in the mid-Pacific landing zone

centered about 300 miles northeast of Honolulu, partly cloudy skies, winds east 15 knots, and seas 4 feet. In the west Pacific landing zone centered about 600 miles south-southwest of Tokyo, partly cloudy skies, winds east-northeast 10 to 15 knots and seas 3 to 4 feet. In the eastern Atlantic landing zone centered about 300 miles west of the Cape Verde Islands, partly cloudy skies, winds 18 knots, and seas 4 to 5 feet. In the primary landing zone in the western Atlantic centered about 800 miles east of Miami, extensive cloudiness, winds 10 to -- 20 to 25 knots, seas 5 to 7 feet and a few scattered showers. An interesting meteorological feature that should be overflown during the day is a low pressure system with an extensive area of cloudiness and showers about 800 miles northeast of Puerto Rico. At 16 hours 28 minutes into the mission of Gemini 12, this is Gemini Control, Houston.

END OF TAPE

Gemini Control Houston, 16 hours 54 minutes into the flight of Gemini 12 at this time. Jim Lovell and Buzz Aldrin are now in their 11th spacecraft revolution and Gemini 12 is making good an apogee of 162.9 nautical and a perigee of 139 nautical at the present time. We're standing by now for acquisition with Carnarvon tracking. Acquisition with Carnarvon should take place in a matter of seconds now. Over Carnarvon we anticipate a GO/NO-GO decision for landing area 30-1, fuel cell purge. We're coming in with our pass over Carnarvon now..

HOU'	Roger standing by for your GO for 30-1.
SC	Roger standby.
CRO	Flight, Carnarvon
FD	Go ahead
CRO	I show computer is faulty.
HOU	Roger
SC	Carnarvon, 12 here
CRO	Go ahead 12
SC	Roger, fuel cell ..... 18 - do you want all these readouts.
HOU	No, we don't need them, just give us a go.
SC	Say again
HOU	Just give us a go.

SC Roger, we're GO, we've employed a little discrepancy. The RCS failure is about

280 2800 psi and temperature of 58.

HOU Roger.

OK it looks pretty steady down here.

SC Roger

HOU Ok we'll give you a GO for 30-1. We'd like an onboard section - an onboard 02 to water, delta P both sections.

SC Roger, section 1 is 2.1 that's 02 to water and section 2 is 2.1 also. The fuel cell delta P lights are out now.

HOU OK. You can start your purge, section 1 and then section 2.

SC Roger.

HOU OK and I have a PLA update for you.

SC Go ahead on the update.

HOU OK. 13-1 bravo, 18 52 00, 21+00, 24+48, all bank angles are roll left 80, roll right 100, 14-1 bravo 20 27 59, 20+31, 25+30, 15-1 alpha, 22 03 58, 19+56, 26+08, 16-4 bravo, 24 51 47, 21+01, 26+42, 17-4 alpha, 26 27 46, 20+32, 26+04, 18-4 bravo 28 03 43, 19+59, 25+21,

CRO We've had LOS flight.

HOU Roger did you get it all.

CRO That is negative.

Gemini Control Houston, we've had loss of signal over Carnarvon. To recap a bit on our solar eclipse photography, we restate that Command Pilot Lovell advised our Cap Com Bill Anders that he hit the total eclipse righ on the money. However, with regard of the shadow, the Gemini 12 crew had a maximum time of some three minutes to turn the spacecraft and shoot towards the shadow. This is not very long. At that time the shadow was described as being over the ocean and had a very low contrast ratio with the ocean. At the time of the turn the shadow was also a great distance off in that the inclination at the time was quite low. This made the task exceedingly difficult and as a consequence inhibited the success of our second priority item, and that was shooting toward the shadow of the total eclipse on the ground. At 17 hours 1 minute into the mission of Gemini 12 this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston at 17 hours, 23 minutes now into the flight of Gemini 12. Jim Lovell and Buzz Aldrin are currently moving across the South Pacific in their Gemini 12 spacecraft on the tag end of their 11th revolution. Our EVA preparations are now scheduled to start some six to seven minutes from now. The time for this EVA was moved forward approximately or about 30 minutes because we did not, as a matter of fact, go into our high orbit yesterday evening and we wanted to continue with our same lighting conditions and the same star fields for the S-13 experiment. To do this, of course, because of our change in times per revolution period, we've compensated for this by moving our time table or schedule forward. To recap a bit, the first night's sleep in space for Buzz Aldrin was very good. He had some six to six and a half hours of useful sleep. This is the 15th day in space for Jim Lovell and he's taking to it as might be expected, quite naturally. As a matter of fact, Command Pilot Jim Lovell could accurately be described as the Johnny Unitas of Manned Space Flight. With every pass completion Unitas establishes a new football passing record and with every passing moment in this flight, Jim Lovell by the same token, establishes a new time in space record. At 17 hours, 25 minutes, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 17 hours 38 minutes into the flight of Gemini 12 now. We're standing by for acquisition at Grand Turk. Acquisition with Grand Turk is expected at 17 hours 38 minutes 56 seconds into the mission. Some 40 seconds from now. At this time Bill Anders in his discussions with the crew will receive a crew status report. He will also endeaver to finish his planned landing area update which was cut short during their pass, last contact with the crew during their pass over Carnarvon. At 17 hours 39 minutes standing by for our contact with the Gemini 12 Spacecraft. This is Gemini Control.

ANT AOS Antigua

HOU Gemini 12, Houston Cap Com through Grand Turk, over.

SC Roger Houston through Grand Turk.

HOU Roger I am ready to continue your block update. What was the last one you copied?

SC Standby we've got to dig out the book it's in, we're in our EVA prep.

HOU Okay, while you're doing that be advised your RCS B pressure looks good on the ground, we figure it is just cooling off. We'd like your estimate of when the delta P lights went off prior to Carnarvon and was that associated with

drinking any water?

SC This is 12. It might have been Bill because we were fixing breakfast at that time and taking quite a bit of water out of the tank.

HOU Okay, back - about how long prior to Carnarvon was it, do you have any estimate?

SC Just prior to Carnarvon we believe.

HOU Okay would you cycle your cryo quantity read through O2 and H2 for about 10 seconds each?

SC Roger, O2 at this time.

HOU Okay, would you go to H2?
Also we'd like a crew status report from you when you have a chance and would you - is your S3 heater on?

SC Negative S3 heater is not on yet. Wasn't that 45?

HOU Okay, give us a call - you can go on now or give us a call when you get it.

SC Roger, do you want to MARK on it?

HOU No just turn it on.

SC S3 heater coming on, 2, 1, MARK

HOU Roger

SC Start passing your updates.

HOU Okay, what was the last one you got?

HOU Gemini 12, Houston Cap Com, what was the last one you copied?

SC Standby 1.

HOU Gemini 12, Houston, you can go off on your cryo quantity anytime you want.

SC Roger, going off. Do you want the frog egg cover put back on? I assume you do for this EVA.

HOU That is affirmative.

SC Roger.

ALDRIN 18 4 Baker last one.

HOU Roger, got one more. 19-4 Charlie, 29 40 03, 19+15, 24+08, over.

SC Roger, I copied, 19-4 Charlie.

HOU Roger.

HOU We're standing by for a crew status report, when you are ready, Gemini 12.

SC Houston, 12.

HOU Go ahead 12. Go ahead 12 Houston here.

SC Roger, we have both completed meal 2 alpha, water gun is reading 985. We have consumed about the same amount of water. Sleep was about 2 hours solid apiece.

HOU Roger copy.

LOS Grand Turk.

END OF TAPE

HOU — Gemini 12, Houston Cap Com. One minute to Antigua LOS and standing by.

S/C — Gemini 12, roger.

ANT — LOS Antigua.

Gemini Control Houston. We've just had Loss of Signal with Antigua with the Gemini 12 crew. One point of clarification, the crew indicated that they received two hours of solid sleep. Our indications here are that they were in a good reasonable rest condition for a somewhat longer period than that. The indications readings from the medical console on the ground indicate that they had a very restful period indeed. We don't expect too much in the way of conversation with the crew for awhile. This will be a most busy time for astronauts Lovell and Aldrin. They have a seven page EVA preparation check list to contend with which should occupy most of their time. They'll be doing such things as assuring the readiness of their suits for EVA configuration, making sure the camera gear is ready, the handrail for tomorrow's EVA will be unstowed. It's to be positioned today during the dayside pass. And the thermo cover for the frog egg experiment which was mentioned will be put back on to provide protection for this experiment while the hatch is open. To quickly run down what our schedule in ground elapsed time looks to be for

milestones leading up to EVA, at 19.10 ground elapsed time over Texas we should give a go for depressurization. At 19:23 ground elapsed time, assuming all is going well, the crew will start their depressurization of the spacecraft. At 19:28 or thereabouts the hatch should be opened. This would be prior to sunset. And at 19:43:30 the - during the first night pass - astronaut Buzz Aldrin would start on his S-13 experiment. We're now picking up Canary. We expect little or no conversation during this pass but we'll stand by for any that transpires.

CYI Houston Flight, Canary Cap Com.

HOU Go ahead.

CYI Okay, we're showing dead bands narrow on the Agena. There supposed to be a next configuration at this time?

HOU I think there should be an FC2. Stand by.

CYI Okay, they're in FC2 right now.

HOU That's correct, Canary.

CYI Roger.

This is Gemini Control Houston. We have had no contact with the crew over Canary. This, of course, is attributable to the fact that the crew is most involved with their EVA preparations. We expect no contact with the crew. It's a system of negative reporting when all things are going well as they apparently are with our lack of contact at this time. This is

to be expected. Gemini Control Houston, 17 hours, 57 minutes and standing by.

CYI Gemini 12, Canary. About a minute to LOS.

S/C Roger, Canary. We're in EVA prep.

CYI Roger.

CYI Houston Flight, Canary Cap Com. We've had LOS both vehicles. Both were go.

HOU Roger.

Gemini Control Houston. We've just had Loss of Signal with Canary. We're on a brief pass over Kano. This is in the outer ring of acquisition with Kano, and we'll be standing by for any conversation.

END OF TAPE

HOU Gemini 12, one minute Kano LOS.

S/C 12, roger.

KNO Kano has LOS.

Gemini Control Houston, 18 hours, 4 minutes into the flight of Gemini 12 now. We just had loss of signal with Kano. And as we expected, we had no conversation with the crew. Cap Com, Bill Anders, only stood by for any conversation that might transpire; however, to reiterate again, the crew has been most involved with their EVA preparations and we expected no conversation during this pass. At 18 hours, 5 minutes, now into the mission of Gemini 12, our next station to contact will be Carnarvon. This is at 18 hours, 27 minutes, 44 seconds GET. So this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 18 hours 23 minutes into the flight of Gemini 12 now. Jim Lovell and Buzz Aldrin are on their 12th revolution. The spacecraft Gemini 12 is presently approaching Carnarvon tracking. With regard to today's EVA, we are following the same EVA sequence in Gemini 12 as was practiced in Gemini 10 by Mike Collins. Today we have the standup EVA and tomorrow the umbilical EVA. Although Collins' standup EVA was shortened by an eye-watering problem, he fared well during the umbilical EVA. Only a spacecraft fuel shortage closed the activity early. And there is a school of thought that an initial exposure to the vacuum of space in a standup environment might aid for the purposes of orientation in EVA. So this morning, we have the standup EVA built around the S-13 UV photography covering two night passes, then a day pass, then another night. We expect hatch opening shortly before sunset for this first night. Our dayside pass should be a busy one differentiating somewhat from earlier standup EVA's. The -- at this time, Lovell will, during the dayside pass, or before the dayside pass, Lovell will maneuver the Gemini 12 spacecraft to heads down position. Aldrin will install the 16 mm EVA camera which will be used tomorrow for evaluation today. He'll install the hand rail which will be left intact for tomorrow's umbilical EVA. He will retrieve and replace some GLV strips, these are glass-type strips to measure contamination. He exercises, he'll retrieve the S-12 micrometeorite collection package, and try for some S-5 and S-6 photography with his camera. During this time, Lovell will reconfigure the

S-13 for further S-13 -- S-13 camera for further photography during the second night pass. One item that is rather unique. During today's standup EVA will be two sets of exercises. Both of these will be performed for thirty seconds or so. One will be done before Aldrin stand ups, but after the cabin is depressurized. The second will be done during the dayside pass. We expect that he will move his hands to his helmet and back at the rate of about once per second. And this activity will be measured or calibrated with a metabolic cost of this activity predetermined in the case of Aldrin on the ground. And we'll note the differences between the two environments. We continue to stand by. We are some one minute now away from acquisition with Carnarvon tracking. However, we expect little or no conversation during this pass as the crew is still involved in preparations for their standup EVA. At 18 hours, 27 minutes, 16 seconds, this is Gemini Control Houston.

CRO I have TM-1 solid, Gemini.

HOU Roger.

CRO Gemini 12, Carnarvon. Standing by.

S/C Gemini 12, roger.

CRO All systems are go Gemini, all systems are go Agena.

HOU Roger, Carnarvon.

(dead air)

END OF TAPE

Gemini Control Houston, 18 hours 35 minutes - no conversation whatsoever over Carnarvon. Gemini 12 crew is obviously still involved in their EVA preparations and we have one minute until LOS.

SC Gemini 12 Roger.

CRO Carnarvon has LOS Gemini and Agena. All systems GO at LOS.

HOU Roger Carnarvon.

Gemini Control Houston, 18 hours 36 minutes now into the flight of Gemini 12. We've had loss of signal at Carnarvon. The next station to acquire Gemini 12 will be Texas at 19 hours 10 minutes 28 seconds into the flight of Gemini 12. Over Texas we expect Bill Anders, Cap Com Bill Anders, here in Mission Control to be in contact with the crew and this would be a milestone contact because at this time if the situation is suitable he will give a GO for depressurization. So at 18 hours 37 minutes 25 seconds this is Gemini Control.

END OF TAPE

Gemini Control Houston at 19 hours, 10 minutes into the flight of Gemini 12 at this time. We're standing by for contact over Texas and at this time we expect Bill Anders to talk to the crew with regard to their depressurization. If we receive a go over Texas they will start depressurizing the spacecraft over Canary. Standing by at 19 hours, 10 minutes. This is Gemini Control.

HOU — Gemini 12, Houston Cap Com, through Texas and standing by.

S/C — Roger, Houston. We're going through our suit integrity check now.

HOU — Roger.

Gemini Control Houston. Still standing by during this pass over Texas.

(PAUSE)

HOU — Gemini 12, Houston Cap Com. Over.

S/C — Houston, this is 12.

HOU — Roger. We'd like you to pump up your O_2 pressure when you go to manual O_2 heater until you get 850 psi.

S/C — Understand pumping up the O_2 till 850.

HOU — Correction, that's 700.

S/C — My .... was up to about .3 to .4 and my command pilot's was .4.

HOU — Understand. Make that O_2 pressure 700.

S/C Understand 700. It's 650 now.

HOU Right.

HOU Gemini 12, Houston. Over.

S/C This is 12, go ahead.

HOU Roger, 12. You're go for depress on your schedule.

S/C This is 12. Roger. We'll be depressing about 19:23.

HOU Roger.

This is Gemini Control Houston at 19 hours, 18 minutes into the flight of Gemini 12 now. You just heard Cap Com Bill Anders give a go for depressurization. The crew was advised to pump the pressure up slightly or move the pressure up slightly and this was done with the manual O_2 heater aboard the spacecraft. It was reading 650 psi. They've moved it, during the process of moving it, to 700 psi.

S/C Houston, you have anything you want to add to our jettison bag?

HOU Stand by.

HOU Bermuda go remote.

BDA Bermuda remote.

HOU Gemini 12, Houston. That's negative, over.

S/C Okee doke. Be advised that the right mike in the pilot's helmet appears to be inoperative. I'm using just the left.

HOU Understand.

END OF TAPE

HOU Gemini 12, Houston, over.

S/C Go ahead Houston.

HOU Roger. Would you check your audio UHF TR number 2 circuit breaker?

S/C Roger. Number 2 audio is up and on.

HOU Roger.

HOU Gemini 12, Houston. One minute to LOS. See you at Canarys in about three minutes.

S/C Roger.

HOU Canary Cap Com, Houston Flight.

CYI Go ahead, Canary Cap Com.

HOU Okay. Everything looked good going over the hill here. Standing by for you.

CYI Roger.

This is Gemini Control Houston. We are standing by now for our pass over Canary./ As soon as we have an indication as to the status of hatch opening, we'll pass this along to you. Nineteen hours, 26 minutes, 54 seconds, this is Gemini Control.

This is Gemini Control Houston. Nineteen hours, 27 minutes. Canary has acquisition. The spacecraft has indicated depressurized and go. We are standing by. Cabin depressed and exercise. This is the arm raising exercise has been completed. The first of these exercises.

Canary advises Flight that everything is looking good at this time. The cabin is depressurized. (pause)

Gemini Control Houston. The suit pressures look very good at this time. Still standing by during this pass over Canary.

Gemini 12 advises he's getting set and the lights are checked out. (pause)

Gemini Control Houston. Nineteen hours, 33 minutes. We are advised the hatch is open, was opened right on time. (pause)

Gemini Control Houston. Aldrin advises he has a small tendency to float out, but very little. This is, no doubt, an outgassing effect that occurs when the hatch is open. He's restrained by his oxygen hoses as well as the fabric tether, which Lovell can operate much like a seat belt. (pause)

END OF TAPE

Gemini Control Houston, we are about one minute until LOS over Canary and all aspects of the flight look good at this time.

This is Gemini Control Houston, 19 hours and 35 minutes into the flight of Gemini 12 at this time. We are - have just been acquired or will be acquired - we've just been acquired by Kano who has acquisition and we'll pick up the conversation at this time, any conversation that might transpire.

SC Okay I'm in rate command,.or rate test.

ALDRIN Notice any motions of the spacecraft combination when I move around just a little bit?

LOVELL Yes a little.

ALDRIN That's how I think we got turned around. Okay at 20 minutes - orient of first star field. I got the first star which is Cassiopeia, the exposure is of 2/20 seconds - 2 at 50 seconds and 2 at 2 minutes

LOVELL Give me the MARK

ALDRIN You got a MARK.

LOVELL Right on time there it looks like.

ALDRIN Soon as I get there I'm going to have to give you the ....

ALDRIN That's vehicle pressure

LOVELL Okay I am just getting into position here .....

ALDRIN Did you hear those thrusters fire when you move around?

LOVELL Negative.

ALDRIN I said did you hear those thrusters fire when you move around?

LOVELL Can't hear you.

ALDRIN Can you hear those thrusters firing when you move aroun ?

LOVELL Oh, no, I'm not.

ALDRIN Well I do.

LOVELL Seems a good amount of garbage area up here. Things floating all around us. Look like some of the paint has peeled on the Agena.

ALDRIN Roger in the first stage.

LOVELL Yes.....the velco covering on the ....cover is melting.

HOU Gemini 12, Houston Cap Com. We have about one minute to Kano LOS. Your VOX is going five by and Buzz will you confirm that you can see stars in the daylight? Over.

ALDRIN Negative, I won't really confirm that. It looked like there was stars when I first got up but a

closer examination - there is so much moving away from both vehicles - hate to say it but it appears to be going up.

HOU Understand, one minute.

LOVELL It may be going in another direction from you however, that would be the way that I am looking for it.....

HOU Understand.

LOVELL I think I mistook that for a star.

HOU Copy.

LOVELL The .....

ALDRIN Okay can you look back and see all of that.....

LOVELL Now when you look to the sun we might ~~see~~ a little bit far to the right.

KNO Kano has LOS

Gemini Control Houston, we've just had loss of signal over Kano, at 19 hours 42 minutes . Heartrates at the start of our EVA ran like this. For Command Pilot Jim Lovell 85, for Pilot Ed Aldrin 92, respiration rates for the command pilot was 15 and for the pilot 18. Very shortly the crew will be heavily involved in their S-13 experiment. We will shoot first at Gamma Cassiopeia which is in the northern sky, secondly at Sirius which is the brightest star in the sky visually and the third field will be Gamma Velorum down in the southern part of the Milky Way. They

will use the grating attachment for this experiment. At this time we have a tape ready for our pass over Canary and we'll play that tape for you now.

CYI Gemini 12 Canary Cap Com standing by

SC Roger. Cabin is depressed, exercise is completed.

CYI Roger, you're looking good down here.

CYI Flight, Canary

HOU Say again Canary

CYI I say everything looks real good,both suit pressures are up, 02 pressure is holding good.

HOU Roger, how about sending some summaries?

CYI They are on the line.

HOU Okay, we have them.

HOU Canary from Flight.

CYI Go ahead Flight.

HOU Send us a bravo Gemini.

CYI Bravo, Gemini.

SC We're in VOX now.

LOVELL Jettison just missed the dipole.

ALDRIN Okay, ...for S-13.

LOVELL .....lights already checked out.

ALDRIN Okay

ALDRIN ....watching your attitude thruster firing, it is really something.

LOVELL We'll go at about.....aren't we.

ALRDIN The star is right behind us. I believe I see stars all around us.

LOVELL Are you sure that is not the repress.

ALDRIN Stars in the daylight. I don't think so. Wait a minute that one star was that waste poucher.

HOU Canary from Flight, send us another main, Gemini.

CYI Roger.

SC We've got some of the timer cord hanging around me here.

LOVELL What's the air dump?

ALDRIN Can't say.

HOU Flight, Agena Charlie.

ALDRIN It looks like I might have to pull some of that stuff away when I get back to the adapter.

LOVELL Why await standard dynamics.

ALDRIN Okay, I'm just drifting here it looks like I have a small tendency to float up but very little, I'm completely free to push myself away and it .....away from the hatch. There doesn't seem to be any tendency at all to want to leave the hatch.

.....out of the way of those washers. I presume particles coming out of the cockpit, but they don't seem to be pushing me out. I imagine there is a little bit of tension on my hoses now but otherwise I'm moving out completely free. I see ...

LOVELL Okay.

ALDRIN A beautiful view.

Now one of the mountains over there.

LOVELL I'm going to rate command Buzz.

CYI Canary is about one minute to LOS.

SC Roger, can you hear us in VOX.

Canary this is 12, can you hear us in VOX.

CYI Roger, we are reading you loud and clear.

SC Roger.

ALDRIN A thrill.

LOVELL Are you in a good position Buzz?

ALDRIN For what the picture?

LOVELL Yes.

ALDRIN Okay, can you tell me if I'm going SEF I can see I'm slipping, can you tell me?

LOVELL Yes your going SEF.

ALDRIN Okay, /...cloud patterns

LOVELL I'm going to rate command Buzz.

ALDRIN	Let me back down in the hatch a little bit.
HOU	Canary Cap Com, Houston Flight.
CYI	Go ahead Flight.
HOU	Send us an Agena Charlie.
CYI	Say again
HOU	Agena Charlie
CYI	Roger
FD	Kano remote
FD	Canary is local
KNO	Kano is remote and we have acquisition.
HOU	Gemini 12, Houston Cap Com through Kano and standing by.

END OF TAPE

Gemini Control Houston, 20 hours, two minutes into the flight of Gemini 12. The Gemini 12 spacecraft has been out of range of acquisition for some time now; however, we are currently approaching the Carnarvon tracking station. There is approximately ten to 15 minutes remaining on our nightside pass. The crew is no doubt completing the final phases of their first S-13 experiments. We have picked up Carnarvon now and we're standing by for any conversation.

HOU Carnarvon from Flight. What did you say?

S/C Carnarvon, how about turning off that Delta P circuit breaker?

CRO Stand by.

HOU Flight, Carnarvon.

S/C I rather doubt that it would effect pictures taken by the grating but it just might interfere with ....

CRO Okay, stand by and I'll get them in Houston.

HOU Flight. Go ahead.

CRO Roger. Go ahead and turn it off.

S/C Okay.

ALDRIN Can you turn the cabin light on, Jim?

LOVELL Yes. You may have to move the ... Buzz.

ALDRIN Let me know when you're ....

LOVELL I've got it.

ALDRIN Now?

LOVELL Now.

ALDRIN	I took them at 8 seconds, okay? Is that all right?
HOU	Roger.
LOVELL	You're facing to the left.
ALDRIN	Hey, Jim, move it to the left.
LOVELL	I don't think you're aligned right.
ALDRIN	Well, I guess it's up to the left.
LOVELL	Yeh, it should be going up towards it. Okay, you're coming up on Antares.
S/C	Okay, I got it. I got Antares.
S/C	Okay.
S/C	You know we're way behind time. I don't know how they expect us to do these things and then.....
S/C	Got it lined up?
S/C	To the right of .....
S/C	.....to the left of us.....
S/C	Yes.
S/C	I got a roll. Watch out for your knee. Watch out for your knee.
S/C	Where is it?
S/C	I'll do it. Don't you do any of it.
HOU	Carnarvon from flight. Agena main.
CRO	Roger.

S/C	What's that forward .....
S/C	Must be ...., I suppose.
S/C	What's that before us?
S/C	Must be.. Orion.
S/C	garbled
S/C	hard right.
S/C	Stand by a second.
S/C	...401 nominally.
S/C	Good pictures, Buzz.
S/C	What's that?
S/C	No reflections. Okay, stand by 20 seconds.
	All set?
S/C	Okay, go ahead.
S/C	Stand by. Mark.
S/C	5, 4, 3, 2, 1, Mark. Stand by for next one.
	Stand by. Mark.
S/C	garbled
S/C	okay. Stand by..huh?
S/C	Get your foot down.
S/C	How's that?
S/C	Okay. Stand by. Mark. 4, 3, 2, 1 Mark.
	Stand by for .... Stand by. Mark.
S/C	Nothing on it.
S/C	Yes.
CRO	One minute to LOS. Standing by.
S/C	Stand by.

S/C We got a blur in this thing, have we got - okay, stand by now. 5, 4, 3, 2, 1, Mark it. Okay, stand by for one in one minute. Tell me when you're ready.

S/C Right.

S/C Stand by. Mark.

CRO Carnarvon has telemetry LOS, Agena and Gemini.

HOU Roger.

Gemini Control Houston at 20 hours, 11 minutes into the flight of Gemini 12. We've just had Loss of Signal over Carnarvon and an amazingly calm pilot, Buzz Aldrin, as you heard. He was performing his S-13 Star Photography. Current heart rates on Command Pilot Aldrin read 75 - or on pilot Aldrin I should say, read 75. On Command Pilot Jim Lovell, 76. Respiration rates for Jim Lovell, 12. For Buzz Aldrin, 18. Twenty hours, 12 minutes, 34 seconds, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 20 hours, 23 minutes into the flight of Gemini 12. The Gemini 12 spacecraft is now in daylight. We are approaching acquisition with Canton tracking station and should acquire Canton momentarily. We are advised that the official hatch opening time, GET, was 19:29:01. Standing by for acquisition at Canton. This is Gemini Control.

HOU	Gemini 12, Houston Cap Com through Canton and standing by.
S/C	Okay, stand by. I can't do anything now.
HOU	Gemini 12, Houston.
S/C	We're on a tight schedule right now.
HOU	Gemini 12, Houston Cap Com through Canton and standing by.
LOVELL	Buzz, watch your white GLV strip.
ALDRIN	Okay. I'm doing it right now.
LOVELL	Take pictures.
HOU	Gemini 12, Houston Cap Com, through Canton and standing by.
S/C	Roger, we're in daylight again. Tell ... we could not catch Gamma Velorum because we didn't have time by the time we got oriented out on the platform.
HOU	Roger, copy.
ALDRIN	All right, we'll tape them in.

LOVELL All right. You turn the camera on. I've got the radiator on , I'm going to ... I believe you're on the S-12 now.

ALDRIN Okay. ...pouch.

LOVELL It was in a pouch.

Speak up.

ALDRIN Okay. I'm off a little bit on the ...

LOVELL ..... is getting against my back now.

..... and wait for a command. ...(garbled)

ALDRIN Did they come up with anything from the ground yet?

LOVELL Its still blowing.

ALDRIN Oh.

LOVELL Stand by one and let me go ahead with the air-to-ground.

ALDRIN Stand by one.

LOVELL Let me go ahead with the air-to-ground.

I've got to give water and hand rate gyro.

ALDRIN Let me get started and I'll..

LOVELL Start your Maurer and ... okay the lanyard, and essentially that'll be all but depress.

ALDRIN Okay, I'll help with the K-pumps.

LOVELL (garbled)

We'll change at the first ... The circuit breaker is on. (garbled.) Make the third ...

ALDRIN Do you want to give me a code?

LOVELL Well, let's see. Hold it.

ALDRIN (garbled) DF? is it

LOVELL No. I say how/looking?

ALDRIN Its just fine.

HOU Gemini 12, Houston. One minute to LOS.

S/C Roger, Houston, can you hear us?

HOU Roger, reading you five by.

S/C Roger, the nose handrail is in. Tapes have been changed. Buzz was on the prism now of the S-13.

HOU Roger. We've been copying.

S/C We'll have to pump up the oxygen here pretty soon.

HOU Okay.

S/C ... out.

CTN Canton has LOS.

Gemini Control Houston. Twenty hours, 31 minutes into the flight of Gemini 12 at this time. Our communications over Canton were extremely rugged and hard to follow. However, we did receive an indication that the prism attachment has been placed on the S-13 camera by Command Pilot Lovell in preparation for the second set of S-13 UV star photography. We also understand that Aldrin did acquire the GLV strips. He's moving right down the time lines that we anticipated. We also read that he did not acquire or did not have time to acquire Gamma Velorum at the end of his first night pass. We do expect to reacquire the spacecraft over Guaymas at

20 hours, 41 minutes, 20 seconds. In the meantime, we have a weather advisory regarding the weather on the stateside pass. The near stationary frontal system throughout the southeastern U.S. is associated with extensive cloudiness and scattered shower activity and this is as shown in the scalloped area on the weather map. Only a few scattered clouds prevail over the southwestern U.S. from Texas to southern California, so viewing conditions should be reasonable along that portion of the ground track. Another frontal system and associated cloudiness is moving into the northwestern part of the U.S. At 20 hours, 33 minutes, this is Gemini Control.

END OF TAPE

This is Gemini Control Houston, 20 hours, 41 minutes into the mission of Gemini 12 now. We are coming up on the final phases of our 13th revolution during acquisition with Guaymas and we will have a continuous run over the States following Guaymas and we'll stand by now for our pass over Guaymas.

S/C ...over here by your window?

S/C Yeah.

S/C Unfortunately, I can't read your trigger.

HOU Gemini 12, Houston Cap Com thru Guaymas, standing by.

Lovell Roger, Houston, this is 12. We are standing by too.

Aldrin Ah, there we are.

Lovell Everything has been completed, except retrieving the EV camera, Buzz is out there taking all kinds of pictures of water.

HOU Roger

Aldrin It looks like a good heading here, Jim. There's Baja, California, Southern California coast out there.

Lovell Houston, without a platform it might be a little difficult to get all three star fields, it takes a little while to get from one to the other. Does the experimenter have any choice of which of these three star fields on the second night pass he doesn't want to have??

CAP COM That's affirmative. If you want to drop one, drop the second one, Algo.

Lovell Roger, we'll drop Algo if we don't have time.

CAP COM That's affirmative.

Aldrin — It looks great...down there... a little....can you move it just a tad?

Lovell — Just a few feet. No, its way up there Buzz, its already loose and I think all the way.

Aldrin — Its all the way?

Lovell — If you're ready to come on down, I can't even see the other end of it.

Aldrin — Ok.

Lovell — I've got the blue.

Aldrin — Ok, that's it.

Lovell — ....I don't know....too loose.....into everything.

Aldrin — Roger (garbled)

Lovell — Look at that, there's California wanting to get some shots of New Mexico, 102.

Aldrin — Roger. Can't see (garbled) ...pretty clouds down there.

HOU — Texas Remote, Guaymas local.

TEX — Texas Remote

GYM — Guaymas local.

S/C — How is the weather in Houston?

CAP COM — Its cloudy. Ah, roger. /We have a front laying just off the Coast.

Aldrin — Yes, I think I can see it.

Lovell — What did I tell you, Buzz? Four days vacation with pay!! To see the world!!

Aldrin Yeah!! Hey, don't everybody smile down there.

CAP COM We are smiling.

Aldrin ...pitch down a little more Jim?

Lovell Pitch down?

Aldrin Yeah.

Lovell (garbled) Ok.

Aldrin ...now over here to the South.

Lovell ...coastline there to the left.

Aldrin Ok. ...me how much is left in the...

Lovell ...know, but let's take some pictures of it. We are going to retrieve it pretty soon.

Aldrin We ought to come over Florida at this pass.

Lovell Heading over the Gulf now?

Aldrin Yeah.

CAP COM You'll be passing over the southern tip of Florida, Gemini 12.

Lovell Roger.....can't be a little higher.

CAP COM Roger.

Aldrin Was there a definite turbine problem or was it your concern over the attitude control that scrubbed the burn?

CAP COM Stand by.

Lovell Hey Buzz, did you shoot the contrail down there?

Aldrin Where abouts?

Lovell Right over the hull, right on the nose. See it?

Aldrin Yeah, picked up the contrail.

Lovell Good.

Aldrin OK, looks like Florida is coming up. How about pitching down just a little bit more? There are the Keys.

Lovell ....that National flight to Houston.

Aldrin Yaw right a little, if you can.

CAP COM That's the backup crew.

Lovell Right.

Aldrin ....going the wrong way.

CAP COM No, that's the backup crew.

Gemini 12, Houston. There was nothing wrong with the Agena attitude control, we are just not going to make any PPS burns.

Lovell Roger, understand.

Aldrin Want to pitch down a little more Jim, roll right.

Lovell Roll right?

Aldrin Yeah.

Lovell Hey, look at that.

Aldrin Recognize that?

Lovell Looks like, uh, let's see, Mobile??

Aldrin Would you believe Tampa?

Lovell OK, I'll believe Tampa.

Lovell I can't see a thing.

Aldrin Alright, pitch down a little more.

CAP COM That sounds like a typical Navy navigator.

Aldrin Boy, look at that beautiful water.

Lovell Well, that's the Cape, I can see that.

Aldrin Sure would like to do a little skin-diving there. Looks like there are a few clouds over the Cape too.

Lovell Looks like we launched on the right day.

CAP COM Gemini 12, Houston. You ought to have some pretty good cloud cover in the 16-1 area.

Lovell Roger.

Aldrin Yaw right a little.

CAP COM You might try to get a picture of that if you can.

END OF TAPE

....try to get a picture of that if you can.

ALDRIN Are you logging all of these in?

LOVELL Yes I am writing them all down.

ALDRIN That one must be 45.

LOVELL That is why we're staying under it.

There is a shot to the right there of the sun.

ALDRIN I know it but these clouds are .....

FD Bermuda remote.

ALDRIN I don't think that's much.

BDA .....mainland

SC Repress

BDA See you next pass.

ALDRIN Do you suppose these are the clouds he is talking about?

LOVELL I don't know, look down there there is a big 16-1 visible.....

ALDRIN Yes, I can.....

LOVELL Yes, this must be it right here.

.....

ALDRIN Move forward I am taking your picture.

HOU You're about over 16-1 Gemini 12.

SC Okay there is a lot of clouds out here.

Roger we can see a lot of clouds.

ALDRIN Ready to smile.

LOVELL Yes.

ALDRIN Affirm.

LOVELL Did you get the right setting.

ALDRIN What are you guessing?

LOVELL 5/6 maybe.

ALDRIN .....(garble)

ALDRIN Okay, smile.

LOVELL Okay.
You're really going to have to fix me this time because I can't see a thing Buzz. It's very hard for me to align because - my tie-down slipped up

ALDRIN Yes

LOVELL I'm having a hard time seeing out of the ....

ALDRIN Maybe we ought to make one more trip beforehand.

HOU Gemini 12, Houston. One minute to LOS. We'd like to have you do the next exercise period over Carnarvon if possible.

SC Roger, can you give us a GET?

HOU Standby. We'll give it to you over Canary.

SC I got 50 showing on here, I might as well (garble) until it's all over.

LOVELL Yes.

ALDRIN I don't know whether we got any pictures with this stuff on the back of us.

LOVELL You used up what's in the camera.

LOVELL Yea it's off.

ALDRIN Well, let's take a picture of each other then.

LOVELL I don't know if it's all gone or not but let it run out Buzz.

ALDRIN It is still running, (garble)

LOVELL Okay, it's 35 minutes do you want to start bringing that camera in and get it all squared away. Cut the (garble) off.

ALDRIN I can hear it still running.

LOVELL Yea, I know, but it will run forever. I just turned it off.

Gemini Control Houston, 21 hours now into the flight of Gemini 12. We are out of range with Bermuda. You were just tuned into a lengthy conversation between Jim Lovell aboard Gemini 12 and Cap Com Bill Anders here in Mission Control. Anders did advise Gemini 12 that if they had a time problem during their second night pass with regard to the S-13, that if they choose to drop any star or star field Algol would be the likely choice. During this pass, they will be shooting with the prism, instead of the grating. The grating gives us the heighth dispersion spectra which - where we might hope to see some details in the

spectra the prism gives a shorter spectra but it also allows us to see the much fainter stars than can be seen otherwise. Surgeon advises us that heart rates are remaining very steady in the high 70 range. Standing by for acquisition with Canary. This is Gemini Control Ho ston.

END OF TAPE

S/C ... I flipped your circuit breaker.

LOVELL What's your suit pressure?

ALDRIN Pressure's good.

CYI Okay, we have both vehicles. TM solid. Both are go.

HOU Roger.

CYI Gemini 12, Canary Cap Com.

S/C Roger, Canarys. How do you read us?

CYI Read you loud and clear.

Okay. Your Carnarvon acquisition will be 21 +38.

S/C Roger. 21 + 38.

CYI That's affirmative. We are standing by.

S/C Roger.

LOVELL Look at that old ... (garbled) at the workstation there.

ALDRIN Yeah. It looks just like the one that was there before.

LOVELL Okay, let's leave here, give up on SGFW.

ALDRIN Okay.

LOVELL Give up on SGF?

ALDRIN Yes, believe you're right.

LOVELL You're out of film now.

ALDRIN Yep. Here's Africa coming up.

LOVELL It come?

ALDRIN Yeah.

ALDRIN The ... out.

HOU Canary,Houston Flight.

CYI Go ahead, Flight.

HOU Send us a Gemini main.

ALDRIN There's no sign that it would effect ...

LOVELL Roger.

ALDRIN Wonder why the pressure is dropping off.

Yeah, pressure gauge is ...

LOVELL What pressure is that?

ALDRIN O_2.

LOVELL Okay on seven. Have you got the heater on?

ALDRIN No.

S/C Canary, this is 12.

CYI Go ahead, 12.

S/C Roger. We just saw a drop in O_2 psia slightly.

Did you get that on the ground?

CYI Okay. Its bouncing a little bit, but it is holding pretty steady down here.

S/C Okay. It's over that 700 now, but it bottomed down to about 400 telemetry and then 600 for a while.

CYI Okay. We haven't noticed any big fluctuations in it. We'll keep an eye on it for you.

S/C Okay. It might just be a gauge problem.

ALDRIN Okay, let me get the camera in.

HOU Canary, send us a Gemini A, please.

ALDRIN Camera is off.

LOVELL Roger. I'll direct the command to stop these rates.

ALDRIN ... both on the seat.

LOVELL Watch it. Watch it.

ALDRIN Okay.

LOVELL Get your foot out of the way.

Get your foot out of the way.

ALDRIN Okay.

LOVELL You're on the switches to the fuel cells.

ALDRIN I don't want to hit those.

LOVELL I can see three of them. Can you look down and see the other three of them on?

ALDRIN The back switches?

LOVELL Yes.

ALDRIN They're on.

CYI Houston Flight, Canary Cap Com.

HOU Go ahead.

CYI Okay, that O_2 is holding real steady at 836.

HOU 836?

CYI Right.

LOVELL Now why don't you check that Delta P gauge? Can you reach around there and do that?

ALDRIN Check it for what?

LOVELL The Delta P gauge.

ALDRIN I can't reach around there now.

LOVELL You've got a problem.

ALDRIN No I can't.

In the first place, you let it slip.

LOVELL Stand there and tighten up on ..now wait.

ALDRIN Boy, I don't know if I'll be able to get these straps on
/.. the way this suit is.

LOVELL (Garbled)
If you can, get in the same position you were in before. And I'll put the strap in the spot the same spot it was before.

CYI Gemini 12, Canary Cap Com. About a minute to LOS. That O_2 pressure is holding real steady now down here.

S/C Okay, Canary, thank you.

CYI Houston Flight, Canary Cap Com. I've had LOS both vehicles and both were go.

HOU Roger.

This is Gemini Control. We've just had LOS with Canary and we're picking up now at Kano. We should start our second night pass after acquisition at Kano and before Tananarive.

S/C (garbled)

KNO Kano is remote and we have acquisition.

HOU Gemini 12, Houston Cap Com, through Kano and standing by.

S/C Roger.

HOU With reference to your exercises over Carnarvon, it'll conflict with S-13, so do your exercise on your schedule. We'll get it off the tape.

S/C Roger.

LOVELL Okay, looks like we're set for S-13 through Kano.

END OF TAPE

S/C ...at lunch time.

S/C ...in the box, does it have a tendency to go sideways?

S/C Let me look and see.

S/C ...still taking pictures of the sunrise and..

HOU Roger.

S/C ...on our back.

S/C What?

S/C I say we are on our back.

Aldrin Ok.

Lovell See the horizon?

Aldrin Looks like the one behind us

Lovell Maybe...

Aldrin Yeah

Aldrin You sure it isn't a Lockheed bolt?

Lovell May be

Lovell (Garbled) there on our ....right.

Aldrin Right?

Lovell Right. ....

Aldrin Pick up a feeler here.

Lovell That's beginning to....right now.

I hope you....did you?

Aldrin Yeah. It takes me a while to...adapter...out here.

Lovell Yeah, I've been out of the sun.

Aldrin Yeah. Its like coming in out of a snowstorm.

Lovell Hey, there's....

Aldrin I'm beginning to....some now. Man, I'll tell you, that's hard to see.

Lovell Ok, you're coming up on...in a few feet

(Several sentences of garbled VOX transmission)

Lovell ...I think I am....I can barely see out buzz, I can barely see down.

Aldrin (Garbled)

Aldrin Ok, it should be that star that's coming into view now.

CAP COM 30 seconds to KAno LOS.

KNO Kano has LOS.

Gemini Control Houston 21 hours 18 minutes into the Flight of Gemini 12 now. We've just had loss of signal with Kano. The next station to acquire will be Tananarive, this will be at 21 hours, 22 minutes, 37 seconds into the Flight of Gemini 12. The Gemini 12 spacecraft is now in its 2nd night pass during this standup EVA. At 21 hours, 18 minutes, 40 seconds, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston at 21 hours, 22 minutes now into the flight of Gemini 12. The Gemini 12 crew, Jim Lovell and Buzz Aldrin, now are involved in their second night pass portion of the standup EVA. We expect acquisition with Tananarive in a matter of a few seconds now and we're standing by for any conversation which might transpire during this acquisition or during this pass over Tananarive. This is Gemini Control standing by.

HOU	Gemini 12, Houston Cap Com through Tananarive and standing by.
S/C	Mark.
S/C	garbled
S/C	All right.
S/C	Stand by. Mark it.
S/C	You were right on, Buzz.
S/C	I'm not so sure the camera's on this time. I think it could stand a little moving, Buzz. ....I mean.
S/C	Stand by. Mark. Stand by for the next one. Tell me when you're ready.
S/C	All right.
S/C	Stand by. Mark.
S/C	Stand by. Mark it.
S/C	All right.
S/C	Stand by. Mark.

S/C It's going pretty well.

S/C Let me know when you're ready.

S/C All right.

S/C Stand by, Mark.

Got it?

S/C Okay.

S/C Okay, we'll be ..... in a second.

S/C Okay, we're going over to Canopus.

S/C On my mark.

S/C Okay.

S/C It's not very far from looking at them.

.....which way you go.

S/C What's that to the right? The bird, huh?

S/C Yeh, the bird wings of Velorum.

S/C garbled.

S/C ....approximately appears to be 29 degrees.

S/C read off the .... wing.

HOU Gemini 12, Houston Cap com. One minute to Tananarive LOS.

S/C Roger, Houston. I have the voice transcript two hours now, going remote.

HOU Roger, understand.

TAN Tananarive LOS.

Gemini Control Houston, 21 hours, 30 minutes into the

flight now. We've just had our LOS or Loss of Signal with Tananarive. Most of the conversation you've heard during this pass was concerned with the S-13, the UV Star Photography experiment. Our next acquisition will be at Carnarvon and that will be at 21 hours, 38 minutes, one second into the mission. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston 21 hours 38 minutes into the mission now. Just coming up on acquisition with Gemini 12 over Carnarvon. Standing by for it.

ALDRIN When I rub my gloves together there is static electricity between them.

LOVELL Stand by. Do you read?

ALDRIN ...phenomenon.

LOVELL Stand by. Mark. Stand by. Mark.

S/C ..load...pictures.

CRO 12, Carnarvon standing by.

S/C Roger.

S/C All set? Stand by-Mark.

S/C Stand by. Mark.

S/C Next one.

S/C Low as I can get it. Hold this under now.

S/C All right.

S/C Stand by. Mark.

S/C How is it going? Pretty well?

S/C Well, I ... a little bit left, but it ...

S/C That is okay.

S/C Stand by. Mark.

S/C ...give me another one. When you are ready.

HOU Carnarvon Com, Flight. Gemini main.

CRO Roger.

S/C Stand by. Mark.

CRO 12, Carnarvon.

S/C Go ahead.

CRO Roger, we have requested that you record a GET at start of ... exercise.

S/C Roger, will do.

S/C How about the exercise ... holding this cable and ... down for 2 minutes?

CRO That doesn't count.

S/C Doesn't count, huh?

S/C No useful work is being done.

LOVELL Just keep your feet out of the fuel cell switches.

ALDRIN ... I do believe the sun is coming up.

LOVELL Is it?

ALDRIN Well, we will get one more... be there in a couple of minutes. How are you doing on that one?

LOVELL 5 seconds to go. Stand by. Mark. Go when you are ready.

ALDRIN Okay.

LOVELL Stand by. Mark.

ALDRIN Sun coming up....

LOVELL We will make an 11 inning version..

CRO One minute until LOS. Standing by.

S/C Roger. Standing by. Mark. ...S-13 exposure Carnarvon...1 minute ... due to the sunrise.

CRO Okay.

S/C You want to record that one.

S/C Okay.

S/C Okay, let me know when you are ready with the camera.

LOVELL Okay, stand by a second. Just let her hold there Buzz. We will just keep it.

S/C Did...

ALDRIN ...

LOVELL Okay.

ALDRIN Taking a few pictures here, just about dawn.

LOVELL Do you feel that you rested for 2 minutes?

ALDRIN What?

LOVELL Do you feel that you rested for 2 minutes?

ALDRIN No, man.

LOVELL ...

CRO We have LOS of both vehicles.

HOU Roger.

CRO All systems go at LOS.

Gemini Control Houston 21 hours 47 minutes. We have just had LOS over Carnarvon.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/12/66, 12:36 p.m. CST

This is Gemini Control Houston at 21 hours, 50 minutes into the mission of Gemini 12 at the present time. Our next station to acquire will be Canton and this will be 57 minutes after the hour. Fifty-seven, 43 seconds after the hour. By the time we are acquired by Canton we expect the hatch to be closed and repressurization of the spacecraft being taken place. So at 21 hours, 50 minutes, this is Gemini Control Houston.

END OF TAPE.

Gemini Control, Houston, 21 hours, 58 minutes into the mission now. We have acquired Gemini 12 over Canton and conversation is taking place now with, remoted through Canton with Pete Conrad and the crew.

Lovell That was a pretty good exercise, wasn't it?

Aldrin Yeah. That was a lot of fun.

CAP COM 12, Houston. How did the hatch closing go?

Lovell ...slipped on me there,...one star to the other.

Aldrin ...pick up stars. Take too long for me to get ...

Lovell Yeah, I am starving to death already.

Aldrin If we can...

HOU 12, Houston.

S/C Go ahead. This is 12.

HOU Roger, how did the hatch closing go?

S/C Roger, we are two feet above right now. We want to pull off until we pull up some pressure.

HOU I didn't quite copy. Would you say again?

S/C We are 2 feet above and the cabin, trying to build up some pressure. Let me know when we are going to start...pressurizing cockpit.

HOU Houston copy.

S/C Houston, 12 here. I am sure .. easily.

HOU Houston copy.

S/C ...going by me now.

S/C Maybe a little of this.

S/C ...

S/C ..going up again.

S/C I have a status for you Flight.

S/C Oh, I see what is broken

S/C What is it.

S/C My lap belt is broken. It apparently came apart somehow. Well, it wasn't ... anyway.

S/C No.

S/C ..appreciate...

HOU 12, Houston, 1 minutes until LOS. Standing by.

S/C Roger. We are building up pressure in the O_2 again. We are about 4... now.

HOU Houston copy.

S/C ...another pressure...

S/C Well, do we have everything?

S/C I don't know.

CTN Canton has LOS.

Gemini Control Houston 22 hours 7 minutes into the flight of Gemini 12 at this time we have just had loss of signal. Passed out of range of Canton tracking station. Our communications over Canton was quite difficult to follow. The transmission did come in quite garbled. However, we did read that the hatch has been closed. It was scheduled to have been closed prior to Canton and the crew did indicate that they were building up the pressure in the cabin.

Also a confirmation was made that they performed their set second set of exercises or exercise. Buzz Alrdin performed his exercise over Carnarvon. Our next acquisition will be California at 22 hours 15 minutes into the flight of Gemini 12 and we will pick up at that time. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 22 hours 15 minutes into the flight of Gemini 12 at this time. We're standing by now for our stateside pass and expect an acquisition by California in just a moment. Standing by for California this is Gemini Control.

HOU Gemini 12, Houston. Standing by at California. Gemini 12, Houston.

SC Go ahead Houston

HOU Roger, would you turn your delta P circuit breaker on and let me have an idea how you're coming there. I've got a rather lengthy update. If you don't want it now we will give it to you later.

SC The delta P circuit breaker is coming on. We still have the two lights and we're right in the middle of unstowing all this stuff so how about giving it to us later.

HOU Okay, we are standing by.

FD Guaymas remote, California local.

GYM Guaymas remote

CAL California local.

This is Gemini Control Houston, 22 hours 18 minutes. We are continuing to standby during this stateside pass. However, as you heard Command Pilot Lovell indicate the crew is quite

involved at the present time of restowing all of their gear which was involved during the standup EVA. Continuing to standby at 22 hours 18 minutes, this is Gemini Control.

FD Texas remote, Guaymas local.

TEX Texas remote.

GYM Guaymas local.

HOU 12, Houston. Gemini 12 Houston.

SC Go ahead Houston, Gemini 12.

HOU Roger would you check your delayed time circuit breaker please?

SC Roger it appears to have been bopped, let me put it forward.

HOU Okay, thank you very much. While you are listening we got an eat period for you starting at 23:00 to 23:50 and during that eat period at 23:17 over Carnarvon we would like you to purge the fuel cells, section 2 and then section 1. We'll update the rest of your flight plan at Carnarvon.

SC Okay, that is purge the fuel cells over Carnarvon, we'll be standing by for that call for us to do that.

HOU Okay, that will be 23:17:00.

SC 23:17, okay.

SC Okay, is there any S-5,S-6 of interest on this pass?

HOU That is negative. We are going to delete it, that is in the flight plan update that we will pass you whenever you are ready to copy it.

SC I mean on this stateside pass right now.

END OF TAPE

HOU 12, Houston.

S/C Go ahead.

HOU At your convenience, would you go back to FC1 please?

S/C Roger, will do. What is our orbit now?

HOU Wait one.

HOU 12, Houston. You're still in a 139 by 163.

S/C 139 by 163. Thank you.

HOU Jim, for your information, as you pass Bermuda there, the Blue Angels are putting on a little show right now.

S/C Uh huh.

HOU Excuse me, over GBI.

HOU And 12, this is Houston. If you have a chance could you give us 15 seconds on what happened to your tie down?

S/C Yeh, Pete. One of the tie downs we found out after we repressed part way, well, the lap belt let go.

HOU Roger, did it break or did it just come loose?

S/C It looks like maybe it wasn't fastened correctly or something like that. It just came loose. I tried it again after we got down and it was okay.

HOU Okay, thank you.

S/C It happened on the day pass that it let go .....up against the top where it made it very difficult to see anything but we may get the stars on the second pass.

HOU Okay, thank you.

HOU Bermuda remote.

BDA Bermuda remote.

S/C Houston, 12.

HOU Go ahead.

Go ahead, 12. We're listening.

HOU Gemini 12, this is Houston. We're listening.

S/C Roger. A possible problem popped up before EVA. We attempted a urine dump and we weren't too successful. We'll give it another try here as soon as we get squared away.

HOU Okay.

HOU 12, Houston.

S/C Can you guess what the Command Pilot did not jettison on the last EVA?

HOU Yes, we can guess. We want you to check your secondary coolant valve circuit breaker, please.

HOU 12, Houston. Did you copy that?

S/C 12. Negative.

HOU Roger. Check your secondary coolant valve circuit breaker. The celanoid urine dump

is wired to that.

BDA Houston Cap Com, Bermuda Cap Com.

HOU Go ahead.

BDA You're not - ... transfer resumed.

HOU 12, this is Houston. Check your secondary coolant loop circuit breaker.

S/C Roger, understand you want the secondary - wait a minute, we've got that one on. Houston, 12. Say again.

HOU Roger, check that it is on. Is that on?

HOU 12, Houston. We have one minute to LOS.

HOU 12, Houston. How do you read me now?

S/C Much better, Houston.

HOU Okay, check that secondary coolant loop circuit breaker on.

S/C All coolant loop circuit breakers on.

HOU Okay, and have you tried the urine dump or are you going to?

S/C We haven't tried it yet but we're going to give it another try here.

HOU Okay, we're coming up on about 30 seconds to LOS at Antigua.

S/C Oh, okay, Pete, it's beginning to fall into place now. I remember somebody saying that

when you have that secondary coolant valve circuit breaker open that you can't do a urine dump. Is that right?

HOU That's affirmative, that's affirmative.

S/C Just the configuration we're in.

HOU Okay.

END OF TAPE

Gemini Control Houston. We're out of range now with Antigua. The next station to acquire will be Canary. We expect acquisition with Canary at 22 hours, 39 minutes into the mission. At 22 hours, 36 missions -- minutes, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston. Twenty-two hours, 38 minutes now into the flight of Gemini 12. Astronauts Jim Lovell and Buzz Aldrin are nearing acquisition with Canary Island tracking, and we will stand by -- standby for any conversation which might transpire during this pass. In the meantime, in Mission Control, the backup crew members for Gemini 12 are now present.

HOU	Affirmative.
CYI	Okay, we'll give them a TX then.
HOU	Okay.
CYI	Okay, we've got TM solid.
HOU	Roger.
CYI	Gemini 12, Canary Cap Com.
S/C	Canary, Gemini 12, go ahead.
CYI	Roger. Like to check the status of your RCS heaters.
S/C	Roger. RCS heaters have been on since inversion checklist.
CYI	Okay. And verify that your TM switch is in the command position.
S/C	TM is command.
CYI	Roger. Sending you a TX.

CYI Houston Flight, Canary Cap Com.

HOU Go ahead, Canary.

CYI Okay. He's got his ACS on, horizon sensors are still off and the geo rate's still off. Do you want him to turn them on?

HOU Negative.

Canary, Houston Flight.

CYI Go ahead.

HOU Send us another Agena main, please.

CYI Roger. Agena main?

HOU Affirmative.

CYI Roger.

12, Canarys. About a minute to LOS. We'll be standing by.

S/C Roger, Canarys. We'll be able to take an update here shortly.

CYI Okay. I guess we'll give it to you over Carnarvon. And we'll see you in the morning.

S/C Righto.

CYI Houston, Canarys..

HOU Go ahead.

CYI Okay. We've had LOS on both vehicles and both were go.

HOU Okay. We'll see you in the morning.

CYI Aye that's affirmative.

Gemini Control Houston, 22 hours, 44 minutes. We've just had LOS with Canary. We expect to pick up Kano momentarily. In the meantime, as we started to mention, the backup crew members for Gemini 12, that's Gordon Cooper and Gene Cernan, are now in the Control Center and its expected they will fill in and assist in Cap Com duties along with Pete Conrad and Bill Anders. Standing by for any conversation which might transpire over Kano, this is Gemini Control Houston.

HOU Kano go remote.

KNO Remote.

HOU Gemini 12, Gemini 12, Houston through Kano, over.

S/C Roger, Houston, this is 12 here.

HOU Roger, did you get the -- did Buzz get the GLV strips on the EVA?

S/C Naturally.

HOU Very good. Very good. 12, Houston. We have about a five minute pass here at Kano. We are standing by. You'll be updated over Carnarvon.

S/C Roger. Understand.

(pause)

END OF TAPE

HOU 12, Houston. One minute to LOS Kano, standing by.

SC Roger Houston. We are breaking out some lunch now.

HOU Okay.

KNO Kano has LOS.

Gemini Control Houston, 22 hours 52 minutes into the flight. We've just had loss of signal with Kano. The GLV strips referenced during the conversation between Pete Conrad and the Gemini 12 crew, these are four glass like strips that are located behind the hatches on spacecraft 12. During the first standup EVA, Aldrin was scheduled to pull two of these strips and replace with two others stowed within the cabin. Tomorrow he is scheduled to pull all four of these strips. These are aboard to measure any contamination either in powered flight or in orbital flight during the flight of - during the mission of Gemini 12. We assume from his answer that he was successful in fulfilling the needs of the flight plan for today. Twenty-two hours 53 minutes this is Gemini Control Houston.

END OF TAPE

This is Mission Control, Houston, 23 hours 7 minutes 38 seconds after liftoff. During the just completed pass over the Tananarive voice remoting station, spacecraft communicator Pete Conrad passed to the crew of Gemini 12 an update of their flight plan which included two runs of the Airglow Horizon Photography Experiment, S-11, the S-29 Moon Libration Region Photography using the star fomalhaut as the target star. An eat period was programmed, planned landing area update during the pass over the Coastal Sentry. Crew status report and a purge of fuel cells during the next Hawaii pass, and another run of the M408 Beta Spectrometer Experiment and also he spelled out the hours for their sleep period tonight. We have a tape of this particular pass and we will play it for you now and it includes the ground elapsed times of these various experiments and activities. Let's listen to that tape now.

FD Tananarive go remote.

TAN Tananarive remote.

HOU Gemini 12, Gemini 12, Houston through Tananarive standing by.

SC Houston, 12 here. We won't be copying but can you give us a brief resume of what we have coming up?

HOU Okay, we'll do that. We got you eating as you are now. Around 24:13 elapsed, we'd like an

S-11 mode A, and then on the next rev at 25:43 another mode - S-11 mode B. Along about 27:05 we'll get the X-ray experiment back on and at 27:13 an/S-29 on fomalhaut. Then we got you at another eat period, we'll update your PLA update at 28:12 over the CSQ, and get a few things at that time over Hawaii, a crew status report 28:27, you'll have another fuel cell purge and right around 29:00 we'd like to catch that M408 again, which we missed yesterday. Then we are going to have you go to bed at 29:30.

SC Thank you.

HOU Okay, they'll give you the exact details for that whenever you are ready to copy. You can get it at Carnarvon or we will give it to you at the states again.

SC Okay, was that S-29 on fomalhaut?

HOU That is affirm.

SC Houston, 12.

HOU Go ahead 12.

SC (garbled)

HOU Say again 12, I am not reading you. Gemini 12, Houston, say again I didn't copy that.

SC I said all the experiment....

HOU Roger

HOU 12, Houston.

SC Go ahead Houston.

HOU Roger, now on your EVA tomorrow you will be going a rev later but it will be approximately the same GET as scheduled. You realize that seeing you have not gone into your high orbits you will pick up about one whole rev in time but we are going to keep the flight plan going according to the GET. This also means that you will recover a rev later but it will be at approximately the same GET as originally scheudled.

SC Roger, understand.

HOU Carnarvon Cap Com, Houston Flight.

CRO Flight, Carnarvon go ahead.

HOU Would you send us an Agena Charlie at your acquisition?

CRO Roger.

HOU Gemini 12, Houston. One minute to LOS Tananarive standing by.

TAN Tananarive LOS.

This is Mission Control Houston again. That completes the recent pass over the Tananarive voice remoting station. In the discussion between spacecraft communicator Pete Conrad and the crew of Gemini 12, he did mention that the actual ground elapsed times of flight plan events would be as on the original flight plan but because of being in a low orbit resulting from

not being able to do the high apogee burn the actual events will be some one revolution later, because of the spacecraft being in a lower orbit travels faster in a shorter period. We were expecting acquisition now by the Carnarvon, Australia tracking station. We will cut into that conversation as soon as we hear the spacecraft communicator at Carnarvon put in a call to the spacecraft. They are coming up now, let's join it.

SC Carnarvon, 12 here.

CRO Okay, I'm shipping up a TX.
Okay, and I'd like for you to turn your encoder off for a minute so we can get a reset timer reset command to the Agena.

SC Roger.
We're standing by for the update.

CRO Okay, you can turn your encoder back on.
All right we have a fuel cell purge section 2, followed by section 1 and you are ready to copy update is that affirmative?

SC Roger, we'll start fuel cell purge if you'll give us the update.

CRO Okay. 24 13 22 S-11 Mode A, 25 43 33 S-11 Mode B, 27 05 00 X-Ray on, data with Mack, 27 13 36 S-29 Fomalhaut at yaw south 50 degrees,pitch up 50 degrees. From 27 50 to 28 30 eat period, 28 12 00 at CSQ a PLA update, 28 27 00 at Hawaii you will

have a crew status report, a fuel cell purge section 1 then section 2 and leave the cryo read in H2 for the sleep period. At 28 57 00 M408 Mode A, 29 30 00 start the sleep period, H2 heater off for the sleep period.

HOU Carnarvon send us an Agena main please?

CRO Roger.

At 38 40 00 end sleep period. Did you copy that?

SC Roger, we got everything except about leaving the cryos - is that at H2 at Hawaii with the crew status report?

CRO That is affirmative.

SC Roger, and also be informed that our delta P lights on the fuel cells go out while we consume water in making the meals.

CRO Okay we copy that.

CRO Okay and let us know when you are through with the fuel cell purge.

SC Will do.

END OF TAPE

HOU Carnarvon from Flight.

CRO Go ahead.

HOU How about an LOS main Gemini.

CRO Okay.

S/C Carnarvon, Gemini 12 is through with the fuel cell purge.

CRO Okay.

Okay, can you switch to H_2 on your borrow switch please?

S/C H_2.

CRO Okay, we've got it, thank you, you can go back to O_2 off.

12, Carnarvon. We have one minute to LOS. We'll be standing by. You should be coming into daylight.

S/C You're right.

CRO What kind of a day do we have?

S/C Well, its pretty clear up here.

CRO Right.

S/C What have you got down there?

CRO Haven't had a chance to look at it yet.

S/C Did anybody ever find out what was wrong with our radar?

CRO No, not to my knowledge. Seemed like some sort of a problem with ...

CRO Carnarvon has LOS. Both vehicles. All systems go at LOS.

This is Mission Control Houston again. 23 hours, 22 minutes and 50 seconds after liftoff. Both spacecraft as you heard, were go on the ground over the Carnarvon pass. It'll be coming up over Canton Island voice remoting station in approximately 10 minutes. And should be approaching Hawaii toward the upper edge of the Canton acquisition area. Should be one continuous pass, voice-remoted from Houston through Canton and then through the spacecraft communicator at Hawaii. This is Mission Control.

END OF TAPE

This is Mission Control Houston at 23 hours 33 minutes 23 seconds after lift-off of the Gemini 12 mission. While we are standing by for momentary contact with the Canton Island voice remoted station which will continue on through the Hawaii tracking station pass, we have a time of repressurizing the cabin during this morning's standup EVA. It was 21 hours 58 minutes and 35 seconds ground elapsed time. Now you can assume that the hatch was closed some 1 minute earlier than this. We now have acquisition and conversation going on between Pete Conrad and the spacecraft. Let's join the conversation now.

HOU ..you used on your eclipse photos.

S/C Roger, I took about 4 of them, one of them was a ... time and I think ... one second was probably very good picture. Four seconds we were beginning to break out at that time. So I finished that one and one more short one.

HOU Roger, understand about 4 photos.

S/C Roger, that's how many we took.

HOU Okay, thank you.

S/C How are we doing with that pass .....

HOU I didn't copy that, say again please.

S/C Roger, the update said that the rear window was suppose to have a shade on it.

HOU I will have to check on that for you, I wasn't here when all that was going on.

S/C Yea, ...

HOU 12, Houston, we have about six minutes here at Canton and we are standing by.

S/C Roger

HOU Canton go local.

CTN Roger, Canton local.
LOS both vehicles, everything is okay.

HOU Roger, Hawaii.

HAW Gemini 12, Hawaii - standing by, we have nothing for you.

S/C Roger, Hawaii.

HAW Cryo O_2 tank pressure is down around 780 or somewhere to that.

HOU Okay, let's just both watch it.

HAW Okay. It looks like it is still coming down somewhat.

HOU Okay, keep your eye on it.

HAW Where are we staying on the dome right now.

HAW Yea, from what we show on it, it looks like we should be able to go clear down to 500 .

HOU Standby, we will get a number here.

HAW Okay.

HOU Yea, we use 500 to call them.

HAW Okay, very good

END OF TAPE

HAW We are showing the delta P lights off.

HOU Survey of delta P lights off.

HAW Roger. What is the present thinking on that.

HOU When we take a drink we lower the pressure in that water system and allow a little more room in there so we don't trigger the pressure switch.

HAW Okay. We just got all delta P lights on now..

HOU Okay.

HAW No, TM ... sorry about that.

HOU Okay.

HAW Hawaii has LOS.

This is Mission Control Houston again. The change of shift press conference of the Green Team of Flight Controllers will begin momentarily in the Houston News Center. Participants in the press conference will be Mr. William Schneider, Mission Director for Gemini 12, Mr. Clifford Charlesworth, Flight Director of the Green Team, John Aaron, Electrical Environmental and Communications engineer and Dr. Fred Kelly from the Green Team. At 23 hours 48 minutes 31 seconds after lift-off. This is Mission Control.

END OF TAPE

This is Mission Control Houston at 24 hours 27 minutes and 8 seconds after lift-off. We have accumulated some 6 minutes of voice air-to-ground transmission tape during the recent state side pass and the pass over the Ascension Island remoting station, which accumulated during the change of shift press briefing. Let's play those tapes back now.

CAL California is remoted.

HOU Gemini 12 Houston.

S/C Go ahead.

HOU Roger, I have got a few things to pass to you here. First, if you haven't turned on your manual O_2 heater would you turn it on, please? And bump it up to 700.

S/C Okay.

HOU And on your S-29 experiment, between each series of photos, would you skip one frame?

S/C Okay, will do.

HOU And I have a node update if you are ready to copy.

S/C Houston...generally low rate now, we will get it a little bit later.

HOU Okay, and also I would like to talk to you about your fuel cells when you have time.

S/C Okay.

HOU You want it now?

S/C Go ahead.

HOU Okay. What we feel is happening here on the ground that you are leaking some O_2 into the water line from the fuel cell. And as you drink water you relieve the pressure. We feel that you put enough oxygen into the water side now that you have completely expanded the N2 bladder and therefore you are building up some higher water pressure and as you drink water, it can down to its normal level and turn out the delta P lights as you filled the spacecraft tank. Now to get rid of as much water as possible we are going to ask you to purge oxygen once every rev for 30 seeonds and then we will continue normal hydrogen purges, but in doing that the feeling is when your first open the oxygen purge valve you jettison what water is in there with the oxygen flow and by doing a 30 second purge each rev, we will get rid of as much product water as possible. And we will call you when we want you to do the 30 second purge over a station once a rev. Do you have any questions on that?

S/C Roger. What does that do to our oxygen supply?

HOU It won't affect it because youre purging for

HOU 30 seconds once per rev and that is the same as for 2 minutes every 6 hours.

S/C Okay.

HOU We are watching your oxygen very carefully and have the feeling that we will be able to keep you okay on O_2. No problem.

S/C Okay. (Keying) camera....

HOU 12, Houston. Would you pass me a PQI at your convenience?

S/C We have 52 percent.

HOU Roger. Understand five two percent.

S/C Roger.

HOU Guaymas remote, California local.

GYM Guaymas remote.

CAL California local.

HOU 12, Houston, in about a minute and a half I want to ask you for a short count. We are going to remote through an aircraft here in Texas just to check it out. And you need not acknowledge this transmission. I will call you in about 2 minutes.

Gemini 12, Houston. Would you give me a count to 10 and down, please? And that is all we needed.

S/C On your toes, 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 Long count out.

HOU Gemini 12, Houston. Outstanding. Thank you.

GYM Guaymas local.

Fisher 372 go remote.

...

HOU Gemini 12, Houston. Would you do it one more time please?

S/C Okay, 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 - 2 3 - 4 - 5 - 6 - 7.- 8 - 9 - 10....from Houston, we will send it to you.

HOU Roger. Thank you very much for the airplane that time. Houston is standing by. Gemini 12, this is Houston, we are going back to our normal communications configuration at this time. ...372 go local. ...372 go local.

GBI LOS GBI.

HOU Gemini 12 Houston 1 minute to LOS Antigua, see you via Ascension. Gemini 12, Gemini 12, Houston standing by at Ascension. Gemini 12 Gemini 12, Houston standing by at Ascension. Over.

S/C Very great.

HOU 12, this is Houston say again. Oh, busy, I got you. Never mind.

HOU Gemini 12, Houston. One minute until LOS at Ascension. Standing by.

S/C This is Gemini 12.

HOU Go ahead, 12, this is Houston.

S/C Roger, We seem to be having the same problem we were having yesterday in getting the Agena to hold, it is starting already to gyro compassing and...

HOU Roger, are you using FC-1?

S/C Negative Flight, mode 2.

HOU Okay. 12, this is Houston. The last time we were able to look at you, you had not stablized at the time you turned the ACS off. And the horizon sensors were still on. You might go over your whole set of commands again. And ensure that it is damped itself before you turn it off.

S/C You mean turn it on?

HOU Do you have it on now?

S/C Negative, it is not on now.

END OF TAPE

HOU Is it on now.

S/C ... is on now.

HOU Okay, but what you are telling me is that when you did have it on gyrocompassing, it didn't seem to be responding. It was over-shooting and coming back, is that right.

S/C That is affirmative.

HOU How far was it over-shooting.

S/C 90 degrees.

HOU 90 degrees.

S/C Yea, we still show the proper aim .. and got the proper command in for TDA forward and in Flight Command Mode 2 ... the Agena control and she took off on 90 degrees. We have double checked our commands.

HOU I see, Okay, let us kick it around for a little bit.

S/C Roger.

HOU 12, Houston, when did this happen. Were you over the states. Was this while you were still over Ascension and over the range.

S/C I'm not for sure where it was happening, Houston.

HOU Okay.

This is Mission Control at 24 hours, 41 minutes and 2 seconds after liftoff. That completes the pass over Tananarive voice remoting station. We have loss of signal there and in some ten minutes the spacecraft and Agena will be passing over the Carnarvon, Australia tracking station, mid-way through the sixteenth revolution. We will come back up at that time. This is Mission Control, Houston.

END OF TAPE

This is Mission Control Houston at 24 hours, 48 minutes and three seconds after liftoff. Gemini 12 momentarily be picked up electronically from the Carnarvon, Australia tracking station. We're standing by for spacecraft communicator out at Carnarvon to put in a call to Gemini 12. They now have telemetry solid at Carnarvon. Carnarvon is now putting in a call. Let's listen.

S/C	Go ahead, Carnarvon.
CRO	I'm going to send you up a TX.
S/C	Roger.
CRO	Okay, we've got an Agena clock reset load. We'd appreciate if you'd turn your encoder off.
S/C	Encoder off.
CRO	Okay, 12, Carnarvon. You can turn your encoder back on again.
HOU	Carnarvon from Flight.
CRO	Go ahead.
HOU	Ask him how he thinks the Agena is performing right now.
CRO	Okay. Looks real steady from the ground, Flight.
CRO	12, Carnarvon.
S/C	Go ahead.
CRO	Okay, we show you in FC2, Agena 0 0 0, and you BEF. Is that affirmative?

S/C Roger, we're not too sure yet. We're in that area where we can't see the ground at all. We were just about ready to ask you what you had down there.

CRO Right. We show the ACS is on, horizon sensors are on and you're gyrocompassing TDA forward. Everything looks pretty steady down here. Could you give us any idea from up there?

S/C Yeh, we're steady from here too. I guess maybe we're just going to take a little time to gyrocompass around and get settled down.

CRO Okay.

HOU Carnarvon from Flight.

CRO Go ahead.

HOU We agree that we ought to let it settle down and give it time to gyrocompass. The other think we'd like them to check is that when checklist calls for horizon sensors off, did he note that the last time out, we may or may not have seen that over the states.

CRO Okay, You did not see it over the states?

HOU That's right.

CRO Right.

HOU But, we just might not have contacted at the time, Jim, but you might remind him of it.

CRO Okay.

CRO 12, Carnarvon.

S/C Go ahead.

CRO Okay, just a reminder that when you go through that checklist and come to horizon sensors off, that you might put it in there that it seems as though over the states they note it still on. They didn't notice the off sent.

S/C All right.

CRO Okay, and right now, you're perfect. You're there at TDA forward and no yaw park rates at all. You're real great. Though you might just have to give it a little more time to gyrocompass.

S/C Right.

CRO Flight, Carnarvon.

HOU Go ahead.

CRO Okay, we're noticing a slight increase trend in the OCSA nitrogen pressure.. temperature, excuse me. It's 86.3 now.

HOU Going up?

CRO Affirmative.

HOU Okay.

CRO Okay, we show Canaveral about 82.7, 81.5 at Texas.

HOU Okay, we'll watch it.

CRO One minute to LOS at Carnarvon and standing by.

HOU And can we have an LOS main Gemini, please.

CRO Roger.

HOU And a contingency India.

CRO Roger.

CRO Carnarvon has LOS Gemini.

This is Mission Control Houston, 24 hours, 57 minutes and 25 seconds after liftoff. We have had loss of signal at the Carnarvon, Australia tracking station. We'll be coming up over Hawaii at 25 hours and 13 minutes which will be some 20 minutes from now. We'll come back up at that time. This is Mission Control.

END OF TAPE

This is Mission Control Houston, at 25 hours, 13 minutes and 18 seconds after liftoff. We are standing by here for acquisition at the Hawaii tracking station which should come up any moment now. Still standing by for Hawaii. According to the site acquisition table, it should be in about four seconds. Hawaii does have telemetry solid both vehicles. Let's standby now for any air-to-ground conversation.

HAW Gemini 12, Hawaii, we would like to do a 30 second fuel cell purge whenever you are ready.

S/C Roger, go ahead. Which section would you like.

HAW We would like both sections, we can start out with section one first.

S/C Roger, start out with section one - 30 seconds.

HOU That is just oxygen, Hawaii.

HAW And that's oxygen only on this.

S/C Roger, O_2 only. Purging on section one.

HAW Roger.

S/C Roger, on section two.

S/C Roger, fuel purge off.

HAW Roger, thank you, looks good.
We have nothing further for you, we will be standing by.

S/C Roger.

HAW And we have no Delta P lights at this time and no Delta P lights during the purge.

HOU Were they on before the purge.

HAW That's negative. They were off the whole time.

HOU Thank you.

HOU Hawaii from Flight.

HAW Go, Flight.

HOU Would you ask him if the EVA jettison list was normal or were there any exceptions.

HAW 12, HAWAII. Was the EVA jettison list normal or were there any exceptions on it.

S/C It was normal except the command pilots ECD was not jettisoned.

HOU Thank you.

HAW Roger, thank you.

This is Mission Control. We are still over the Hawaii tracking station waiting for additional conversation between spacecraft communicator at Hawaii and the crew of Gemini 12. We still have some three minutes and 10 seconds in this pass. Probably unlikely we will have any further conversation, but we will standby just in case. There will be a gap of oh, some 2 minutes between the Hawaii loss of signal and acquisition at California and the Stateside pass at the end of the 17th revolution and the beginning of the 18th. We will standby for further conversation from Hawaii.

HAW 12, Hawaii, we will have LOS in a minute.

S/C Roger.

END OF TAPE

HAW Hawaii has LOS both vehicles. ..turn the control system off on the Agena and went to the Gemini control system right at our LOS.

HOU Roger, Hawaii.

HAW Everything was go at LOS.

This is Mission Control Houston. During that pass over Hawaii there was a purge of the fuel cell system aboard the spacecraft. We are waiting momentarily, contact through the California station from which spacecraft communicator Pete Conrad here in Mission Control will converse with the crew. We should be having contact any moment now. In fact they are already a couple of seconds past the time due according to the side acquisition table. During this pass the - another run of the airglow horizon photography experiment S-11, is scheduled to be run during the pass over the Eastern Test Range just as they go into darkness. We will stand by now for conversation during this state side pass.

HOU 12, Houston. How is everything going?

S/C Roger, this pass looks a lot better than the last one. We are pretty well stablized.

HOU Okay, I kind of think from what we could see on the ground that you may not have had enough time for the Agena to settle down. That's all. You can get her set up 15 minutes or so in advance I think it will work all right, for you.

S/C All right. We are following the procedures of the S-11 and we are upside down now.

HOU Okay. I have got an S-6 update for you which the weather people are quite interested. Can I give it to you now?

S/C Go ahead.

HOU Okay, the time is 26 49 45 will be an S-6, the yaw is zero, pitch down, 30 and it seems to be some perculiar air mass anomaly. I guess there is a clouds associated they would like to get a picture of it.

S/C Okay, I will give it a try.

HOU Okay, and have you gotten node update?

S/C No, would you pass that up.

HOU Okay. Time 25:04:17 node rev 16, 151.0 east and right Ascension is 11 hours 21 minutes.

S/C Right, thank you.

HOU And, in the world of sports today Notre Dame 64, Duke 0. Mississippi 14, Teneessee 7. We will have some more for you in a little while.

S/C Sounds great.

HOU Guaymas remote, California local.

GYM Guaymas remote.

CAL California local.

HOU Texas remote, Guaymas local.

GYM Guaymas is local.

HOU Okay.

END OF TAPE

LOS Antigua

LOS GBI

HOUSTON 12 Houston, do you have time to copy another update, or not, I don't want to bother you.

S/C A quickie.

HOU Okay it's another S6. 28 09 54 S6; yaw zero, pitch down 30; it's a centralized storm near the Phillipines. We'd like to get those pictures if possible.

S/C Will do.

END OF TAPE

HOU 12, Houston. One minute to LOS Antigua, standing by.

ANT LOS Antigua.

This is Mission Control Houston at 25 hours, 46 minutes and 55 seconds after liftoff. That was a rather quiet station pass over the stateside range. We'll be coming up over the Ascension station in some five minutes from now. We'll come back up at that time. This is Mission Control.

END OF TAPE

This is Mission Control Houston. Spacecraft Communicator Pete Conrad just put in a call to the spacecraft through the Ascension station. Let's join that conversation now.

When contact was first established through the Ascension station, Pete Conrad said, "this is Mission Control Houston standing by" through the Ascension station. We are still waiting for further conversation. Apparently the crew is still busy in this round of the Air glow horizion photography experiment. We will continue to standby and monitor the air-to-ground.

(dead air)

Still two minutes and 33 seconds remaining of this Ascension Island pass. They are still very quiet. Standing by for any possible conversation between the spacecraft Gemini 12 and Spacecraft Communicator here in Mission Control.

(dead air)

HOU Gemini 12, Houston - one minute to LOS, Antigua standing by.

S/C ....

HOU This is Houston, 12, I didn't copy that

S/C .... difficulty with the shutter ..... closed.

HOU Roger, understand.

ASC Ascension, LOS.

This is Mission Control Houston. We have had loss of signal over the Ascension Island station at 26 hours, 1 minute and 9 seconds after liftoff. This is Mission Control Houston.

END OF TAPE

This Mission Control Houston 26 hours 8 minutes 30 seconds after liftoff. Gemini XII is coming up over the Tananarive voice remoting station. Should have acquisition within the next 2 seconds. We'll be standing by for any conversation between Houston through the Tananarive station to the crew of Gemini XII. Let's stand by now on air ground and see what and listen to hear what is said.

HOU Tananarive go remote.

TAN Tananarive remote.

HOU Gemini 12, Gemini 12 Houston at Tananarive over.

S/C Roger, Houston.

HOU Roger, 12 could you tell me how much S29 film you have remaining? And with respect to your camera problem you might check that the F stop has not slipped underneath the tape if it's out of the detent, it is possible that the shutter won't operate quite correctly and also if the lens is not rotated all the way in to the detent on the camera this also may happen.

S/C We finally figured a way to get it to working.

HOU Say again please.

S/C Roger, we have...

HOU Houston copy.

S/C We have between 10 and 15 S29 and S11 shots left on this magazine and we have another full magazine.

HOU Houston copy.

HOU Gemini 12 Houston, one minute to LOS Tananarive standing by.

TAN Tananarive LOS

This is Mission Control Houston, we have had loss of signal at the Tananarive voice remoting station. The next station to be acquired will be the Carnarvon Australia tracking station in approximately 9 minutes, at 26 hours 16 minutes and 50 seconds after liftoff this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston at 26 hours, 25 minutes and 7 seconds after liftoff. We should be coming into the Carnarvon, Australia acquisition area. We are standing by for a fairly brief interchange here over that station. It is a very low elevation angle pass, the last one of the day. As a matter of fact the elevation is only some 3.09 degrees for a duration of four minutes, 41 seconds. Let's join that conversation now.

(dead air)

A fairly quiet pass up to now over Carnarvon. The spacecraft communicator out of Carnarvon, Jim Fucci, said earlier that he was standing by. He called the spacecraft and said, "Carnarvon standing by".

CRO Flight, Carnarvon.

HOU Go ahead.

CRO Okay, we have pretty intermittent TM, but it looks like the ECS control valve outlet cap primary is cycling.

HOU From what to what.

CRO Uh, let's see, about 20 up to around 50 degrees.

HOU Okay, 20 to 50, that's the ECS primary out.

CRO That is affirmative.

HOU Okay.

CRO Now, that may not be too valid a reading because of our intermittent TM, but the rest of it looks pretty solid, so I can assume it is fluctuating right now.

HOU Okay, thank you Jim.

CRO Right.

CRO It looks like it is cycling for about 26 to 54 degrees.

HOU 26 to 54.

CRO That's affirmative.

CRO One minute to LOS, and standing by 12.

S/C Roger.

HOU Carnarvon from Flight.

CRO Go ahead.

HOU How fast is that fluctuating, Jim.

CRO About 20 seconds for one complete cycle.

HOU Goes up and back down in 20 seconds.

CRO Up, down and up.

HOU Okay. Carnarvon, have them turn the A pump on in the primary loop.

CRO Roger. 12, Carnarvon. Turn the A pump on in the primary loop.

HOU Tell them why.

CRO 12, Carnarvon.

S/C Go.

CRO Okay, we are getting fluctuation on your primary temperature in your control now.

S/C Roger, you want the B pump off right.

CRO Roger, that is right.

CRO We have had LOS.

This is Mission Control Houston. We have had loss of signal at the Carnarvon, Australia tracking station. The next station to acquire Gemini 12 will be the Hawaii station in some 19 minutes from now. We will come back up at that time and carry that conversation. This is Mission Control Houston. Twenty-six hours, 30 minutes, 50 seconds after liftoff.

END OF TAPE

This is Mission Control Houston at 26 hours 49 minutes and 6 seconds after lift-off. Gemini 12 at the present time is now coming up on the Hawaii station. We should have acquisition at any moment. We will stand by for any conversation between spacecraft communicator Keith Kundel at Hawaii, and the crew of Gemini 12. Let's listen in.

HAW We have initial TM contact on both vehicles. It is still a little shakey at the present. We are getting intermittent radar track.

HOU Okay.

HAW Gemini 12, Hawaii. We have a 30 second purge to do some time during this pass, so we show TM intermittent. We would like to wait until later on in the pass, to do it.

S/C Roger, Hawaii. Have you had some pretty bad weather down there today?

HAW No, it has been doing quite a little raining. It is raining pretty heavy outside right now. It looks like... solid TM, tape dump started. 12, Hawaii. TM is looking good and solid at present. Whenever you are ready to start that purge, let us know.

S/C Hawaii, would you tell us which section to go first, please?

HAW Let's start section 2 on this one. Does it make any difference Flight?

HOU 2 and then 1.

HAW Roger, let's start with section 2 and then section 1.

S/C Roger, here is section 2.

HAW Purge on.

HOU Roger.

S/C Let me know when it is off.

HAW Roger. Section 1 purge on.

HOU Roger, thank you.

HAW Purge off.

S/C ...

HAW Roger, thank you. 12, it looked good from here.

HOU Hawaii Com Flight.

HAW Go Flight.

HOU How is is control valve look.

HAW I get no cycling.

HOU Roger.

HAW It looks like we might have lost a little bit of the tape dump off probably due to antenna shading. 12, Hawaii. We just sent you a TX.

S/C Roger.

HAW 12, Hawaii. We will have LOS in approximately 1 minute.

S/C Roger.

HAW Hawaii has LOS. Everything was go at LOS.

HOU Roger, Hawaii.

This is Mission Control Houston. We have had loss of signal at the Hawaii tracking station. During the pass over the station which was rather quiet conversation wise, there was a purge of the Gemini 12 fuel cell system. The California station is due to acquire momentarily within the next 27 seconds or so. We will stand by for the beginning of conversation between spacecraft communicator Pete Conrad here in Mission Control and crew of Gemini 12. This particular pass toward the end of the 17th revolution will curve down over the central portion of Mexico through Central America and across the canal zone. And over the northern portion of Brazil. Standing by for telemetry contact. Pete Conrad is putting in a call. Let's join.

HOU Gemini 12,

END OF TAPE

Pete Conard is putting in a call, let's join...

HOU Gemini 12 Houston, over.

S/C Go ahead Houston.

HOU Roger, we'd like you to power down your A pump in the primary loop and bring the B pump back on again so we can watch it over the states. And we'll give you a call when to do that when we have telemetry.

S/C Well, we just did that. We just powered down the A and put on the B. You want us to reverse that?

HOU No, leave it on. I don't have much else for you. Navy 30 Vanderbilt 14, I'm still waiting on the Army score.

S/C It's about time Navy won.

HOU Roger.

While we are waiting for further conversation between the ground and spacecraft Gemini 12, about 12 minutes from now the S29 moon librations regions photography experiment is due to be run. Let's join the conversation again.

S/C Say Houston, 12

HOU Go ahead 12.

S/C We're still trying to operate the Agena correctly and no matter what we try, the doggone thing just keeps going around. There must be something wrong with it, we've gone through commands a dozen times

and unless we send these things out perfectly get right on the old heading, stop all over rates with the old control system and then set it up she's okay otherwise she keeps on travelling.

HOU Roger, we copy.

Guaymas remote, California local.

GYM Guaymas remote

CAL California local

S/C We just found out BEF to go to TEA south, and yawing around a bit at 360 and we're BEF again. That's the kind of thing that happened.

HOU Roger, did it stop or did you have to stop it?

S/C Well, it never does stop at any reasonable heading it went up to a pitch up of about 40 degrees or so and it was going past SEF.

HOU Roger, is this in SC 1 or 2 or have you tried both?

S/C It doesn't seem to make too much difference

HOU 12 Houston, we're waiting to acquire you at Texas here where we can look at the telemetry and see if we can see anything on it and we'll keep you advised.

S/C Roger, we're just taking over control again so we can get ready for S 29, and see what we can do.

HOU Roger, one other thing. Have you tried to stabilize it with the horizon sensors and the GO rate off to determine if your gyros are working alright and maybe that would help us to isolate the problem.

S/C We'll give that a try when we get some time here.

HOU Okay, I think one thing that would be a help to us would be to go inertial on it with the G O rate off and the horizon sensors off and say and FC 2 and see if it will hold the fixed heading in whatever attitude you're in and then bring on your G O rate and then your horizon sensors and then your gyro compassing.

S/C Yeah, that does real well, in holding inertial re-reference and also does quite well with G O rate normal and reverse without horizon sensors. It is only when you tie that horizon sensor in with the gyro compassing that it doesn't seem to want to play the game right.

HOU Well, it sounds like then you do have something in gyro compassing circuit and we'll see....you're coming up on the time for S 29 you can't try and power up for it while we're looking at you. We have you here for about 5 minutes.

S/C Okay, we have the attitude system off on the Agena now.

HOU Roger, understand it's off. We're seeing that the p pitch horizon sensors are to the yaw channel

HOU Texas remote Guaymas local.

HOU Texas remote

GYM Guaymas is local

S/C Roger. ...pitch a right sensor yaw when we want it to go TEA south. That's when we did the 360.

HOU Roger, understand.

END OF TAPE

HOU 12, Houston, you can leave the B pump on in the primary loop. It looks alright now.

HOU 12, Houston, you can leave your B pump on. It looks pretty good.

S/C Roger, primary B on, primary A off.

HOU 12, Houston, would you put your quantity read switch to O_2 please.

GBI LOS, GBI.

HOU 12, Houston, you can put your quantity read switch to OFF. Thank you.

S/C Roger - You are to be advised the update on S-29 27:13:36. Sunset came just after that time and it's impossible to see any stars enough to get a shot with the vibration we have. We are trying again at 27:14:57.

HOU Roger.

S/C We can attempt to try and see if we can't get a shot of it a little later time.

HOU 12, this is Houston - Roger.

HOU 12, Houston.

S/C Go ahead.

HOU Roger - we just want you to point there at that region and go inertial.

S/C Roger.

HOU 12, this is Houston. You have about one and a half minutes, one minute to LOS - standing by.

HOU 12, Houston. X-ray - ON, Beta with Mag.

GTI LOS, Turk.

This is Mission Control Houston. We have had loss of signal through the Antigua station of the Eastern Test Range. There will be a very low elevation angle pass over Ascension Island voice remoting station. As a matter of fact, the elevation angle is only 1.3 degrees for a duration of three minutes and 20 seconds, hardly time to even establish contact. However, we will standby. During this just completed stateside pass, a certain amount of conversation was carried on from Mission Control here and the crew regarding some apparent problems in the Agena stabilization system in the gyrocompass mode, where it tends to drift somewhat in attitude while in the gyrocompassing mode. However, all the other stabilization modes seem to function properly in the Agena. The Agena systems engineers and various others here in the Control Center are going over the schematics and telemetry indications to see what the problem might be. Perhaps there will be more discussion later on on this minor problem. At 27 hours, 19 minutes, 28 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Mission Control Houston at 27 hours 29 minutes 37 seconds after lift-off. Let's tune in on the conversation through the Ascension Island tracking station.

HOU Roger, Gemini 12, would you check your X-ray Beta switch with mags please.

S/C Okay.

HOU And 12, we are going to try to get you to a little gyro compassing exercise over the CSQ. We would like you to be either TDA north, or TDA south as you arrive over the CSQ and then setup the commands to gyro compass so that the TDA is aft or spacecraft SEF, so we can watch the gyro compassing circuit on the telemetry.

S/C ...CSQ gyro compass spacecraft SEF...

HOU Roger, we want to have you gyro compass for 90 degrees and so we can watch the circuit there. So you could be TDA south or north and plan to setup your command so that you gyro compass at FC-2 to spacecraft SEF. That is correct.

S/C Roger,...we are still trying to get... without a platform reading.. rate command.....

HOU Roger, I think I copied you. You said your pointing commands are not good enough without your platform, is that what you are saying. You are not sure where you are pointed.

S/C That is affirmative, when you go into the darkness 50 degrees up and 50 degrees down means nothing to you. You can't see a thing.

HOU Roger. I copy. We will work this out and see if we can't give you something better than that and we can talk to you at Hawaii.

S/C Roger. We are ready for a 5.5 update...

HOU 12, this is Houston. I didn't copy that last one. Comm is pretty bad. 12, Houston we are about 1 minute until LOS. Standing by.

S/C Roger.

This is Mission Control Houston. Apparently we have had loss of signal, from the Ascension Island voice remoting station. During that pass the spacecraft communicator here in Mission Control passed to the crew some instructions for an exercise in operating the Agena gyro compassing system on the upcoming pass over the tracking ship Coastal Sentry south of Japan. The purpose of this will be to allow the Flight Controlers aboard the Coastal Sentry to examine the gyro compassing circuits on telemetry to perhaps determine what the problem is in apparent deviations from attitude while in the gyro compassing mode. At 27 hours 35 minutes 17 seconds after lift-off, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, 27 hours 43 minutes and 38 seconds after liftoff. Gemini XII is within a few seconds of being acquired by the Tananarive voice remoting station from which we anticipate a brief conversation between Houston and the crew of Gemini XII. Mean while their flight plan at the present time calls for an eat period lasting from 27 hours 50 minutes ground elapsed time to 28 hours 30 minutes. We are standing by for acquisition of signal. Tananarive does have acquisition. Let's join the conversation.

HOU Gemini 12 Houston through Tananarive, over.

S/C Go ahead, Tananarive.

HOU Gemini 12 Houston through Tananarive, I'm not reading you, you're reading me to give you a little more on this test over the CSQ. We would like for you to send all commands to gyro compass the 90 degrees to the SEF position and while over the CSQ and if you will send the commands slowly they can verify that each command is going in and verify that we are getting the correct response. And then we can watch it from there.

HOU Roger. 12 Houston, how do you read me now?

S/C Read you loud and clear.

HOU Roger, did you copy my last, over.

S/C Roger, we'll send those commands over CSQ and we'll be in VOX and say it slowly so we can verify each one.

HOU Okay and at ascension I didn't quite copy the last thing about the problem you were having pointing, is there something that we can give you that will help this or are you just saying that you are having difficulty locating that region from Fomalhaut?

S/C My only comment there Houston is something like this going on here we're getting the region that is high in the sky at sunset that we can't get to that without a platform. We have no horizon to go by. We are going in to darkness and the light is reflecting off the Agena so we have nothing to look at. It requires a lot attitude fuel on the spacecraft part to determine where we are after sunset, to line up the stars and get in to position to take the pictures which means that we are late in doing S 29 and we finished it just as the libration region is setting which is too late.

HOU Roger, copy.Yeah, I guess the only thing we can do for you there, I guess you'd better wait until you are dark adapted and then just go as rapidly as possible to Fomalhaut and over.

S/C Roger, either that or add a platform...one of the two

HOU Roger, well, we want to save that oxygen so we would like to leave it down.

S/C Roger. for hindsight we were set up for it at the end of the 95 night pass if we hadn't had the S6, we

could have stayed inertial all time.

HOU Roger. 12 Houston. We have about one minute to LOS standing by.

Tananarive LOS

And this is Mission Control Houston at 27 hours 52 minutes 42 seconds after liftoff in the Gemini XII mission. The next station which will acquire spacecraft Gemini XII will be the tracking ship Coastal Sentry in approximately 15 minutes. At that time there will be an exercise run with the Agena gyro compassing system to allow flight controllers aboard the ship to check out the circuitry by means of telemetry to perhaps pin point the source of the erratic performance of this particular mode of the Agena stabilization system. We'll stand by in 15 minutes for that particular pass. This is mission control.

END OF TAPE

This is Mission Control Houston. We're at 28 hours 7 minutes and 2 seconds after liftoff. We're coming up over the tracking ship, Coastal Sentry with Gemini 12. At this time, their schedule will be S-6 Synoptic Weather Photography experiment of a tropical depression just east of the Phillipine Islands; however, let's now tune in to the air-to-ground conversation between the Coastal Sentry and the crew of Gemini 12.

CSQ — Gemini 12, CSQ

S/C — Roger, CSQ, go ahead.

CSQ — Roger. Before we start this test, we'd like you to turn your encoder off.

S/C — Roger, the encoder is off and the situation is this, the spacecraft control the combination the TDA North, the spacecraft south, the spacecraft is still holding that situation, and anytime you are ready, we'll go and send command to gyro compass the Agena around in flight control mode 1 to spacecraft SEF, TDA west.

CSQ — Okay, now, you're still having this difficulty in flight control mode 1, is that correct?

S/C — In both flight control mode 1 and 2.

CSQ — Okay, we'll run the test in 1.

HOU — And we better be in high rise and sensor gains, CSQ.

CSQ — Roger, flight

CSQ — You can turn the encoder back on and we'd like to run this test in high rise and sensor gain.

S/C — Rog, CSQ

CSQ — Okay, give us a call when you're ready to go and call the command out, CSQ.

HOU — CSQ flight, is he in high rise and sensor gains?

CSQ — They've got the ACS off right now, flight.

HOU — Okay. The normal checklist flight control mode 1 has high horizon sensor gains for gyro compassing and I want to start that way.

CSQ — That's affirmative, and I advised them that.

HOU — Okay.

CSQ — He says roll right, set your yaw high RP ..... Go ahead 12.

S/C — Roger..... in reverse 360

CSQ — TDA aft spacecraft SEF. Roll right on the schedule 310. ...out 320. ACS is on 401.

S/C — Say again.

CSQ — ACS just went on.

HOU — Roger

S/C — horizon scanner on 301, GO rate on 351, gyro comp on to 341.

HOU — TDA north. CSQ, flight

CSQ — Go ahead, CSQ

HOU — Do you see it coming around?

CSQ — That's affirmed. He's torqueing it into yaw, but I don't think we're getting very much out of this, stand by one flight. Flight, CSQ.

S/C — Instead of going FDS, we're going BEF.

HOU — Go ahead.

S/C — Okay, I think we ought to organize this just a little differently, maybe do it at Hawaii. The Agena during the test is still unstable.

HOU — Say again?

S/C — It wasn't lined up, the Agena wasn't when we started the test. We pulled it around with the Gemini and then turned it loose.

HOU — Yeah, Okay, but that uncages the gyros and then it should gyro compass the SEF.

S/C — It's coming around all right.

HOU — The wrong way?

S/C — A little bit.

CSQ — This is CSQ, I'm transmitting you a TX.

S/C — Roger.

HOU — CSQ, flight. Ask him which way he is yawing.

CSQ — ....The way we see it, he's not doing much of anything. They've started to move toward medium position, but now it's just standing half way between BEF and spacecraft pointing south.

S/C We see some high tracking in yaw.

CSQ Did you say you were fairly stable at that attitude?

S/C It's yawing around to the left now.

HOU That's the way it's supposed to go, CSQ. He started a little bit off, he might go that way. CSQ, flight, how does it look? CSQ.

CSQ I don't really know, flight.

HOU say again.

CSQ I don't really know, flight.

HOU Okay, tell them that if it doesn't get the attitude while still in contact, we'll let it go to Hawaii and continue to watch it. It may be coming around all right.

CSQ 12, CSQ

S/C (garbled)

CSQ Okay, if you don't get the attitude in about 30 seconds, let it go and we'll pick it up over Hawaii.

S/C Roger, it seems to be fairly well behaving this time.

CSQ Roger.

S/C It went pretty nicely last night in SEF position, it could possibly be that we gyro compassed to either a north or a south position....

CSQ Rog.

S/C It seems to be slowing down now, with the SEF attitude.

HOU Is it coming SEF? Let's just leave it alone and see how it works.

CSQ We've had LOS on Gemini.

HOU Okay. I didn't copy his last, did he say it was coming around and slowing down and looked alright?

S/C A gyro rate over Hawaii.

And this is Mission Control Houston 28 hours 15 minutes 41 seconds after liftoff. As you monitored that pass over the CSQ, the test of the gyro compassing mode of the Agena target vehicle was run through and we're going to follow through on the test during the upcoming Hawaii pass which should begin about 10 minutes from now. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston at 28 hours 24 minutes 44 seconds after lift-off. We are coming up on Hawaii station. We are within 1 minute from acquisition at the Hawaii station. We are - spacecraft communicator Keith Kundel is standing by to continue the gyro compass exercise with the Agena. During this pass to follow through on the test that were being run and checked by ground telemetry. Earlier in this revolution over the Coastal Sentry tracking ship. Standing by for the initial contact. Okay let's join that conversation.

HAW. Roger, looks like he is going around okay here.

S/C I was thinking we might want to try that north or south heading, but we have got to do some 408 coming up shortly.

HAW Yes, roger. We will see what Flight thinks about doing all this. Also we are going to have another one of those 30 seconds purges plus I have got a block 4 update for you too. And crew status report.

S/C Okay, we are in the process of working on the meals. We may have to delay the crew status report.

HAW Roger.

HOU Okay, go ahead and get the rest Hawaii. We will talk it over here. It looks like it ---

S/C ---now. I have got my partner to copy the PLA update.

HOU Okay, what we want to do is start with section 1 section 2 and then also do a normal purge on the H_2 this time.

S/C Okay, want to start with the H_2 purge, section 1 and 2 and then I will do the O_2 for 30 seconds. Is that okay?

HAW Yes, that is roger.

S/C Okay.

HAW Okay, let me know when you are ready to copy.

HAW Flight, it looks like he came around real good from here.

HOU Roger.

S/C Delta P lights hydrogen purge, section 1.

HAW Roger, we copy.

S/C Ready to copy.

HAW Area 20 3 Alpha, 30 56 58, 20 plus 41 26 plus 09. Area 21 3 Alpha, 32 32 56, 20 plus 08 25 plus 35. Area 22 3 Bravo, 34 09 17, 19 plus 23 24 plus 45. Area 23 Alpha Charley 35 03 12, 20 plus 53, 27 plus 27. Area 24 Alpha Charley 36 38 31, 21 plus 07, 26 plus 26. Area 25 -2 Alpha 38 12 14, 21 plus 11, 26 plus 41. Area 26 Alpha Charley 39 48 37, 21 plus 07, 26 plus 33. And that will be roll left 80, roll right 100. Weather is good in all areas with the exception of 24, which is marginal and it does include the SEP maneuver. Over.

S/C Roger, weather good except for 24 which is marginal.

HAW Roger.

HOU Hawaii, an Agena India please.

HAW Wilco.

HOU Hawaii Com, Flight.

HAW Go Flight.

HOU Have you got everything up that you had to get up to the crew?

HAW That is affirm.

HOU And how does the Agena look?

HAW Agena looks fine.

HOU Okay. SEF, TDA aft.

HAW It is 0180.

HOU Okay. And it's in deadbands.

HAW That is affirm.
Very little, well we are not showing any thruster activity right now.

HOU Okay. Roger. We talked to them a little more over the States, Keith. We think they ought to stay that way and do this 408 up over the Atlantic this pass and after that experiment try gyro compassing out these plus or minus 90 degrees and see

HOU how that works.

HAW Okay, where do you want to do all that?

HOU Just tell them to go ahead and do it after the experiment at their leisure.

HAW Okay. And that was gyro compass to what?

HOU Plus or minus 90 is what is worrying Buzz. So have him go ahead and do it again and see how it works.

HAW Okay, 12 Hawaii. Flight recommends that you stay like you are and go ahead and do that M408 experiment, once that has been completed, you can go ahead and try your plus or minus 90 degree maneuver.

S/C Roger.

HAW Okay, it looks like we have got about a minute and a half. You going to have any of your crew status report information available?

HOU Hawaii, Flight.

S/C We are in the process of eating our last meal. We will give you a status report when we finish it.

HAW Okay, and would you place your quantity read to the H_2 position, please, for us?

HAW Roger, thank you.

HOU Hawaii Flight.

HAW Go Flight.

HOU You need to get an SP disable ground command 40, spacecraft 240.

HAW Okay, could you turn your encoder off for a brief moment and we will send SPC disable here.

S/C Encoder off.

HAW Okay, you can turn it back on. We have it. Looks like we have about 30 seconds to LOS.

S/C Roger.

HAW Okay, Hawaii has had LOS.

And this is Mission Control Houston. We have had loss of signal at the Hawaii tracking station. During that pass, the planned landing area block updates were passed to the crew. These are routine updates, retrofire times for a series of revolutions in the future hours of the flight for landing. Also a fuel cell purge was run during this pass and the crew reported that they were in the midst of having a meal. We are coming up on a very short duration State side pass, which will only touch the California and Guaymas, Mexico stations. We are scheduled to be acquired at the California station in approximately 1 minute

from now. We will stand by until we have telemetry indications through California. California does have acquisition. We will stand by until Pete Conrad gives them a call through California. Let's join that conversation.

HOU Gemini 12, Houston

END OF TAPE

HOU Gemini 12, Houston standing by California.

HOU Gemini 12, Houston - over.

HOU Gemini 12, Houston.

S/C Houston, Gemini 12, go ahead.

HOU Roger. We would like to have you spend about 20 minutes on your 408 and then if you would like to go ahead and do some more gyrocompassing to either South or North and wind up SEF, if you can let the CSQ know how you are doing, we have looked at all the data and as best as we can determine all the control systems in the Agena are working correctly. In FC-1 with all that fuel aboard it may take quite a while, and if you do have this excersion get off more than 40 to 45 degrees, I just recommend you go ahead and resend all the commands again. We had that happen once or twice on our flight, and as I say, the best we can determine, it looks like it is running okay.

S/C Roger.

HOU You can give us a call through Tananarive or CSQ on how you make out with your yaw to the North or South headings.

S/C Roger, we will proceed doing that after M-408.

HOU Roger, standing by.

HOU 12, Houston, when you get done go on back into FC-1 and go ahead and go back to your ACS gains low so that we conserve control gas.

S/C Houston, 12. You are fading out.

... Guaymas remote, California local.

GYM Guaymas remote.

CAL Cal. local.

HOU Roger, 12, this is Houston through Guaymas now. We were loosing you at California. I say again, When you get done with your test, make sure you go back to 460 ACS gains low so that you save your control gas. Did you copy 12.

S/C Roger - Houston we will go back to 460.

HOU Thank you. 12, Houston, would you pass how many S-29 pictures you took and how many S-6 pictures please.

S/C Standby.

HOU You can pass it later.

HOU 12, Houston. One minute to LOS - standing by. This is Mission Control Houston, apparently we have had loss of signal through the Guaymas station. We will be coming up on the tracking ship Rose Knot off the West Coast of South America at - in approximately eight minutes. We will come back up at that time to relay the air-to-ground conversation over that particular station. At 28 hours, 44 minutes, 15 seconds after liftoff, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, at 28 hours, 51 minutes and 42 seconds after liftoff we should be now nearing contact with the Spacecraft Gemini 12 from the tracking ship Rose Knot. We are approximately 10 seconds away from acquisition according to the site acquisition table. We will listen in to the conversation between Spacecraft Communicator Bill Buchholz aboard the tracking ship Rose Knot and the crew of Gemini 12. Standing by for acquisition and telemetry. The spacecraft is GO on the ground is the report from tracking ship Rose Knot. Let's eavesdrop a little.

S/C Roger - RKV

RKV Okay, would like to have you bump up your O_2.

S/C Uh, Buzz would you bump up the O_2 a bit.

RKV Turn your O_2 heater ON please.

S/C Roger, okay - good enough.

RKV We have nothing for you at this time 12, we will be standing by.

S/C Roger - Roger, do you want these heaters put back on the H_2 during the remainder of the area.

RKV Standby 12

Do you want the H_2 heaters on - indicator ON for the remainder of the ... or just switch to it.

HOU Yes, we want to go back to H_2.

RKV Roger - have Buzz put cryo switch in H_2.

RKV 12, RKV - would you read me your cryo switch in H_2 please.

He probably won't get to it South of here, but will teletype the way it is, we will give the information you want presently.

RKV Flight, RKV

HOU Go ahead.

RKV Okay, Mean time 1 with zero on 14.6.

HOU Rog.

RKV Stack one alpha 4.70; stack one bravo 4.46; Mean Time 2 12.8. Stack two alpha 3.54; stack two bravo 4.32.

HOU Okay, Main bus voltage.

RKV Standby one. Brave .. 01. Reads 27.5.

HOU Roger. Was that in the time when the heater was on.

RKV It's right at this time. The heater is on

HOU Okay.

RKV Okay, it looks like his pressure is going back up to around 900 on the meters here.

RKV 12, RKV - you are about one minute to LOS. Would you give me the condition of your heater switch at this time.

S/C Roger - the heater went back to auto, I'll get a reading in a minute.

RKV Roger.

S/C We are reading 70 ...

RKV Say again

S/C Reading 70 on the O_2 pressure.

RKV Roger, Roger.

RKV RKV is LOS Gemini

HOU RKV, Flight.

RKV Roger, RKV.

HOU Send us an Agena Main in a contingency India on the Agena..

RKV Main and an india

HOU Rog.

RKV RKV is LOS Agena.

Both vehicles are GO at LOS.

And this is Mission Control in Houston at 28 hours, 58 minutes, and 21 seconds after liftoff. We have loss of signal on both vehicles over the tracking ship Coastal Sentry. The next station from which we will acquire the two spacecrafts will be the Tananarive voice remoting station and that will be in approximately 20 minutes. We will come up again at that time with any possible conversation from Houston through the Tananarive station. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, we're at 29 hours 18 minutes and 43 seconds after liftoff. We should be acquiring the Tananarive voice remoting station. We'll be standing by for any conversation out of Mission Control here with the crew of Gemini XII. Tananarive does have acquisition signal. We are standing by for "Pete" Conrad to talk to the crew. Let's join the conversation now.

HOU Tannanarive over.

Gemini 12, Gemini 12 Houston through Tananarive. Over.

S/C Go ahead Houston.

HOU Roger, need a few things from you before you go to bed, please. Could I have a PQI reading?

S/C Roger. PQI looks about 49 percent.

HOU Roger, 4 9 percent. I'd like your crew status report if possible. I have a node update for you and a couple of other questions when you are ready to copy.

S/C Roger, Houston. Water gun reading 01236, we've got just about an equal amount of water. Finished fuel 8223, completed all three meals today.

HOU Houston copy. 12 This is Houston. You can advise the pilot that Army won 6 to 3 over California today.

S/C That's just getting us set for the big one.

HOU Roger, I've got your node up date if you are ready to copy.

S/C Ready to copy.

HOU Roger, the time is 31:+ 03 + 39 node Rev 2 0 59.1 east right ascension 11 hours, 13 minutes. over.

S/C Roger. time 31 + 03 + 39, node rev 2 0, 59.1 east 11 hours 13 minutes right ascension.

HOU Roger. On the S29. Do you think that you got some pictures withou having hit the airglow? We want to know whether we should schedule another one tomorrow or not.

S/C Say again.

HOU Roger, I would like to know if you think that you've got a good S29 picture or not so we can decide whether to schedule another S29 for tomorrow.

S/C Roger, that's with the airglow, that's the libration report...

HOU Roger, I know it's the libration but you said it went over the horizon and I want to know if you think you got a good picture of the libration point. Over.

S/C Roger, it was in the second series of 30 second one minute, two minute shots that we lost the two minute one, because it was going into the horizon.

HOU Houston, copied. Roger. Did you get that one S6 shot?

S/C Roger, we did. We weren't sure where you wanted us

to get a picture. There were several interesting spots down there so we used the right angle.

HOU Roger. And how is your Agena operating?

S/C Well, it seems to be...

HOU Say again.

S/C ...we're going to ...around here to.....

HOU Okay. You can...if everything is going alright ther's no...you do not have to contact the CSQ if you don't want to. You can go ahead and go to sleep. I talked to both of your wives and they say good show so far and good luck for tomorrow and we'll see ya'll in the morning.

S/C Roger. Roger.

HOU Houston standing by and Good Night.

And this is Mission Control Houston. Apparently that will be the extent of the air to ground communications over this pass, via the Tananarive voice remoting station. Pete Conrads last comment was Good Night. So Good Night it is. The next station to acquire the spacecraft will be the tracking ship Coastal Sentry in approximately 20 minutes. In all likelihood it will be just a ground readout of telemetry indications from the spacecraft and the Agena relayed back to Houston from the Cap Com aboard the Coastal Sentry, Bill Garvin. at 29 hours 25 minutes and 43 seconds, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston at 30 hours 3 minutes and 3 seconds after liftoff. Gemini 12 and the Agena are now over the Hawaii tracking station where the spacecraft communicator just reported that both the vehicles were GO on the ground. Earlier in this revolution, the spacecraft crossed the tracking ship, Coastal Sentry, at approximately 29 hours 43 minutes GET, where it was reported the crew apparently were still awake and both spacecraft were GO on the ground from Coastal Sentry. Some times for activities tomorrow, the crew is due to wake up at 5:20 am CST, and hatch open time for the umbilical EVA tomorrow morning will be at 9:30 am CST. The members of the Blue Team of flight controllers are beginning to drift into Mission Control Center here to relieve the Black Team. At 30 hours 4 minutes and 8 seconds after liftoff this is Mission Control Houston.

END OF TAPE

This is Gemini Control, 31 hours 23 minutes 33 seconds into the mission of Gemini 12. The spacecraft is in acquisition with Coastal Sentry ship. There is no voice contact as there was not expected to be during this pass, being in a sleep period. It's during the 20th revolution. The astronauts entered the sleep period 29 hours 30 minutes into the mission. They had three meals today. They will end their sleep period 38 hours 40 minutes, for a total sleep period of 9 hours 10 minutes. The OAMS orbital attitude maneuvering system propellent quantity readout are 49 percent, which is right on the money. That's what we expected the OAMS readout to be during the original flight plan. The heartrates are for Lovell 72, for Aldrin 79. Respiration 12 for Lovell, 13 for Aldrin. Dr. Hawkins, the NASA surgeon on duty here at the MCC, indicates that he does not believe they are asleep as yet. To recap the mission so far, very briefly, for the first day, we did have an accomplished rendezvous and docking, which was an aim of the mission. We accomplished the M-408 or the Radiation experiment, measurement experiment. Today, we accomplished standup EVA and also the S-13 experiment was accomplished, which is the star-field ultraviolet astronomical photography that astronaut Aldrin accomplished during the EVA. Also, during today, we have accomplished the S-29 experiment which is the Lunar Earth Libration Regions Photography, the S-11 experiment, which is the Airglow Horizon Photography, the S-5 experiment, Synoptic Terrain Photography and the S-6 experiment, Synoptic

Weather Photography. All in all, with the acception of the high apogee which we had originally scheduled but had to give up early in the mission, the mission appears to be progressing very satisfactorily. Right now the Blue Team is on duty with Gene Kranz acting as flight director. Astronaut Conrad is the only holdover from the Black Team. He seems to be stuck on duty here until around midnight as Cap Com. At 31 hours 26 minutes 37 seconds into the mission, this is Gemini Control.

END OF TAPE

This is Gemini Control, 32 hours, 3 minutes, 30 seconds into the mission of Gemini 12. The position of the Gemini 12 spacecraft at this time is approaching the West Coast of Africa. The Rose Knot tracking ship acquired approximately thee minutes ago. Correction - that is South America. Not Africa. One of those little mistakes that happen now and then here in the Control Center. We have had no voice contact with the astronauts because they are in a sleep period. The heart rates are as follows: Lovell 52 beats per minute, Aldrin 46. Respiration rate: Lovell 14 per minute, Aldrin 12. The Surgeon says that indications are that the crew is sleeping soundly. That information was as of the Coastal station tracking ship. Onboard propellant quantities in the Ohms system are right on the money at 32 hours, 4 minutes, 32 seconds into the mission. This is Gemini Control.

END OF TAPE

This is Gemini Control 33 hours 3 minutes 30 seconds into the mission of Gemini 12. The position of the Gemini 12 spacecraft is now approaching Canton Island, Canton should acquire at 33 hours 11 minutes 58 seconds into the flight. The spacecraft is now on it's 22nd revolution. We have had no voice contact since the sleep period began at 29 hours 30 minutes into the mission. They have been in the sleep period therefore for 3 hours 35 minutes. The weather in the prime West Atlantic landing area. The forecast for tomorrow, 7 to 9 foot swells, 5 to 6 foot waves, cloud covered 2,000 scattered to broken, wind 20 to 25 knots from the north. We anticipate the weather in the prime landing area to clear for Monday and Tuesday, the end of the mission. The other areas that - the east Atlantic, the West Pacific and the Mid-Pacific areas are forecast to be good through the mission. At 33 hours 4 minutes 47 seconds into the mission, this is Gemini Control.

END OF TAPE

This is Gemini Control, 34 hours 3 minutes 31 seconds into the flight of Gemini 12. The position of the spacecraft is over Africa. Kano acquired the spacecraft some 3 minutes ago. The astronauts entered their sleep period 29 hours 30 minutes into the mission so they have been in their sleep period now for four hours 35 minutes. We've had again no voice contact with the crew, none was planned. From RKV, from the Rose Knot tracking ship, we have the heartrate on astronaut Lovell, 48 per minute, on Aldrin 44 per minute. Respiration rate, Lovell 14 per minute, Aldrin 12 per minute. The surgeon indicates their really sawing them off up there. Apogee of the spacecraft is now 162.1 nautical miles, perigee 139.6 nautical miles. Bill Anders has replaced Pete Conrad in the MCC as the Cap Com, as of now the tracking station telemetry readings indicate onboard systems on Gemini and Agena look good. This is Gemini Control at 34 hours 4 minutes 44 seconds into the mission.

END OF TAPE

This is Gemini Control, 35 hours 3 minutes 33 seconds into the mission of Gemini 12. The position is approximately approaching the west coast of South America. The Rose Knot tracking ship should acquire the spacecraft by telemetry 35 hours 11 minutes 41 seconds, or some 6½ minutes from now. There is still no voice contact with the astronauts. Their sleep period now is extended to 5 hours and 35 minutes since they went into the sleep period. They are sleeping soundly. Flight director, Gene Kranz, and the flight controllers are currently reviewing the schedule of tomorrows activities. At 35 hours 4 minutes 19 seconds into the mission of Gemini 12, this is Gemini control.

END OF TAPE

This is Gemini Control, 36 hours, 3 minutes 31 seconds into the mission of Gemini 12. The Gemini 12 spacecraft is approaching the east coast of China at this time. The Coastal Sentry ship should acquire the spacecraft some 40 seconds past the minute of about 9 seconds ago. There again will be no voice contact on this just telemetry. The sleep period now stands at 6 hours 35 minutes. There is some 2 hours 35 minutes to go before they are awakened. The last data from Rose Knot tracking ship indicates the heartrate of astronaut Lovell at 43 beats per minute, astronaut Aldrin at 42 beat per minute. Respiration rates are: Lovell 12 per minute, Aldrin 10. Our surgeon indicates that they are indeed still sleeping in a good deep sleep. At 36 hours, 4 minutes, 32 seconds into the mission of Gemini 12, this is Gemini Control.

END OF TAPE

This is Gemini Control, 36 hours, 50 minutes, four seconds into the mission of Gemini 12. We have come up in the last comparatively few minutes with a possible problem on one of our fuel cell stacks. The flight director, Gene Kranz, has directed that the crew be awakened. The spacecraft is in acquisition by the RKV -- the Rose Knot tracking ship, and we will now bring you the conversation with the astronauts.

S/C	.....
RKV	Yes, we'd like to have open circuit voltage check on Two Bravo.
S/C	OK. That's with the stack turned on, right.
RKV	That's affirm.
S/C	Roger. Open circuit voltage is 29.7.
RKV	Open 9.7.
S/C	Yes, it's still going up. It's about 30 volts.
HOU FLT	Hey, Bill, make sure he did that in the warm up position.
RKV	12, did you do that in a warm up position.
S/C	Negative.
RKV	Could you give it to us in a warm up position, please. Flight, RKV. Did you want him to turn the section to warm up or is it just Two Bravo off?

HOU FLT	Stand by. Section Two to warm up.
RKV	Roger.
S/C	I have 30.7.
RKV	30.7 with Section Two in warm up.
S/C	Roger. Section Two's in warm up.
RKV	Roger. Understand. Did you copy, Flight?
HOU FLT	OK. Let's do an 02 purge.
RKV	Roger, Flight. OK. Gemini 12, RKV. Would you do an 02 purge on Section Two. 02 only.
S/C	Roger. You want the section on for that, right?
RKV	..... through a normal purge.
HOU FLT	The section should be on for that. He's correct.
RKV	Roger. That's your static section off.
HOU FLT	Section on.
RKV	That's section on, Gemini 12. Tape dump's complete.
S/C	Alright, just hold up. Will you say again. I thought you said normal purge and then 02 only.
RKV	That's affirmative, 12.
S/C	OK. Two minutes of 02 purge.

RKV — Flight, I don't believe we're going to get the complete purge before our LOS here.

HOU FLT — Ok, Bill.

RKV — Or we can .... real time off if ....

HOU FLT — Why don't you leave real time on.

RKV — OK. Just let it on -- let him go by with it on.

HOU FLT — That's affirmative. We'll tell Canary.

RKV — OK. I don't think Canary picks them up this time, do they.

HOU FLT — Yes, they do.

RKV — Alright.

HOU FLT — Give us an LOS summary, Bill. Both vehicles.

RKV — Roger.

HOU FLT — Say again, Rod. How's the structure current looking?

RKV — It's steady at 2.24.

HOU FLT — Roger.

RKV — Gemini 12, you're just less than one minute to our LOS.

S/C — Roger.

RKV — Canary Islands will pick you up here in a little while, so they'll finish it all up -- finish it up with you.

S/C Roger. 02 purge complete on Section Two.

RKV Roger. Understand. Purge is complete, Flight.

HOU FLT Roger. Thank you.

RKV So I can go back on with Section Two?

HOU FLT Roger. Let's go back on with Section Two.

RKV Roger. Gemini 12, will you go back on on Section Two now. Well, we have LOS, Flight, I don't know if he got my last transmission.

HOU FLT Roger.

RKV We completed the tape dump here. Do you want us to play it back? -- for any information.

HOU FLT That's affirmative. I want to know ....

This is Gemini Control. You heard that conversation. We're taking a close look at a fuel cell stack that possibly has gone very low or possibly is inoperable. We are estimating the next contact either at Ascension or at Canary Islands. Ascension will acquire at 37 hours, four minutes, 49 seconds into the mission. Canary Islands will acquire at 37:08:40 into the mission. We will continue to keep you advised and stand by until the next station contact. This is Gemini Control.

END OF TAPE

This is Gemini Control 37 hours, 4 minutes, 2 seconds into the mission of Gemini 12. As you know, as we reported, we have awakened the crew at the Rose Knot tracking ship. We had some conversation. There is a possibility of one fuel cell stack in the spacecraft being low in amperage. The complete Gemini fuel cell system, of course, has three stacks -- two, three-stack sections so there are six stacks in the spacecraft; however, Gene Kranz, the Flight Director thought it advisable to wake the crew, check this situation out. Ascension should have contact with the spacecraft 37 hours, 4 minutes, 49 seconds into the mission, which is right about now. We will stand by for any astronaut conversation.

This is Gemini Control. 37 hours, 6 minutes into the mission of Gemini 12. It is possible we will not have contact from Ascension on this pass; however, Canary Islands has been instructed to talk to the crew of Gemini 12. They will acquire 37 minutes -- correction, 37 hours, 8 minutes, 40 seconds into the mission, which is some two minutes from now. We will stand by and come up about 15 seconds before that time to hear that conversation. This is Gemini Control.

This is Gemini Control. 37 hours, 8 minutes, 17 seconds into the mission. We have just been advised by Canary Islands that they have contact with the spacecraft. They will be talking to the crew now.

CRO Flight, Canarys.

HOU Go ahead, Canary.

CRO Stack 2-B is reading 1.08.

HOU Okay. We're going to leave it as is for the time being.

CRO Roger.

Gemini 12, Canary Cap. Com.

S/C This is 12, go ahead.

CRO Okay. How did the purge go?

S/C Purge okay.

CRO Okay. Could you turn your encoder off? The reset timer timed out over the night and I would like to reset a few functions in the Agena.

S/C Roger. Encoder is off. That purge was just section 2 O_2 only.

CRO That's affirmative.

Okay, 12, we've got the Agena resets. You can turn your encoder back on.

Flight, Canary.

HOU Standby, Canary.

Canary Cap Com, Houston Flight.

CRO Okay. We've got the Agena reset, the encoder is back on.

HOU Okay. You could ask him a position of the autometer switches. / After he gives the positions, you can have him turn them both to off.

CRO Roger, copy.

12, Canarys.

S/C Go ahead.

CRO Okay. What's the positions of your spectrometer switches at this time?

S/C They are off.

CRO They are off?

S/C Affirm.

CRO Okay. I've got a PLA update if you are ready to copy.

S/C Ready to copy and do you want a Go/NoGo?

CRO Roger. You had a chance to test the batteries?

S/C Roger. We'll do that after the PLA update.

CRO Okay. They'll catch you with a flight plan update over Kano. Okay, PLA update. Area 27 - 1 Charlie, 41 16 36. 21 + 12. 26 + 41.

Area - 28 - 1 Bravo, 42 49 59, 21 + 07, 26 + 31.

HOU Slow down a bit, Bill.

CRO Area 29 - 1 Abel. 44 25 53, 20 + 49, 26 + 06,

Area 30 - 1 Abel. 46 01 50, 26 + 16, 25 + 34,

Area 31 - 4 Abel. 48 50 30, 21 + 06, 26 + 37.

Area 32 - 4 Bravo. 50 + 26 + 21, 20 + 45, 26 + 10.

HOU Slow down.

CRO Back angle is a roll left 80, roll right 90, roll left 80, roll right 100. Weather in all areas is good. And you need a set maneuver

for all areas. We're just about at LOS. We'll pick you up at Kano.

HOU Kano go remote.

S/C Do we have enough time to give me that area before the last one ...(garbled).

KNO Kano remote and we have acquisition.

CRO Okay, it was 31 - 4 Abel. 48 50 30.

HOU Gemini 12, Houston Cap Com, through Kano.

S/C Good morning there, Houston, 12 here.

HOU Good morning, Jim. We are interested to know whether you guys would like to take a nap for another rev or would you like to eat early and do some S-5 and S-6. Our recommendation would be to sleep, but that's up to you.

Do you copy?

S/C Roger. We slept like a couple of logs last night. We're just about slept out.

HOU Okay.

END OF TAPE

S/C ...we're just about slept out.

HOU Okay. I'd like to give you a correction to the PLA's we've given you so far. On 30 - 1 Alpha, RET 400 K should read 20 + 16.

S/C Roger. Understand. I thought it would be kind of hard to get to rollback before you got to 400K.

HOU Rog. Okay, let me give you a flight plan update here real quick and we can get these other PLA's if necessary here later on. You ready to copy?

S/C Roger, standby one.

HOU Okay, well if you've got your PLA out, I'll give you whatever you like.

S/C Ready for the flight plan update.

HOU Okay. To get your flight plan in kilter, essentially you add 10 minutes to the nominal times. We'd like for you to start an eat period now, and at 38:35 do an S-6 sequence A -- correction, sequence 8 north of track. 38:40, at CYI, we'll give you a Go/NoGo for 45 - 1 Alpha. 38:55 - S-5, mode Alpha, sequence 04. At 40:30 power up platform and gyro compass to 0 - 900, that is 0 90 0 on the Agena. At 41:17, sunrise, platform defree, Agena inertial. 42:47:28, EVA sunrise. Okay,

that's the end of the flight plan update. I'd like a note here before we loose you if stack B -- stack 2B current goes below 1 amp, turn stack 2B off and monitor open circuit voltage until the next site.. And you are holding at 1 amp right now on ground TM.

S/C Rog. We're showing about zero on it now.

HOU You are showing zero?

S/C Roger.

HOU Okay, let's turn it off. Be advised your flight plan is also one rev off. So add one rev and 10 minutes.

S/C Roger, Bill. What was that EVA sunrise time again?

HOU 42:47:28. We've got 30 seconds to LOS. We'll give you the PLA updates at Carnarvon. Could you give me an open circuit voltage real quick. On stack 2. Section 2.

S/C Three zero.

HOU Understand 30.

This is Gemini Control, 37 hours, 18 minutes, 52 seconds into the mission of Gemini 12. You heard that conversation between Astronaut Anders and the crew of Gemini 12. He was remoting through Kano, Nigeria station. He gave the crew a

flight plan update. To repeat it briefly, 37 hours, 15 minutes into the flight, eat period. 38:35, an S-6 experiment, 38:40, Canary Islands Go/NoGo for rev 45-1. 38 hours, 55 minutes, an S-5 experiment. 40 hours, 30 minutes, power up the platform, 41 hours, 17 minutes, sunrise, 42 hours, 47 minutes, 28 seconds, EVA sunrise. You also heard him advise the crew to add one revolution plus 10 minutes to bring them up to the planned flight plan. Also, the Gemini 12 crew was advised to shutdown the fuel cell stack B, which is now inoperative. This does not indicate a critical situation. We have five stacks left. At 37 hours, 20 minutes, 21 seconds into the mission of Gemini 12, this is Gemini Control.

END OF TAPE

This is Gemini Control, 37 hours, 40 minutes, 12 seconds into the flight of Gemini 12. Coastal Sentry now has acquisition of the spacecraft. Gene Kranz, the flight director, is passing instructions on to Coastal Sentry to pass on up to the spacecraft concerning this fuel cell situation. The short recap is the fuel cell stack B, of which we have five stacks, so only one stack appears at least to be inoperable. We will continue to check this out;if it is possible, we will put it back on the line. We will now stand by for Coastal Sentry contact with the Gemini 12 crew.

CSQ	Roger.
HOU FLT	OK, Bill, we'll stand by for your pass.
CSQ	OK.
HOU FLT	OK?
CSQ	..... seconds to go, Flight.
HOU FLT	Roger.
CSQ	Gemini 12, CSQ.
S/C	Go ahead, CSQ.
CSQ	Roger. We'd like to run a little test on the fuel cell. What we'd like you to do is to observe two or three out of each stack current and give us enough time here to get a ground correlation read out so would you give us a

read out on Stack 1 and Alpha.

S/C Roger. One Alpha reads 3 ...

CSQ Stack Two.Alpha.

S/C Two Alpha is 2.3 M.

CSQ Three Alpha.

S/C We only have two seconds.....

CSQ Stand by one. One Apollo.

S/C One Apollo is 3...PIM

CSQ Two Apollo.

S/C Two Apollo is 0, zero.

CSQ Okay, we'd like you to now to measure the .... circuit voltage on two Apollo.

S/C Roger, the open circuit voltage is zero.

CSQ All still low on two Apollo.

HOU Okay, Bill, leave it off.

CSQ Okay. I have a new update for you. .... time is 38:32:53, roll of 25, 55.9 left, right Ascension, 1104. One minute to LOS. I'll transmit you a TX.

S/C Roger. .... 38:32:53, gravity 25, 55.9 left, right Ascension, 1104.

CSQ Roger, roger.

HOU Bill, do you have any Delta P lights up there?

CSQ That's negative.

HOU Negative, no Delta P lights?

CSQ No Delta P lights.

HOU Roger, thank you.

HOU CSQ, AFD. Would you give us an LOS main on Agena?

CSQ Okay.

This is Gemini Control, 37 hours, 46 minutes, 42 seconds into the flight of Gemini 12. We have had LOS from Coastal Sentry. The next contact will be some 40 minutes from now with the Rose Knot tracking ship, off the west coast of Africa. A short recap in revolution 24, it was found that fuel cell stack B was slightly - quite a bit - low in amperage, .98 to 1.08 amps. At that time it was decided to awaken the crew over the Rose Knot Victor and this was done. They have had about five and a half hours sleep. In other words, they were awakened something around one and a half hours early. It was decided to instruct them to shut down fuel cell stack B. The open circuit voltage appeared to be good but it won't pick up any load. This still leaves us with five stacks. They also had a flight plan update which includes the time for EVA, so everything other than the loss of that fuel cell stack appears to be normal. If that fuel cell stack can be, it will be brought back on the line after further checks along the flight path. At 37 hours, 48 minutes, 10 seconds into the mission of Gemini 12, this is Gemini Control.

END OF TAPE

Gemini Control Houston 38 hours, 17 minutes into the flight of Gemini 12. The Gemini 12 spacecraft with Astronauts Jim Lovell and Buzz Aldrin is currently passing over the south Pacific and approaching the RKV ship off the western coast of South America. The crew was awakened during the last pass over the RKV and they are currently in an eat period. Meanwhile, in Mission Control Houston, we are in the process of a change of Flight Controller teams. At the present time, Cliff Charlesworth Flight Director of the Green Team is talking things over with Gene Kranz, who has been here most of the evening. Over the RKV, we might expect some further verification of our fuel cell status. At the present time, stack 2B, that is 2 Bravo, has been shut down. The fuel cell has two sections; this would represent one-sixth of those two sections, comparable to what we had on Gemini 11. We showed low amperage and therefore, shut down the fuel cell stack 2 Bravo. This, again, is a situation similar to 11 where the other fuel cell stacks picked up the power and carried on from there. At 38 hours, 19 minutes into the flight of Gemini 12, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 38 hours, 22 minutes now into the flight of Gemini 12. Jim Lovell and Buzz Aldrin are approaching the outer ring of acquisition with the Rose Knot Victor. The Rose Knot Victor Cap Com will probably advise the crew that he is standing by, and will monitor systems during this pass. We expect little or no conversation during the pass, however. Standing by at 38 hours, 22 minutes, this is Gemini Control Houston.

RKV ...is on.

HOU Thank you.

RKV The Delta P lights are out.

HOU Very good.

RKV The Agena vehicle is go.

The Gemini vehicle is go.

Gemini 12, RKV.

S/C Go ahead, RKV.

RKV Okay, we show you go on the ground here. We have nothing further for you. We'll be standing by.

S/C Roger, we're coming up on an S-6.

RKV Roger.

Gemini Control Houston. We continue to monitor the pass over the Rose Knot Victor. Again, as we stated earlier, we expect little or no conversation during the pass, but we are standing by.

RKV Flight, RKV.

HOU Go ahead, RKV.

RKV The ... current is still varying between 3 and 4 PCM counts on the Agena.

HOU Roger, everything looks good here. We have your first summary.

RKV Roger.

Gemini Control Houston. The voice you have been hearing talking to the RKV, of course, is that of Flight Director Gene Kranz. Mr. Kranz has been in the control center most of the evening, and continues to remain here for a while as the Green shift comes aboard.

RKV Flight, RKV.

HOU Go ahead, RKV.

RKV Are you reading me loud and clear?

HOU Affirmative.

RKV Okay, we'll get into the flight plan here on Hotel Charlie 06, RCS-B source temperature reading 51.2 degrees. And Hotel Charlie 02 RCS-Bravo source pressure reading 2870 psi.

HOU Okay. GMC is watching that. He says that's okay.

RKV Okay.

RKV Flight, 1, 2, 3.

HOU I'm reading you, Bill.

RKV Flight, it seems that when I key my mike here, we come out getting some fluctuation with Agena TM when I'm talking to you.

HOU I'd say you've got a local site problem.

RKV We'll check around here.

RKV 12, RKV. You are just about to our LOS.

S/C Roger.

HOU Let's have an LOS Gemini main, please, Bill.

RKV Roger.
We have LOS Gemini.

HOU Roger.

Gemini Control Houston, 38 hours, 29 minutes into the mission. We've just had loss of signal with the Rose Knot Victor. The next activity, which will involve the crew, is some S-6 photography. This is scheduled to take place in about 10 minutes. They will be shooting sequence 8 pictures; the S-6 photography is synoptic weather, and sequence 8 indicates that they'll be seeking Cirrus bands eminating from a tropical convergence zone. Meanwhile, in Mission Control Houston, the flight controllers in the operations control room on the third floor are quietly going over their flight plans in preparation for a very busy

morning, a morning which will involve the umbilical EVA on the part of Buzz Aldrin. And on the first floor of this windowless building, its business as usual for the real time computer complex. Its 7094 computers are up and humming in support of the Gemini 12 mission, and business as usual to them means 40 billion calculations per day, for a day like today, and certainly this will be the busiest computer complex in the world this morning. The next station to acquire Gemini 12, will be the Canary Islands and this is scheduled to take place in 38 hours, 41 minutes, 13 seconds into the mission. That is some 10 minutes from now. Standing by and continuing to monitor, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 38 hours, 41 minutes into the flight of Gemini 12 at this time. The Gemini 12 spacecraft is currently in an orbit of 161.9 nautical and 139.6 nautical and we have just been acquired by Canary and we'll stand by for conversation during this pass.

S/C Roger, same one.

CYI Okay, we'd like to get a nominal fuel cell purge, section 2 then section 1.

S/C Understand nominal fuel cell purge, section 2 then 1.

CYI Roger, we're standing by for it.

Gemini Control Houston. As you just heard, Canary advised the Gemini 12 crew that they have a go for 45 dash 1 and they're to accomplish normal fuel cell purge, first section 2 then 1.

CYI 12, Canary, sending you a TX.

S/C Roger.

CYI And could we have a PQI, please?

S/C Roger, we're using about, oh, between 48 and 49 percent.

CYI Roger, thank you.

CYI Flight, Canary.

HOU Go ahead.

CYI How about a crew status report?

HOU Stand by. I don't see it scheduled. Hold on.

HOU Canary from Flight.

CYI Go ahead.

HOU We're scheduled for that over ETR next pass.

CYI Okay.

HOU Canary Cap Com, Houston Flight.

CYI Go ahead, Flight.

HOU See any Delta P lights?

CYI Negative, Delta P lights.

HOU Canary from Flight.

CYI Go ahead.

HOU Agena India.

CYI .....Omega, roger.

HOU Agena India.

CYI Roger.

(PAUSE)

Gemini Control Houston, continuing to monitor our pass over Canary. Standing by.

CYI Flight, Canary.

HOU Go ahead, Canaries.

CYI Okay, we've completed the tape dump and he's on section 102 purge at this time.

HOU Roger.

CYI Gemini 12, Canary. Would you move your cryo quantity switch to the O_2 position, please? Thank you. Okay, Gemini 12, would you ... your H_2 tank at this time and move the switch

to the vent position and then to safe?

S/C Roger.

CYI Did you get the vent pull?

S/C Roger, we heard the reaction back there in the ...

CYI Okay, and put your cryo quantity switch to off, and your H_2 heater switch to auto.

S/C Roger.

CYI And we got about 30 seconds to LOS and we'll be standing by.

S/C Roger.

HOU Kano go remote, Canary local.

KNO Kano's remote and we have acquisition.

HOU Gemini 12, Houston Cap Com through Kano, over.

S/C Roger.

HOU Jim, will you move your cryo quantity switch to H_2, please?

S/C garbled

HOU Gemini 12, Houston Cap Com. I'm not copying. Did you read leave your cryo quantity switch in H_2?

S/C We are back in H_2.

HOU Mighty fine.

KNO 30 seconds to Kano AOS - correction LOS.

KNO Kano has LOS.

Gemini Control Houston, 38 hours, 52 minutes into the flight of Gemini 12. We've had LOS over Kano. The voice you heard from Houston remoting through Kano was that of Cap Com Bill Anders. And at 38 hours, 55 minutes into the mission, that's some two minutes from now, the crew is scheduled to take some S-5 Photography. This will be Synoptic Terrain Photography and they will be shooting for an African Rift Valley. At 38 hours, 53 minutes into the mission now this is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 39 hours, 30 minutes into the flight of Gemini 12 at this time. In Mission Control, the Green team Flight Director, Cliff Charlesworth, has gone around the room and discussed with his flight control team, the various aspects of the upcoming umbilical EVA mission. It all looks good at this time. The surgeon reiterated that sleep on the part of the Gemini 12 crew was something less than 6 hours. Jim Lovell had indicated that he had "all slept out". The Gemini 12 crew, Jim Lovell and Buzz Aldrin, are now in their 25th revolution. We've got a long dry spell between passes as they cross the south Pacific. The next station that will acquire will be Antigua. This will be at 40 hours, 4 minutes into the mission. In the meantime, to bring you up-to-date on some of the activities that happened yesterday, the telescoping handrail which Buzz Aldrin put out yesterday during his standup EVA is in place for today's activity to provide him with ready transportation to the nose of the Agena for tether attachment. This handrail, by the way, is in three two-foot sections. It has got an 8 inch segment which was spring-loaded. It was stowed right inside Aldrin's hatch so he could readily reach it as he started his standup EVA. And it is presently mounted on the half-beam between the two hatches. This is one the spacecraft side, and the other end is plugged into a hole on the docking cone of the Agena. Also, yesterday,

Aldrin mounted the 16 mm EVA camera on the center line between -- behind the two hatches. That is where it will be positioned today. He did this for a couple of reasons. One, this will provide him with a basis of comparison between performing this task with a chest pack on, that is the ELSS on, and without the chest pack. Yesterday, of course, he did not wear the chest pack. Also, this will give him a basis to evaluate some modifications that had been made to the mounting on the camera. The camera mounting O-ring was somewhat swollen during Gemini 11 and had given Dick Gordon a problem or two in his mounting exercise at the start of the Gemini 11 umbilical EVA. Following yesterday's activity, Aldrin did take the camera back in and he will remount it today as part of his tasks. The crew will begin their EVA preparations in about seven minutes from now. This will be during a quiet period and we will have no conversation with them until Antigua. At 39 hours, 33 minutes, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 40 hours, four minutes into the flight of Gemini 12 at this time. Jim Lovell and Buzz Aldrin are approaching acquisition with Antigua tracking station. We expect some conversation during this pass between Cap Com Bill Anders and the Gemini 12 crew. We'll stand by for acquisition which is expected at any moment. Standing by now for acquisition this is Gemini Control Houston.

ANT AOS Antigua.

HOU Gemini 12, Houston Cap Com, over.

S/C Hello, Houston. 12 here.

HOU Roger. That was a pretty lonely pass there, wasn't it?

S/C Yes, it was. Something interesting happened ....(broke off)

HOU We didn't copy Gemini 12, say again. How's that for a cliff hanger?

(PAUSE)

HOU Gemini 12, Houston Cap Com, over.

S/C Go ahead, Houston.

HOU You were cut out after you saw something interesting. What did you see?

S/C We didn't see anything. I said that during our S-5 attempt to photograph on photo sequence 4 we attempted to get spacecraft control and it appears after an analysis of our control system,

that thrusters 2 and 4 are not operating.

HOU Roger, copy.

HOU Gemini 12, Houston. We'd like to have you start a gradual power up by turning on the A pump in both the primary and secondary loops. We'd like to have you leave this on for at least a rev. We'll give you more items over Canary and then we'd like to have you follow your normal EVA prep in flight plan power up. Over.

S/C Roger. Understand that you want us to put on primary A and have both primary B and primary A on at this time. Is that correct?

HOU Negative. Only primary A in each loop.

S/C Roger. Only primary A in each loop going on at this time.

HOU Also we'd like to have you do a 30 second O_2 purge in section 2. We'd like to have you start one now and we want you to do one each rev. We'll advise you when to do them on the following rev. Do you copy?

S/C Roger. 30 second purge in section 2 coming on at this time.

HOU Okay, and we're ready for a crew status report.

S/C Roger, water gun count of 1361. Water consumed

about equal and both eaten meal 3 on day 3 meal ..

HOU Roger, make that a 30 second purge for both sections.

S/C Roger. 30 second purge for both sections.

HOU Roger. Now we'd like to have each one of you try drinking about a pint of water each now and we'll be asking you to drink more as late in the EVA prep as possible, over.

S/C Roger, is this the fuel cell?

HOU Roger.

HOU Also we'd like to have you turn your encoder off now so we can reset your timer.

S/C Encoder off.

HOU Okay, and a note to in order to conserve attitude gas in the Agena, we'd like you to make sure that before you send ACS on, that you kill all your rates.

S/C Roger. You read about our thrusters 2 and 4, did you?

HOU That's affirmative. We're thinking it over.

S/C Fuell cell purge is complete. You say you want me to really load up on the water, huh?

HOU That's affirmative.

S/C How come I didn't get any of this on the ground

debriefing - ground briefing? I was asking these questions before.

HOU We'll give you a briefing when you get back.

S/C I guess they will.

HOU Okay, you can turn your encoder back on again. And can you give us an evaluation of your sleep period.

S/C Roger, sleep period was very good.

HOU Mighty fine.

S/C It must be at least six hours apiece.

HOU Copy.

HOU Gemini 12, Houston. Where is your roll logic at this time?

S/C Roger. Roll logic primary. Okay, you mean your roll jets? They're in yaw.

HOU Roger, understand.

S/C Roger, we've had them both in yaw and pitch. We had them in pitch after initial rendezvous trouble a day or so ago and then we brought them back to yaw.

HOU Copy.

S/C They may have been out for awhile. At least they might have been intermittent. These problems sound a little familiar with some of the things we had....

HOU Roger, understand.

HOU Gemini 12, Houston. You have about one minute to LOS.

S/C Roger.

ANT LOS Antigua.

HOU Flight.

ANT Go ahead, Flight.

HOU You get everything you need now?

This is Gemini Control Houston. We've just had loss of signal at Antigua. The two thrusters referenced in Command Pilot's Jim Lovell conversation - these are OAMS thrusters, 2 and 4, OAMS Orbital Attitude Maneuvering System. He indicated that these thrusters apparently are out at this time or he had an indication that they are out at this time. These thrusters are used for pitch down and yaw left functions; however, we should point out that what this really does, it reduces our control authority by half. It does not eliminate control authority. At 40 hours,15 minutes this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston. We've just been acquired by Canary and we will pick up that conversation now.

S/C ...gyro ...

CYI Your TM switch to real time and acq 8.

S/C TM is real time and acq.

CYI And your cryo read switch to the O_2 position. Okay, we got it.

S/C Roger.

HOU Canary Cap Com, Houston Flight.

CYI Go ahead, Flight.

HOU Two things. Ask him if he's getting anything at all out of thrusters 2 and 4, that is, whether they are degraded or out.

CYI Rog. 12, Canarys.

S/C Go ahead.

CYI Okay. We'd like to know whether you are getting anything out of thrusters 2 and 4 at all. Are they degraded or are they off?

S/C Okay. Here's the sequence we went through. We attempted to patrol the spacecraft to a good position for S-5. We noticed that we were getting a roll every time we put it in a pitch or a yaw maneuver, so we finally went around and checked all the thrusters by turning off all the circuit

breakers, then turning them on one at a time. We put our rate gyros on, checked our needles for deflation. We could also hear the thrusters solenoid open up of course. And both 2 and 4 had no response at all. We had no -- no response, but only those circuit breakers were on. One at a time.

CYI Okay, copy that.

S/C It is difficult to get a good evaluation because we didn't know whether our unusual attitude response to the control maneuver was due to the offset CG due to the Agena fuel aboard or whether it was the thruster powerup and this problem could have existed for some time before it dawned on us what the situation was.

CYI Roger.

HOU Okay, very good Canary, would you ask him to send..

S/C We tried secondary attitude drivers to no avail.

CYI Roger.

HOU Would you ask him to send ACS gains low command 460, please. Do you copy?

CYI Roger. 12, Canarys.

S/C Go ahead.

CYI Okay, would you send command 460, ACS gains low to the Agena please?

S/C Roger.

HOU Canary Cap Com, Houston Flight.

CYI Go ahead, Flight. It indicates low down here already, but we had to send it anyhow.

HOU Okay, would you give us a PCM count from CA09. Charlie, Alpha 09.

CYI Roger.

Standby one.

Okay, that's 184, and in the O_2 position.

HOU Thank you.

CYI And 193 in the H_2 position.

HOU Say again.

CYI 193 in the H_2 position.

HOU Okay, and we'd like an LOS main Agena.

CYI Roger.

HOU Canary Cap Com, Houston Flight.

CYI Go ahead, Flight.

HOU Okay, we recommend that he open the circuit breakers on TCA-2 and 4.

CYI Open them and leave them open, right?

HOU Affirmative.

CYI 12, Canarys.

S/C Go ahead.

CYI Okay, we recommend that you open the circuit breakers on thrusters 2 and 4 and leave them open.

S/C Okay, thrusters 2 and 4 circuit breakers coming open now.

CYI Roger.

12, Canarys, about a minute to LOS.

S/C Roger, Canarys. We plan on powering up the platform at 40:30, you concur?

HOU Affirmative.

CYI That is affirmative.

Flight, Canarys.

HOU Go ahead.

CYI Okay, looks he turned the platform on just for a few minutes there, and when he did the main bus went to about 25. It was reading about 26 prior to that time.

HOU Was it back off? Did he turn it back off?

CYI It is off now, right. He said he'd power up at 40:30, according to flight plan.

HOU What did the main bus go to?

CYI 25. 25 volts.

HOU How about the current? How about the currents?

CYI Standby one.

Okay, looks like the main bus went up to about 20 amps.-- A and B went up or 2 went up to about 10 or 12 amps.

HOU Say the first one again.

CYI Main bus 1 went up to about 20 amps.

HOU Okay.

CYI Okay, we've had LOS and both vehicles were go.

HOU Roger.

This is Gemini Control Houston. 40 hours, 26 minutes now. We've just passed out of range with Canary. The crew was advised to open circuit breakers 2 and 4. This was done -- this instruction was given since these thrusters are not doing anything at the present time. We felt that there was no point in giving them power. We will indicate again that thruster 2 is used in a pitchdown mode and I believe we said earlier that thruster 4 was used for yaw right. This would actually be yaw left. We will also indicate that these thrusters 2 and 4 -- neither one have a total effect on control authority. There are alternate mains certainly for accomplishing each of these maneuvers. So at 40 hours, 27 minutes, this is Gemini Control Houston.

END OF TAPE

CRO Houston Flight, Carnarvon.

HOU Go ahead, Carnarvon.

CRO Okay, we noticed the Canary summary of total main bus current is a little low. Are we deleting that rule from the mission rule? The 36.

HOU Which one?

CRO The 36 amps minimum for two hours prior to EVA and during EVA.

HOU Not that I know of. Stand by, Jim.

CRO That's 19 dash 3. Carnarvon has acq aid contact Agena.

HOU Roger, Carnarvon.

CRO Showing the Agena at FC-1 plus 90.

HOU Roger.

HOU Carnarvon from Flight.

CRO Go ahead.

HOU What do you show on main bus voltage now?

CRO We don't have solid sync Gemini yet. We're not at AOS. What did you want, total main bus?

HOU Yes, voltage.

CRO Okay. Oh, voltage. Okay. Intermittent signal Gemini. Showing 25 volts.

HOU Say again.

CRO 25 volts.

(Pick up continuation of commentary from Tape 149, Page 1)

Gemini Control Houston, 40 hours, 52 minutes into the flight of Gemini 12. The Gemini 12 spacecraft is now approaching acquisition with Carnarvon tracking. To quickly recap some of the activities that have taken place this morning. The Gemini 12 crew was awakened about an hour and a half early this morning, earlier than the normal flight plan called for. Fuel cell stack 2B is not operative at the present time. This is one of six stacks in two sections in the fuel cell system. We're running about one revolution plus ten minutes ahead of our normal flight plan. This is the case because of the fact that we cancelled or did not do our high apogee orbit on the first day, and also before Antigua it was reported that - during Antigua pass, I should say - it occurred before Antigua. It was reported that two 25 pound thrusters, the OAMS thrusters, thrusters 2 and 4, were apparently down. This will have no effect, however, on our EVA plans for this morning. We're acquiring now at Carnarvon, and so we'll stand by for any conversation which might transpire.

CRO Showing 25 volts.

HOU Say again.

CRO 25 volts.

HOU What are the currents?

CRO 21 and a half amps.. plus one, 13 may plus 2.

Gemini 12, Carnarvon.

S/C Go ahead, Carnarvon.

CRO Okay, we're showing your O_2 pressure is no go.

You're a little low.

S/C Okay, we'll pump it up a little.

CRO Let's get it about 710 onboard.

S/C Very well.

HOU Carnarvon from Flight.

CRO Go ahead.

HOU How about getting us a main when you get the heater on?

CRO Roger.

HOU And an Agena main.

CRO Roger.

CRO We're showing about 780 on cryo O_2 tank pressure. Way below expected. Okay, we also show them on both A pumps. Is that where you want them?

HOU That's affirmative. That's what we did over the states.

CRO I know that, but EVA prep shows secondary B.

HOU Yeh, but we asked him to leave it on until he comes across the states again.

CRO Okay, I'm getting both Delta P lights in section 1.

HOU You have both lights? Or no lights?

CRO O_2 to water in both section 1 and 2. They are on.

HOU Copy, on.

CRO Okay, the O_2 tank pressure is coming up pretty nicely. It's 740 - 840 correction.

HOU Did you send us a Gemini main, Carnarvon?

CRO Roger.

CRO We're showing about 39 amps total spacecraft current.

HOU Say again, please.

CRO Showing about 39 amps total spacecraft current.

HOU Okay, does he have the heater off now?

CRO Oh, no. It's still on.

HOU The summary shows 44 and a half.

CRO Okay, we just got a readout. You're correct.

HOU Carnarvon from Flight.

CRO Go ahead.

HOU Ask them if they have Delta P lights also. I'm sure they have.

CRO Roger.

CRO 12, Carnarvon.

S/C Go ahead.

CRO Roger. Confirm you have Delta P lights section 1 and 2 ... the water.

S/C Roger, we have.

CRO Okay.

HOU When did they come on?

CRO When did they come on?

S/C Oh, I'd say about fifteen minutes ago.

CRO Okay, thank you. We show your O_2 quantity is go and O_2 pressure is go at 875 ground readout, and except for your integrity check and all that your spacecraft current is go, your go for depress.

S/C Okay, we'll continue now with the EVA prep.

CRO Roger.

S/C Carnarvon, we're just going to recheck with you but we have sunrise egress time of 42:47:28. Do you confirm?

CRO That's affirmative.

S/C Roger.

CRO We've had LOS Gemini and Agena. All systems were go at LOS.

HOU Roger.

Gemini Control Houston, 41 hours now into the flight. We've just had loss of signal over Carnarvon. The next station to acquire will be Grand Turk. This is at 41:37 into the mission. So we'll have no conversation for awhile with the crew as they make their way on the 26th revolution across the southern Pacific. At 41 hours and one minute into the flight of Gemini 12, this is Gemini Control.

END OF TAPE

Gemini Control Houston, 41 hours 21 minutes now into the flight of Gemini 12. The Gemini 12 Spacecraft with its crew, Jim Lovell and Buzz Aldrin, is passing over the South Pacific now on its 26th revolution. This is a quiet time in the mission since we do not have a station contact again until we reach Grand Turk. One point of clarification, this regards the instruction given to the crew to drink more water, this was brought to pass for a couple of reasons. One it will assist in disposing of fuel cell water, two we have a surgeon input here also. The surgeon feels that it is most desirable that they do drink water prior to the extravehicular activity. This is particularly identified since there are other means of venting or disposing fuel cell water. At the present time the Gemini 12 crew, Lovell and Aldrin, are very much in the midst of their preparations for the umbilical EVA. It won't surprise us in fact we'd rather expect that they will be quiet tight lipped in future conversations on our passes down the line. This is particularly so when you consider the camera gear, the 25-foot umbilical, the chest pack, miscellaneous other equipment they've got a precision job of arranging on their hands. Also one term crosses up in the flight plan - crops up in the flight plan checklist. This is a clothes line. This will be strung in the cabin as the name implies, to attach cameras and other gear which might otherwise float outside the hatch during the EVA. One item that Aldrin does not plan to do even if they get ahead in the EVA preparation and that is to go on his ELSS or chest pack system early. Dick Gordon did this and was hindered somewhat because of his efficiency

in doing so. The water boiler in the chest pack doesn't work except in a vaccum. So it will be around the time of depressurization we're sure before Aldrin switches to his ELSS.
At 41 hours 24 minutes into the flight of Gemini 12 at the present time, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 43 hours, 38 minutes, and we've acquired over the Eastern Test Range and we'll pick up the conversation now.

S/C .. correlation between drinking water and those lights.

HOU You say negative correlation?

S/C I said there is a definite correlation between drinking water and those lights.

HOU Understand. You feel that the ..

S/C Everytime that we use water to prepare the food, or drink quite a quantity of it, the lights go out.

HOU Roger. We have indication here on the ground that you drank water after the Canary pass and before Carnarvon and the lights came on prior to Carnarvon. Is that correct?

S/C Rog. The lights were on at Carnarvon. Prior to that, they came on.

HOU Roger. Did you drink prior to their coming on?

S/C I believe it was after, Bill, I'm not sure.

HOU Okay. With respect to the Agena control situation, just a little rundown here. As you know, we are -- the Agena's heavy with fuel and therefore, has a pretty high moment of inertia. This results in

effectively low ACS control authority, and in order to avoid any high gas usage, and with your control problem, we'd like to recommend that you use rate command when you attempt to kill all rates prior to turning ACS on. You understand?

S/C Roger. We are now inertial. As for the flight plan, and we'll stay in this condition until after EVA.

HOU Roger. We suggest using rate command after EVA. Also, we'd like to have you each drink another pint or so of water as late as possible in the EVA prep.

S/C Houston,12, here. What is the reason behind this. Is it for the fuel cell or for body conditioning?

HOU We're trying to condition the fuel cells.

S/C Yeah, well I'd just as soon not get super saturated with water when I'm going to be exposed to a warm environment.
Why don't you check that out?

HOU Stand by.

S/C Right now, I think I've been drinking an adequate amount of water to get through the day's activities.

HOU We agree with that;if you can drink any water it'll help us out fuel cell wise.

S/C Okay, I'll -- I'll sacrifice.

HOU Roger. If you can get rid of any that might help.

S/C I'll take care of that, too.

HOU Okay. Also, if it is convenient for you, we'd like for you to fix the S-3 frogs on your mark. That's just one unit.

S/C Roger, can you read me?

LOVELL Can you read me now?

ALDRIN Yeah, what did you do?

LOVELL I don't know. I just heard something click.

HOU Gemini 12, did you call Houston?

S/C Roger, I thought I'd lost communications here for a minute. Are you ready for the unit one?

HOU Roger. On your mark.

S/C Houston, 12, do you read?
Do you read me, over?
Houston, 12.

HOU Go ahead.

S/C Did some switch get hit maybe?
Houston, 12.

HOU Roger, read you five by. How me, 12?

S/C Roger. We're having an intermittent problem here with electrical switches, I guess because

you're -- we're losing communications. Would you let us go back on ...

HOU Right. Looks like your keying switch was stuck. You can fix unit one in the S-3 on your -- convenience. On your mark.

S/C Roger. Can you read me now, Houston.

HOU Read you five by.

S/C Houston, 12, can you read?

HOU Roger, that's five by and we're not getting biomed. You might check your lead and your circuit breaker.

S/C Okay. How about now?

HOU Looks good.

S/C Okay. Unit one. On my mark. 3, 2, 1, Mark.

HOU Mighty fine.
Gemini 12, Houston, over.

S/C Go ahead.

HOU Roger. We'd like to get your feeling on how you feel about the possibility of dumping some water through the urine system if possible.

S/C Well, we might do it after EVA, Houston. We're in the middle of EVA prep now.

HOU Okay, we won't bug you on that then.

S/C Yeah, we've got gear all over the cockpit, you know, as per standard procedure.

HOU Roger.

HOU Gemini 12, Houston. One minute to LOS.

GTI LOS, Turk.

(pause)

Gemini Control, Houston. We've just had LOS over Antigua. The lights referred to by the crew during this pass is the Delta P light and when this light is on it indicates an oxygen overpressure relative to water. We are standing by now for acquisition at Canary. We expect to acquire some two minutes from now at 41 hours, 51 minutes into the mission. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 41 hours 52 minutes now into the flight. We are coming into Canary now and expect conversation with the crew momentarily.

HOU Oxygen only

CYI Oxygen only, roger.

CYI Gemini 12, Canary Cap Com.

SC Go ahead

CYI Okay, we would like to get a 30 second 02 purge only on both sections if you have time.

SC Roger

What purge do you want first Canary?

CYI One

SC What section do you want first?

CYI One

SC Section 1. Section 1 coming up.

CYI 12, Canary. Your 02 pressure is coming down a little bit, do you want to bump up to 90 degrees please?

SC Roger, it came right down when we were checking out the ELSS. I've got the heater on now, we're building it up.

CYI Roger.

SC Purge complete.

CYI Roger.

HOU Canary, from Flight, send us another Gemini main and do you still have delta P lights?

CYI That is affirmative.
Okay, his cabin pressure is up to about 5.61 but I think that is from the ELSS checkout.

HOU Roger.

HOU Canary from Flight, and Agena bravo please.

CYI Roger
Flight, Canary

HOU Go ahead

CYI Okay we are getting some real weak radar signals this pass. I don't think you're getting any C-band off of it.

HOU Roger.
That is probably because of the antenna at Canary. They probably got it rolled over.

CYI Roger.
12, Canary, you're about one minute to LOS, your 02 pressure is looking real good now.

SC Roger, well we'll stop it here.

HOU Canary Cap Com, Houston Flight.

CYI Go ahead Flight.

HOU You've just about had LOS, I'll catch him over Kano.

CYI Okay

CYI He was about 900 on 02 pressure when he cut it off.

We've had LOS both vehicles and both were GO.

HOU Roger, GO.

FD Kano go remote.

KNO Kano is remote and we have acquisition.

HOU Canary Cap Com, Houston Flight.

CYI Go ahead Flight

HOU You saw everything okay for depress is that correct?

CYI That is affirmative.

HOU Thank you. Gemini 12, Houston Cap Com, through Kano. Standing by.

SC Roger, Houston.

HOU Roger, Gemini 12. Be advised that you're performance curves on your remaining stacks have been looking good since power up.

SC Very good.

Houston,12 here.

HOU Go ahead 12, we read you weak.

SC Houston, Gemini 12.

HOU Roger 12, go ahead.

SC Roger, would you ask Chris for another bedtime story for me, I kind of miss them since the last flight.

HOU Roger, we'll have one for you.

HOU We may be able to do better than that.

END OF TAPE

HOU You may be able to do better than that.

(PAUSE)

HOU Gemini 12, Houston Cap Com. One minute to Kano LOS. Have fun on your EVA.

S/C Rog. Thank you very much. Will do.

HOU Roger.

KNO Kano has LOS.

Gemini Control Houston, 42 hours, five minutes into the flight of Gemini 12. That was Cap Com Bill Anders who advised the Gemini 12 crew during the last minute of that pass to have fun on their EVA. During the first daytime pass while Aldrin is attaching the Agena tether to the spacecraft docking bar, Aldrin will move down the handrail which he attached yesterday. As he proceeds to the nose, he'll hook his left tether to an attach point on the end of the second telescoping section of the handrail. He'll hook his other tether to one of the rings on the Agena docking bar. While attaching the tether he will be essentially with his head over the docking cone and his feet toward the spacecraft window. This will be on the right side. He'll take on the appearance of a swimmer rather than the ride 'em cowboy type approach of Dick Gordon who performed the same task. We're evaluating different kinds of restraints on this flight today to maintain stable body positions. This is done to avoid the floating up and away effect from a work position. Aldrin will

evaluate the handrail which he'll move down. He'll be wearing two waist tethers wrapped under the lower strap of his parachute harness. These are made of nylon parachute webbing and they can be varied in length and have hooks on either end for attachment to the rings on the TDA and to the handrail. Back at the adapter work station he'll evaluate foot restraints which closely resemble or have been described previously as looking like Dutch shoes. These were carried on Gemini 11 but they were not used. They have performed well in simulations. Aldrin will carry forward a set of handholds from the adapter when he proceeds to the Agena work station. And he will evaluate these by sticking them on the Velcro. And for Gemini 12, our EVA plan is laid out in such a way that no individual task is vital to future events in the mission. If a single task proves to be too difficult, Aldrin will probably bypass it, going on to the next item. We want to see the degree of difficulty associated with each of the assignments as well as the degree of ease in which they can be performed, because it's just as important to know what's hard as it is to know what's easy. Now Aldrin does have regularly scheduled rest periods throughout the umbilical EVA and in the Gemini 12 ground rules, he can also stop and rest if he feels a need to do so. This is just like an athletic team that would call a time out. At 42 hours, 8 minutes, our next station to contact will be Carnarvon. This is at 42 hours, 26 minutes, 57 seconds and we will pass that conversation on to you as it transpires. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 42 hours, 26 minutes now into the flight of Gemini 12. Jim Lovell and Buzz Aldrin are on their 27th revolution and approaching acquisition with Carnarvon tracking station. Over Carnarvon, we expect the Go/NoGo message for cabin depressurization and hatch open. And we are making contact now, so we'll stand by for conversation over Carnarvon.

CRO Carnarvon has Gemini contact.

HOU Roger.

CRO Gemini 12, Carnarvon. We are checking out your systems now.

S/C Roger, Carnarvon.

HOU Carnarvon, from Flight.

CRO Go ahead.

HOU What did you show as the pump configuration?

CRO Both A pumps.

HOU Both A.

CRO That is affirmative.

HOU Carnarvon from Flight.

CRO Go ahead.

HOU Agena Bravo.

CRO Roger.

12, Carnarvon. Have you completed your suit integrity check yet?

S/C This is 12. The command pilot has, the pilot has not. We're still getting ready for it.

CRO Okay.

S/C I'm pumping up the oxygen a little bit. We are already on depress and ELSS both.

CRO Okay.

HOU Carnarvon from Flight.

CRO Go ahead.

HOU Just remind him that he has both A pumps and to go ahead as per checklist as far as pump configuration. I think that comes later.

CRO Okay.

HOU You understand?

CRO Roger. 12, this is Carnarvon. We're indicating here on the ground both A pumps in primary and secondary loops. We just want to remind you to just continue on with your checklist.

S/C Roger. We have both primary A pumps on. Is that correct?

CRO That's the way you are right now, but do it as per checklist.

S/C Roger.

HOU Carnarvon from Flight.

CRO Go ahead.

HOU A Gemini Bravo.

CRO Roger.

HOU Do you have our lights?

CRO Say again.

HOU Do you have Delta P lights?

CRO That is affirmative.

HOU Roger.

CRO 12, Carnarvon. Confirm you are on manual O_2 heater.

S/C That's affirmative. I am, but it doesn't seem to be pumping it up much. We have the repress open of course.

CRO Okay.

S/C It's holding about 620.

CRO Roger that.

S/C You want us to go off / repress and pump it up?

CRO Just follow your check list.

S/C Roger.

CRO Flight, Carnarvon.

HOU Go ahead.

CRO Okay. It seems with that O_2 manual heater on he's not doing any good with that repress open. I told him to continue on with his checklist. It calls for closing it a little later after the integrity check.

HOU Roger.

Carnarvon, from Flight.

CRO Go ahead.

HOU Send us a main, Gemini and B's, Bravo.

CRO Roger.

12, Carnarvon, we have one minute to LOS. All your systems are go with the exception of your cryo O_2 pressure. Just keep a close eye on that thing and get it up to 710 onboard before EVA.

S/C Roger. But it doesn't seem to be going up, Carnarvon. I left the manual O_2 heater on.

CRO Roger. It'll probably go up when you close the repress.

S/C Roger.

HOU Carnarvon, he's go as long as it is not going down.

CRO Roger that. You're go for depress just as long as that pressure does not decrease, 12.

S/C Roger, Carnarvon, but it is not increasing at all, with the manual O_2 heater on. It is still just about repressing.

CRO Roger. Looks like its going down Flight. Flight, Carnarvon.

HOU Go ahead.

CRO Roger. We've had LOS both vehicles.

HOU Roger.

CRO And it looks like that O_2 tank pressure is going down. Started at 735, 730, LOS short about 711.

This is Gemini Control Houston, 42 hours, 36 minutes now. The next station to acquire the Gemini 12 spacecraft will be at 43:08 and this will be over Texas. Now the Gemini 12 spacecraft will be passing well to the south of Canton and Hawaii tracking. However, the hatch opening is presently scheduled for 42:47:28 with cabin depress some three minutes earlier. Our first opportunity to confirm whatever activity has transpired with the EVA will be over Texas. We will acquire Texas at 43:08. At 42:37, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 42 hours 48 minutes now into the flight of Gemini 12. At the present time we have no contact with the Gemini 12 Spacecraft. Our last contact was over Carnarvon. However, if Gemini 12 is holding to the present or to the flight plan schedule, the cabin depressurization would have occurred by this time. We would expect hatch open time to have occurred. The countddown clock in Mission Control is counting up on the assumption that it did occur. However, we will not know the exact status until out next station contact and this contact will be at 43:08; 43 hours and 8 minutes into the mission over Texas. At 42 hours 49 minutes this is Gemini Control Houston.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/13/66, 9:42 A. M. CST

Gemini Control Houston, 42 hours, 55 minutes into the mission of Gemini 12 now. The Gemini 12 spacecraft is still proceeding across the South Pacific out of contact - out of station contact - at this time. The bottom countdown clock in Mission Control reads 13 minutes, six seconds at this time. This clock indicates time of acquisition to our next station contact. This station contact will be Texas. At that time Bill Anders will be in contact with the crew. Bill Anders, the Cap Com, has been back frequently talking with Flight Director Cliff Charlesworth. This has been a frequent occurrence in Mission Control. The Cap Com by the nature of his profession as an astronaut is quite active. He's on his feet perhaps more often than the other Flight Controllers here in Mission Control. Also, his console is directly in front of that of the Flight Directors. Often they have over the desk consultations before passing word along to the crew. This is interesting activity to watch. It's much like splitting the duties of a quarterback on a football team with the Mission Director and Flight Director calling the plays and the Cap Com passing on the signals from Mission Control. 42 hours, 56 minutes into the flight now. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 43 hours 9 minutes now. We are acquiring over Texas and we're standing by. This is remoted through Corpus Christi and we're standing by.

Gemini Control Houston we have conversation going on now with the Gemini 12 crew and we'll turn to the conversation.

SC Roger we're just ahead of my field of view over it.

SC I probably will when I do a little on the ELSS.

LOVELL Say Buzz, where did you get that blue pack on your back?

Where did you get that blue pack on your back there?

ALDRIN Blue pack huh.

LOVELL Okay, here's ....a little difficult

ALDRIN No, it's a little tight.

LOVELL Okay.

ALDRIN Are you preparing it now .....

LOVELL Okay good.

ALDRIN Okay let me open it and .....out

LOVELL Open her up.

ALDRIN Open and I'm going to leave it .....

LOVELL You have it opened and deployed.

ALDRIN I think the best thing to do is push it straight out, it seems to be locked better that way.

LOVELL Okay

ALDRIN Just make sure it is not going to come loose.

LOVELL Yes.

ALDRIN Even though you make complete PPS burn, if they do anything with it, it'll fly down.

LOVELL Are you still cold?

ALDRIN I am still cold.

LOVELL Okay, sounds good.

HOU Roger, sounds good.

ALDRIN I am going to take the velcro off the S-10 even though I'm through with it, ...
just another little bonus.
All right the velcro is off..

LOVELL Okay velcro off of the S-10,.....
Okay, I see.... listen before I have you go ahead of the game here, why don't you just take your tether and go around to the work base a little bit and we'll get a couple of shots while you rest.

ALDRIN All right.

LOVELL He's getting in a good position for photography now.

HOU Gemini 12, Houston Cap Com, could you turn your heater to auto please?

SC Roger, thank you.

ALDRIN Well let's see, I think maybe I'll move this tether out to the other ring, that looks a little better.

Okay, how is that for position?

LOVELL Perfect

ALDRIN ~~Don't~~ let me kick that S-10.

LOVELL Pick your feet up.

ALDRIN Okay, what you really don't want to do is hit the handle.

LOVELL I'm having a harder time getting the camera up to the window then you are I think.

ALDRIN Okay.

Houston, how much longer on this pass do we have with you?

HOU We got about another 10 minutes worth Buzz.

ALDRIN Okay.

LOVELL Okay, why don't you just rest here for a couple of minutes Buzz? I will try to turn it back here shortly, we're - we got time to go through the effort.

HOU Everything is looking real good here Gemini 12.

SC Hey point it towards the camera I might still have some film left.

SC Houston, this is 12 here. I have a couple of messages for you.

HOU Ready to copy.

ALDRIN Roger, to commemorate our launch day on November 11, I have an emblem here that I would like to leave in orbit. It says November 11, Vets Day

LOVELL Stay right there Buzz, hold it a second

HOU Roger copy, November 11 Vets Day

ALDRIN I'd like to extend the meaning of it to include all of the people in the world who have been and are now and will continue to strive for peace and freedom in the world.

HOU Mighty fine.

SC Okay, Flight you are doing a good job.

ALDRIN However, I've got another one here. This message that I have concerns a contest coming up in the future. I think the precedent was set for this about a year ago. I'm not sure that Jim can read this one, so I will read it out loud to you so you can all hear it.

GO ARMY, BEAT NAVY.

HOU Roger, understand. Beat Army.

ALDRIN I knew we had the wrong Cap Com on there.

HOU It's no sweat.

LOVELL Always a guy with a large mouth.

ALDRIN You're not taking pictures there friend

LOVELL Camera just broke.

Okay, I'll get a picture of it just a minute standby.

That's a nice job, I hate to tell you that.

ALDRIN You got it, how about the other one.

LOVELL Oh, I got it.

ALDRIN Okay.

I'll just leave this up here.

LOVELL Okay, I'll give in, it's about time for us to come back.

Okay, let me put the cover on this Maurer camera here for a second.

HOU Everything is looking good Buzz, guess you slowed down a little.

ALDRIN What a beautiful view.

LOVELL Yea.

SC We're completely upside down now

HOU Roger

END OF TAPE

HOU — Roger.

S/C — garbled.

HOU — Gemini 12, Houston. Everything is looking real good. Coming down nice.

ALDRIN — Okay. My feet are still cold.

HOU — Roger.

LOVELL — Okay, Buzzeroni. How do you feel?

ALDRIN — Great. Let me get one more portable handhold deployed out here.

LOVELL — Take a rest, maybe?

ALDRIN — Well, I don't want to risk it now going back to the adapter. I think I'm just about out of film.

ALDRIN — That Velcro holds pretty well.

ALDRIN — Okay, let's go.

LOVELL — All right. Now you'll have two handholds supplied - portable handholds - supplied up on the nose, two pip-pins standing by.

ALDRIN — Right.

HOU — Gemini 12, Houston. If you have a chance on your way back you might glance over your left-hand side and see if you see any ice on the H_2 vent. That's on the Command Pilot's side.

ALDRIN — I sure do. It's about, oh, six inches high in the form of a bush sort of a, icicling out radially. It's about, oh, eight inches across and it's pure

white.

HOU — Understand, six inch bush.

ALDRIN — Jim, I think this clamp here might possibl have come loose while I was using it as a handhold.

ALDRIN — I don't think it should be used as a handhold.

.....

LOVELL — Understand.

ALDRIN — And I'm going to use the Velcro on the top of the ELSS to hold this open.

LOVELL — Okay, this Maurer camera sure beats the Hasselblad for taking pictures of EVA here. I can get up to the window.

LOVELL — Well, I'm glad it (interrupted)

ALDRIN — ...wondered about that.

LOVELL — Yeh.

ALDRIN — All right, I'm working my way back along the handrail now.

LOVELL — Okay.

ALDRIN — How's the umbilical look, nice and clear?

LOVELL — Well, it's 35 now, Buzz, so we better go.

ALDRIN — Okay. Something's clicking out here on... just a few minutes.

LOVELL — It is on?

ALDRIN — It's not on.

HOU — Gemini 12, Houston Cap Com. One minute to LOS,

about 20 minutes to sunset.

LOVELL Roger. Come on Buzz, let's go.

ALDRIN Okay.

LOVELL Quit horsing around.

LOVELL Back in the hatch.

HOU Roger.

LOVELL Now he's working on number 1 on the .. list.

HOU Roger.

LOVELL Okay, now have retrieved your 16-mm camera.

HOU Three minutes to Canaries.

S/C Roger.

ALDRIN Okay, here's the camera. Got it?

LOVELL Okay, give it here.

ALDRIN Wait a minute. Okay, I think it's free now.

This is Gemini Control Houston, 43 hours, 24 minutes now. The Gemini 12 crew has as was indicated in our conversation is moving along very well. They're right down their time lines on this dayside pass. The Agena tether we read had been attached. The heart rates have been right down the middle as far as the Surgeon is concerned here. There was one slight peaking up. This is when he gave an indication consistent with our ground rules to stop and take a brief rest. They've been ranging in the area of 120 and below in the case of Pilot Buzz Aldrin who's currently on EVA. We're standing by for our next station. Our next station will be Canary at 43:26:26. That's

approximately a minute from this time. This is Gemini Control Houston.

HOU — Houston Surgeon Aeromed 1.

(PAUSE)

LOVELL — Buzz, the umbilical .... before you start back it will get tangled. Before you go back.

S/C — Okay, Flight, Canary.....get the ELSS and the chestpack fastened.

CYI — Okay.

HOU — Good, Canaries.

CYI — Okay, he's about 760.

S/C — All right, that seems to be fairly secure.

HOU — Okay, stand by.

LOVELL — Okay, go ahead and bring her down.

ALDRIN — Okay.

HOU — Canary Cap Com, Houston Flight.

CYI — Go ahead, Flight.

HOU — Okay, in about one minute have him put the heater on manual on and watch it through the pass.

CYI — Okay, looks like he's turned the heater on already. It's coming up a little bit.

HOU — Okay.

CYI — Gemini 12, Canary Cap Com standing by.

S/C — Well, we have all of the umbilical out the hatch now.

LOVELL Okay, move to the nose, Buzz.

ALDRIN Moving from the portable handrail back to the retro handrail now.

LOVELL Okay.

ALDRIN I'm putting one hand over the other, Jim, just getting myself going with a little momentum.

LOVELL ELSS still high, right?

ALDRIN The ELSS is still high. I can see that the EVA light is on.

LOVELL Okay.

ALDRIN I'm back at the big tail now.

LOVELL Okay.

ALDRIN Getting set to turn the corner.

LOVELL Okay.

ALDRIN Turning the corner.

LOVELL Okay.

ALDRIN Going around the edge.

LOVELL Okay.

ALDRIN Tieing the umbilical ... the big tail.

LOVELL Okay.

ALDRIN It's through the big tail. ... sights.

LOVELL Okay.

ALDRIN Is it straight now.

LOVELL Yes, it's fairly straight from here.

ALDRIN Okay, that's good. I'll just leave it there.

LOVELL Okay. ..... 41 minutes now, Buzz.

ALDRIN Good show.

LOVELL And I want you to be .....

END OF TAPE

S/C I'll see about it.

S/C Okay.

S/C I want to be positioned with feet in foot restraints.

S/C I'm going around now.

S/C Okay.

S/C And it looks like both lights are working.

S/C Okay. Both lights working huh?

S/C The umbilical goes behind you and you get your feet in the foot restraints.

S/C Fine.

S/C Hey, easy, easy, you're shaking up the whole spacecraft.

S/C Okay, left foot is in the foot restraint.

S/C Sounds good.

S/C And the right foot's in.

S/C Okay.

S/C At your convenience, ...(garbled).

S/C And we want this in one degree per second. 150, that's right?

S/C Yeah, if you want to get some night shots on this pass, I'll be glad to position for that.

S/C Well, I don't think we're on an experiment now. It doesn't want to go in as easily as I would have liked. As a matter of fact, it isn't going in easily at all.

S/C It's fine.

S/C I don't see what the problem is other than this beam is sticking out quite a ways.

S/C What seems to be your problem back there?

S/C Would you believe that the linkage is broken in the .. bracket?

S/C Is that right.

S/C Wait a minute, maybe I can do a little repair work here. Ah, how about that? It's in. But the linkage is broken, I'm pretty sure.

S/C How about resting for a little bit?

S/C All right, I got the plug in.

S/C Okay, it's 44 minutes, we'll rest for 2 minutes.

S/C I have the UV camera filt changed and the other one to do.

S/C What do you see back there? Is everything okay?

S/C Everything looks good. Can you see anything up front?

S/C Right. They don't seem to have a tendency to come out, but that heel seems to be up a little higher in some places than anticipated.

S/C Did you start the Camera?

S/C No I didn't.

S/C You didn't turn it on did you?

S/C I'll turn it on now for you.

S/C Well, wait a minute. Have we got enough time?

ALDRIN Yes. We're going to leave there/at sunrise, so we've got 48 minutes. But I'll hold off a second.

LOVELL Yeah. There's nothing to take a picture of right now and besides, if we've got it oriented I'm afraid it would be way overexposed.

ALDRIN Okay. I'm (garbled)...12

ALDRIN The neutral position that I have is just -- just about at position where my -- both hands would be freely in position to grab the hand bars, -- the hand bars, you know.

LOVELL Yeah.

ALDRIN And that's just primarily a suit position. Now if I move a little forward toward the workstation, I have just a very small tendency to come back, but you know can put a suit in several different positions and they'll stay. I'm going to lean back now. I am leaning straight back and I'm almost parallel with the -- my back is parallel with the longitudinal axis now. And this is a little bit harder than it was under water. A little bit more leg force. I'm looking right down and we're going right over the desert. I guess this is Africa, huh?

LOVELL I think so. Hey Canarys, are you still with us?

CYI Roger, got about a minute to LOS.

LOVELL Okay, why don't you just inquire into Houston sometime at your convenience about the next exercise which is the tether experiment with these thrusters and Buzz and I will just put in these ... and gone on upstairs.

CYI Roger. Copy that Flight?

HOU Negative, say again.

S/C (garbled)

CYI Gemini 12, you want to know all about the thrusters for the tether exercise, is that correct?

S/C Yes, the tether is attached and I just want to know what their thinking is on using 2 and 4 or just what they want for this exercise ... (garbled).

CYI Roger. We'll pass that on. Flight Canarys.

HOU Go ahead.

CYI Okay, he wants to know about the use of thrusters for the tether exercise, whether they are going to use 2 and 4 or not and we've had LOS.

HOU Okay. Kano remote.

S/C I don't have my checklist.

KNO Kano is remote and we have acquisition.

HOU LOS main, Canary. Gemini.

ALDRIN I'm changing cameras now. I'm changing the film for this -- this side camera up there.

LOVELL What?

ALDRIN The side camera.

HOU Gemini 12, Houston Cap Com through Kano. Everything is sounding great on the ground.

ALDRIN Okay. By far the hardest job was putting in this camera here.

LOVELL Okay, Buzz.. uh..

ALDRIN It may not come out.

LOVELL Okay, pull the umbilical cord so it doesn't slip in the handrail.

ALDRIN Already done.

LOVELL Install the penlight and actuate the guidelights on the handbars.

ALDRIN Roger.

HOU Gemini 12, Houston Cap Com, through Kano and standing by.

LOVELL Roger, Houston. We're down to where we're going to start the adapter workstation task. I'm in the process of changing film on my lefthand camera, which is no mean task. It's pretty difficult as a matter of fact. Buzz is standing

... (B...)

by. He's going to be tied up with equipment pretty soon.

HOU Roger. Everything is looking real good.

ALDRIN I don't know whether you heard through Tananarive, I had a problem with the camera. Looks like the linkage in the bracket was broken. I was able to stick my finger in underneath it and get it to work properly, so it is now installed. There may be a problem getting the camera off.

HOU If you have a problem taking it out, maybe you can remove the camera from the bracket.

LOVELL Yeah.

ALDRIN I've got both penlights out now. Incidentally, one of them looks like it was heating up a good bit. The glass on the front or whatever it is bulged out a good bit.

LOVELL Okay, Buzz, start your camera.

Okay, you got all the switches?

ALDRIN All but the ...(garbled).

LOVELL All right. ...(garbled).

ALDRIN Wait a minute. When I push it in, it starts to move. All right. Let me see if it's going now. Keeps taking pictures but the bracket is fairly free to swivel. No wait a minute. I'm getting it started. It's taking pictures.

LOVELL Okay, if you want to, Buzz, why don't you rest for two minutes because I want to change a tape, and this is a good time to change it.

ALDRIN All righty.

LOVELL Believe it or not, this is going to get tiresome pretty soon. I want to change it before it gets started.

ALDRIN I'm getting a slight warm posterior. The sun is setting very agreeably. It's great from a visibility standpoint, but it's not too good from the heating standpoint. It's still plenty cool, but it is getting alittle warm.

HOU Roger, that's the sunning effect.

ALDRIN Yeah, the sun ...the sun on Cernan.

END OF TAPE

Lovell Ok, new voice tape installed.

Aldrin It sure gets bright back here with all the sun.

HOU Gemini 12, Houston. I'd like to remind you to check your manual O_2 heater.

Lovell Roger, I'm at 17 now, I'll turn it off a little bit.

HOU Roger

Lovell Ok, Buzz, are you rested?

Aldrin Ok, as I press myself down against the bottom of the suit I can feel the zipper a little bit on the warm side.

Lovell How do you like the foot restraints, Buzz.

Aldrin They are great. I don't see any problem in positioning my body at all.

Lovell We are going to the checklist now.

Aldrin Yes, I can see it.

Lovell Any time you want to you can start the...

Aldrin Well, you're the doctor, you can...

Lovell Well, it doesn't make any difference

HOU Three minutes to sunset.

Lovell Ok, thank you.

HOU Gemini 12, Houston, one minute to Kano LOS, you'll be at Tananarive in 9 minutes.

Lovell Ok, fine.

KNO Kano has LOS

Gemini Control Houston, 43 hours, 42 minutes into the mission of Gemini 12 now. You have just heard the conversation during this

long pass, and the umbilical EVA is moving along very well at this time, somewhat ahead of our normal time lines, as a matter of fact. The pilot, Buzz Aldrin, was scheduled to be back to the adapter work station sometime prior to sunset, he did better than that. The broken linkage referred to in the conversation - this is a bracket for the...is concerned with a bracket for the 16mm camera located back in the adapter work station. Heart rates are holding extremely well, at Canary LOS Pilot Buzz Aldrin was logged at 102 heart rate and 16 respiration rate - well within what would be expected - what had been anticipated. Command Pilot Jim Lovell is logging 96 beats at the present time. Back in the work station,the adapter work station, Aldrin performs a variety of tasks - there's about 17 numbered tasks and he's back there primarily to evaluate his restraints, the foot restraints and waist tethers. As was indicated in the conversation he's tried the foot restraints already, he indicated that it was close to the same amount, perhaps a bit more difficult than what he had experienced during underwater simulations prior to the mission. The tasks that he will be involved with also are of a variety that may be needed in future EVA missions. Aldrin will work with a torque wrench back at the adapter work station and he will measure in inch pounds the amount of torque applied to a couple of bolt heads back there and he will remove another bolt similar to those that might be expected in a Saturn S4-B dome and he will put it back into another hole. He will do this with and without foot restraints. Here he will try to cut cables with debris cutters and also we would like to get a comparison between one and two-handed tasks back there.

Aldrin will have a connector that can be plugged in with one hand and two with two hands. There are a couple of rings and a couple of hooks. Cernan had some problems with this. He was without benefit of the foot restraints, however. In the case of Aldrin, he will try and link these. Up at the top, he will have three different widths of velcro strips and he will see how easy it is to pull these. An interesting aspect - the tasks that will require a continuous or semi-continuous effort like the connectors and the bolt tasks are down low on the panel and these tasks at the top are the kind where you make one reach and they are over. With the space suit on, the helmet on, and the chest pack on, Aldrin in a normal position will be crouched over and the placement of these tasks is to avoid working against the suit. In his set of circumstances at the present time, he will have better access to the lower part of this work panel. At 43 hours, 46 minutes, this is Gemini Control Houston.

END OF TAPE

Gemini Control, Houston, 43 hours, 49 minutes now into the flight of Gemini 12. We are at acquisition with Tananarive. We don't know if there will be any conversation during this pass because it is a short pass, and we are standing by now.

S/C	(First part garbled)
Lovell	Why don't you rest here for awhile.
CAP COM	Gemini 12, Houston Cap Com through Tananarive and standing by.
Lovell	OK, Houston. We will rest a moment.
CAP COM	Roger
Aldrin	The right glove at the base of the thumb is beginning to have a little bit of a throb. (Garbled)
CAP COM	Gemini 12, Houston Cap Com. One minute to LOS. Carnarvon in 10 minutes.
Lovell	OK. What is the status of your visor? Is it fogged or anything?
Aldrin	No. It's clear as a bell.
Lovell	The face cover? Is it fogging at all?
Aldrin	Negative
Lovell	Are you perspiring at all?
Aldrin	Negative
Lovell	No perspiring.
Aldrin	I'm bending back now, looking up at the stars.
TAN	Tananarive LOS.

Gemini Control Houston, 43 hours, 53 minutes now. We've just had loss of signal with Tananarive tracking station. Our next station to acquire will be Carnarvon, this is at 44 hours, 2 minutes into the mission. About nine minutes from this time. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 44 hours, one minute into the flight now. Before we acquire at Carnarvon we thought we would background you on these two pennants that were referred to in the air/ground conversation. One is..uh..both pennants I should say, are white with dark blue borders, retangular in shape and/one the that was first referred to it says "November 11, Vet's Day" and on the reverse side of this pennant is an American flag. The second flag, also made out of the same material, said "Go Army, Beat Navy" this no doubt refers back to the flight of Gemini 6 during the 7/6 mission and the sign that Command Pilot Schirra which said "Beat Army". Both were rolled up in portable handhols and, the first pennant, by the way, would have gone on November 11, for the umbilical EVA, is our initial flight schedule had held. We should also indicate that both of these pennants are made out of flight qualified nylon. We have acquired now at Carnarvon and we'll pick up the conversation.

Aldrin ...also near the raised bush where the bolt was attached into

Lovell Ok. Oh I see, I see it. You were able to get the bolt in, huh?

Aldrin Right. Now, a loose bolt, with a washer is being inserted manually on raised tether, the bottom bolt, and its a delicate operation.

Lovell Take it easy.

Aldrin The bolt is just fitting right straight into the hole now, zero g is holding it here, its not engaged.

Lovell Oh?

CRN Gemini 12,Carnarvon standing by.

Lovell Roger, Carnarvon, I'm going to go to manual on the O_2 and pump up the oxygen.

CRN Ok, we were just going to suggest that.

Aldrin Too bad the camera wasn't working, that would have been a beautiful picture.

HOU FLT Carnarvon send us another main when he turns the heater on please.

CRN Roger

Aldrin The picture I was referring to was that I fumbled the bolt and the washer and they both went drifting in underneath my helmet, I pushed them forward, then moved myself away from them for a moment and caught both of them, and put them together and they are now going in manually and I'll give it a couple of more turns and put it in the rest of the way.

Lovell Oh I see. You are playing a little orbital mechanics to retain proficiency.

Aldrin Yeah, I had to do a little rendezvous there.

Lovell I see, ok.

Aldrin Yeah, this nut and bolt work station is way too close to the tethers...the right one especially.

Lovell ...the tethers are too close to the work stations...right?

Aldrin Right.

Aldrin Ok, looks in good shape, I'm using the wrench here and tightening up on her. Then there's the same problem overcoming the rachet door, in other words, you unwind just about what comes to what you wind; there, its going in now.

Lovell Ok. Let me know when you have the bolt tightened down.

HOU FLT Carnarvon from flight.

CRN Go ahead.

HOU FLT Does he have that heater on? Your main doesn't show. He does?? Ok. Give us another main, please.

CRN Ok.

Aldrin Ok, it's tight.

Lovell Ok, it says here we to evaluate the ...reflex, and we can rest a few minutes, do you want to take a look at that?

Aldrin Ok, let me stow the...

ALDRIN Wrench is stowed. Okay we can look at the hook and ring connections.

ALDRIN Right. Got out the big ring. The Velcro didn't want to come undone on it. Main ring is out and and the big hook and the two are hooked together.

LOVELL Okay, big ring is out and both hooks are hooked together. Okay, let's take a look the small one.

ALDRIN All right. The small ring is out and it is more of an effort to get it. The proper position in your hand. I am going to hook it in the big ring. Into the big hook. The big ring is now engaged into the ring. The hook is engaged into the big ring, and the little ring.

LOVELL Okay, now take a banana pillow and rest for a while.

ALDRIN You want the little ring?

LOVELL I thought you had evaluated the little ring.

ALDRIN The little hook goes ...

LOVELL Okay.

CRO Gemini 12, Carnarvon. We have 1 minute before LOS. Just a reminder on your manual heater.

S/C Roger, Carnarvon. I am just about to switch manual right now.

CRO Okay.

S/C ...700..

CRO Copy that.

LOVELL Okay, Buzz, while you are resting here...

ALDRIN No, not right now.

LOVELL ...

ALDRIN Well, ...make one ring evaluation of the little ring. Ready...little hook is open. Ring...

ALDRIN ..two are back together. I am going to stow the little ring where it belongs. The hook is stowed, but the little ring isn't. Okay, everything is back where it was.

LOVELL Okay, take a banana pill and rest for a few minutes.

CRO Carnarvon has had LOS both vehicles. All systems go at LOS.

HOU Roger, Carnarvon.

Gemini Control Houston 44 hours 11 minutes into the flight of Gemini 12. Buzz Aldrin at this time is still back in the adapter workstation area performing the various tasks that are involved back there. His heart rates are holding very well indeed, ranging from a low of 88 up to 120. No higher than 120 or 22 during this particular time frame. The foots restraints back there by the way, bring to mind an old song, the old song being "Oh, those golden slippers". The foot restraints are gold, as a matter of fact, painted gold for thermal reflection and this Sunday morning Buzz Aldrin has become the first man to try on those golden slippers in space. At this point they appear to have worked very well indeed. The next station to acquire will be Canton at 44 hours 22 minutes into the flight, some 10 minutes and this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 44 hours, 22 minutes now into the flight of Gemini 12. We're approaching Canton tracking station in the Pacific at this time and we should acquire Canton or Canton should acquire the spacecraft momentarily. And we're standing by now -- standing by for any conversation which will transpire on this pass over the Pacific.

HOU Canton, go remote.

ALDRIN All right. It's in and let me make sure its back in the ... (garbled).

LOVELL On 250 degrees per second.

ALDRIN Okay.

LOVELL And its a good guess.

ALDRIN Okay, now let's see. When the ... says no, I turn off the camera and ...(garbled)

LOVELL Find out when it's moving.

ALDRIN It's moving.

HOU Gemini 12, Houston Cap Com through Canton and standing by.

LOVELL Roger, ...(garbled).

ALDRIN I think one way to weigh the tether is the portable handhold ...

LOVELL Yeah it is. How do you like that nose handrail?

ALDRIN Well, it's pretty hard to evaluate.uhtil you see how they are up here. I am backing toward the Agena now. That's the ...(garbled)

LOVELL How far are you from your tether?

ALDRIN Now don't pull me in with it.

LOVELL How about ...

ALDRIN I thought maybe I'd have a look at the right portable handhold.

LOVELL Okay.

ALDRIN I think maybe that'll do. ... is right on the top and it looks to be ...

LOVELL Okay.

ALDRIN Think maybe I should ... it off? And it's into the side, ...

LOVELL Okay, sounds good.

ALDRIN I need just a little bit of body torque here. The left waist tether is in place with the portable handhold.

LOVELL Okay.

ALDRIN The left waist tether is off of the portable handhold. And it's into the midfit. The ... pin is out.

LOVELL Okay.

ALDRIN And that one is in. ... out slowly. It's back.

LOVELL Take it easy.

ALDRIN ... centered in now. I'm not going to lock it. There it is. Okay, that's done now. Let me do experiment S-10 on the way in. We can get it out of the way. Okay, time for a little breather here.

LOVELL Okay, rest for two minutes. I'll talk to the ground.

ALDRIN ... what a terrible blow. ...(garbled) (Garbled)

LOVELL Stand by.

ALDRIN Lovell.

LOVELL Yes, Buzz.

ALDRIN I guess we'd better check that retro camera and make sure it's working.

LOVELL As soon as I get the lights on. Cut your ... down.

ALDRIN Okay, I'll turn off both cameras in a second.

LOVELL I ...(garbled) goes.

ALDRIN Did you say ...(garbled)?

LOVELL Better not.

ALDRIN No, it says the same thing.

LOVELL Wait a second ... I'll get it for you.

HOU One minute to LOS. 10 minutes to Guaymas.

LOVELL Okay. Hold on a second.

Buzz.

ALDRIN Yes?

LOVELL Okay, let's do a little checking first.

ALDRIN I have one ... remaining here. Let me see if I can get it here. The handhold -- the spacecraft ...

CTN Canton has LOS.

Canton has LOS.

Gemini Control Houston, 44 hours, 31 minutes now into the flight of Gemini 12. Pilot Buzz Aldrin is at the Agena workstation now tethered with his head facing the command pilot's side of the spacecraft, the left side of the spacecraft. At the Agena workstation, he has what is called an Apollo torque wrench to work with. This wrench can be set for torque settings from 50 to 200 inch pounds and if he breaks out the wrench at a given value, he moves the torque value up a notch. He also works with a couple of connectors up there. One which would approximate an electrical connector, one a gas connector. These are at this station. Our next station to acquire, next tracking station to acquire is Guaymas and this is at 44 hours, 40 minutes, 4 seconds, or some 8 minutes from now. This is Gemini Control, Houston.

END OF TAPE

Gemini Control, Houston, 44 hours, 40 minutes now into the flight of Gemini 12. We are standing by now for acquisition at Guaymas. We expect conversation at any time.

Aldrin — Bring up on it and pushing away. And I am free with no ace cutters.

Lovell — OK. You are free with no ace cutters. Righto.

Aldrin — I am going to start cleaning up shop here. Dispensing with waist tether, portable hand holds.

Lovell — OK. Better get rid of everything.

Aldrin — I trust you are recording all of this.

Lovell — Boy, you are a litterbug, aren't you?

Aldrin — I had a backup Veteran space sign here.

Lovell — There it goes.

Aldrin — Alright the work station is clear and no tethers. Lets take a look at .... preparation.

Lovell — Pardon

Aldrin — No tethers.

CAP COM — Gemini 12, Houston Cap Com standing by.

Lovell — Roger, Houston.

Aldrin — Disconnect with no tethers and unhook and hook back up.....by the electrical connectors... with

n — no waist tether, unhook... and hook back up.

Lovell — OK

Aldrin — I think we ought to make one last check of the S-10.

Lovell — OK

Aldrin — I will tell you what this part of the Agena looks like.

Lovell — Hey Buzz, you never did wipe off my window, did you?

Aldrin — Oh, ok. Give me a half a minute.

Lovell — Hey, would you change the oil too?

Aldrin — Change your oil? Yeah, alright. I can see the tether looks hooked up and the spacer is agape.

Lovell — Ought to be some great pictures here.

Aldrin — I'll try it.

Lovell — OK, running out of voice tape, Buzz.

Aldrin — Let me take one last look at the S-10.

Lovell — You go ahead and look and I will change voice tapes.

CAP COM — Gemini 12, Houston Cap Com. You needn't answer while you are changing the voice tape. I would like to comment that if you are willing, we would like to run a quick check of your OAMS thrusters by having Buzz observe a thruster firing while he is standing in the hatch when you have a chance. We want all the gear inside and just prior to ingress when you are removing the EVA camera. You might think about this and give us a call when you have a chance.

Lovell — OK. That sounds pretty good. We will do that.

CAP COM — OK. We have a procedure here for you when you get squared away. We will talk you through it.

Aldrin — I have got to wipe his window off first here. Helping any?

Lovell — No

Aldrin — No? Its slippery if anything is on the outside.

Aldrin Wait a minute, I think it is looking out now. The film is coming off. See any improvement?

Lovell Yeah, it looks good.

Aldrin OK, where is the bad spot?

Lovell Right over here in the corner there.

Aldrin Right here?

Lovell I know where you can get a job, Buzz.

Aldrin Huh?

Lovell I said that I know where you can get a job.

Aldrin Know where I can get a job, huh.

Lovell I am still trying to get this other tape back in the (garbled)

Aldrin I can see from the outside that you have quite a film on the inside.

Lovell Yeah.

Houston Texas remote, Guaymas local. Texas remote.

Aldrin Can you hold onto this (garbled)

Lovell No. I have got to secure this tape which is quite a job. There we go, there we are.

Aldrin I'm sorry that we didn't get a picture of that (garbled)

Lovell Do you have anything in the way of (garbled)

Aldrin Yeah

(Garbled)

Lovell OK. Come on back.

Aldrin — Alright. Lets bring in the umbilical. I think that.. yeah, I have the end here.

Lovell — Ok

Aldrin — Yeah, it is just about wrapped around me here.

Lovell — Houston.

CAP COM — Go ahead, 12, copy.

Lovell — OK, we are getting prepared now to bring in the umbilical here.

CAP COM — Roger, let me know when you are ready to try this check of your thruster.

Lovell — OK.

Aldrin — We have got just about all of the umbilical that is coming in before I hand in the L O S S and I am standing in the hatch.

Lovell — OK is the umbilical clear and everything, Buzz?

Aldrin — Yeah, pull in just a little.

Lovell — OK. What about the retro camera?

Aldrin — OK a little more

Lovell — Get the retro camera. Watch your feet. Watch your feet.

Aldrin — OK

Lovell — Put your feet down further. Thats it. Keep your feet down, Buzz. Camera stowed.

Aldrin — Yeah

Lovell — OK Houston, go ahead. What do you want us to do?

CAP COM — OK, Gemini 12. Confirm that the adapter is clear.

Aldrin — The adapter is clear.

CAP COM — OK, Jim if you can, turn on your two attitude circuit breakers. The ones that you turned off previously.

Lovell — OK, will do. They are on.

CAP COM — Ok, OAMS control power on and direct.

Lovell — Have OAMS and direct.

CAP COM — Ok, we would like Buzz to observe the upper right side of the spacecraft on his side. That is thruster no. 4 area while you give a very short blip, yaw right.

Lovell — Roger, short yaw right. Buzz,you all set?

Aldrin — OK. I can see something coming out there. It looks like thruster is coming up. How about hitting another one for comparison, the one that is on the same quadrant quadrant there, is that no. 3.

Lovell — You want no. 3. That is down below.

CAP COM — OK, hit pitch down while you are at it.

Aldrin — The comparison on the one that is in the same quartrent there will be firing up.

CAP COM — Roger, pitch down. Pitch up

Lovell — Pitch up.

Aldrin — Alright now in comparison, that was a lot cleaner flame.

CAP COM — Roger, was the first a flame or a fluid.

Aldrin — There wasn't a flame barely on either of them that I could see. It was only about 30 degrees away.

CAP COM — Roger, why don't you try one more short yaw before you come in.

Aldrin — Very good idea. Try that once more.

Lovell — Yaw right

Aldrin — Alright, there is a definite difference. It looks like that there is a lot of compartment material coming out.

CAP COM — Roger, copy.

Aldrin — Want to try another one, that doesn't seems to be working.

Lovell — (Garbled)

CAP COM — Negative, you can't see it

Lovell — At thrust, there are pieces of slight, like after the urine dump, that occasionally dome by out in the direction of that thruster that was inoperative.

CAP COM — Roger, copy. Go ahead and turn your OAMS control power off and start your ingress.

Aldrin — Alright, I guess.. how about the handrail?

Lovell — OK

Aldrin — We missed getting a picture of that one.

Lovell — Yeah, ok.

END OF TAPE

LOVELL Okay.

ALDRIN We missed getting the picture out.

LOVELL Yeh, okay.

ALDRIN Do you have anything going?

LOVELL Huh?

ALDRIN Do you have to do anything to get a picture?

LOVELL Well, I don't know what to say, Buzz. Go ahead and throw it away.

LOVELL Pull it down to the left.

ALDRIN I'll slow it down so you can see it.

LOVELL Okay.

ALDRIN Okay?

LOVELL There she goes.

ALDRIN Flying low...

LOVELL The highest - the world's highest javelin thrower.

ALDRIN Better....get back. It's lonely.

Let's go end over end now. Okay, let's go back in here..... hatch holding device.

LOVELL Yes, try and get this camera down on top of the camera box.

HOU Gemini 12, Houston Cap Com. Confirm OAMS control power off.

LOVELL Roger, OAMS is off.

HOU Good.

LOVELL All right, looks like the .....

ALDRIN Okay, looks like.... filled with debris.

LOVELL There are flecks of dust in it but it looks..

ALDRIN Okay?

LOVELL Roger..... Deploy the hatch holding device.

HOU Gemini 12, Houston. If you can turn your manual O_2 heater.

S/C All right.

LOVELL Okay.

ALDRIN You ready for the (interrupted)

LOVELL Check to see if the hatch pawls are in the lock position.

ALDRIN Wait a minute, I have one more thing to ....

LOVELL Okay.

ALDRIN ..... was the last thing you said?

LOVELL Hatch pawls in lock position.

ALDRIN Yes. They're in lock.

LOVELL Hatch holding device teeth are opened up, right?

ALDRIN Where am I right now? .....

LOVELL Here you go. Okay, clear hoses. Okay, ingress into the cabin, release restraints and hand me the ELSS.

ALDRIN All right.

LOVELL And can you, what?

ALDRIN I want to tell you that the ..... moved away

from the ... area.

LOVELL — Okay.

ALDRIN — ... my restraints are coming off.

LOVELL — Okay.....here's the seat, Buzz. Sit down.

That's it. Okay, hand me that monster.

ALDRIN — I'll never forgive you if you lose that.

LOVELL — What this...(garbled)

Oh, I'm going to lose that one.

ALDRIN — All right, lowering restraints through loops.

Why ever do you want to pick the top one first?

All right, that looks good. Just has a slight

twist on it. If you can turn that toward you.

Turn it toward you this way. Okay, that's right.

Take the ELSS and lower it down.

ALDRIN — All right, getting in position. Let me check the

.... hatch .... camera box.

LOVELL — Okay. All set? Okay.... make sure ....

ALDRIN — All right, the footwell looks nice and clean.

Put .... on to the right-hand.

LOVELL — Take the top off. I can't hold this whole thing.

Okay.

ALDRIN — Pilot's ... check.

HOU — Everything looking good, Gemini 12.

S/C — Okay, we're down to the last latch.

S/C ..... tail off..... still warm in here.

HOU About 19 minutes to sunset.

S/C garbled

HOU Take your time.

S/C Okay, we'll pressurize with the ELSS shortly.

LOVELL Okay, that checked out.

ALDRIN GARBLED

ALDRIN Would you believe both the penlights came back with me?

ALDRIN Never thought they'd make it.
Now all that remains is to see that S-10....
with the tether comes loose.

LOVELL You let the ELSS .... didn't you, Buzz?

ALDRIN Yeh, number 9.

LOVELL Bypass normal.

HOU Okay.

LOVELL Oh, can you get this .... off?

ALDRIN We're going to have to elbow to elbow in it.
Okay, I think it's in the off position.

HOU Gemini 12, Houston Cap Com. One minute to LOS.
New EVA record. Beautiful job.

ALDRIN Thank you.

LOVELL Okay, I'm going to turn off the repress now.
Can you get the package in now?

ALDRIN What, the ELSS?

LOVELL Can you ..... up?

ALDRIN Might as well. Okay, ...

LOVELL Okay, good. Okay, repress coming off now.

Stand by. Take it away.

ALDRIN Cabin's to about 3 quarters of a pound.....

30 seconds. Eyeballs.....

LOVELL Okay, pressure reads normal.

Gemini Control Houston, we're out of range of Bermuda now. The hatch is closed on the Gemini 12 spacecraft and our preliminary data indicates we've had a highly successful umbilical EVA today. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 45 hours 2 minutes into the mission now. The Gemini 12 Spacecraft is now over Canary and we'll standby for any conversation with the crew.

SC Feels like it might be ....but..

SC That could be perspiration.

Carrying to much water.

ALDRIN Perspiration.

HOU Canary Cap Com, Houston Flight, I didn't copy his last did you?

CYI Okay, standby

Cabin pressure is 2.(garbled) at this point.

HOU 2 point what?

CYI 87.

HOU Roger.

CYI Gemini 12, Canary Cap Com. How is the repress coming?

LOVELL Roger, pretty good we're at .....

ALDRIN About 3.(garbled) psi.

CYI Roger copy.

We're reading same on the ground at this time.

SC Ready for an exercise.

Command Pilot just volunteered.

LOVELL What's the pressure now?

ALDRIN 2.6

HOU Canary Cap Com Houston Flight. What is his cabin pressure now?

CYI Standby one. Getting a cam on it right now.

HOU	Okay.
CYI	3.68
HOU	3.68; thank you.
SC	(garbled)
SC	What's the pressure.
SC	Coming up to 4.
SC	Pressure is now 3.8.
SC	(garbled)
SC	Okay, I have it.
CYI	Canary, 12
CYI	Go ahead 12.
CYI	Gemini 12, Canary go ahead
CYI	Gemini 12, Canary Cap Com go ahead.
HOU	What's his cabin pressure Canary?
SC	....all right we're down to about 1000 pounds now.
CYI	4.97
HOU	Roger 4.97
S/C	It's coming up a half a pound
CYI	Now 5.29.
HOU	Say again.
CYI	5.29
HOU	Copy.
S/C	.... see above ....
CYI	Now 5.61
HOU	Roger.

CYI Gemini 12, Canary Cap Com, did you call.

S/C Gemini 12, go ahead.

CYI No, did you call us down here.

S/C Roger, As a matter of /interest Canaries, We have just trying to repressurize the cockpit and we /were using emergency O_2/ in the ELSS to repressurize and my eyes began to smart, they burn very badly until we got the pressure up. I went to ..... to see if it would stop it, but it didn't. There is a faint odor in my suit, but I couldn't tell exactly what it was. As soon as I opened up the visor the stickness and smartness of my eyes went away.

CYI Okay, how do they feel now.

S/C They are feeling okay now. It felt at first like a smog or perspiration was in my eyes.

CYI Roger, I copy that.

S/C And as I tried to point the bars, the perspiration got worse.

CYI Okay, I understand they have cleared now and you are feeling better now, right.

S/C Right

CYI Okay, we got about a minute to LOS there and we will be standing by.

S/C Okay.

CYI Cabin pressure 5.61 and holding.

HOU Roger

CYI Did you copy that about his eyes smartting.

HOU Copy.

CYI Okay, he is back on flow now.

HOU Okay

CYI Canary LOS

KNO Kano remote.

Canary local.

... Good job.

HOU Gemini 12, Houston Cap Com through Kano - over.

S/C Go ahead, Houston

HOU Roger, Gemini 12, we suggest you go off vox and back to "push to talk".

S/C Say again.

HOU Gemini 12, Houston Cap Com suggest you go off vox and go back to "push to talk.

S/C Will do.

HOU Be sure your cabin is 5.6. Looks mighty fine on the ground, real nice job.

END OF TAPE

Gemini Control Houston, we are still monitoring our pass over Kano, no conversation at this time. We have been advised that the hatch open time that we read here in Mission Control was 42 hours, 46 minutes even, Ground Elapsed Time, slightly ahead of our initial schedule, and the hatch locked time read here was 44 hours, 55 minutes, 25 seconds and as Bill Anders had advised the Gemini 12 crew, Jim Lovell and Buzz Aldrin, this is a new EVA record. Continuing to stand by, this is Gemini Control Houston.

This is Gemini Control Houston, 45 hours, 15 minutes now into the flight of Gemini 12. We are at the tag end of our Kano pass now and no further conversation is expected with the crew. We will shortly be going out of range with the Gemini 12 spacecraft. The record established this morning, by the way, with Astronaut Buzz Aldrin, represents a cumulative record which includes yesterdays standup EVA, so at 45 hours, 16 minutes, this is Gemini Control Houston.

END OF TAPE

This is Mission Control Houston, let's join the conversation that's in progress between spacecraft Gemini 12 through the Tananarive voice remoting station.

S/C Garbled

CAP COM I'm sorry, 12, the com isn't too good, would you say again slowly, please?

S/C Roger, I've noticed....circuit breaker was opened, I think that was accidentally done during ingress, no problem.

CAP COM Roger, we copy.
12, Houston, when you have a chance, if you remember, did you get much roll when you were doing your yaw and direct?

Lovell That's affirm, Houston, when we started to yaw we did a roll.

CAP COM Houston copied, thank you.
12, Houston, you don't have to acknowledge, but I'd like to talk to you a minute and say that we see no problem with the tether exercise in rate command, however, we would like for you to turn the number 2 and number 4 circuit breaker off and the reason for that is if we have a cold problem every time you flow monopropellant you would continue to keep it cool and possibly by leaving them off for a while, and in the sunshine they warm up we might get them back later. Over.

Lovell — This is 12. I understand you see no problem. I understand to turn circuit breakers 2 and 4 ...

CAP COM — That's right, because if you flow propellant out of them and there's no firing, they'll just get colder, and this way you won't flow any propellant out of them, and if there is a freezing problem in the solenoid area they may warm up eventually and we'll check them later after the tether.

Aldrin — Roger

CAP COM — Gemini 12, we have about 30 seconds to LOS. Standing by.

This is Mission Control Houston, 45 hours, 30 minutes and 9 seconds after liftoff. We have had loss of signal from the Tananarive voice remoting station, we'll be coming up over Carnarvon, Australia in approximately 7 minutes from this time. Meanwhile the change of shift press conference should begin in approximately 15 minutes, at 12:30 CST. Participants in the press conference will be Mr. William Schneider, who is Gemini 12 Mission Director, Clifford Charlesworth, the Green Team Flight Director, Dr. Charles A. Berry, who has been on the medical, aeromedical console most of the morning during the umbilical EVA, and Gene Cernan who is Gemini 12 backup pilot, who has been monitoring EVA from the spacecraft communicator console. At 45 hours, 31 minutes and 10 seconds after liftoff, this is Mission Control.

END OF TAPE

This is Mission Control Houston. The Carnarvon Australia tracking station has had telemetry and ac-aid contact with spacecraft Gemini 12. As yet the spacecraft communicator at Carnarvon Jim Fucchi has not put in a call to the crew, and now he is checking the various ground readouts on the spacecraft conditions. We will standby for him to put in a call to the crew. This particular pass over Carnarvon station will last approximately eight minutes and 17 seconds.. Mission stands at 45 hours, 38 minutes, 15 seconds. Still quiet on the air-ground over Carnarvon. He is putting in a call now, let's join them.

CRO Gemini 12, Carnarvon.

S/C Carnarvon, 12.

CRO Okay, would you go to Command on your TM switch please.

S/C Roger - TM is command. We may have uncovered what the problem was with Jim's eyes. The ~~EVA~~ camera that came from the adaptor, if you recall, stopped working after originally reported as working. It didn't take any film at all, and seems to have over-heated because I guess we turned it on while the sun was still up. What we would like to know - we are going to store it in a plastic bag, and we would like to know if anybody on the ground has any desire to have the over-heated camera back, or shall we jettison it tomorrow.

HOU Standby

CRO Okay, standby on that end.

... I am going to ship you up to TX.

CRO Okay, we have a purge. Over this section we want to purge section 1, then section 2, thirty seconds on the O_2.

S/C Okay, how many minutes do we have.

CRO Oh, we have a little while, about six.

HOU About six.

S/C Okay, understand fuel cell purge, which section first. 30 seconds O_2.

CRO Right, Section 1 and then section 2.

ASC Carnarvon, ASC - have you got C-band track.

CRO That's negative.

HOU Carnarvon, we would like to have C-band track, see if you can get it.

CRO I'll go down and take care of that myself.

HOU Okay.

HOU Carnarvon, do you have S-band track.

CRO That's negative.

HOU Roger.

CRO We have a C-band skin track.

S/C Fuel cell purge is complete.

CRO Roger

CRO Just a short flight plan update in about seven minutes at 45:50:00, we want a gyrocompass to 000 that's Agena 01800.

S/C Understand seven minutes gyrocompass 000, and Agena 01800.

CRO That's affirmative. Now replace your cryo switch to H_2 please.

HOU Carnarvon, Flight.

CRO Go ahead.

HOU Contingency Delta on the Agena please.

CRO Roger.

CRO Okay, you can go back to O_2 thank you.

S/C Carnarvon, Gemini 12.

CRO Go ahead.

S/C Roger - Our digital clock stopped at 45:14:00 have you got the time there.

CRO Okay, I'll give you a mark at 45:45:30.

S/C Okay, standby, it will take a while handle it.

CRO Okay, you got about thirty seconds.

S/C We cant't seem to get it to going forward.

CRO Okay.

S/C Naw - it won't crank forward or backward, we will look into it some more.

CRO Okay

S/C We'll shake it around a bit.

CRO Roger.

HOU Is SET still carrying on your telemetry - Carnarvon.

CRO That's affirmative.

HOU Is it in Sink.

CRO Well, we just lost sight, it was in Sink, I checked it when he told me about that clock.

CRO We have LOS both parameters. Both vehicles and all systems were GO.

And this is Mission Control Houston. During that just completed pass over the Carnarvon, Australia tracking station, the crew conducted a purge of the fuel cell system. They are still in what is called post-EVA period, coming up on an eat period at 46 hours, 20 minutes ground elapsed time during the upcoming pass over the states. At 45 hours, 47 minutes and 1 seconds after the liftoff this is Mission Control. We now join the press conference in progress.

END OF TAPE

This is Mission Control, Houston at 46 hours 35 minutes and 40 seconds after lift-off. We have just had loss of signal through the Antigua station of the Eastern Test Range. At the end of this state side pass, we have an accumulation of more than 20 minutes of voice air-to-ground tapes beginning back at the Canton Island voice remoting station through the Hawaii station and we have just completed state side pass. Let's go back and listen to those tapes now.

HOU Canton go remote.

CTN Roger. Canton remote.

S/C Say, do you us ...Agena around...spacecraft in the other direction.

HOU That is affirmative spacecraft SEF.

S/C We are having a hell of a time when we place the spacecraft in an inertial roll ... to get this ...we are all out of ... We are going to let it go we get the spacecraft straightened up and then we will work on it.

HOU Roger. And would you check your tone VOX circuit breaker there for your clock problem. Have you got that straightened out?

S/C That is the first thing we said... the circuit breaker is ... and that doesn't do it.

HOU Well, there is two circuit breakers. Electric timer and tone locks.

S/C Well, we checked both of them.

HOU Okay. And your clock is stuck. Is that correct?

S/C ....

HOU Okay, you now have the clock. Is that correct?

S/C Houston, 12 here. What I meant to say was the combination ... we don't seem to be able to exercise proper control in rate command or in direct with our own attitude system. Now, it may be that... I think we want to get to a particular area...

HOU Roger.

S/C How do you feel about that?

HOU Okay, what is your approximate heading right now?

S/C Well,..back...

HOU You say you are upside down?

Roger, you say you are upside down? Is that correct?

S/C Roger.

HOU Okay, my suggestion is, if you can roll any where near right side up, go ahead to FC-2 and set up the

HOU commands for zero zero zero and forget it.

S/C Okay, we will do that. I think the problem is the combination... when we roll one way we lose control we seem to lose control and when we put the control the other way, we lose...

HOU Yes, I can understand that. Also we looked at some vehicle rates for your combined weight and you can, if you have 8/10ths of a degree per second, in yaw, why the whole combination in FC-1 would go 360 degrees before it would stop with the attitude thrusters. So we feel that the problem is just getting just letting it sit there long enough for it to right itself total combination with the low gas pressures.

S/C Okay...

HOU That is affirmative. And so if you get it anywhere near upright so the horizon sensors see some of the earth, and set up FC-2 0000 with gyro compassing I think you will find that it will eventually come around. It may take a while, but everything looks good here.

S/C ...

HOU We have about 3 minutes and we are standing by. We will see you over the States.

12, Houston. 1 minutes until Hawaii acquistion and we will leave you until Hawaii.

S/C Roger. We have the commands setup now and we are ...

HOU Okay, just bear with it. It is just that is so darned heavy that it is just not going to move very fast for you and it will overshoot the dead-bands.

S/C Am reading about 28 percent...

HOU Roger. Understand 28 percent attitude gas.

S/C That is 2 0.

HOU Two zero. Roger. 20. You guys did real well. You get things squared away and take your time and rest. We have plenty of time here.

HOU Canton local.

HAW We have got him here at Hawaii.

12, Hawaii. Standing by.

HOU Hawaii, Flight.

HAW Roger.

HOU GC would like to know if the circuit breaker 2 and 4 are off.

HAW We concur on the ground. We have 2 and 4 off.

HOU Okay.

HAW We have one question. We are looking at the dome here and it looks like it should be somewhere around 800 psi on cyro 2.

12, Hawaii. I am sending you TX.

S/C It looks like we are down to about 15 percent attitude gas on closer inspection.

HAW Roger.

HOU Hawaii Com, Flight.

HAW Go, Flight.

HOU Tell them when it gets close to right, go to FC-1 and be sure he puts 460 gains low in.

HAW 12, Hawaii. When you get close to being the right attitude go to FC-1 and make sure that you do get 460 in.

S/C Roger.

HAW That is gains low.

Flight, did you copy that okay, that he was showing 15 percent on attitude gas on closer inspection.

HOU Roger, we copied 15 percent.

HAW Roger.

HOU What is the pump configuration, Hawaii.

HAW They have got primary A secondary B.

HOU Tell them to go to both A's.

HAW Okay. 12, Hawaii. We would like to have you to go to both A pumps on.

S/C Roger. Thank you.

HOU Hawaii Flight. Continuancy India on the Agena, please?

HAW We sent one. Do you want another one?

HOU Okay, we want another one at LOS.

HAW Okay.

S/C We are in flight control mode 1, now. We overshot to the right a little bit. And it looks like it is going back.

HAW Roger, very good.
12, Hawaii, we will have LOS in about a minute.

END OF TAPE

HAW — Roger, very good.

12, Hawaii, we'll have LOS in about a minute.

S/C — Roger

Haw — ...and it looks like the Agena is settling down a little. That's 000 on the spacecraft. Hawaii has LOS.

HOU — California remote

CAL — California is remoted

CAP COM — Gemini 12, Houston standing by at California, have about three or four or five items to talk to you about, when you have a chance. Gemini 12, Gemini 12, Houston, over.

S/C — Go ahead, Houston.

CAP COM — Roger, I've got five or six items to discuss with you when you have a chance.

Lovell — Ok, let me get my book out here.

CAP COM — Ok, the first thing was, did you jettison anything that you didn't plan to during your EVA for eight purposes here?

Lovell — I don't believe so. The waist tethers are gone, the handrail is gone.

CAP COM — Ok. And if Buzz has a chance, could he give us an idea as to which flow modes he used on the ELSS, we seem to have picked up quite a bit of oxygen and we were interested.

Aldrin — Roger, it was on medium for a short while prior to egress, went to high for egress and I was on high for the entire time.

CAP COM — Roger, ok, thank you. And Jim, I gather you didn't have any more problems with your lap belt, it apparently wasn't hooked up right, is that correct?

Lovell — That's right.

CAP COM — Ok, and with regard to the camera, we would like to have it back. If you think its causing any problems with fumes if you could get it in the right aft box and leave it there, if not and its causing a problem, go ahead and get rid of it.

Lovell — Ok, we have it in the zipper bag, we'll just stick it in the aft box shortly.

CAP COM — Ok, I sorta gathered that you got your fumes in your eyes there while you still on the suit loop which shouldn't really come from the camera in the cabin.

Lovell — You're right. That's true. Unfortunately... it wasnt the oil film.

CAP COM — Ok, fine.

Lovell — Perspiration going into the eyes, digging into the eyes, and the more you blink, the more you water, the more it gets. Now I don't know whether this is a natural condition or if this is something around the eye and there would be tears that causes

irritation.

CAP COM — Ok, fine. Do you want me to sync your GET for you.

Lovell — Love to.

CAP COM — Ok, why don't I give you a while to set up the clock. Why don't you set it up for 46 hours, 20 minutes, 00 seconds and you have about 2 and 1/2 minutes to go.

Lovell — Roger, 46, 20, 00.

CAP COM — Ok, and in the meantime, in order to save electrical power, when you are satisfied in your tether exercise that you no longer need your local vertical needles, why don't you just plan to turn your computer off.

Lovell — We think we ought to discuss this attitude control problem a little bit before we go leaping into this tether exercise. I'm not convinced that for one we can pitch the Agena down and maintain a straight down attitude.

CAP COM — Ok, we were going to talk to you about that in a little bit, we were discussing it right now ourselves.

HOU — Guaymas remote, California local.

GYM — Guaymas remote

CAL — California local

CAP COM — Ok, you've got about 1 and a half minutes to clock sync and Buzz, do you remember whether the 408 blume was deployed correctly when you were out?

Aldrin — No, I...its on the bottom if I'm not mistaken. I didn't get a chance tolook down there.

CAP COM — Very good, thank you. You might could consider while we are discussing the thruster problem, i you can use the Agena to pitch down with, of course, and if you are not familiar with that, I think you have it in the book there, we can work something out by pitching, using the Agena control system to pitch you down, we're discussing exactly your control problem right now and we'll have an answer for you.

Aldrin — Yeah, ok. We should station keep after we undock.

CAP COM — Yeah, we are working on that. Also, 12, did you notice any tendency to float up any with the ELSS on? When you were standing in the cockpit?

Aldrin — Negative.

CAP COM — Ok.

Aldrin — I'll expand on that later.

CAP COM — Fine. Ok, ten seconds to clock start, 5 seconds, 2, 1, Mark. The time is 46 20 00.

Lovell — Roger.

CAP COM — Ok, I'll give you a hack at 46 20 15 to check it. Stand by. Mark. 46 20 15.

Lovell — Roger, thank you.

CAP COM — Okeydoke. I have a couple of updates here for you if you are ready to copy them.

Lovell — Roger, go ahead.

CAP COM — Ok, 46 20 00 to 47 00 is an eat period, if you are stowed, and we have down here the sunrise time for the start of the tether exercise as 47 18 00. We would like a fuel cell purge at 49 13 00, it will be at Hawaii with a cryo readout and it will be section 2, then section 1 and I have a node update for you.

Lovell — Hang on a moment. (Pause) When do you want the fuel cell purge to start?

CAP COM — 49 13 00 - it'll be at Hawaii and they'll call you.

Lovell — Ok. Ready for the node.

CAP COM — Ok, 46 00 06 node, a rev 29 17 0.9 West, right Ascension 10 hours 54 minutes.

Lovell — Roger, understand.

CAP COM — 12, one other question, for you separation maneuver which will be a posigrade burn of approximately 6 feet per second horizontal, what's your druthers? Do you want to use the aft firing thrusters or the forward firing

thrusters, we'll pass it to you either way.

Lovell — We'll use the aft firing thrusters.

CAP COM — Roger, aft firing thrusters posigrade.
12 Houston, with regard to the thrusters, what we would like for you to do is to turn the number 2 and the number 4 circuit breaker back on, - the roll logic switch in the normal position, with yaw, and go ahead and undock that way and we think that you should have fairly good attitude control at that time in rate command, and of course if you are not satisfied with it, why you can always get rid of the tether.

Lovell — Well, this is a change in our procedures, Houston. We were going to start with the Agena vertical, do you want us to leave it horizontal then, or what.

CAP COM — No, let's see. You were going to fly it down there with the Gemini, and you can fly it down there with the Agena, and stop it; and then undock in rate command.

Lovell — Ok, I was just curious about our Agena attitude gas.

CAP COM — Roger.

Lovell — Houston, 12 here. We didn't get what you would call an acceptable rate command before, rate

command capability and I'm wondering if maybe we hadn't ought to check and see if we have lost another thruster.

CAP COM — Ok, let us kick that one around here for a minute and we'll talk to you again.

Aldrin — Ok, but for sure, when we went to rate command there, it wasn't acceptable and it wouldn't stop us, is what I am trying to say. We still had a residual rate.

CAP COM — Roger. Well, of course you are going to have 2/10ths of a degree per second and at that time you had the number 2 and number 4 circuit breaker off, and even monopropellant

END OF TAPE

HOU number 2 and 4 circuit breaker off and even mono-propellant or part-by propellants you are going to get some help from them and that might change the picture a little. I agree with you when you are on that heavy burn, you don't get a lot of good response to begin with.

S/C Roger.

HOU 12, Houston. Your wives are out here and they are real happy with your show this morning.

ALDRIN Roger.

LOVELL Roger.

HOU 12, Houston.

S/C Go ahead.

HOU Okay, I am afraid that if you start checking thrusters on the Agena you get that combination moving again, the consensus of the opinion down here is let's get set up to do it and then you can use the pitch mode on the Agena to get pitch down. You go ahead and dock. Now,leave the 2 and 4 circuit breakers on and if you aren't too happy with the control mode after you undock you might go ahead and change your roll logic switch to the other one, but one thruster may be a little bit better than the other and it would give you a a little better control that way, say for roll and if you are not satisfied with it, why just

HOU go ahead and get rid of the docking bar and then you can go on back away. You can go ahead, if you have got a fairly slack tether out there you might give it a couple of tries and go right back to rate command again.

S/C Roger. That is exactly what we are going to do. We had control troubles, we are going to jettison.

HOU Very good. We concur. Okay 12, Houston. When you use the Agena to pitch why remember to get 420 in there pitch rate low so you have the one and a half degree per second pitch rate rather than the 3 degree per second.

S/C Roger.

GTI LOS Turk.

This is Mission Control Houston again. Let's join the conversation in progress through the Tananarive voice remoting station.

S/C We are trying to get the spacecraft down now. We are pointing straight down.

HOU Roger. I won't bother you.

S/C Ready for update.

HOU Roger. This is for 32-4 Bravo GETRC 50 plus 26 plus 21.

R RET 400K 20 plus 45 RETRB 26 plus 10 roll left 80, roll right 100. Area 33-4 Alpha GETRC 52 plus 02 plus 21. RET 400K 20 plus 15 RETRB 25 plus 34 roll remains the same weather is good in both areas and this is with

HOU a separation maneuver. Over.

S/C Understand. Say again for RETRB 34-4 A.

HOU RETRB 25 plus 34.

S/C Roger, understand.

HOU How are you coming with getting it pitch down? All right.

S/C Roger. We are pitched down all right.

HOU Very good.

S/C Houston.

HOU Go ahead.

S/C We went through the proper procedures and got 90 degrees down and we are in flight control mode ..

HOU Understand. You are in FC-2 and you are slowly drifting.

S/C Right. ...we back up we went through the procedures as described and we headed down hill 90 degrees down and stopped and then we went to flight control mode 2. Do you read me. And we are slowly coming back up.

HOU Roger. If you pitch down 000 you should be geo rate normal. Roger that is right geo rate reverse. And you say it is drifting back up?

HOU 12, Houston.

TAN Tananarive LOS.

And this is Mission Control Houston. We have had loss of signal at the Tananarive voice remoting station. And also the accumulated backlog of air-to-ground voice tapes during the recent state side pass has been rerun. Upcoming in this mission is the 4th undocking and the start of the tether exercise. This will occur at 47 hours 18 minutes ground elapsed time, which is about 13 minutes from now over the Carnarvon station. Tomorrow's standup EVA exercise will occur at the EVA preparations will begin at 61 hours 30 minutes and the hatch will be opened at 63 hours and 30 minutes ground elapsed time. The particular star fields which will be photographed during this EVA will be any daytime stars that can be seen plus the star Orion and portions of the Milky Way. On today's umbilical EVA, the EVA actually began at 42 hours 46 minutes ground elapsed time and occurred right at apogee of 161 nautical miles. We will be acquiring the Carnarvon Australia tracking station at in approximately 6 minutes. We will come back up at that time and listen in on the conversation between Carnarvon and the crew of Gemini 12 at 47 hours 7 minutes and 1 second after lift-off, this is Mission Control.

END OF TAPE

This is Mission Control Houston at 47 hours, 12 minutes and 54 seconds after liftoff. Should be crossing the acquisition range on the Carnarvon, Australia tracking station momentarily. We will standby for acquisition signal and voice contact between the spacecraft communicator out at Carnarvon, Jim Fucchi, and the crew of Gemini 12. We are some five minute away from the fourth undocking and the start of the Tether extension. Standing by for Carnarvon. This is a fairly high elevation angle pass, almost over the Zenith of the Carnarvon station. Let's join the conversation at Carnarvon.

S/C Go ahead Carnarvon.

CRO Okay, when you get her pitched down there, you have to put on that G O rate in order to keep that thing going around, that's command 351, we show it OFF on the ground.

S/C Roger.

HOU And make sure it is reversed Carnarvon. How does it look to you.

CRO It is in reverse Flight.

HOU Okay.

CRO Sending you a TX, 12.

S/C Roger.

HOU Carnarvon from Flight.

CRO Go ahead.

HOU What attitude are you on, in the platform.

CRO Okay, we are showing 27000.

HOU Okay.

HOU Carnarvon, would you please send us a couple of summaries, Gemini and Agena Main.

CRO Roger

HOU Contingency india Agena please.

CRO Roger

HOU Carnarvon from Flight

CRO Go ahead

HOU Okay, just standby out there Jim unless he calls you.

CRO Okay.

CRO Okay, he was is FC-2 when we saw him and he - the G O rate was off, and he turned the ACS OFF and that kinda stabilized it a little bit. Now he has the ACS back ON again.

HOU Okay, and how is G O rate.

CRO G O rate is on.

HOU Okay, and it is reversed?

CRO That is affirmative.

HOU Okay - sounds good.

S/C Carnarvon, 12.

CRO Go ahead

S/C Roger, we are in a verticle position. We are going to wait until we get a light on the horizon or a light in the background before we undock.

CRO Okay - does it seem to be holding pretty good.

HOU Carnarvon from Flight.

CRO Go ahead.

HOU You can tell them not to acknowledge - we want to pass on that he may see some extra propellant usage out of the Gemini because of the control situation.

CRO Okay.

CRO Is that because of this two and four circuit break.

HOU That's right.

CRO Okay.

CRO Gemini 12, this is Carnarvon, no need to acknowledge this, but for your information, you may see some extra propellant usage from the Gemini because of the control situation where upside down with those circuit breakers open on two and four.

HOU No, they are closed, the circuit breakers are closed.

CRO With them closed.

S/C Roger - we are going to leave them closed as per instructions.

HOU That's right.

CRO Okay.

S/C It will only be a minute to wait now until we get a light on this.

CRO Okay.

HOU Carnarvon, Flight.

CRO Okay.

HOU Gemini OBC please.

CRO Okay

CRO We've got LOS Gemini.

And this is Mission Control Houston we have had loss of signal at the Carnarvon, Australia station. At LOS the Gemini and Agena were still on docking configuration and both spacecraft all systems were GO. The crew were holding a verticle attitude, still docked. The Agena pointing down toward the center of the Earth. They were waiting for a lighted horizon before actually undocking and beginning the Tether exercise and in an attempt to establish the gravity gradient. We will come back up again at the Canton Island voice remoting station and continue on through Hawaii and the next stateside pass. At 47 hours, 22 minutes and 35 seconds after liftoff, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, we're at 47 hours 33 minutes and 55 seconds after liftoff coming up now over the Canton Island voice remoting station. Canton does have acquisition of the spacecraft. We'll stand by for Pete Conrad to put in a call to the crew and see if, in fact, they have undocked and have begun the tether exercise. Still nothing but carrier noise. This Canton Island pass will continue on through the Hawaii pass. Let's join the conversation.

CONRAD 12 Houston at Canton, standing by.

S/C Roger Houston, 12 here. This is Aldrin what do you want? If you want to have some fun try doing this with two attitude thrusters out.

CONRAD Roger.

S/C I'm at the end of it now.

CONRAD Say again. You're broken up. Slowly please.

S/C We're sure having to do a lot of translation. The Agena's beautiful, it's just standing there nice and vertical and everything is really swell and nice there was no jerk or nothing, the Agena went along beautiful.

CONRAD Very good.

S/C We simply don't have any spacecraft control.

CONRAD I see.

S/C Even if I try to translate to the (garbled)

CONRAD Roger.

S/C (garbled)

CONRAD Say again. You say your rate command doesn't work?

S/C Rate command is firing .....it won't stop any thing.

CONRAD 12 Houston, you'll be coming in to Hawaii in about 30 seconds and you'll have better com. They'll be talking to you.

S/C Okay Pete.

HOU Hawaii flight.

HAW Flight Hawaii

HOU Send us a Gemini Alpha, a couple of time during your pass and a couple of Gemini mains.

HAW Roger, will do.

CTN Canton local. I think we've lost contact with the spacecraft.

HOU Say again.

HAW We have initial contact at the present.

HOU Okay, and if he contacts you after you're standing by, after PQI , it is convenience.

CTN Okay, it's local.

HAW We're still pretty ragged at the present. Gemini 12 Hawaii standing by.

S/C Roger, Hawaii, this is 12. We aren't having too much success in maintaining position with the Agena.

HAW Roger, understand.

HAW At your convenience we'd like to get a PQI from you.

S/C Roger, that's 35 percent.

HAW Roger, thank you.

S/C Hawaii here's the situation again in case you did not get it, at Canton. The tether deployment was fine we let it come out and the velcro hung it up a little bit, thrusters managed to get it unstuck. It hung up just slightly at the 50 foot marker and we got it undone. We'd be in great shape right now if we had a control system. The Agena is fine, the tether is out, we are hardly moving, except that we can't control attitude. Everytime I try to control translation we change our attitude and we have no good control over it.

HAW Roger.

HOU Hawaii from flight.

HAW Go flight.

HOU Has he tried any other control modes?

HAW Have you tried any other control modes?

S/C Roger, we have tried rate command, rate command fires continously but will not stop the roll.

HAW Rog.

S/C We switched back and forth the roll (garbled) and that helps.

HAW He's in direct right now.

HOU He's in direct right now?

HAW Affirmed.

HOU Okay. And if that doesn't work you might ask him if he wants to try pulse?

HAW Flight suggests trying pulse.

S/C Trying pulse? We've tried pulse.

HAW Roger.

S/C We've tried pulse, we've tried direct, we've tried recommand. We just don't have any roll control that's what's wrong Hawaii. We have tried to get roll by pitching yaw but we just can't do it.

HAW Roger.

HOU Hawaii from flight.

HAW Yeah, go flight.

S/C We're thinking about just letting it go and hoping that maybe whatever we've got in will hold it.

HAW Okay, that's what flight was just suggesting here.

S/C The Agena is in perfect shape, it's just beautiful and just perpendicular and if we only had a control system I'm sure we could do this thing much better than even in the simulator.

HOU Yeah, we're showing you're hanging in there in good contention. Ask him how he feels about just letting the roll go.

HAW Yeah, we're talking right now.....(faded out)

HOU Hawaii?

HAW Go flight.

HOU Ask him how he feels about just letting the roll go?

HOU And not trying to control it.

HAW Rog. That's what he was saying wasn't it?

HOU Not exactly. Ask him that question and see how he responds.

HAW Okay we're picking up some now.
Okay, what we would like to have you do if you are willing, is to just let the roll go and see if it will damp out after a while here.

HOU He isn't going to damp out Hawaii, he's just going to let the roll go and just worrying about pitching....

S/C Roger. We've lost sight of the Agena. As long as the tether doesn't wrap around it we'll do it.

HAW Okay. Flight doesn't think you will really damp out in roll.

S/C Well, we've stayed well above him now for quite a while. We are out in front of him just a little bit.

HOU Hawaii from flight.

S/C Yeah, we're also getting a little low on ACS gas pressure.

HOU HAWAII from flight.

HAW Go flight.

HOU What we want to tell them is try to control it in pitch and yaw as best he can.

S/C .....10 to 15 feet maybe ten feet of slack

HOU Try to control it as...(interrupted)

S/C Looks like Hawaii is pretty today

END OF TAPE

Lovell — Looks like Hawaii is pretty today.

Haw — It sure is. Try to control in pitch and yaw and just let the roll part of it go if you can do that ok.

Aldrin — Well, when we put it in pitch and yaw all we get is roll.

Haw — Ok. we show that the Agena .....on the tether that way.

HOU FLT — Hawaii from Flight.

Haw — Go Flight.

HOU FLT — Suggest flight control mode on the Agena, 451 and 460 if they can get.

HAW — We'd like to have you go to Flight Control Mode 1 on the Agena if you could, and include 451 and 460 in an attempt to save some of the control gas, its getting mighty low.

Lovell — Roger, 451 and 460.

Haw — 451 and 460 - got a map on both of them.

HOU FLT — Rog, thanks. Can you confirm that on the ground Hawaii? Flight Control 1?

Haw — That's affirm, Flight.

HOU FLT — Ok.

Aldrin — We are still and don't seem to be getting too much further ahead, we may possible have to go to (garbled)

Haw (garbled)/ roll rate 3.89 feet here on the ground. By the way it is a decrease. too, Flight, since our acquisition.

HOU FLT ..say again

Haw We'll have LOS in about a minute here. That is a decrease since our acquisition.

HOU FLT Ok, in roll rate.

Haw Affirm. Pitch is staying in there pretty good and yaw fluctuates back and forth, however, he doesn't look like he's getting too bad out of yaw. Hawaii has had LOS out of both vehicles.

And this is Gemini Control. We've had loss of signal from the Hawaii Island Tracking station. During the conversation between Hawaii and Gemini 12 it was revealed that they are having a small amount of difficulty in maintaining Gemini attitude, however, the Agena target vehicle is hanging in quite well in a vertical position, looking very beautifully, as the crew mentioned. Their propellant quantity remaining at the present time on the Oams fuel of Gemini 12 is 35%. Part of the attitude control problem has to do with the two thrusters being out and they are getting a certain amount of cross-coupling when they attempt to take out any roll motions. We are coming up on a stateside pass now, should be acquiring in California at the present time. We'll stand by to join the conversation through the stateside and Eastern Test Range pass.

Still standing by for the stateside pass. As yet...now he's putting in a call, let's join it.

CAP COM — Gemini 12, Houston at California.

Lovell — Roger, Houston, 12.

CAP COM — How does it look now.

Lovell — Say again?

CAP COM — How does it look now?

Lovell — We are still just a little bit ahead and let me give you the direction of the travel, a little bit to the right. We've stayed ahead for quite some while, and I don't know, I think we might get ...

Cap Com — Roger

Lovell — We've just about stopped doing anything, just about anything we do all goes to....so we are just staying here to see what happens. We have a loose tether between the Agena and the spacecraft.

CAP COM — Ok.
12, Houston, about how many times have you hit the end of the tether?

Aldrin — Three - four times.

CAP COM — So it looks like you're just sort of bouncing off it lightly.

Lovell — That's right.

CAP COM — It sound s to us down here that you are either rotating very slightly or you are captured and

and it looks to us like you would be alright, how do you feel about going into night that way and not trying to station keep?

Lovell — That's a good decision, I think.

CAP COM — Ok. During the pass over Texas and the Cape acquisition we'll be sending you some DPS loads, and we want to do this just to check out computer, and we'll call them while we check them.

Lovell — Roger.

CAP COM — And if its alright, I'll give you a call before we do it and you can go to prelaunch for us so we can look at it.

Lovell — Roger.

HOU — Guaymas remote. California local.

GYM — Guaymas remote.

CAL — California local.

Lovell — Houston, 12 here.

CAP COM — Go ahead.

Lovell — My only concern, Houston, is the fact that we have a very loose tether and its snaking around... I'm concerned that it might get wrapped around some of our antennas on the side of the spacecraft, along the end.

CAP COM — Thank you, copy.

Aldrin — We are about lying abreast with him in the direction of motion now, we've been ahead of him up until now. He's off to the right.

CAP COM	How many feet off to the right?
Aldrin	Well, it might be, I'll measure it in degrees, about 40 - 45 degrees.
CAP COM	Roger, just keep watching, you've got quite a ways to go before night.
Lovell	Yes, I think the big thing is, can we keep below the horizon.
CAP COM	Roger.
Aldrin	The tether's kind of wrapped around him now.
CAP COM	Copy

END OF TAPE

Houston — Texas remote, Guaymas local

Texas remote, Guaymas local

CAPCOM — 12, Houston. Would you put your computer to pre-launch please.

Lovell — Roger, it is on pre-launch.

CAP COM — 12, Houston. Stand by, we are sending you a load.

Lovell — We are going right over you now Houston.

CAP COM — Houston, copy.

Lovell — Almost. If this thing is leaning just right, we might even get a picture of the Agena and Houston at the same time.

CAP COM — Outstanding.

Lovell — Don't keep your fingers crossed.

Aldrin — Would you settle for Corpus Christi?

CAP COM — Affirmative

Lovell — Smile down there

CAP COM — Roger we are smiling.

Lovell — I think I got several good shots of the Agena with Houston in the background.

CAP COM — Very good. 12, Houston, would you please switch the computer to catchup now. 12, Houston, would you switch to catchup, the load was good.

Lovell — Roger, we are in catchup. Thank you.

CAP COM — Roger, stand by for a TR. Mark

Lovell — Got it. Houston, it appears that we are slowly dropping now and the Agena is slowly rising up to the horizon I believe.

CAP COM Roger, how much slack have you got in the tether?

Lovell Not too much, we get pulled occasionally but that is about it.

CAP COM If it keeps bouncing off the end of it, I think you are safe in going through the night as long as you don't get too much slack. How do you feel about that?

Lovell Well, there is slack, Houston, and the slack goes back to the back end of the spacecraft. If she stayed taut, we would be fine.

CAP COM What is the rate that you are hitting the end of the tether at, once every two or three minutes, or less than that or more.

Lovell Oh we are going real taut, but it is coming fairly close. I think that there is probably some elasticity. We lucked out I think somehow.

CAP COM You are saying, that when you get slack in it though, you are getting some slack that looks like it is getting underneath the spacecraft. You can't see the tether, is that what you are saying.

Aldrin That is right. For instance, right now we can't see the tether or the Agena. It is down below us someplace. But it is obviously pretty close to taut because, for example, right now it is wrapping around that spacing thing that I put on. It looks pretty close to taut right now.

CAP COM OK, that sound familiar.

S/C And, yes, the Agena, it is a good ways away from the horizon.

HOU Roger.

S/C But there is no more than three or four pounds in that tether when she hits the end. It is very, very gentle. I would say we just passed the taut tether.

HOU Roger.

Well, it sounds like it is cycling and that is good.

S/C We are still on the right side of him. We have gotten a little closer now, to his line of motion. To the orbit plane. We are mostly behind him now and I think the way to really tell is to how far down the horizon we go when we get to maximum or behind him.

HOU Roger. We concur.

ANT LOS Antigua.

HOU 12, Houston how much of the tether can you see when it is over the nose?

S/C Well, for instance, right now I can see the whole thing because I can see the Agena, but at times we can't see anything. Just the red wire that goes right down around the nose, but it is below it.

HOU Okay, can you give us some idea of what your attitude excursions are with respect to the tether then? In pitch, say, like 60 degrees, 45 degrees, how much are you pitching with respect to the tether?

S/C 90 HOU Do you think it is going all the way to the nose?

S/C About 40 degrees.

HOU Okay, one says 90 and one says 40, you guys discuss this and let us know.

S/C Okay, I think we agree. One was with respect to the tether and the other was with respect to the local vertical.

HOU Okay.

S/C With respect to the local vertical we're pitched up 110 degrees.

HOU Okay, and the Agena is down below you.

S/C That's right and we're looking at the sky.

HOU Okay, are you still pitching up or are you pitching down?

S/C We're passing through the horizontal plane, right now.

HOU Pitching back down.

S/C Rog.

HOU Okay

S/C And we're almost due aft or straight behind the Agena

HOU Okay, so with respect to the Agena you're almost on the horizon with him too, huh?

S/C No, not quite. He hasn't reached the telemetry area yet.....

END OF TAPE

HOU Agena you are almost on the horizon with him too, huh.

S/C No not quite. He has not quite reached the rim of the earth. And he may not get there.

HOU Okay, how about letting me know when you think you are beginning to go back up with respect to - in other words traveling forward with respect to the Agena.

S/C Okay, we are both looking for the same thing.

HOU Yes, I think if you do that, don't you think you are beginning to be captured.

S/C Yes, think so.

HOU You have about 13 more minutes to sun set.

S/C Roger.

GTI LOS Turk.

HOU Okay, correct that, you have about 9 minutes left.

S/C ..with all the .. I used, the Agena is still below. However, now we have quite a big loop in the tether. I'd say we are about 60 feet away from it right now.

HOU Opening or closing.

12, Houston. We have got about 3 minutes and 30 seconds to Antigua LOS and we will have you again at Ascension. 12, Houston do you have

HOU radar range. Are you locked up on..

S/C Radar is on, however, we are not getting anything.

HOU Okay, we copied on the ground here some thruster firing. You firing your maneuver thrusters.

S/C Just fired it.

HOU Say again.

S/C Just fired it briefly.

HOU Okay.

S/C ..attitude, trying to see if we can station keep at night.

HOU Okay. 12, Houston. What do you think. Do you think you are all right to go into night? Either way. 12, Houston. Are you satisfied you can station keep?

S/C We will give it a try.

HOU Okay. Very good. And we have about 1 minute until LOS Antigua. We will see you at Ascension at 48 16 18.

ANT LOS Antigua.

And we have had loss of signal at the Antigua station of the Eastern Test Range. During that state side pass, there was a considerable amount of discussion about whether or not to attempt to station keep through this upcoming night pass or stay on the tether and see whether eventually they might be captured in the gravity gradient mode. The

tether occasionally would taut between the spacecraft and the Agena. The two spacecraft have just begun Gemini 12 has just begun its 31st revolution. This is the 32nd revolution for Agena. We will come up again at the Ascension Island voice remoting station, in some 4 minutes from now. At 48 hours 12 minutes and 9 seconds after lift-off, this is Mission Control Houston.

END OF TAPE

This is Mission Control in Houston. We have had acquisition of signal of Gemini 12 through the Ascension Island voice remoting station. We are standing by for Pete Conrad to put in a call to the crew through the Ascension station. Here he goes, let's listen.

HOU Gemini 12, Gemini 12 - Houston at Ascension - over.

S/C 12 - ... we finally got back .... just over .. .. turned it back on again.

HOU 12, this is Houston. We are still a little low yet and I couldn't read you - say it again slowly.

S/C We are in the light now and we just started to separate. We are coming up for ... 0. We expect sunrise at about 30 degrees silhouette.

HOU Roger

S/C These lights keep flashing because we have ... we haven't actually started at all because of the Agena ....

HOU Uh - 12 - Roger.

HOU Just pass on to you, if you want to maneuver you might remember that if you are gonna maneuver in pitch, but your logic switch to yaw and vice versa. It might help a little bit... and if you have a few moments between Ascension and Tananarive then you can look at your water gun, we would like to get the count off it, if you can't, forget it.

S/C 1507

HOU Understand 1506

S/C 1507 .... incidentally, I think this is leaking a little bit.

HOU 12, the com is very bad, we are not reading you too well, we will get you at Tananarive in a little while.

S/C Roger

HOU Yea, the "Roger" came through loud and clear, say it again now, maybe you are getting pretty high over the station, maybe we can read you.

S/C The water gun is reading about 1507, might be a little higher than that now. I think it might be leaking a little bit, I'll be watching it.

HOU Roger - copy.

S/C Alright, on that water tank, we haven't been keeping telemetry .. that's probably why it has been acting up.

HOU Okay, Roger - copy.

S/C Gemini 12

HOU Go ahead 12.

S/C The Agena looks like it is fairly nearly taught all the time now and we've just about to pass stateover. We are thinking of maybe letting the Gemini pass as we go over.

HOU Roger - I didn't quite copy all that.

HOU Okay, we got that. The other thing is we have been looking at your OAMS propellant and you have plenty. That's no problem right now.

S/C Roger.

HOU 12, Houston - one minute to LOS at Ascension.

S/C Roger - .... garble ... that .... same attitude.

HOU Roger.

... LOS

We have had loss of signal at the Ascension Island voice remoting station. The communications during this pass even though it was a high elevation angle pass and rather fuzzie. We are coming up over Tananarive in approximately seven minutes. We will come back up at that time, hopefully the communications will be a little more clear. At 48 hours, 25 minutes and 47 seconds after liftoff this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston. Gemini 12 should be acquired by the Tananarive voice remoting station. We're standing by for any conversation. Let's listen in right now.

HOU Gemini 12, Houston standing by at Tananarive.

SC Roger, Gemini 12 here.

HOU 12, Houston. How is it looking now?

SC (garble)

HOU Roger.

12, Houston. The ACS is still on in the Agena isn't it?

SC Roger it is. It is about horizontal with us right now. What we are going to do is put in a very small upthrust and then we'll try and kill our translation, as we pass over directly above it if we do. The tether is tightly taut how and I think as long as we can keep it taut we might be able to kill our rates as we pass straight over.

HOU Roger. Copy.

HOU 12, Houston. One minute to LOS at Tananarive. Carnarvon 48:48:02.

TAN Tananarive LOS

And we've had loss of signal at the Tananarive voice remoting station. We'll come back up at the Carnarvon pass which will be in about 8 minutes. At 48 hours 40 minutes and 37 seconds after liftoff this is Mission Control Houston.
END OF TAPE

This is Mission Control Houston. Let's join the conversation now in progress between the Carnarvon, Australia tracking station and Gemini 12.

S/C ...control mode do you show the Agena in now and how much gas is left?

CRO Okay, in FC-1.

HOU We show 5 pounds gas Carnarvon.

CRO Okay, about 5 pounds of gas.
Has there been much thruster activity in the Agena.

HOU Just very little. In fact, it is practically nil.

CRO What was your last comment Flight?

HOU Say again?

CRO What was your last comment? I though I heard you say something.

HOU I just wanted you - I didn't think you copied his first transmission. He asked about the Agena.

CRO Oh yes, I copied. I was just checking on all that. We are showing yaw right, yaw left. Yes, he is maneuver quite a bit.

HOU Say again.

CRO He is doing quite a bit of maneuvering right now.

HOU Okay. We need an Agena contingency India.

CRO Roger.

CRO Okay 12, you can turn your encoder bac on.

S/C Okay.

HOU Does he think he has it set up yet? Carnarvon, ask him if he thinks he is close to set up.

CRO 12, this is Carnarvon. How close to setting up the Agena do you think you have it.

S/C Well, we are trying to get back into position now and I think we may have a slightly better crack at this time than we had before. Rates seem to be nulled down a bit better.

CRO Okay.

S/C We will do what we can.

CRO Do you want to make any comment about the purge, Flight?

HOU I am think about that. It sounds like he has the rates nulled and is ready to get started into it.

CRO Right.

HOU I think I am going to let it go.

CRO Okay. The last time he was talking to me it sounded like he has a typewriter up there or something.

HOU That might have been our little printer over here.

CRO Oh.

HOU Carnarvon Com Flight.

CRO Go ahead.

HOU Are you seeing any thruster activity on the spacecraft.

CRO That is affirmative. Yaw right.

HOU Is it very much or would you say pretty small.

CRO Pretty small.

HOU Okay.

CRO He just gave about 3 pulses on, yaw right.

HOU Okay, what control mode, pulse?

CRO That is affirmative.

HOU Okay.

CRO There is a little more yaw right.

HOU Carnarvon Com Flight.

: Carnarvon Com Flight.

Carnarvon Com Flight.

Carnarvon Com Flight. Carnarvon Cap Com, Flight.

Carnarvon Cap Com Flight.

HOU Carnarvon, this is Flight. If you read me, send us an Agena LOS main.

This is Mission Control Houston again. Apparently we are having a little difficulty with the communication lines in the last portion of this pass, over Carnarvon. But we passed the time what should

have been loss of signal at Carnarvon. We will come back up at the Hawaii pass, which will be in approximately 16 minutes at 48 hours 57 minutes and 36 seconds after lift-off, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, the spacecraft Gemini 12 attached to the Agena Target Vehicle by the tether is coming up now over the Hawaii tracking station. They're beginning to get sort of ragged electronic contact with the spacecraft, as it comes farther over the hill. We'll have a pass here of about 8 minutes and 31 seconds over Hawaii. We'll standby for the conversation between the Spacecraft Communicator, Keith Kundell and Gemini 12. The Spacecraft Communicator reports that everything is a lot more stable then it was the last time around. The control system on Gemini is turned off at this time. Let's listen in.

HAW 12, Hawaii standing by.

SC Roger Hawaii we're still giving this tethered Agena a try.

HAW Roger and it looks pretty stable from here.

SC Roger, we haven't dropped it in quite awhile and looks like we're in pretty good shape. We're just [illegible] to [illegible] the 10 feet south and maybe 20 feet ahead of the direction of orbit travel. Good tight tether now.

HAW Roger looks like you still have a very slow roll rate and that is very gradual.

SC Is that the spacecraft you read.

HAW Affirm.

SC Now while our attitudes does have certain excursions to it, we're about 45 degrees pitch aft now.

SC That doesn't seem to be to much it'll bother them.

HAW Roger, very good.

HOU Hawaii Flight

HAW Go Flight

HOU I copy him the Agena 10 feet down below him and 20 feet to which side?

HAW Affirm

HOU Which side of the Agena?
Is he to the right or the left of it?

HAW Are you to the right or the left of the Agena?

HOU He's to the left of the Agena?

SC We're just about to cross right now, as far north south with respect to the orbit plane. We're crossing now and we're maybe 10 feet ahead.

SC Yes, 10 feet ahead.

SC Right.

SC Going just a little bit north now. All right I'll make that (garble)

HAW We have an Agena clock reset load to send in could you give us encoder off please?

SC Roger, encoder off, (garble) will not lock on and we're not able to get map lights right now. We're not pointed directly at it. I tried to switch to spiral or dipole and was

unable to get any map lights.

HAW Okay.

SC Which antenna do you show we're on now?

HAW At the present time you're on the spiral.

HAW At the present time you're on the spiral antenna.

HOU Hawaii, Flight, a memory compare and SPC load?

HAW Okay.

We're rechecking it.

HOU Is the spacecraft computer still up Hawaii?

HAW That is affirm Flight.

HOU Okay, send OBC's Hawaii, Agena - India and echo contigency.

HAW India and echo, roger.

HOU Roger, and an OBC.

HAW Roger

HAW Okay and since we've had acquisition it's roughly 4 minutes now, he's gone through it looks about like a 50 degrees in roll and pitch and yaw are almost solid.

HOU Ask him if he thinks its setting up properly in the gradient now?

HAW 12, Hawaii. Do you think you're setting up in the gradient at the present?

SC It sure looks like it. We're - the docking bar is lined right up with the dipole, almost

straight above it and the tether is taut.

HAW Okay, mighty fine.

Since we've had acquisition on you you look like you've rolled about roughly 60 degrees, that's been over about a five minute period now.

SC That's not the attitude we're worried about it's more the (garbled)

I think we might want to stay with Agena in attitude control a little bit longer and then maybe near the end cut her off.

HAW Okay.

Flight go ahead and try to update him right now.

HOU Roger.

Think maybe we ought to try sending a command, something that we have a function that we can verify that we're actually getting into the thing.

HOU Hawaii from Flight.

HAW Go Flight.

HOU They want to use a command to check it, they could use a purge light.

HAW Okay, we seem to be having trouble getting into it too. I think maybe we ought to check first and then let him try it.

HOU Okay. You've got a memory compare on your clock

load didn't you?

HAW Unfortunately that was may mistake on that Flight, we didn't.

HOU Okay.

HAW We're showing we're not getting into memory either.

HOU Okay, do you want to try it again?

HAW Yes, we've resent it again and we still get negative on the memory compare.

HOU And the encoder is off right.

HAW Affirm.

Oh, it did go in the second time he said. It shows up now on the memory readout that it is in and in correct.

HOU Okay.

You sent SPC enable then.

And give him back his encoder as soon as you can.

HAW Roger.

Okay, we got that in okay.

HOU Thank you.

HAW Let's see, 12 you can turn your encoder back on. We'll have LOS in about one minute.

If you'd like to change antennas, we'll check and see if you get it in okay.

SC What do the Agena people recommend for getting it locked in?

HAW What do you recommend on it?

HOU For what?

HAW For their check.

SC Okay, I'm on the spiral now.

HAW Yes, that is affirm.

SC Okay, I'll send 260, see if it switches.

HAW That is affirm, we agree it did switch.

SC Okay, I'm not getting a map light here.

HAW Okay, affirm it is working all right.

SC Check and see with them, the Agena people in Houston which antenna would be best?

HAW Did you copy that last one Flight?

HOU Affirmative.

HAW Oh, one little goof here. I didn't get TX in so the burn will be coming out with the TM on it.

HOU Okay

This is Mission Control Houston. Apparently we have had loss of signal at Hawaii. Coming up on the Stateside pass here, should be acquiring by the California station momentarily. Let's listen in now.

HOU Gemini 12, Houston through California.

S/C Go ahead Houston.

HOU Roger, you are getting extremely low on attitude gas in the Agena and if you think you are stable, you still have some daylight any time you are ready, you can go ahead and shut the ACS off.

S/C Houston, the best indication we have really is capture or not is the Agena. If it's that low I guess we will have no choice.

HOU Standby a minute.

END OF TAPE

HOU 12, Houston, go ahead and look at it as long as you want, I just wanted to advise you about the attitude gas and whenever you are satisfied, that's up to you

S/C Okay, Houston, we understand about the attitude gas. Just what do you plan on doing, this tether exercise takes a long time. We are in that region now where we can stay with gases a long period by slowly going into the spin like we did I was afraid to attempt. We are in good position now. We could turn off the gas and just let it go, and I would suggest no matter what it does that we go through the night period perhaps in this manner. We won't touch the controls. So that if we are not captured and we go into a spin we will come out the next day in that spin.

HOU Roger, if you are satisfied, go ahead then. I gather from what you are saying, you have a pretty taught tether all the time now.

S/C That's right, it's a taught tether. There is not much force in there at all, however, we are just merely going along with it. Although we were in the same position the last time and we slo-w-l-y got into a horizonal position, and it might be the same this time.

HOU Okay, whenever you are ready you can give her a go.

S/C We are not getting map lights so you will have to confirm whether the ACS is ON.

HOU Roger, you will be over Texas in just a couple of minutes so we can look at it then. You can always send your cone lights or aft lights or something like that if you want to assure yourself that you're getting in.

S/C It's kinda nice and pretty up here.

HOU I'm talking about when you get in the night side if you're -

S/C Nice recovery.

S/C We're talking about attitude gas.

HOU Whose on first.

... Guaymas remote - California local.

... Guaymas remote - California local.

GYM Guaymas remote.

HOU 12, Houston, we have you .. we have Agena Telemetry now at Texas if you want to try and turn it off.

S/C Roger, we did turn it off.

HOU 12, Houston, we show it off on the ground. You getting in alright.

S/C Roger.

S/C Houston, 12.

HOU Go ahead.

S/C The tether is essentially taught now and to give you some idea of force of the tether, the natural bend of the wire when it made the loop, is still bent about 70 degrees. So, you can imagine how small the forces are in that tether.

HOU Roger - copy.

HOU Texas remote - Guaymas local.

TEX Texas remote.

GYM Local.

END OF TAPE

This is Mission Control Houston, we're still standing by for any further conversation during this stateside pass. Spacecraft just beginning it's 31st revolution. It is now over the Carribean ocean. And will be passing out of the Antigua station acquisition range within 3 or 4 minutes. We'll continue to monitor the air/ground for any conversation.

HOU 12 Houston How does everything look now?

S/C Roger, it appears as though its pointed right toward us and if anything, it looks as if it is moving away from the horizon. Looks like we are in pretty good shape now.

HOU Very good. Very good.

S/C We'll just hold on to this thing through out the main period.

HOU Okay. 12 Houston. On the next rev over Texas I'll pass you your update for your SEP maneuver and it'will be with the firing thrusters.

S/C Okay. Matter of interest, the docking light is a good device to illuminate the tether with at night, it works out very nicely.

HOU Yeah. Roger. We used it on ours. We've been watching you here on the ground and it sort of looks like you are just oscillating there in sort of a cone I guess.

S/C It's kind of hard to tell just looking at attitude.

GTI LOS Turk

HOU 12 Houston, we've got about 2 minutes to LOS Antigua

and see you over ascension.

S/C Roger Houston.

HOU 12 Houston. Did you get a chance to eat yet?

END OF TAPE

ANT LOS Antigua.

This is Mission Control Houston. We have just completed one of the quietest state side passes of this mission. Apparently the tether exercise is going along quite well and tend to be near what may be gravity gradient mode. We are coming up over the Ascension Island voice remoting station where communications haven't been too good this mission and there will be fairly low elevation angles so they could be worse this time. We will come up at that time in approximately 6 minutes at 49 hours 46 minutes and 25 seconds after lift-off, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston. Spacecraft Gemini XII is now over the Ascension Island tracking station and let's join the conversation between Pete Conrad and the crew of Gemini XII.

CONRAD ....section 2, then section 1, hydrogen normal and oxygen in a normal purge. Two minutes,over.

S/C Roger, normal fuel cells purge two then one, is that correct?

HOU That's correct. Do it as soon as you come out in daylight And you are satisfied you can watch it and see what happens to your rates and so forth when you purge.

S/C (garbled)and we'll have a.....and see what that does.

HOU Roger.

This is Mission Control Houston we've had only a brief exchange during this pass over the Ascension Island voice remoting station between spacecraft communicator Pete Conrad here in Mission Control and the crew of Gemini XII. Mainly concerned instructions for doing the fuel cell purge after they came out in to daylight and the main purpose would be to observe any rates that might be set up during the actual purge of the fuel cell hydrogen and oxygen system. We'll continue to stand by during this pass for any possible conversation. It is highly unlikely there will be and then we'll come up again for....let's join the conversation.

HOU Hou...Gemini XII Houston. One minute to LOS Ascension and see you Tananarive 50:08.

S/C Roger.

Ascension LOS

And we have had loss of signal at the Ascension Island voice remoting station and in 8 minutes we are due to be acquired at the Tananarive voice remoting station. We'll come back up at that time. At 50 hours and 11 seconds after liftoff, this is Mission Control in Houston.

END OF TAPE

This Mission Control Houston. We're at 50 hours 8 minutes and 46 seconds after liftoff. Over the Tannanarive voice remoting station let's listen in for any conversation between the spacecraft communicator Conrad and the crew. Let's join it.....

HOU Gemini XII Houston through Tananarive, over.
Gemini XII, Gemini XII, Houston through Tananarive

S/C Roger, Houston this is XII.

HOU Roger, a couple of things. Have you turned your computer on, over.

S/C Both computers are on.

HOU Okay. The other thing is have you been moving around in the cockpit at all, we'd like to know if your movements in the cockpit tend to upset the combination at all.

S/C We can't tell just now. It's still dark. I'll let you know in the light time. We did make a urine dump here to see what it would do and we didn't get any results, we'll find out.

HOU Okay, very good and when you do get out in the daylight and after the fuel cell purge if you would make some deliberate movements in the cockpit to observe we would appreciate that and your comments.

S/C Okay. We will. We've been moving in the cockpit, stowing things. Turned the Agena control system off , occasionally we'll get a little....in the tether (garbled)

and then goes slack a little bit.

HOU Roger, very good. Where are you in relation to the horizon now. Are you still pointed down pretty good?

S/C As far as we know, however, it's still dark here and we put the lights on the .....and we'll have to find out where we are a little bit later.

HOU Okay.

S/C You want us to leave the computer on for telemetry don't you on this.

HOU No. We would like the computer off now if you're not using it so that you will save electrical power.

S/C Houston, this is 12.

HOU Go ahead.

S/C Roger, we reported spacecraft motions through the computer and do you want us to leave it on to records the ....degrees.

HOU That's negative, we want the computer off, please. We want the computer off, please.

S/C Roger.

Hou Thank you.

S/C Houston, would you say again which sections you want purged first.

HOU Roger, purge section 2 first.

S/C Roger, normal 2 minute 30 seconds to purge.

HOU That's affirmative.

HOU Gemini 12 Houston. One minute to LOS Tananarive.

S/C Roger, Houston.

TAN Tananarive LOS

And this is Mission Control Houston, we've had loss of signal over the Tananarive voice remoting station. A fairly noisy pass, a lot of background noise, but some conversation between Mission Control here in Houston and the crew of Gemini XII. In approximately 17 minutes we'll be coming up on the first pass over the tracking ship Coastal Sentry, just south of Japan. We'll come back up at that time with that pass at 50 hours 16 minutes and 49 seconds after liftoff this is Mission Control Houston.

END OF TAPE

This is Mission Control at Houston at 50 hours, 33 minutes and 14 seconds after liftoff. We have had ac-ach contact over the tracking ship Coastal Sentry of Gemini 12. We are standing by for any conversation that might transpire. This is a fairly low angle elevation pass. All systems are GO. Let's listen in.

HOU Roger.

CSQ Gemini 12, CSQ

S/C Go ahead CSQ

CSQ Roger, how did the purge go.

S/C Purge was go. Well, I think we are still captured ... garble ...

HOU Fuel cell purge.

CSQ Roger. We con't have anything else for you, will be standing by.

S/C Roger

S/C Uh, CSQ you might relay to Houston that if it is possible we would like to take the last pictures during the stand up EVA tomorrow.

CSQ Okay. Houston copy.

HOU I did.

HOU CSQ from Flight.

CSQ Go ahead

HOU Tell them that after the separation, or after the end of the tether exercise, we are looking for a maneuver about 25 minutes later, so they will have time to get squared away and do an

align and then be ready for the burn.

CSQ Okay.

CSQ 12, CSQ

S/C Go ahead.

HOU We want to do a burn about 25 minutes after you terminate the tether exercise and align.

C/S Roger - we were just discussing that CSQ, we are trying to figure out a way of making the burn both control .. (fade)

CSQ Rog.

S/C What is the magnitude of the burn, is it ... sec.

HOU That is correct.

CSQ Right

CSQ One minute to LOS Gemini 12.

S/C Roger.

CSQ LOS on Gemini.

And this is Mission Control Houston. We have had loss of signal on Gemini 12 from the Coastal Sentry tracking ship. We will come up again during the Hawaii pass which will be in approximately eleven minutes. At 50 hours, 38 minutes and 17 seconds after liftoff, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston we're at 50 hours 49 minutes and 5 seconds after liftoff. We should be acquiring the Hawaii Islands tracking station at any moment, we'll stand by for comments between the Hawaii and the crew of Gemini XII on the progress of the tether exercise. The crew should be in an eat period at this time. Hawaii is scheduled to provide the crew with some planned landing area updates. During the next pass over the states another run of the Beta spectometer exercise for experiments scheduled to be run. We're standing by for Hawaii here.

Roger, would you please send TX for.....

HOU Hello Hawaii, 12 here. For information we would like to go clean of the Agena prior to darkness in the daylight and also set up for a burn. We are still discussing how to make this burn, we're not to sure how much control we're going to have to make this ome.

HAW Roger, we copy. Did you copy that?

HOU Yes, I copied they were still considering how they were going to do the burn and they weren't sure how well they would be able to do it with the control system.

HAW Roger. They also said they would get clean of the Agena in the daylight.

HOU Okay. Stand by I'll be sure that's what we have. You mean do the burn in daylight? Is that what you mean?

HAW No, they wanted to make...Yeah, yeah, that's right.

HOU Well, you'd better ask them. Do they mean get off the tether or do they mean do the burn?

HAW 12 Hawaii. Do you mean do the burn in daylight and get off rather than get off the tether in daylight.

S/C No. We want to get off the tether in daylight, of course.

HOU Yeah, that's fine, and then we'll do the burn about 25 minutes later in daylight.

HAW Okay, flight says we'll do the burn about 25 minutes later in daylight.

S/C Roger, I think it would be much better to do the burn in daylight. We're going to have to determine just how much control we have and how long, how much it takes to align the platform.

HAW Okay.

HOU Hawaii, will you send a TX for Texas for LOS, 511100.

HAW 511100.

HOU Affirmative.

S/C Hawaii, 12.

HAW 12, Hawaii.

S/C Roger, unless you want us to continue gravity gradient we can get off the tether any time you want us to.

HAW Okay, they're looking at that real close right now. We'll have something for you shortly.

S/C Okay.

Sounds like they want to get off right now. Do

you want us to go ahead.

HOU Negative standby.

Hawaii from flight

HAW Yeah, flight.

HOU We would like them to continue the gradient through the rest of this day pass and through the upcoming day pass and then separate at the next sunrise.

HAW They would like for you to continue this gradient exercise through the rest of this day pass night time and then separate upcoming sunrise.

S/C Okay, understand we'll continue the gradient through the next night pass and separate at sunrise.

HAW Roger, that's affirm.

S/C understand.

HAW 12 Hawaii, we'll have LOS in a minute.

S/C Roger, Hawaii.

HOU Hawaii has LOS

This is Mission Control Houston. We've had loss of signal at the Hawaii station. We're coming up now on a stateside pass that will carry the spacecraft down over the Mexico, Central America and South America with a fairly brief time over part of the eastern test range, Guaymas and the California station. Should be acquiring at California in approximately ten seconds. We'll stand by for spacecraft communicator Conrads conversation with the crew. Let's listen in.

HOU Gemini 12 Houston to California, over.

CAL Roger, 12.

HOU I got the up date your PLAs anytime you're ready to

copy.

S/C Okay.

HOU Okay. Area 34-3A; GETRC 532029 RET 400K 2107; RETRB 2635; the bank angles are roll left 80 roll right 100, the weather is good in the bank' angles and the bank angles are good in all following areas. There is a separation maneuver required for 34-3A, no separation maneuvers for the rest of them. Area 35-3 Bravo GETRC 545601; RET 400 K 21 ± 05, RETRB 26 + 53, area 36 - 3A, GETRC 563201, RET 400K 20 + 35; RETRB 25 + 58; area 37 charlie charlie, GETRZ 580705; RET 400 K 19 + 55 RETRB 25 + 04; area 38 Alpha charlie 590142, RET 400K 20 + 54 , RETRB 26 + 40 area 39 Alpha charlie, GETRC 60 38 01, RET 400K 21 + 17, RETRB 27 + 05, area 40-2 Alpha, GETRC 621152, RET 400K 21 + 20, RETRB 26 + 42 Do you copy?

S/C Roger, I got all of them except the first area and GETRC and RET 400K.

HOU Roger, area 34 - 3 Alpha, 53 20 29, RET 400K 21 + 07 RETRB 26 + 35.

S/C This is Gemini 12, you faded out at the end but I have it all, thank you.

HOU Okay, I've got a separation maneuver for you, are you ready to copy?

S/C Roger, go ahead.

HOU Roger, purpose separation. GETB 5.....

END OF TAPE

S/C Roger, go ahead.

HOU Roger, perfect separation. GETB 52 14 27 Delta V 60, 6.1 excuse me. Six feet per second. Burn time 8 seconds. Yaw 0, pitch 0. Address 25 00060. Address 26, address 27, all zeros. Thrusters aft, maneuver posigrade.

HOU Guaymas go remote, California go local.

GYM Guaymas remote.

CAL California local.

HOU 12, Houston, did you copy?

S/C Roger, you faded out right at the end. Separation maneuver GET burn 521427, Delta V 6.0 duration 8 seconds yaw 0, pitch 0, address 25 9 say again address 2500060 address 26, 27 zeros, say again after that.

HOU Roger. Thrusters aft, the maneuver is posigrade.

S/C Roger, understand thrusters aft maneuver posigrade.

HOU 12, Houston. We appreciate your control problem and we are going to see how well you do on your burn and how you do on getting your platform alignment and everything and we will talk to you after that about the rest of it.

S/C Very good. It gives us a little challenge.

HOU Okay, I didn't copy your last. We would like you to

HOU turn your X-eray on Beta with mag and leave it on through the sleep period, please.

S/C Roger. X-eray on the Beta with mag through the sleep period.

HOU And what was the last thing you said?

S/C Disregard.

HOU Okay.

HOU Texas go remote, Guaymas go local.

TEX Texas remote.

GUY Guaymas local.

HOU Okay and after your separation maneuver, we plan to power you down and get you fed and go to bed.

S/C Very good. Houston, 12. There doesn't seem to be too much doubt that we are captured. ..two total amplitudes. Seem to be... a little bit ... total angle ... vertical ... previous one, but they recovered within about oh, I would say 30 degrees on horizontal.

HOU Roger. In other words, you are gone about plus or minus 60 degrees from the vertical.

S/C Yes, looks like it.

HOU Roger, very good. 12, Houston, FEE will look for your crew status report. You can pass it whenever

HOU you are over his station and you are ready to give it. No rush.

S/C Roger.

HOU And 12, Houston. Your sleep period is going to run approximately 53 hours to 61 hours.

S/C Roger. Roger, we just passed over Acapulco.

HOU And 12, Houston. After you separate would you turn your encoder off.

S/C Will do. Do you have any fix for the radar?

HOU That is negative. 12, Houston. I think we are going to change the plan and see if we can't put S-51 in for tomorrow morning. And it also looks like your separation from the Agena for the last time.

S/C Say again please.

HOU Roger, we are going to try for S-51 in tomorrow.

S/C Okay, what is that change address that you want.

HOU Yes, we are going to change the time so you do S-51 and the jettison tomorrow.

S/C Okay. You say we are not coming back to the Agena?

HOU It looks that way right now. We would like to see how well you do after you get off it. That is the main thing.

S/C Okay, I guess you want to check our ... no residuals...

HOU That is affirmative. Okay you are going over the hill now and this is your last state side pass. We will see you in the morning.

S/C Roger.

This is Mission Control Houston again. We have had loss of signal out of the Texas station in the Eastern Test Range. And our next station to be acquired will be a brief pass just over the edge of Ascension Island. However, it is such a low elevation angle, it is highly unlikely any contact will be attempted. We will come up over Tananarive at ground elapsed time of 51 hours 43 minutes 22 seconds. During this state side pass, Pete Conrad passed up to the crew a series of planned landing areas updates. Also a time for jettisoning the tether of ground elapsed time of 51 hours 49 minutes 27 seconds and the separation maneuver of 6 feet per second posigrade at a ground elapsed time of 52 hours 14 minutes and 27 seconds. At 51 hours 12 minutes and 42 seconds after lift-off, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston at 51 hours, 43 minutes and 25 seconds after liftoff. Coming up over the Tananarive voice remoting station should be acquiring right now. Standing by for Pete Conrad to put in a call. There he goes, let's listen.

HOU Gemini 12, Gemini 12 - Houston through Tananarive - over.

S/C Houston, this is Gemini 12 through Tananarive talking.

HOU Roger, I've got a few things for you. As soon as you get off the tether, we would like you to hold a normal fuel cell purge while you are aligning the platform and prior to the SET maneuver. Also, make sure you get the encoder off as we want to set up the Agena. And then you can go ahead and eat and sleep which will be 53 to 61 hours elapsed and tomorrow morning we are going to schedule S-51 at 62:45 and your second pass by us will be 64:20 and we gonna try and schedule the EVA at 65 hours, so, you think you have enough time then, on your second pass all you have to do is snap a couple of pictures. Over.

S/C Uh, let's think about that for a while. Meanwhile we will be asking how critical is the time on this SEP burn Houston. We

want to take our time and if it's not critical between separation if we burn a little bit later on.

HOU Well, Roger, I thought 25 minutes would be enough for you to get off. We could move it a little bit later I believe.

S/C No, I say, we don't know what it's gonna take. We just want to know if it's critical on the time for the burn.

HOU No, it's not critical, if you can make it, go ahead and make it.

S/C How about burning BEF with the birds flying separate during telemetry, going away.

HOU That's fine, burn it any way you want and if you don't burn it on time, if you will give us the exact time of the burn, that's fine. Whenever you can burn it, burn it. Well, what we need is the exact time.

S/C Roger - 12.

HOU Okay, for the rest of tomorrow we will work out a schedule of D-10, T-2, S-11 and S-29 depending on how good your control system ability is after you give us a little evaluation after your SEP burn.

S/C Roger.

HOU Although, if you are awake during your sleep period in the middle of the night for any reason, and you can think of it, a 30 second O_2 purge will help your fuel cells during the night time there. If you aren't awake, no problem, but if you are well give it a 30 second O_2 purge.

S/C Roger - understand. We've been able to get a purge just a little bit ago. Do you want this to be a forward two minute purge.

HOU That is affirmative. We would like to get a full purge on it right after you get off the Agena while you are aligning the platform.

S/C Roger, understand. Also, we have been looking at these Delta P lights for a little while and the only thing we are getting through the circuit breaker is the fact that the Delta P lights are on. We would kinda like to turn them off.

HOU Okay, we concur.

S/C Thank you

HOU 12, Houston, the only way we can see and monitor the Delta P lights on the telemetry is if you leave them on. So, if you could cover them with something we would appreciate it if you would leave the circuit breaker on.

S/C Plug it in. Okay we will do it right.

HOU Okay, the only difference on your burn time Delta T wise with the forward firing thrusters

it will be a 10 second burn vice an 8 second burn.

S/C Roger.

HOU That last purge you did helped the fuel cells considerably, so that's why we want to get another long purge on them.

S/C Roger.

HOU 12, Houston - have you sat from the Agena yet.

S/C I am going to now.

HOU You are going to now, is that correct.

S/C Roger - standby.

HOU Okay, we've got about a minute and 45 seconds from LOS.

S/C We are released .. we still got it within .. Boy, are we released.

HOU Understand you are off the Agena, is that correct.

S/C Roger and the force of .... rate... is a good one... it looks like a good .... (fade)

HOU Roger. We get it in rate command.

S/C Say again.

HOU I say, we didn't notice that, we were in rate command when we did it. Of course, ours was working real good.

TAN Tananarive LOS.

This is Mission Control Houston. As you heard during the Tananarive pass the crew jettisoned the tether between the spacecraft and the Agena target vehicle at a ground elapse time of approximately 51 hours, 51 minutes and 10 seconds. This time may be revised somewhat. Other information passed to the crew was that their sleep period would run from approximately 53 hours ground elapsed time to 61 hours ground elapsed time. Times for tomorrow morning sodium vapor cloud test from the French rocket site in Algeria, the first pass would be 62 hours 45 minutes ground elapsed time and the second pass 64 hours, 20 minutes. The second standup EVA tomorrow will come at about 65 hours. At 51 hours, 53 minutes and 28 seconds after liftoff, this is Mission Control Houston.

END OF TAPE

This is Mission Control at 52 hours 6 minutes and 4 seconds after liftoff. Spacecraft Gemini 12 has just entered the acquisition area of the tracking ship Coastal Sentry. We're standing by for any conversation between spacecraft communicator, Bill Garvin, and the crew of Gemini 12. Garvin is putting in a call now.

CSQ — Gemini 12, CSQ

S/C — Roger, CSQ

CSQ — Roger, we're ready to go ahead and start gyro compassing the Agena.

S/C — Don't touch the Agena yet. We don't have much light and we want to get away, we're trying to watch. We trying to align the platform. We have a hard time finding them.

CSQ — Give me a call when you are ready

S/C — I don't know if we'll get a /four feet per second separation, but we're ready to compass.

CSQ — Okay.

S/C — We're using maneuver thrusters for yaw control.

CSQ — Roger. Flight, CSQ

HOU — Go ahead.

CSQ — You may have to have to go ahead and gyro compass this thing over Hawaii

HAW — Yeah, okay.

Two minutes from LOS

You still have to call me back.

CSQ Okay, Hawaii.

HOU CSQ, flight, would you send us an OBC.

CSQ Okay.

HOU Say again, you're fading in and out, Bill.

CSQ I say, I'd like to remind you to have the Agena send out that time word reset load. We didn't transmit that either.

HOU Okay. We copy.

CSQ We're coming up on LOS, Gemini 12.

S/C (garbled)

HOU Did he say he was going to burn on time?

CSQ That is affirmed. Flight, CSQ.

HOU Go ahead.

CSQ We caught that about the fact that he is utilizing the on control by using the maneuver thrusters.

HOU Yeah, we copied that.

CSQ Okay. We had a LOS on Gemini

This is Mission Control Houston at 52 hours 14 minutes 4 seconds after liftoff. The next station to acquire will be the Hawaii tracking station in approximately 9 minutes. They're coming up on the separation maneuver.in approximately 10 seconds and the crew has indicated that over the Coastal Sentry that they will do the burn on time using the forward firing thrusters instead of the aft firing thrusters. In this manner, they will be able to watch the Agena during the actual separation. At 52 hours 14 minutes and 40 seconds after liftoff, this is Mission Control.

END OF TAPE

This is Gemini Control 52 hours 24 minutes 3 seconds into the mission. We have acquisition with the Hawaii tracking station coming up at 33 seconds. That is some 20 seconds from now. We will stand by at that time to hear conversation with the astronauts on their separation maneuver from the Agena vehicle.

HOU ..its in the cockpit.

S/C Okay.

HOU Hawaii Com, Flight.

HAW Go Flight

HOU After those items, ask them to drink as much water as they feel is reasonable. In the meal tonight.

HAW 12, Hawaii.

S/C Go ahead, Hawaii.

HAW All right, we would like to know how it went during the burn.

S/C Okay. We used maneuver thruster to get aligned and aligning was okay. Also rate command was out to the tether line and does hold it. We made a burn and we had to correct the attitude with the thruster during the burn. We burned in orbit rate of plat mode.

HAW Orb rate and plat mode. Okay.

S/C Well, we did have to use a little maneuver thruster to correct our yaw.

HAW Okay, and we would also like to know how it went during the purge.

S/C Roger, the purge was normal.

HAW Roger, very good. Okay, and would like to have you check and if you have less that 5 frames left on the film that you used to photograph the eclipse you can go ahead and stow it and use the other film pack for tomorrow.

S/C Roger, we have already done this.

HAW Roger, very good. Okay, another little reminder. We would like for you to use as much water as reasonable. Drink during your meal preparation.

S/C Roger, drink water, I have heard that before.

HAW Yes, and you will probably hear it again.

HOU Hawaii Com Flight.

HAW Go Flight.

HOU Let him know it also helps his fuel cell.

HAW Yes, I am sure he is fully aware of that. But I'll...

HOU Tell him anyway.

HAW Of course, our main concern on this is to help out the fuel cell as much as possible. We're only kidding.

S/C Roger.

HOU Hawaii, is the computer on or off?

HAW It is on, he just switched it to prelaunch mode.

HOU Okay. Did you send us the OBC?

HAW Yes, it is on its way.

HOU And are you starting to gyro compass the Agena?

HAW That is affirm.

HOU Okay.

HAW And the L-band beacon just went off and am turning approach lights off now.

HOU Okay.

HAW And they are off. And he just turned the computer off.

HOU Roger, computer off.

S/C Hawaii.

HAW Go 12.

S/C Roger, we are going to power down unless they want us to have anything going.

HOU No we are ready to power down.

HAW You might go ahead and have at it and we saw the computer just come off.

S/C Roger. We are just holding by on the platform.

HAW Okay.

HOU Hawaii Com Flight.

HAW Go Flight.

HOU I would like you to ask the crew for a general comment on how they feel about the control system for the remaining experiments S-51 T-2 and D-10.

HAW Well, we would like a general comment on how you feel about the control system in regard to remaining experiments which are S-51 T-2 and T-10.

S/C This is 12. Rate command seems to hold it very decently. Big burns more than 6 or 7 we are going to have to use maneuver controls to stop it. ... you have to get certain angles or attitudes, I am not too sure. I think we can probably do it in rate command and try to get it, it will be a little expensive on gas.

HOU Okay, we are in pretty good shape on fuel. But he feels he can get the attitudes of the experiments reasonably well.

HAW That is affirm Flight.

HOU Okay.

HAW Okay, we are pretty good on fuel at the present time so we are not worrying too much about heavier usage of fuel.

HOU Hawaii, did you send the C-band beacon on to track the spacecraft.

HAW That is negative.

HOU Well, go ahead and do that.

HAW Okay.

HOU Hawaii Com Flight.

HAW Go Flight.

HOU What we have left is the crew status report. When they are ready to pass it out we will stand by at CSQ and Tananarive. At RKV and Tananarive.

HAW Okay, about all we have left for this day is crew status report and we will stand by over RKV and Tananarive for that.

S/C Okay, ... Houston ... rerendezvous, it might be accomplished.

HAW You think you have a chance of accomplishing rerendezvou.

S/C Well it depends upon how much gas we use. But it could be done.

HAW Okay, we have them thinking about it. Did you copy that Flight?

HOU Affirmative. We will look at that and see

HOU what it looks like tomorrow.

This is Gemini Control 52 hours 32 minutes 2 seconds into the flight of Gemini 12. You heard that conversation between the Cap Com - correction - between the Hawaii tracking station and Gemini 12, separation maneuver is complete, that is to separate it from the general vicinity of the vehicle. Purge was normal. They have stowed the eclipse film pack. They were advised to use asmuch water as reasonably possible during the meal preparation. Whereupon Astronaut Lovell said "I have heard that before". The L-band beacon is off, computer is off, they are going to power down. They have been given the okay to power down. Astronaut Lovell indicated that he felt they had enough fuel to accomplish tomorrow the S-51, T-2 and D-10 experiments. He indicated that probably would best be done through rate command. He said it would be a little expensive on gas, but he was then advised that they have plenty of fuel to go with. He was also questioned as to the possibility of rerendezvous and he replied in the affirmative. So that will be determined this evening for an update on the flight plan for tomorrow's activities. We are going to stand by at the Rose Knot tracking ship and Tananarive for a final crew status report at 52 hours 33 minutes 36 seconds into the mission, this is Gemini Control.

END OF TAPE

This is Gemini Control 52 hours 50 minutes 2 seconds into the mission of Gemini XII. The spacecraft is presently coming up on the acquisition point with the Rose Knot tracking ship off the coast, correction, off the west coast of South America should acquire at 32 seconds past the minute some 10 seconds from now. We will stand by for what ever the crew status report passes between the Rose Knot and the Gemini XII crew before their sleep period. We are standing by now.

RKV is here Gemini 12 and agena

RKV

RKV Delta P lights are on and it looks like he is powered down.

HOU Roger.

RKV the picture is off and aligned. Disregard, it was off the .....

HOU Okay, the up grade of plus 5 degrees pitch is ..... Pitch position gyro 5 1 degrees. Did you copy?

CSQ Roger, stand by. We do not have any indication that .....

HOU Say again, the agena guys weren't copying that.

CSQ Say again.

HOU The Agena guys weren't copying that, your transmissions you can give it to them post pass.

S/C Guess you're right,

CSQ Say again Bill.

S/C Set your horizon sensors off to real low.

Roger.

This is Mission Control. It does not look like we will have any crew conversation over the Rose Knot. It appears that the spacecraft is powered down for their sleep period. They did get a go ahead to power down for the sleep period from Hawaii. We will have entered our sleep period therfore from the time we approved they should enter it from the Hawaii tracking station some ten to twelve minutes ago. The black team is now off duty, Gene Kranz is flight director on the white team and is now on duty in the MCC. Pete Conrad is still Cap Com on duty here until midnight. At 52 hours 53 minutes 26 seconds in to the mission of Gemini XII this is Gemini Control....

END OF TAPE

This is Gemini Control 53 hours 33 minutes 31 seconds in to the mission of Gemini 12. We originally reported there would be no more voice contact with the astronauts from the time they were given an okay for a sleep period, however, we did have some reporting in from the crew and the final reporting was over Tananarive remoted with astronaut Conrad here in the control center and we bring you a tape of that status report now.

Tananarive remote

HOU Tananarive go remote

TAN Tananarive remote.

HOU Gemini 12, Gemini 12, Houston through Tananarive over.

S/C Roger , Houston 12 here.

HOU Three quick items we'd like you to leave cryo quantities switch in the H2 position tonight. I would like a PQI reading please. And we weren't quite clear about whether you ate meal 3 Bravo today in addition to 3 Alpha and Charlie, over.

S/C PQI 3 4 percent.

HOU Roger, copy 24 percent

S/C Negative, 3 4 percent. 3 4 percent

Hou Roger, 34 percent.

S/C And we're consuming 3 Charlie at this time.

HOU Roger, did you consume 3 Bravo for today.

S/C Yeah, we chewed 3 bravo too.

HOU Ah, that's good boys, thank you very much and Good Night.

This is Gemini Control (two B pumps is right though) Tananarive LOS

This is Gemini Control 53 hours 35 minutes 14 seconds in to the Mission of Gemini XII, you heard that final recap over Tananarive with astronaut Conrad at the Cap Com here in the Control Center. We are now in a sleep period. The sleep period will terminate at 61 hours in to the mission or roughly 7 and 1/2 hours from this time. The spacecraft is powered down, the apogee is 162.1 nautical perigee 142.8 nautical miles, the OAMS system fuel is holding at 34 percent which is quite reasonable quite good. At 53 hours 53 minutes 56 seconds in to the mission of Gemini XII this is Gemini Control....

END OF TAPE

This is Gemini Control 54 hours 8 minutes 31 seconds in to the mission of Gemini XII. The spacecraft is just passing out of the acquisition area of the Hawaii tracking station and the last word from Hawaii is that the spacecraft is "Go" all the way on systems. This is taken from telemetry readout. We have had no voice contact with the astronauts they are sleeping. They will be awakened in about 7 hours. At 54 hours 8 minutes 57 seconds in to the mission, this is Gemini Control.

END OF TAPE

This is Gemini Control, 55 hours, 3 minutes, 33 seconds into the Mission of Gemini 12. The position of the Gemini 12 spacecraft during revolution number 35 is approximately 2 or 300 miles west of India. The Coastal station tracking ship should acquire 55 hours, 17 minutes, 21 seconds. The spacecraft is trailing the Agena vehicle by 37 nautical miles. The sleep period started at 53 hours and will continue through 61 hours. According to our surgeon, the crew of Gemini 12 is not asleep as of 54 hours, 45 minutes into the mission. However, they are resting. He anticipates them to go to sleep at any time, possibly on the next readouts that we will get from Coastal station that will be indicated. The heart rates are for Lovell 74 per minute, Aldrin 74 per minute. Respiration rate - Lovell 16 per minute, Aldrin 18 per minute. Water intake is good. They are both well hydrated, eating all meals as scheduled - correction - they have eaten all meals as scheduled. The surgeon is well satisfied with their condition at this time. At 55 hours, 4 minutes, 59 seconds into the mission of Gemini 12, this is Gemini Control.

END OF TAPE

Tape 197

This is Gemini control, 56 hours 3 minutes 34 seconds in to the mission of Gemini XII. The position of the Gemini 12 spacecraft is currently approaching the west coast of South America. The Rose Knot tracking ship now has acquisition of the spacecraft and will have for some 4 minutes more. The apogee of the spacecraft is 162.2 nautical miles perigee 143 nautical miles. Coastal Sentry reports at 55 hours 24 minutes 30 seconds in to the mission some 40 minutes ago, that both astronauts are asleep. The sleep period started at 53 hours in to the mission. It will end 61 hours in to the mission. At 56 hours 4 minutes 25 seconds in to the flight of Gemini XII, this is Gemini Control.....

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/13/66, 11:50 PM CST

This is Gemini Control, 57 hours, three minutes, 31 seconds into the mission of Gemini 12. The Gemini 12 spacecraft at this time is just past the east coast of China. The Coastal Sentry has lost signal approximately three minutes ago. At that time, they reported the spacecraft was go. They had no voice communication. However, they did have telemetry. Heart rate on Astronaut Lovell stood at 50 beats per minute. Aldrin -- 56 beats per minute. Respiration rate -- Lovell -- 13 beats -- correction, 13 per minute; Aldrin -- 11 per minute. The weather in the prime West Atlantic recovery area forecasts for tomorrow is good. Fifteen knot winds from the northwest. Five foot swells. Four foot waves. 2,000 foot scattered to broken. The weather in the prime area for Tuesday also looks good. In the West Pacific, Mid-Pacific and East Atlantic areas, the weather is anticipated to be acceptable for both Monday and Tuesday, Tuesday being the planned landing time. At 57 hours, four minutes, 52 seconds into the mission of Gemini 12, this is Gemini Control.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/14/66, 12:50 AM CST

This is Gemini Control, 58 hours, three minutes, 31 seconds into the flight of Gemini 12. The position of the Gemini 12 spacecraft is presently over Africa in the 37th revolution. Coastal Sentry should acquire 58 hours, 28 minutes, 17 seconds or 24 minutes from now. We have had no voice contact with the astronauts. None was planned. Gemini 12 has been in a sleep period for some five hours and five minutes. They now stand at two hours, 56 minutes roughly to wake-up time. Flight Director Gene Kranz and the controllers here at the Control Center are updating tomorrow's flight plan, which should include the second and last stand-up EVA -- extravehicular activity; the D-10 ion sensing attitude control experiment; the S-51, sodium vapor cloud photographic experiment; the S-29, Libration region photography experiment; and also the T-2, manual navigation sightings of celestial bodies. One celestial body to be sighted in the T-2 experiment will be the star -- first magnitude star Betelgeuse. It's interesting in that this star is 200 million miles in diameter. That's some 14 million miles larger than the diameter of the earth's orbit around the sun. Gemini 12 now trails the Agena some 71 miles. It will gradually fall farther and farther behind. At 58 hours, five minutes, 34 seconds into the mission of Gemini 12, this is Gemini Control.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/14/66, 1:50 AM CST

This is Gemini Control, 59 hours, three minutes, 31 seconds into the mission of Gemini 12. The Gemini 12 spacecraft is approaching the west coast of Africa. The Rose Knot tracking ship should have acquisition by telemetry in approximately seven minutes. We have had no voice contact, as was expected for some while now. The sleep period is now standing at six hours and five minutes. It's one hour, 56 minutes to wake-up time. Heart rates are Lovell -- 46, Aldrin -- 49. Respiration rates -- Lovell -- 14, Aldrin - 11. These readings were taken from the last pass over the Coastal Sentry tracking ship. At this time in the mission, all goes well with Gemini 12. This is Gemini Control at 59 hours, four minutes, 31 seconds into the mission.

END OF TAPE

This is Gemini Control, 60, 3 minutes, 32 seconds into the mission of Gemini 12. The position of Gemini 12 is over the east coast of China. Coastal Sentry has just acquired. We have no voice contact, nor is any planned. The sleep period now stands at 7 hours and 5 minutes. It should be approximately 56 minutes to wakeup time. An updated flight plan for today's activities, should be coming up very shortly. We are standing by for it. We anticipate we will have the second standup EVA, we will have the D-10, the ion sensing attitude control experiment, the S-51, sodium vapor cloud photography experiment, the T-2, manual navigation sightings of celestial bodies experiment, and the S-29, libration regions photographic experiment. The weather in the prime landing area in the west Atlantic is considered to be good for today with 15 knot winds from the northwest, five foot swells, four foot waves. The ceiling is anticipated to be 2000 feet, scattered to broken. Tuesday also looks good. It looks as good as Monday or better. The weather in the east Atlantic, west Pacific, and mid-Pacific landing areas, secondary landing areas is also acceptable. At 60 hours, 5 minutes, 11 seconds into the mission of Gemini 12, this is Gemini Control.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/14/66, 3:32 A. M. CST

Gemini Control Houston at 60 hours, 46 minutes now into the flight of Gemini 12. Jim Lovell and Buzz Aldrin are now in their 38th revolution, the tag end of their 38th revolution. They're nearing acquisition with the Rose Knot Victor. We expect the crew to be awakened at this time and we'll stand by for any conversation that will pass between the Cap Com aboard the Rose Knot Victor and the Gemini 12 flight crew. Standing by now this is Gemini Control.

RKV	Gemini 12, RKV.
S/C	RKV, 12.
RKV	Good morning.
S/C	Is it morning already?
RKV	Well, it's about that time. It's around, oh, 1:15 in the morning here.
S/C	Okay, we'll believe you. Okay.
RKV	We'd like you to turn your X-Ray and beta off at this time if you would.
S/C	All right.
RKV	And you can start a fuel cell purge at your convenience, 2 then 1.
S/C	Fuel cell purge, 2 then 1.
RKV	Give us a mark when you start, please.
S/C	Starting fuel cell purge now.
RKV	Roger, copy. Okay, we'll just talk back and forth here a little bit while you're purging.

RKV On this pass you'll be getting a flight plan update over Canary, and suggest you start your eat period as soon as you leave us here, and be advised that during the night your spacecraft looked real good on the ground.

S/C Sounds good. We'll start breakfast and standing by for the flight plan update over Canary.

RKV Okay, and also they'll probably be updating you on the phase adjust at that time.

S/C Roger.....

RKV What did you say, again, 12?

S/C I was wondering if that was for another eclipse.

HOU RKV, Houston Flight.

RKV Go ahead, Flight.

HOU Tell them that what we're going to try to do today and we'll start updating them over Canary, is try to get some of the high priority items done. To start with we're going to do S-51 this morning.

RKV Okay.

HOU Send us a Gemini Bravo.

RKV 12, they're going to be updating you over Canary as to some of the high priority items this morning and get ready for the S-51.

S/C Roger.

HOU RKV, Houston Flight.

RKV Go ahead, Flight.

HOU Did you get the X-ray off, the beta off?

RKV That's the first thing we told him. I'll confirm it with him.

HOU Okay. He got it all.

RKV Say again.

HOU He confirmed it.

RKV He gave me a roger when I told him to turn it off.

HOU Roger.

RKV Tape dump complete.

(PAUSE)

Gemini Control Houston. We're still in our pass over the Rose Knot Victor. There's no conversation going on at the present time. The Gemini 12 crew is probably involved in their fuel cell purge.

RKV Could you go to cryo switch to O_2, please.

HOU Don't forget your pumps, RKV.

RKV And would you turn your A pumps on at this time, both primary and secondary.

RKV Okay, would you switch your cryo switch to O_2 and leave it there, please.

RKV He has his A pumps on, Flight.

HOU Roger.

RKV Okay, 12, you're just about our LOS. We'll see you next pass around.

S/C Roger.

HOU RKV from Flight. A Bravo Gemini LOS.

RKV Say again, Flight.

HOU Gemini Bravo at LOS.

RKV Roger. We have LOS of both vehicles. Both vehicles are go.

Gemini Control Houston, 60 hours, 55 minutes now. We've just had loss of signal with the RKV. The next station to acquire will be Canary. This is at 61 hours, seven minutes into the mission, and over Canary the Cap Com there will pass on a flight plan update. Starting over Canary the Gemini 12 crew will power up their platform. This is scheduled to take place at 61:07. At 61:47, phase adjust maneuver, a small maneuver of some 5.5 feet per second retrograde is planned. And at 62:23 over the RKV, we'll have a crew status report. 62:31, over Antigua, a flight plan update and a planned landing area update. At 62:40, we'll start our first pass for the S-51, Sodium Cloud Photography. At 63:15 through 63:48, we'll have the T-2 experiment, Mode A, Sequence 1. The T-2 is the Space Navigational Sightings Experiment utilizing a space sextant, handheld. This will be done with the helmets and gloves off and the stars to be sighted with the sextant are Betelgeuse and Rigel. At 63:50, the Gemini 12 crew is scheduled to start their EVA preparation for their second standup EVA. At 64:15, the crew will start their second pass on the S-51 experiment. 64:30 through 64:50, the crew will be involved in EVA preparation. 64:50 we're scheduled to depress the spacecraft and from 64:50 through

65:40 the standup EVA is scheduled. At 65:40 the hatch is scheduled to be closed and repressing the spacecraft to begin. At 60 hours, 58 minutes now, this is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 61 hours, 6 minutes into the flight of Gemini 12 at this time. The Gemini 12 spacecraft with its crew, Command Pilot Jim Lovell and Pilot Buzz Aldrin, is now approaching acquisition with Canary. The Canary station will pass up the flight plan update to the crew. We're acquiring now, so we are standing by.

CYI TM solid, Gemini and Gemini is go.

Gemini 12, Canary Cap Com.

S/C Good morning there, Canarys, 12 here.

CYI Good morning. How are you this morning?

S/C That was a short night.

CYI Okay. Got a couple of bits of info for you here. First of all we're setting up the phasing maneuver because we were not able to burn the Agena last night and so we are giving you the phase maneuver to set up the position for tomorrow.

S/C Okay.

CYI And I have the phasing maneuver when you are ready to copy.

S/C Ready to copy.

CYI Okay. Purpose is phase adjust GETB 61 47 47, Delta V 5.5, burn time 09 second, yaw 060, core 25, 90055, core 26, 27 all zip. Thrusters forward, maneuver retrograde. Over.

S/C Roger, understand, phase adjust maneuver GETB 61 47 47, Delta V 5.5 feet per second, duration 9 seconds, yaw zero, pitch zero, address 25 - 90055, address 26, 27 - zeros, forward thrusters, maneuver retrograde.

CYI Affirmative.

S/C Okay.

CYI I've got a notal update for you now.

S/C Roger, go ahead.

CYI Okay, time 61 00 58, rev 39, 40.9 degrees west, right Ascension. 10 + 36.

S/C Roger, would you give me the degrees again?

CYI 40.9 west.

S/C Roger.

CYI Okay, one other item here. The Agena is out of ACS gas so we won't be maneuvering it any more.

S/C Sorry about that.

CYI Okay, I've got a flight plan update for you now.

S/C Roger, go ahead.

CYI Okay, 61 07, power up the platform, 61 00 to 62 15 eat period. 61 30 align platform. And at 61 47 47 the phase adjust maneuver that I gave you. At 62 23 at the RKV we'll take a crew status report. At 62 31 at Antigua, they'll give you block 7 PLA update and also your S-51 update. And 62 46 S-51, first pass. At 63 14 43 sunset, T-2, load A, sequence 1.

63 50 to 64 15, start EVA prep. At 64 05 have an S-51 update, 64 21 S-51 second pass, 64 30 continue EVA prep, at 65 17 56, will be your EVA sunrise time.

S/C Roger, say again 65 17 56?

CYI That's affirmative. EVA sunrise time.

S/C Roger.

CYI And at 66 26 at Carnarvon, they'll give you another flight plan update and at 67 15 end of post-EVA period. That's the end of the flight plan update.

S/C Roger, understand.

CYI And your systems are looking real good down here.

S/C Roger, let me go over a couple that I'm not too sure of. 63 14 14 was sunset for T-2?

CYI Negative. 63 14 43.

S/C 14 43.

HOU Kano go remote.

CYI We've got about a minute to LOS, here, 12.

S/C Roger. I have that update.

HOU Kano go remote.

KNO Kano is remote and we have acquisition.

HOU Gemini 12, Houston Cap Com through Kano.

S/C Roger, Bill.

HOU Morning. Say, Jim, for your second standup EVA we'd like for you to shoot some pictures after sunrise of the star field you took in the night-time if you think you have time for it. How do you feel about that?

S/C You want us to take some pictures after sunrise of the star fields we took during the night, is that what you said?

HOU That's correct. We can give you some pointing commands if you're agreeable and if you are ready to copy.

S/C Roger. We're ready to copy. We'll see what we can do about it.

HOU Well, let me give you these and give you a chance to think about it. In your hardsuit checklist for your sunrise pointing, the sun will be yaw 47 degrees right, on the horizon. Okay, for your post-sunrise pictures, at sunrise + 7 minutes, that's at 34 minutes on the elapse timer, we'd like you to pitch up 125 degrees. 125 degrees up, yaw 20 degrees north. We'd like you to take several one second photographs. Taking care to keep the sun off the camera and off the -- any part of the spacecraft the camera might see. Another note we have for you is for your night stars, we'd like for you to stress Orion and possibly work down in the regions toward Gamma Velora.

S/C Okay.

HOU Could you tell us if you have any water stored in bags on the spacecraft at this time?

S/C We just started preparing breakfast so we do have water and food in one meal.

HOU Okay, mighty fine. We just wanted to make sure you didn't have any bags with water in them when you depress the cabin.

S/C Oh. No not this time.
Houston, 12 here. We pitch up 125 and yaw to the north. That's a yaw first, pitch?

HOU Negative. Pitch up and then yaw and we are assuming you're having the camera on the S-13 bracket this time.

S/C Roger, understand.

HOU Okay, think that over if you think you could swing it; it would give us some pretty good data here.

S/C Okay, we going to have two other platform updates?

HOU That's affirmative.

S/C Okay, why don't we get a pointing command on the eight ball ...?

HOU That's what this is. That's on the eight ball, 125 degrees up.

S/C Okay, then there must be a yaw first and then pitch.

HOU Standby.
Okay, we'll have to double check that and give you some eight ball readings over ...

END OF TAPE

CYI Okay, we'll have to double check that and give you some late followings over the next pass.

S/C Roger.

CYI You've got 30 seconds to LOS, Gemini 12.

CYI LOS, LOS.

Gemini Control Houston, 61 hours, 18 minutes now into the flight of Gemini 12. The phase adjust burn passed on to the crew over Canary - this is a preliminary maneuver to establish a standoff position for tomorrow between the Gemini 12 spacecraft and its Agena target vehicle. Initially, it had been planned to burn the Agena following separation for this maneuver, but this was not possible and it was not possible because we were out of Agena ACS gas. The usage of Agena ACS gas was heavy because the Agena was loaded with propellant since we made no PPS burn for high apogee in this mission as had been originally planned. At 61 hours, 19 minutes into the mission now, our next station to acquire will be the Coastal Sentry Quebec. This will be at 61 hours, 41 minutes, 42 seconds and this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 61 hours, 41 minutes into the flight of Gemini 12 at this time. Command Pilot Jim Lovell and Buzz Aldrin are approaching acquisition with the Coastal Sentry Quebec. We expect acquisition momentarily with the Coastal Sentry Quebec in the western Pacific and we're standing by now for that pass.

CSQ	AOS Agena.
HOU	Roger.
CSQ	Flight, CSQ.
HOU	Go ahead.
CSQ	We've got telemetry solid on Gemini.
HOU	Roger.
CSQ	Spacecraft is go.
HOU	Roger.
CSQ	And we got the Delta P lights and I've got AOS on Gemini.
HOU	Roger.
HOU	CSQ Cap Com, AFD. Would you give us contingency Charlie on Agena?
CSQ	Roger.
HOU	CSQ, Houston Flight.
CSQ	Flight, CSQ.
HOU	Okay, Bill, thanks for staying up. This data looks like the fuel cells don't look too bad.
CSQ	Sure looks like we've got a good spacecraft.
HOU	Yeh, we'll see you in the morning.

CSQ Okay.

END OF TAPE

Gemini Control Houston, 62 hours, 7 minutes into the flight of Gemini 12 at this time. Jim Lovell and Buzz Aldrin are currently passing over the south Pacific in their Gemini 12 spacecraft. We've been out of contact for awhile since they're passing well to the south of both Canton and Hawaii tracking stations. Meanwhile in Mission Control Houston, Mr. Francois Pene, a representative of the French government, is actively involved in coordinating activities leading up to the Centaur launch this morning from Hammaguir, Algeria. The sodium rocket will be launched in support of the S-51 photographic experiment. Here the pilot takes pictures of the sodium trail using his Maurer 70 mm camera with a special filter and film for yellow sodium light. During this time, the command pilot holds attitudes and records times of picture taking. Both Jim Lovell and Buzz Aldrin will be wearing special goggles during this experiment. The purpose of the experiment is to measure by photographic techniques, the wind velocities in the upper atmosphere. This is accomplished by ejecting a sodium cloud from the Centaur sounding rocket and the pictures taken of the clouds measured from about 60 to 90 nautical miles. The rocket, when launched from Hammaguir, Algeria, will eject a cloud from about 37 to 97 nautical miles. This cloud will be a very faint yellow or almost whitish cloud and when we first see it, it should appear as an inverted teardrop. As the spacecraft is

swung around to the side, it should appear as a kind of mushrooming horseshoe. Now one point worth mentioning here the Earth will be about 250 times brighter than the cloud. We are currently looking at a Centaur liftoff time of 62 hours, 41 minutes, 58 seconds GET. Our T-0 time for the experiment or the start of picture taking is at 62 hours, 46 minutes, and 8 seconds, GET. A little bit about the Centaur rocket. It is about 20 feet long, it has a body diameter of some 11 inches. The maximum launching weight is 1080 pounds approximate. And performance speed at approximately 70,000 feet would be 3,378 miles per hour. This is Gemini Control Houston as the Gemini 12 spacecraft continues its quiet pass across the south Pacific, and at 62 hours, 10 minutes, Gemini Control Houston.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/14/66, 5:09 A. M. CST

Gemini Control Houston, 62 hours, 23 minutes now into the flight of Gemini 12. The Gemini 12 spacecraft is approaching acquisition with the Rose Knot Victor. This is the Rose Knot Victor located - the ship located off the western coast of South America. This will be the last pass of the morning over the Rose Knot Victor tracking station. We expect a crew status report at Rose Knot. We're standing by now for acquisition and this is Gemini Control.

RKV	Gemini 12, RKV.
S/C	Gemini 12.
RKV	Roger, stand by for your crew status report.
S/C	..... is 1914 ..... A04, 8 point....
RKV	In both....
S/C	Yes, both....
RKV	Roger.....
S/C	Roger, we slept about 5 hours...
RKV	..... quality of the sleep period.
S/C	Fair.
RKV	Fair. Roger, I have a PQIA when you're ready to copy. You ready?
S/C	Stand by. Go ahead.
RKV	Area 41 dash Alpha Charlie, 63:48:53, 20 + 49, 26 + 26. Area 42 dash 1 Bravo, 65:15:35, 20 + 49, 26 + 27. Bank angles for both areas, roll left 85, roll right 95. Weather in both areas,

good. No ..... required. Did you copy?

S/C Roger, we copy.

RKV I'll get the rest to you a little bit later.

S/C Roger. Do you want the status of this phase adjust burn?

RKV Okay, go ahead.

S/C Roger, well, it was very poor. By the time we got the platform aligned - we did not get the platform aligned by the time we burned. We attempted to burn but .....We did not have enough time to get the platform aligned by the time we powered up. Everytime we either pitched or yawed we got left roll because it ..... We got off at rate command in high orbit and then the diverge... by using maneuver thrusters until we get all the rates damped out and then we can then align the platform. This requires quite a bit of time and to keep your flight planning any .....will have to be turned over to ....time to do it. We also used about 5 percent of our fuel to align the platform this morning - 4 percent, from 34 to 30 percent.

RKV Roger, copy. 34 to 30 percent. On platform alignment.

HOU How long did it take?

RKV How long did it take? Did you figure? How long did

it take to align it?

S/C — About - I'd say about 25 minutes to 30 minutes just to stay aligned, to get the position.

HOU — Roger, understand.

S/C — ..... gave us the time to align the platform after ..... and unfortunately we were just going into darkness. At that time it was a very good hack and .... to get the thing started but the attitude problem caused us to drift off.

RKV — Roger, they'll pick the rest of this information up with you at the next site. We're just about at our LOS now.

S/C — Roger.

HOU — Send us a main, RKV?

RKV — Gemini main?

HOU — Affirmative.

RKV — Okay, did you copy all that information, Flight?

HOU — Affirmative. And also a Gemini Bravo.

RKV — Gemini Bravo. We've had LOS both vehicles.

Gemini Control Houston, 62 hours, 29 minutes now. The next station to acquire will be Antigua at 62 hours, 31 minutes into the mission. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 62 hours, 31 minutes into the mission now. We are standing by for acquisition at Antigua.

S/C Okay, Houston, 12 here.

HOU Roger, I have your S-51 update.

S/C Roger.

HOU Roger, S-51. 62 56 08, yaw 28 degrees north, pitch 12 degrees down. GMT 11 32 41. Copy?

S/C Roger, understand at 62 46 08, S-51. I have the yaw and pitch, but what was that last?

HOU I understand you want a GMT time acq, is that correct?

S/C No, we want a Delta T, when to take pictures if we don't see it.

HOU Roger, start at that time to take pictures. We'd like you to take, besides the sequence camera, 12 exposures with the Maurer.

You understand, 12?

S/C Roger, Houston. Twelve Maurer exposures.

HOU Roger. That's whether you see the cloud or not.

And standby for a GET time acq. At 63 33 10.

1 Mark. 62 33 10.

S/C Roger.

HOU I have your S-51 second pass when you are ready to copy.

S/C Okay.

HOU 64 20 59. Yaw 12 degrees north, pitch 11 degrees down. We'd like you to take 6 exposures with the Maurer. Over.

S/C Roger. I have that.

HOU And with respect to your standup EVA post-sunrise stars. You ready to copy?

S/C I want to get the last part of that.

HOU Roger, I have a pointing angles for your post-sunrise EVA stars. Over.

S/C Roger.

HOU Okay, that's yaw 160 degrees north, pitch 40 degrees up. Pointing is not critical.

S/C I'm glad you said that because its going to be list about 30 degrees.

HOU Its going to be what?

Roger, that's fine. Just spray the general area with exposures if you think you have time.

S/C Is there any pre-sunrise stars?

HOU Pre-sunrise stars. We'd like for you to concentrate on Orion and in the area from Orion to Gamma Velorum. Would you like pointing for that?

S/C It might be helpful if we're to get to the sun at sunrise, we'll need a good to fair amount of time to get down there. Especially hardsuit with our attitude system that's not working too well. How about giving us a little rundown on the priorities.

Which is more important?

HOU Orion is first priority. If you have time work your way down to Gamma Velorum. Take as many pictures as you think you have time for. We'll give you an Orion pointing command some station prior.

S/C Roger, understand. I meant the priority between Orion, Gamma Velorum and the sunrise pictures.

HOU Sunrise is number one priority.

S/C Yeah. That means we've got to be there.

HOU That's affirmative.

Thirty seconds.

Gemini 12, if you recheck your biomed circuit breaker.

S/C That's affirm.

HOU Thank you and we're at LOS.

Gemini Control Houston, 62 hours, 37 minutes now into the flight of Gemini 12. The next station to acquire will be Canary. This is at 62 hours, 40 minutes, 46 seconds into the flight. And during this pass, the Gemini 12 crew is expected to perform the S-51 experiment. The sodium cloud photography experiment during this pass. So at 62 hours, 38 minutes now, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 62 hours, 40 minutes now into the flight of Gemini 12. Jim Lovell and Buzz Aldrin are approaching acquisition now at Canary. It is during this pass, they are expected to perform the S-51 experiment. We are standing by now. Standing by for acquisition with Canary.

CYO Gemini 12, Canary Cap Com standing by.

Gemini Control Houston. Our countdown clock shows 46 seconds now for the liftoff time of the French Centaur rocket and we are standing by.

Gemini 12, Canary. Sending you a TX.

We show T-O and we are standing by.

We have confirmation of Centaur liftoff.

CYI Houston Flight, Canary Cap Com.

HOU Yeah, Canarys, the launch went, looks nominal so far.

CYI Roger. I'll relay that to 12. Gemini 12, Canary Cap Com.

S/C Go ahead.

CYI Okay, S-51 is on its way.

S/C Okay.

Gemini Control Houston. The French confirm a nominal launch time right on the money.

S/C Canarys, 12.

CYI Go Canary -- Go, 12.

S/C We never got a Delta T as to when to start taking pictures and we -- we didn't see the rocket.

CYI Say again, you want a Delta T for what?

S/C We want a Delta T after the acquisition in time to start taking pictures, but we don't see it. They never gave it to us.

CYI Okay, standby one.

HOU Start at the acq time.

CYI Say again?

HOU Start at the acquisition time, that we gave him.

CYI Okay, 12, Canarys. They want you to start at the acquisition time that they gave you.

S/C Okay, thank you.

The Gemini 12 crew should have begun their photography some 10 to 15 seconds ago.

CYI Houston Flight, Canary Cap Com.

HOU Go ahead.

CYI Okay, he's in position at this time for the S-51.

HOU Roger.

CYI And the tape dump is complete.

HOU Roger.

Canary, send us another A, Gemini.

CYI Roger.

END OF TAPE

No conversation with the crew. They are no doubt busy at this time.

CYI Gemini 12, Canary Cap Com. About one minute to LOS, we'll be standing by.

S/C Roger. No joy.

CYI Roger, understand. Did you copy that, Flight?

HOU Copied.

CYI Houston Flight, Canary Cap Com. We've had LOS both vehicles and both vehicles were go.

HOU Kano go remote.

KNO Kano's remote. We have acquisition.

HOU Gemini 12, Houston Cap Com, through Kano and standing by.

S/C Roger, Houston. We took the ...

HOU Roger, understand you took the photographs any way but no joy.

S/C That's affirmative.

HOU Okay, nice try.

HOU We're right on the ragged edge of Kano here. We've got about one minute to LOS.

KNO Kano has LOS.

Gemini Control Houston, 62 hours, 52 minutes now into the flight of Gemini 12. We've just had LOS at Kano. During our next revolution over the Sahara and at about 64:15 ground elapsed time, the time passed

to the crew by Bill Anders at Antigua; this is the time that our Gemini 12 crew will again attempt to photograph the Sodium Cloud which was launched in the French Centaur rocket over the Sahara. 62 hours, 52 minutes, 43 seconds now, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 63 hours, 23 minutes into the flight of Gemini 12 at this time. Jim Lovell and Buzz Aldrin are now in their 40th revolution in the flight of Gemini 12. The spacecraft is currently clocking an apogee of 158.3 nautical and 143.3 nautical for a perigee. The Gemini 12 is now passing over Woomera. We sidestepped Carnarvon on this pass. We'll have no voice contact with the spacecraft although we are receiving data from the spacecraft on the ground. At this time, Pilot Buzz Aldrin should be involved with the handheld sextant experiment. This is the T-2 experiment, space navigational sightings. Aldrin in the case of this experiment, takes sightings and marks the times for the sightings. The Command Pilot is busy recording the data and controlling the spacecraft attitude. They are scheduled to perform this experiment at this time with the helmet and gloves off. At 63 hours, 24 minutes, 40 seconds, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 63 hours, 50 minutes into the flight of Gemini 12 at this time. The Gemini 12 spacecraft is still making its southerly pass over the Pacific, and at the present time, the French are counting down a second rocket. This was initially scheduled as a backup rocket. At Hammaguir, Algeria, a second rocket to be launched in conjunction with the S-51 sodium cloud experiment. The French only a short while ago, proposed the launch of their backup rocket in this endeavor. We expect that the crew will receive an update regarding this during their pass over Antigua. At 63 hours, 51 minutes, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 64 hours 3 minutes now into the flight of Gemini 12. Jim Lovell and Buzz Aldrin now are nearing acquisition with Grand Turk, Grand Turk station. No doubt at this time they are heavily involved in their preparations for their second standup EVA. Also during this pass, during this pass over Grand Turk and Antigua we expect the crew to receive an update on S-51. Standing by now for conversation with the Gemini 12 crew. This is Gemini Control Houston.

HOU Gemini 12, Houston Cap Com, over.

SC Roger Houston, Gemini 12.

ANT AOS Antigua.

SC Houston

HOU Roger, Houston. The spacecraft looks good, they have an S-51 info for you. The French are going to launch a second rocket. Your acq times are good for the second half. We'd like to have you start your photos at your acq time and take eight exposures with the Maurer. Over.

SC Roger, understand. (garble) How about putting back the EVA one rev so it will give us a little more time to get squared away?

HOU I understand you are having trouble in EVA prep and your requesting us to consider putting the EVA back one rev, is that correct?

SC Houston, I'll say again, we're running into a time difficulty due to the petroleum system and the fact that we've got a - can't really control the spacecraft plus do everything else and we'll try and get the S-51 but it might take us a little longer to get the EVA ready to go and we'd much rather take our time and do a good job then to rush into it and maybe open up hatch towards the end of the night period.

HOU Gemini 12, Houston, roger. You can plan your EVA one rev later. We'll update your times when we have a chance.

SC Roger, Houston. One more discretion, the only way we can control yaw, right yaw, is with No. 12 maneuver thruster. Now, what is your feeling on doing this EVA?

HOU Roger, we'll think that over. Okay?
Gemini 12, Houston. We'd like for you to do a 30-second 02 purge on both sections now, and would you check your delta P circuit breaker before you do it?
Do you copy?

HOU Gemini 12, Houston Cap Com do you have your delta P lights on?

SC That is affirmative, their on.

HOU Roger, copy. We show them now on the ground. I'd like to give you one more block PLA update if I could, if you are ready to copy.

SC Houston you are coming in very weak, we can barely read you.

HOU Roger, we'd like to give you one more PLA update.

SC Roger.

HOU Roger. 43-1 alpha, 66 50 05, 20 + 49, 26 + 23, copy?

SC What was that area number again Houston?

HOU Area 43-1 alpha.

SC Roger, 43-1 alpha.

HOU That will keep things going for a couple of revs and when we get squared away on a new flight plan we'll give you the rest of them.

Gemini Control Houston, we still have acquisition over Antigua at this time. Presently there is conversation going on in the Control Center. Taking a quick look at updating our EVA plans and we are continuing to standby on this pass.

HOU Gemini 12, Houston Cap Com, over.

SC Roger Houston.

HOU Roger, we are thinking that in order to avoid this yaw problem with the maneuver thrusters

during the EVA, considering the possibilities of holding the Maurer in your hand. How do you feel about that?

SC Well we were just discussing that.

HOU Okay, we'll start our plan with that in mind and when you have a chance to think about it a little bit more let us know.

SC Roger. Bill, when we try align the platform, right now we're in SEF at PLAT, and if we control the range to almost nothing and then go to align, she stays. But if we don't do that, nothing is going to hold in rate command or PLAT or anything, it is just going to go. The only way we can stop it is with maneuver thrusters.

HOU Roger, understand. You think you would develop to high a rate if on EVA?

SC Well I don't know. We could probably do it if we just leave it in platform mode. Now for the T-2 experiment we just completed, we were able to align on the stars by using the maneuver thruster and very carefully using pluse mode. But of course, we won't be able to do that EVA if we can't fire number 12 thruster.

HOU Roger.

FD One minute to LOS

Three minutes to Canary

ANT LOS Antigua

Gemini Control Houston, 64 hours 13 minutes, we've just had LOS with Antigua. The next station to acquire will be Canary at about one minute and 30 seconds from now. As you heard the EVA plan might be revised to move the time back one revolution later. This cropped up during this pass when Jim Lovell indicated to Cap Com, Bill Anders, that he can yaw right by - only by using the number 12 maneuver thruster. This of course will be under discussion in Missinn Control. We are standing by now for acquisition at Canary.

END OF TAPE

HOU Canarys, TM will be on at your acquisition.

HOU Canary Cap Com, AFD.

CYI AFD, Canary Cap Com.

HOU The TM will be on at your acquisition.

CYI Roger, how about the C-band?

HOU Standby.

It's also on.

CYI Okay, and you want us to TX it off, right?

HOU Rog.

CYI Okay, we have TM solid on the Agena. And it's go.

HOU Roger, Canarys.

CYI Okay, we have C-band track on the spacecraft, but no TM.

HOU Roger.

Have you tried the command at all?

CYI That's affirmative.

HOU Still nothing?

CYI Still nothing.

HOU Okay, maybe you better try circuit breakers, I guess.

HOU Canary, from Flight.

CYI Go ahead, Flight.

HOU You say you have no TM?

CYI That's affirmative.

HOU Okay, stand by, let me find out whether the S-51 went. We don't want to interrupt that. Let's see, you have how much pass time you have left? Plenty.

CYI Oh, we've got quite a bit yet.

HOU Okay, standby.

CYI Okay, TM's coming in now.

HOU Roger.

Canary Cap Com, Houston Flight.

CYI Go ahead, Flight.

HOU Okay, it went off okay.

CYI Okay, fine. We've got TM now.

HOU Okay, you might tell him that.

Gemini Control. That was the Centaur rocket.

S/C 12, Canarys.

CYI Roger,.it looks good down here on the ground. The S-51 is on its way and is looking nominal at this time.

S/C Roger.

CYI Sending a TX.

S/C Rog.

(pause)

Gemini Control Houston. We're still over Canary. No conversation transpiring at the moment. No doubt, the crew is very busy with the S-51 cloud photography.

CYI Houston Flight, Canary Cap Com.

HOU Go ahead.

CYI Okay, his attitudes are good for S-51.

HOU Roger.

Send us another Gemini A, please.

CYI Roger.

HOU Send us an Agena main, too. An Agena main also.

CYI Roger.

HOU Canary, from Flight.

CYI Go ahead, Flight.

HOU Okay, they have visual acquisition from the ground of the cloud on this one.

CYI Okay. 12, Canarys. They've had visual acquisition of the cloud from the ground.

S/C Wish we could say the same. That's where we ought to be.

S/C Eight pictures taken. No observations.

CYI Roger, understand. No joy.

Gemini 12, Canarys. One minute to LOS. I need your LNS-51.

S/C We saw no cloud, Canarys. We looked and we had good pointing commands this time, and it's good spacecraft control for a change. Couldn't see

a thing.

CYI Okay.

S/C You know what they say, Canarys. C'est la vie.

CYI Roger, that.

S/C Oh boy. This is what that means.

Que, sara,sara.

CYI We've had LOS both vehicles, Flight.

HOU Roger.

Kano remote.

KNO Kano is remote.

HOU Gemini 12, Houston Cap Com through Kano.

S/C Roger, Houston.

HOU Houston, Gemini 12 you're right on the ragged edge of Kano. We're not reading you.

Gemini Control. We're at the outer ring of acquisition at Kano. We've had no real contact with the crew although we had a momentary contact. We're standing by.

HOU Gemini 12, Houston Cap Com through Kano and standing by.

S/C Roger. Houston, how do you read us now?

HOU Reading you five by. You've got about 45 seconds to LOS.

S/C Roger. We're right on the point that time, Bill.

We sure looked and just goggled all ways, but we didn't see a thing.

HOU Okay, real nice try and we're kicking around doing the EVA in plat mode with a handheld camera.

S/C Roger. One other thing about S-51. There's a lot cloud coverage up there this time and this makes the area a lot brighter.

HOU Understand, thank you.

KNO Kano has LOS.

Gemini Control Houston. 64 hours, 27 minutes now into the flight of Gemini 12. We've just had loss of signal over Kano. As you heard earlier, during our Canary pass, the sodium cloud following the launch of the Centaur rocket was sighted from the ground; however, Jim Lovell advised that it was not seen from the spacecraft. However, he added that he felt that they had good pointing commands for their photography during this particular revolution. The -- however, it was considered very doubtful prior to this experiment that the crew would be able to see the cloud visually, even under optimum conditions. As we had indicated earlier, the desert surface is some 250 times brighter than the sodium cloud. At 64 hours, 29 minutes, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 64 hours, 52 minutes now into the flight of Gemini 12. The Gemini 12 spacecraft is approaching acquisition with Carnarvon station. Carnarvon station in Australia and we're standing by for this pass over Carnarvon.

CRO All systems are go on the Agena.

HOU Roger.

CRO 12, Carnarvon standing by.

S/C Roger.

HOU Carnarvon Cap Com, Houston Flight.

CRO Go ahead.

HOU Okay, check with the crew. We assume he's going ahead with his EVA prep. We'll talk to him over the states concerning the control situation and we'll have a recommendation over the states about EVA.

CRO Okay.

CRO Agena's in track at Carnarvon.

HOU Roger.

CRO And we're showing activity on thrusters 2 and 4. It's either that or he's opening and closing the circuit breaker.

HOU Okay.

CRO 12, Carnarvon. All your systems are go here on the ground. In regards to your control situation

for EVA, we'll talk to you over the states.

S/C Roger, understand.

HOU Carnarvon from Flight.

CRO Go ahead.

HOU You might ask him how the EVA prep is going, as they're progressing on with it.

CRO Okay. How's your EVA prep coming along?

S/C Well, we're working on it, Carnarvon.....

CRO Roger.

S/C We have some camera shuffling to do due to the S-51 experiment.

CRO Okey doke.

(PAUSE)

No conversation with the crew at this time but we're still standing by as we pass over Carnarvon.

HOU Carnarvon Cap Com, Houston Flight.

CRO Go ahead.

HOU Query the crew and see if they can copy 44 dash 1 Bravo and 45 dash 1 Alpha and that will take them quite a ways. We won't have to bother them for awhile then.

CRO Okay.

HOU Ithink we got to that point on the PLA's.

CRO Okay.

CRO 12, Carnarvon. Do you have time to copy two PLA

updates?

S/C — We can take time.

CRO — Okay, if we give you these two it'll keep you updated there for awhile. We won't bug you too much.

S/C — Go ahead.

CRO — 44 dash 1 Bravo, 68:25:41, 20 + 37, 26 +17; area 45 dash 1 Alpha, 70:01:30, 20 + 18, 25 + 56.

S/C — Roger, do you have bank angle?

CRO — Roll left 85, roll right 95.

S/C — Okay, fine.

CRO — Flight, Carnarvon.

HOU — Go ahead.

CRO — Okay, we show them in platform mode and in that mode we're getting considerable activity on that thruster no. 4.

HOU — Yeh, it's probably not getting anything out of it. It keeps trying.

CRO — Rog. One minute to LOS, standing by.

HOU — Carnarvon from Flight. We're seeing the same thing over here on that thruster.

CRO — Okay.

CRO — Carnarvon has LOS Agena.

HOU — Roger.

CRO — LOS Gemini. All systems go.

HOU Roger.

Gemini Control Houston. We've had loss of signal over Carnarvon. The crew is still involved in that prepartion for standup EVA and as was indicated to the crew, they will be updated during their stateside pass, regarding their extravehicular activity.

END OF TAPE

Gemini Control Houston, 65 hours, 37 minutes now into the flight of Gemini 12. The Gemini 12 spacecraft is approaching acquisition range with the Eastern Test Range and we are standing by now for conversation that might transpire during this pass. Standing by, this is Gemini Control Houston.

GTI AOS Turk.

HOU Gemini 12, Houston Cap Com, over.

S/C Roger, Houston, 12 here.

HOU Okay, 12, we've been kicking this EVA thing around; we'd like to -- our plan is to have you go EVA in plat mode and for Buzz to hold the Maurer in his hand for the photographs. How does that see to you?

S/C Okay, Houston. You've seen us, but let's go over that. We'll be in SGS plat mode and for Buzz to hold the camera for photographs. Okay, now, here are the problems along that line. If Buzz is to take photographs of the sunrise, he needs a visor. Now, he can take the photographs up until the sun comes up, then of course, he can't look that way any longer.

HOU Okay, be advised you have a 40 degree field of view on the Maurer. You're going to be behind the hatch. The sun will be 47 degrees right,

down 17 degrees. I'm pretty sure that Buzz is going to be in the shade. The question is, will he be able to get the camera looking at the sun?

S/C Well, now that's another question. We don't know just how well we can handhold it, but we'll give it a try. Houston, 12.

HOU Roger, we don't think there is a problem with Buzz and the visor as long as he doesn't look directly at the sun. We think that if he just holds the camera in the general area, he'll be okay.

S/C Roger. What we'd like to do, we're almost prepared for EVA. We'd like to get out and over the hatch in daylight, get squared away, jettison the gear, do the exercise, and go into the night pass all squared away for the photographs. Do you concur?

ANT AOS Antigua.

HOU Roger, will that be this daylight pass?

S/C That's right. And we'll stay that way and when we go into the next daylight, we'll take the sun pictures and then we'll ingress.

HOU Roger. How much longer do you think before you'll be ready for depress?

S/C We have to go through a couple of suit integrity checks and that's about it. I'd say in 15 or 20 minutes.

HOU Roger, stand by.

Gemini 12, Houston, you're go for depress on your option. We would like to do the exercise over a manned site. Either Canarys or Carnarvon. At your choice.

S/C Roger, you prefer over a manned site, roger.

HOU That is affirmative.

S/C We'll get all squared away and then we'll go ahead. We'll check suit integrity checks.

HOU Roger, I'm ready to give you some new times, here, if you're ready to copy.

S/C Stand by.

Okay, go ahead.

HOU Roger, your sunrise time for this coming rev will be 66 47 57. And I say again, the sun will be 47 south, down 17.

S/C Say again that time, please.

HOU Sunrise 66 47 57.

S/C Roger. The sun 66 47 57.

HOU Roger. Now, we'd still like you to try to get the night star photos if possible. Pointing is real loose, you can hold the camera up and just spray the area.

S/C Roger, but you want me to keep -- maintain the spacecraft in the plat mode SEF, is that correct?

HOU That is affirmative. We'd like for you to concentrate on Orion and the area down to Gamma Velorum.

S/C Roger, understand. These are all one-second pictures, am I right?

HOU That is affirmative.

S/C Okay.

HOU If you can, after sunrise, we would like to have you point the camera back 125 degrees, or roughly 30 degrees behind the zenith and take another couple of pictures, or several more pictures, which will pick up about the same star field.

S/C Roger, you understand though that we won't have to be outside to get the sunset to get these -- to get these photographs because Orion will be rising all the time and it'll make it harder for Buzz to take the pictures.

HOU Roger, we understand. You can take the pictures of Orion at any time during the night if you could just turn that camera back and point it back up over Buzz's shoulder, that's over his left shoulder, with the sun off the camera during the day and take several pictures, we'd appreciate it. But it's your option, if you

don't think you have time, don't do it.

S/C Roger. How about some Hasselblad pictures?

HOU Roger, understand Hasselblad. Say again on the Hasselblad.

S/C We've got it all ready to go. We can probably get some of each.

HOU Roger, and be advised that the weather over the States is exceptionally clear today.

S/C Roger. Will we be over that?

HOU It looks like if you're getting out this early, you'll probably have to come on in.

S/C We can stay out if that's okay.

HOU Stand by. We'll mull that over a bit, Gemini 12. Another point, if the Delta P lights bother you for the light -- for the night pass, you can go turn the circuit breaker off.

S/C Okay. That's not a bad idea. I think we will.

HOU Gemini 12, Houston. I say again, if you try the pictures of the stars in the daylight, try keeping the sun off the camera, and possibly have the camera pointed so that it will not see any illuminated part of the spacecraft.

S/C We understand. The stars in the daylight.

HOU Roger.

S/C Roger, the general area is 30 degrees after the zenith, is that affirmative?

HOU Roger, that's valid for about five minutes after sunrise, about 30 degrees after zenith, 15 north to 20 south of track.

S/C Roger.

ANT LOS Antigua.

S/C Maybe somebody can figure out the angles from the sun, if they have it handy here, because actually, the stars will be at a 6th point relative to the sun.

HOU Okay, if you just bring it straight up from the sun to the zenith, about 120 degrees, you'll be in good shape.

HOU Bermuda, remote.

Bermuda, go remote.

BDA Bermuda is remote.

END OF TAPE

SC Houston, 12.

HOU Gemini 12 calling Houston, go ahead.

One minute to LOS.

SC Roger, Houston, 12.

HOU Canary is in 2-1/2 minutes.

SC Understand, 2-1/2 minutes.

It looks like after this one you can call us the litter-bug flight.

HOU Be advised you are at LOS and fading out.

AFD Canary Cap Com, AFD.

CYI Houston, Canary Cap Com.

AFD Roger, when you acquire the Agena you'll have the ACS on,geo rate on, horizon sensors on, it will be configured for 0, 0, 0 and flight control mode 1. They tried to set the thing up to see if they could stabilize it with a little bit of ACS gas that might possibly be remaining in there but they said they didn't have any success.

CYI Okay, we'll take a look at it.

Gemini Control Houston, we've had LOS over Bermuda. The next station to acquire will be Canary and it appears from the discussion that Gemini 12 crew will perhaps make a real-time decision as to exactly when to depress for their second standup EVA. They indicated they were GO for depress. This

would move it up from what the time that we're initially talking about, and this would be at 1 revolution later. So it has become a Gemini 12 crew option. Standing by this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 65 hours, 51 minutes now. We're approaching acquisition with Canary and we're standing by. Gemini Control Houston.

Gemini Control Houston. We're coming up over Canary now. The hatch has not been opened yet and the cabin has not been depressed yet but we're standing by to see what transpires.

S/C Roger, understand. We'll close the hatch after we've taken the pictures.

HOU Canary Cap Com, Houston Flight.

CYI Go ahead Flight.

HOU How do they look?

CYI Okay, looking good so far. They haven't depressed.

HOU Okay. The O_2 pressure up okay?

CYI Roger.

HOU You're go for depress then, huh?

CYI As soon as he finishes his suit integrity check.

HOU Roger.

HOU Canary Cap Com, Houston Flight.

CYI Go ahead Flight.

HOU You see the integrity of the check, send us the decay numbers post-pass.

CYI Roger.

Gemini Control Houston still standing by.

Gemini Control Houston still standing by as we have some two

minutes left in this pass over Canary.

HOU Canary Cap Com, Houston Flight.

CYI Go ahead Flight.

HOU Gemini main and bravo.

CYI Roger.

CYI Okay, Command Pilot's suit is being pressurized at this time. I'm seeing integrity check.

HOU Roger.

CYI Gemini 12, Canary Cap Com. About a minute to LOS. Your suit integrity check is good. You've got a go for depress.

S/C Roger, understand. Go for depress.

Gemini Control Houston. You just heard the Canary Cap Com advise the Gemini 12 crew that they have a go for depress.

HOU Kano go remote. Canary go local.

KNO Kano's remote and we have acquisition.

HOU Gemini 12, Houston Cap Com through Kano and standing by.

S/C Roger, we're just about ready to depress.

HOU Mighty fine. We'll be giving you exercises over Carnarvon.

S/C You'll be what?

HOU You'll be doing the exercise over Carnarvon.

S/C Yeh, okay. I forgot about that.

Gemini Control Houston. The exercise referred to there was the arm lifting activity, lifting the arms to the helmet on the part of Pilot Buzz Aldrin during his extravehicular activity, the second standup EVA. At 66 hours, one minute now into the mission, we're over Kano and we're standing by.

Gemini Control Houston. About two minutes to go on this pass over Kano and we're standing by as the Gemini 12 crew is no doubt quite busy at this time.

HOU Gemini 12, Houston Cap Com. One minute to Kano LOS. Have fun. Be 22 minutes to Carnarvon.

S/C Roger, Houston. We're going down now. We're ... psi.

HOU Roger, understand.

Gemini Control Houston. Gemini 12 advises that their depressing now. They're down to 1/2 psi cabin pressure.

HOU Gemini 12, Houston at Kano LOS. Reading you on VOX.

KNO Kano has LOS.

Gemini Control Houston. We've just had LOS at Kano. The next station to acquire will be Carnarvon. This is at 66 hours, 26 minutes, 40 seconds into the mission or some 20 minutes from this time. The Surgeon advises that heart rates for the crew during this period - this period of depressurization ranged from 50 to 70, which is an

amazingly low figure but considering the heart rate pattern that we've seen throughout this mission it does not come as a surprise. Also, we have witnessed here a real time option exercised by the crew as to the start time of their second standup EVA. Initially, we had planned to pass up a fixed time some revolution later from the ground but in discussing the EVA preparations with the crew, Bill Anders after consulting with Flight Director Cliff Charlesworth, came back and indicated to them that they should go with their option. This they have done. So at 66 hours, 7 minutes into the flight of Gemini 12, this is Gemini Control Houston.

END OF TAPE

Gemini Control, Houston, 66 hours 26 minutes now into the mission. We're approaching acquisition at Carnarvon and we're standing by.

SC That one I think may be illuminating the hatch a little.

SC Right.

SC (garbled)

LOVELL Say again, Orion is up there now, Buzz I'm sure.

SC It was a lovely show of the jettison.

CRO Gemini 12, Carnarvon.

SC Go ahead.

CRO Okay, we're waiting for a little bit of solid sync on telemetry and then we'll have Buzz's exercise started, okay?

SC Okay. Thanks for the DPS burn.

CRO That is to let you know we are here.

LOVELL Take a picture of it Buzz as we head towards it.

SC Carnarvon, 12.

CRO Go ahead

SC Are your batteries - thrusters firing now?

CRO That is negative.

SC We do have a continual firing whenever Buzz moves around in the .....

CRO Okay, we're showing intermittent 3 and 4.

SC That is right, 3 and 4 keep (garbled)

LOVELL When he does the exercise it is really going to open up.

SC Is 4 firing?

SC (garbled)

CRO Well the solenoid is opening, I don't think it is doing much firing.

CRO Okay, 12, anytime you are ready, we are ready for Buzz's exercise.

LOVELL Okay.

ALDRIN One more picture of Orion.

ALDRIN Want to hold the camera?

LOVELL Yea.

ALDRIN Don't touch the (garbled)

SC (garbled)

ALDRIN Okay, I got it.

LOVELL Must have been a circuit breaker Buzz.

LOVELL Firing it again

ALDRIN When you are ready.

LOVELL Okay, I will give you a MARK and you can start whenever you are ready Buzz. Are you all set.

ALDRIN Right.

LOVELL MARK

You aught to get a look at both thrusters Buzz.

ALDRIN Ready to go.

SC Exercise

CRO Flight, Carnarvon

HOU Go

SC Standby, MARK

HOU Go ahead

CRO Roger, shouldn't he be on the B pump.
Showing on A on both (garbled)

HOU Standby.
It is okay we are satisfied with that.

CRO Okay.

ALDRIN Can't really get my arms down to far, the motion that I am going through is comfortable. but I do have to squeeze my legs a little bit to keep from going up.

CRO Would you see how many pictures are left in there now?

LOVELL Check.

ALDRIN Have you already turned on the flashlight?

LOVELL I just turned it off in here.
(Long pause) There is about 28 or 30 in here yet. Here is the camera again. Okay, you've gone your two minutes, let's see, can you get anymore of Gamma Velorum?

ALDRIN (garbled)
I think it's in better position now.

LOVELL As a matter of fact I think it is up a bit ahead isn't it?

LOVELL No wait a second,

ALDRIN No it's ....

LOVELL Yea, I'm looking at Schedar.

ALDRIN The one in the middle is Jupiter

LOVELL Yea Jupiter. that is what I was looking at, thinking it was Sirius.

ALDRIN (garbled)

HOU Carnarvon from Flight, Agena LOS main.

CRO Roger

CRO 12, Carnarvon. One minute to LOS and standing by.

SC Okay, exercise is complete.

CRO Roger, thank you.

CRO Carnarvon has Agena LOS

SC Exhibit this, one handed now.

CRO Roger

SC (garbled) burn
Let's see, sunrise at 47, we're 35 now.
66:47 and it's 66:35. About 12 minutes.
You want to start shooting them before sunrise you know.

ALDRIN They want to catch it as it's coming up (garbled)

CRO Carnarvon has LOS Gemini. All systems GO at LOS.

Gemini Control Houston, 66 hours 36 minutes now into the flight of Gemini 12. We picked up the Gemini 12 crew over Carnarvon while Buzz Aldrin was performing his exercises. This is where he moves his arms up toward the helmet. It was indicated by their conversation that they had already shot photographs of the - of Orion this is with the - utilizing UV S-13 camera. The conversation at the tag end of our pass over Carnarvon indicated that they were looking forward to a sunrise time. They plan to take pictures of the sunrise with the S-13 camera. The heart rates during this pass on Buzz Aldrin read this way, during his photographic time heart rates ranged from a low of 82 up to 90. Respiration 16 to 18. During his exercise period, we had a peak of 105, which was considered quite normal. Respiration rate of 16. The total duration of this standup EVA is much like the real-time option which was exercised, we expect the hatch to be opened approximately 1 hour but we will have some latitude as far as duration. So at 66 hours 38 minutes and out of range with Carnarvon now, the next station to acquire will be Canton, this is at 66:49:28 we pass close to the outer edge of the ring of acquisition, but we will standby for any conversation over Canton. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 66 hours, 49 minutes now into the flight of Gemini 12. The Gemini 12 spacecraft is now approaching acquisition with Canton. This will be a short pass on the outer ring of the Canton tracking station, some three minutes -- two to three minutes on this pass and we're standing by for any conversation which might occur.

Gemini Control Houston. We're still standing by. There has been no conversation during this pass. We've only got 30 seconds to go before we loose acquisition with Canton; however, all appears to be going well in the mission at this time. This is Gemini Control Houston.

This is Gemini Control Houston. 66 hours, 52 minutes into the mission now. We're out of range with Canton at this time. Because of the short duration of the pass and the fact that we just tipped the outer ring of acquisition, Cap Com Bill Anders chose not to try to contact the crew during this pass. Our next station to acquire is Guaymas, this is at 67 hours, 6 minutes, 17 seconds into the flight of Gemini 12. We have a nominal flight plan displayed here now which indicates that close hatch and repress time would be at 67 hours even. However, there is some flexibility that can be exercised on the part of the crew in this regard. So at 66 hours, 53 minutes, 44 seconds, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 67 hours, six minutes into the mission now. We're just coming up on Guaymas at the tail end of our 42nd revolution. Cap Com Bill Anders is trying to reach the Gemini 12 crew now.

HOU		Roger, you got the cabin repressed?
S/C		Roger, 3 psi now...
HOU		Roger, understand 3 psi.
S/C		We've got a little leg room here for a change.
		Yeah.
		Now we're known as the litterbugs, right?
		Oh my, now we'll see what's next on the docket.
HOU		Keep space clean.
S/C		.... going to have a fit trying to stack all these little bits and pieces.
		Okay, we're four and a half.....
HOU		Texas go remote, Guaymas local.
TEX		Texas remote.
S/C	LOVELL	Okay, cabin repress is going fine, up to 5 psi.
		Okay, radiator's going to flow. Secondary coolant valve circuit breaker closed.
	ALDRIN	Did we report that .....
	LOVELL	Oh yeah, we have the A pumps on, that's right.
S/C		Houston, 12.
HOU		Go ahead, 12, Houston here.
S/C		Let's see, that was pretty expensive in the area of the way of fuel. It was about 25 to 30 percent.

HOU Copy. When you get relatively squared away we've got some stuff for you. Give us a call.

S/C Okay.

Are you pretty well squared away?

.....garble

HOU Gemini 12, Houston Cap Com, suggest you go off VOX.

S/C Roger.

HOU Gemini 12, Houston. TM shows thruster 4 on continuously. Will you confirm that thruster 4 circuit breaker is off.

S/C Yes, it's off. During EVA, I turned it off. We had quite a bit of ... and we wanted to see if there was fuel ... firing from thruster 4 to see if we'd turn it off it would stop firing. Putting it back on.

HOU Roger.

S/C Houston, 12. Did you want to give us some flight plan updates?

HOU Roger, 12. If you got time, we'd like you to start a normal purge, section 1 and then 2.

S/C Roger, starting normal purge, section 1 and then 2.

HOU Roger and when you get squared away we'd like to have you start a D-10 Mode Alpha, followed by a Mode Echo.

S/C Roger. After EVA is squared away, D-10 Mode Alpha then Echo. Any particular time for that?

HOU No particular time. At your convenience. You can also go ahead and eat. We'll give you a flight plan update next time around on the ETR, over the U. S. at 68:39.

S/C Roger, next flight plan update 68:39.

HOU Roger, and if you want to get your next station time up to date you can add five minutes to what you have on the flight plan.

S/C Roger.

HOU I have a node update, if you'd like - have time to copy that.

S/C Okay.

HOU Time 68:30:11, node rev 43, 155.9 west, right Ascension, 10 hours, 26 minutes.

S/C Roger.

HOU Okay, is there anything you would like to add to the jettison list.

S/C Stand by one.

S/C We threw away the S-13 bracket, and there is a possibility we threw away both cables to the left-hand EV camera. We kept the gold visor, the EV visor.

HOU You kept the EVA visor?

S/C Right.

HOU And everything else went out the door?

S/C Roger.

HOU Roger, we have the rest of these PLA updates whenever you're in the mood to copy them, but they're not critical.

S/C I'll copy them now. We wrapped everything up.

HOU Roger, starting with 46 dash 4 Alpha, 72:50:31...

END OF TAPE

HOU ...4 Alpha. 72 50 31, 20 + 47, 26 + 31, roll left 85, roll right 95. 47 - 4 Alpha, 74 26 07, 20 + 41, 26 + 17, 48 - 4 Bravo, 76 01 48, 20 + 18, 25 + 56, Bank angles are all the same, weather is all good.

S/C Roger.

HOU And we'd like to have Buzz press on the sternal EKG sensor if he has a chance.

S/C Roger. Which one is that?

HOU That's the one on your breastbone.

S/C Okay.

HOU It's right in the middle of your sternal.

S/C Houston, illegible.
Is that going to be it?

HOU I'll have to wait a second. Roger, thanks a lot, that helped and be advised you're about 120 miles from the Agena and holding your own.

S/C Roger.

HOU Gemini 12, Houston. How is your purge going? Mighty fine.
Gemini 12, Houston, over.

S/C Roger.

HOU Roger, just as a matter of info, we'll be planning various modes of D-10 later on in the day, which you can just give a try;if you have any trouble with it, we'll just have you

go -- pass on to the next one. We'll also be trying S-11 and S-29 and some T-2. We'll give you detailed update next time around.

S/C Roger, Houston. Just keep in mind all these require a plane stance, can be done if you take your time, otherwise you just do the job or you use a lot of gas doing it.

HOU Roger, we are considering that and we'll give you a long time for each mode and you'll just have to do the best you can.

... LOS on Gemini, ...

HOU Gemini 12, Houston.

S/C Go ahead.

HOU Roger. Just as a reminder, when you're doing D-10, mode echo, we don't want you to fire your up-down or right-left thrusters.

S/C Roger.

GTI LOS Turk.

S/C Purge complete.

HOU Copy.

Gemini 12, Houston Cap Com. One minute to LOS. Canarys in three minutes.

Gemini Control Houston, 67 hours, 24 minutes now into the flight of Gemini 12. We have concluded our third EVA of this

mission, the second standup EVA programmed for Gemini 12. The Gemini 12 crew, Jim Lovell and Buzz Aldrin, had closed their hatch prior to acquisition at Guaymas. The exact time, or duration of this EVA has not yet been refined; however, to recap quickly, we -- the Gemini 12 spacecraft had its hatch opened after Kano, and before Carnarvon. We picked up Buzz Aldrin during his exercise period over Carnarvon, and the hatch was closed sometime prior to acquisition at Guaymas. The Gemini 12 crew has just been updated by Cap Com Bill Anders. During this next revolution, they will perform the D-11 experiment. This is the ion sensing attitude control experiment. The crew will then, at their leisure, eat. They expect a second flight plan update at 68 hours, 39 minutes, a flight plan update over the Eastern Test Range. The crew appears in very good spirits as they have extended their already existing EVA record, and at 67 hours, 26 minutes, we are standing by now -- standing by for acquisition momentarily at Canary. This is Gemini Control Houston.

CYI Canary has TM solid on the Agena. Agena is go.

HOU Roger, Canary.

END OF TAPE

CYI And we have TM solid on the Gemini. And it is also go. Cabin pressure is still down, about 4.6.

HOU What are you reading on cabin pressure, Canary?

CYI 4.6 off the meter.

HOU Okay.

CYI Gemini 12, Canary Cap Com. We will send you a TX at this time.

S/C Roger.

CYI Houston Flight, Canary Cap Com.

HOU Go ahead.

CYI Okay, the inverter temperature on the Agena is Charlie, Oscar 21, is reading 132 degrees.

HOU Roger, 132.
And that's what it was over the States.

CYI Okay.

HOU And that's why we turned the ACS off, Bill.

CYI Okay.
The cabin pressure is 4.68 now.

HOU Okay, EECOM advises that with the repress off it's going to take a couple of hours to build that up.

CYI Okay.

HOU No sweat.

CYI Roger.
Flight, Canarys.

HOU Go ahead.

CYI Okay, we're reading 768 on the O_2 tank pressure. Do you want to bump that up a little bit or..

HOU Seven what?

CYI 768.

HOU No that's okay.

CYI Houston Flight, Canary Cap Com.

HOU Go ahead.

CYI Okay, on the Agena S-band temperature HO/49 has gone up 2 degrees since it left the States. It's reading 144 now.

HOU Okay, 144.

Canarys, Flight.

CYI Go ahead, Flight.

HOU We're not worried about that S-band temp at this time. We'll continue to watch it though.

CYI Okay.

HOU Canarys, Flight.

CYI Go ahead.

HOU Ask Jim if he has deployed the D-10 sensors yet.

CYI Roger. Gemini 12, Canary Cap Com.

S/C Go ahead, Canarys.

CYI Have you deployed the D-10 sensors yet?

S/C Just a second and we'll let you know. We're still doing the EVA post-stowage and you'll have to wait for it.

HOU No, no, no hurry, okay.

CYI Stand by, stand by on that, 12.

HOU No hurry, that's okay. We just wanted to know.

CYI There's no hurry on it. Do it at your convenience. They just wanted to know back in Houston.

S/C Roger.

CYI And we have about a minute to LOS, here. We'll stand by.

HOU Kano, go remote.

CYI Canarys local.

KNO Kano is remote and we have acquisition.

HOU Gemini 12, Houston Cap Com through Kano.

S/C Roger, Houston.

HOU Roger, on the D-10 deploy it and activate mode Echo on your convenience.

S/C Roger.

HOU Gemini 12, if you are calling Houston, we're not reading you.

S/C Houston, 12 here. We are not calling.

HOU Roger, read you five by. You copy that comment on D-10?

S/C You said there was no hurry to deploy D-10, is that correct?

HOU Deploy D-10, mode Alpha and mode Echo at your convenience.

S/C Roger, will do.

S/C Houston, 12 here.

HOU Go ahead, 12.

S/C We'd like for you to confirm that the number 12 forward firing thrusters will not effect the D-10. I haven't used it yet, but we probably will be using them for yaw control.

HOU That is affirmative. The forward and aft firing thrusters will not effect D-10.

S/C Roger.

HOU Gemini 12, Houston, how did the EVA photography go?

S/C Well, it was a little bit difficult to get the shots of the sunrise. They were kind of back angle shots around the hatch underneath the hatch-closing device. So we ended up taking all frames of the UV film and I think we out to get some fairly good pictures out of it.

HOU Sounds real good. Nice going.

S/C (garbled)

HOU Say again, 12.

S/C Do you think you could see Orion in the daytime?

HOU Oh we think we might on UV film, if the camera didn't see any of the spacecraft.

S/C Well, it was kind of hard after sunset, but after sunrise, the sun was shining on the back of the adapter and I think I might have been able to

get the Gamma Velorum area, but the Orion area

I'm pretty sure was getting some...

END OF TAPE

S/C I think I might have been able to get the gamma Velorum area but the Orion area, I'm pretty sure was getting some scattering from the spacecraft.

HOU Roger. Anywhere up there would be great.

HOU Gemini 12, Houston Cap Com, over.

S/C Go ahead.

HOU Roger, if you don't object we'd like to have you go to the primary scanners for the rest of the day and back to secondary tomorrow.

S/C Very well, we're on primary.

HOU Mighty fine.

S/C What we're trying to do is the horizon scanners in orb rate of the platform to see what it does.

HOU Roger.

(PAUSE)

Gemini Control Houston. We're in the final stages of our pass over Kano. There's one minute to Loss of Signal at Kano. We're standing by for any further conversation which might take place. This is Gemini Control.

HOU Gemini 12, Houston Cap Com, one minute to LOS. Five minutes to Tananarive.

KNO Kano has LOS.

Gemini Control Houston. We've just had loss of signal over

station. Tananarive will acquire at 67:47 into the flight of Gemini 12. At the present time the Gemini 12 spacecraft with its crew of Jim Lovell and Buzz Aldrin is in its 43rd revolution. The apogee on the spacecraft is now 157.9 nautical miles and the perigee reads 142.8 nautical miles. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 67 hours 47 minutes now. We've just acquired Gemini 12 at Tananarive and we're standing by for conversation with the crew.

HOU Gemini 12, Houston standing by at Tananarive.

SC Roger we have completed mode A, we are in the process of mode B.

HOU Roger.

Gemini Control Houston, very little conversation during this pass over Tananarive. Here in Mission Control, Astronaut Gordon Cooper has come in to perhaps spell Bill Anders for awhile in the Capsule Communicator duties. He is at the console now and is chatting with Anders.

HOU Gemini 12, Houston Cap Com. One minute to Tananarive LOS, 9 minutes to Carnarvon.

Gemini Control Houston, 67 hours 55 minutes now. We've had loss of signal with Tananarive. The next station to acquire will be Carnarvon. Our pass over Carnarvon is scheduled for 68 hours,2 minutes, 1 second into the flight of Gemini 12. As we start over the hill on our 43rd revolution this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 68 hours, two minutes now into the flight of Gemini 12. Jim Lovell and Buzz Aldrin are approaching acquisition at Carnarvon tracking. We expect little or no conversation during this pass, by the way. Carnarvon advises that they are standing by.

CRO — Flight, Carnarvon

HOU — Go ahead.

CRO — I'm showing both A pumps on in loops, both A pumps and B pumps.

HOU — Say again.

CRO — I say we're showing the A pumps on in both loops. Stand by. Go ahead, 12.

S/C — Check of our thrusters indicate no. 8 thruster is also out. I guess the last plat mode operation was too much for it. We can still see the thing firing but trying to operate it we found out we get no response from no. 8 at all.

HOU — Okay, that's thruster no. 8, is that right?

S/C — Roger, OAMS thruster no. 8.

HOU — Okay, copy that.

CRO — Flight, Carnarvon.

HOU — Go ahead.

CRO — Does he need his computer for this D-10?

HOU — Yeah, I think he does need it for the first

part.

CRO Okay, it's showing off right now. Did you get that comment on the A pumps being on also?

HOU Yes.

CRO Okay.

HOU That's because they're powered up, Jim. Leave it that way.

HOU The computer's off and that's appropriate, Carnarvon.

CRO Say again, Flight.

HOU The computer being off is appropriate for this mode.

CRO Okay. We're showing quite a bit of activity on pitch up and yaw left.

HOU On the spacecraft?

CRO Roger.

HOU Yeah, ... working.

CRO He just opened up his maneuver thruster circuit breaker.

HOU Maneuver thruster did you say?

CRO Rog.

HOU All of them or one of them?

CRO All of them.

HOU He's probably troubleshooting and trying to find

something that works.

CRO Rog.

CRO Okay, he just opened up 5 and 6, 1 and 2, 3 and 4. Attitude is now 80 - closing back up.

HOU Okay.

CRO And he's really firing 5, 6, 1 and 2. Pitch up and pitch down.

HOU Rog.

S/C Carnarvon, Gemini 12.

CRO Go ahead.

S/C Roger. It seems like right now we go unstable in plat control mode.

CRO Roger. He's in pulse right now, Flight.

HOU He's in pulse?

CRO Right now he's in pulse, right. He says he's unstable in platform mode.

HOU Yeah. That's cause he doesn't have any yaw going for him except one thruster.

CRO Yep.

CRO And we've had LOS Gemini and Agena.

HOU Roger Carnarvon.

This is Mission Control Houston. We have had loss of signal at the Carnarvon, Australia tracking station. The next event at the Press Center is the Change of Shift Briefing from the green

team. The participants will be Dr. Charles A. Berry; Mr. William Schneider who is Mission Director for Gemini 12; Jerry Griffith, the Guidance Navigation and Control Engineer for the green team; and green team Flight Director Clifford Charlesworth. This Press Conference should get underway in a few minutes. At 68 hours, 11 minutes and 33 seconds after liftoff this is Mission Control, Houston.

END OF TAPE

This is Mission Control Houston, coming up over the Canton Island Voice Remoting Station. We've just had acquisition at Canton Island. We will standby for any conversation between spacecraft communicator here in Mission Control and the crew of Gemini 12. Let's listen in.

HOU Gemini 12, Houston Cap Com, through Canton and standing by.

SC Roger, Houston. Did you get the word from Carnarvon on some addresses?

HOU Roger, we were monitoring your Carnarvon pass and we'd like to make sure you got your roll jets in pitch.

SC Roger.

HOU Would you confirm that your OAMS heater circuit breaker is on?

SC Roger, OAMS heater circuit breaker is on.

SC We are now duitifully performing mode F of the D-10.

HOU Roger, we might be doing some more of that if this keeps up.

SC (garbled)

HOU Seems like you've been in this situation before, Jim.

SC We had little problem with two delta P lights up here.

S/C HOU Roger, just like being back home again.

HOU Gemini 12, Houston. We're still thinking of having you try the other mode on D-10 to see how you can - how it will work out, but if you can't hack it why you can always give foxtrot a try.

SC Well we attempted to (garbled) SEF but we weren't to the right mode (garbled) and couldn't even do it without (garbled) we got the rates down but the plat wouldn't hold it.

SC (garbled)

HOU 12, Houston. You're fading in and out. We'll dump you more over the states. Be advised that if you are still drifting you might to get some pictures over Mexico and Florida, the weather is pretty good.

SC Roger.

HOU Gemini 12, Houston Cap Com. About one minute to Canton LOS. See you at Guaymas in 11 minutes.

SC Roger.

This is Mission Control Houston at 68 hours 30 minutes and 39 seconds after liftoff. We have had loss of signal at the Canton voice remoting station. Coming up on Guaymas in approximately 10 minutes. This is Mission Control Houston. Now to the Press Conference.

END OF TAPE

This is Mission Control Houston at 69 hours 12 minutes and 35 seconds after liftoff. Gemini 12 at the present time is over the Kano, Nigeria voice remoting station. During the just completed stateside pass the crew was given flight plan updates for the days activities. Up through the sleep period. Included several runs of experiments, they were given a GO for landing area 60-1 which is the normal end of mission landing. They also reported, the crew reported, that number 8 thruster was out. They were now in drifting flight. We have an accumulation of tape of the air to ground transmissions which we will play back now. They will include the stateside pass, the Canary Islands pass, and the Kano, Nigeria pass presently under way. At the completion of that we will pick up whatever transmissions are made during the Tananarive voice remoting station pass. Let's roll the tape now.

CAL	California has acquisition.
FD	California go remote.
CAL	California is remoting.
HOU	Gemini 12, Houston. Over.
FD	Guaymas go remote, California local
GYM	Remote
HOU	Gemini 12, Houston Cap Com, over.
SC	Roger, Houston.
HOU	Roger 12. Our calculations here on the ground

indicate that you're probably approaching an empty adapter water tank here shortly. You'll be able to tell this because the water pressure will drop from about 20 psi which you've been having to almost nothing. You'll have to use a squeeze bulb to get water out of the spacecraft tank. You have about 13 pounds in the spacecraft tank. When you notice this drop in water pressure, we'd like for you to get a gun count. Over.

SC Thanks a lot. Okay, we'll give you a gun count.

HOU Okay, you faded on us on your description of the control situation over Canton, could you give us a run down?

SC Roger. Number 8 thruster appears to be out. We can hear the solenoids firing but it doesn't do anything. Very similar to a situation that we had back on 7. We tried to align the spacecraft SEF after we realigned the Scan Mode and when we got back there we went back to the Plat Mode and it started to put vibration on it so we got out of it again. To save fuel, we just went adrift. We're drifting now.

HOU Okay. Sort of like Gemini 5 control power.

SC Yes, this looks like another one.

HOU Gemini 12, Houston. Could you give us a water gun count now please?

SC Roger, our water gun is looking at 2024.

HOU Copy, 2024. I have a flight plan update for you when you are ready to copy.

SC Ready to copy, go ahead.

HOU Roger. We have a - several D-10 modes here for you. We'd like for you to try them, recognizing your control problem. If you would do the best you can, if you can't get it you might move on to the next mode. If you have - if you can't get them at all just go ahead and do fox trot. Okay the first one 69 30, D-10 Mode Bravo, end it at 69 40. At 69 55, D-10 Mode Bravo, end it at 70 05. At 70 05, start a D-10 Mode Charlie, end it at 70 30. 70 45, S-11 Mode Charlie; 71 20 to 72 20, D-10 Mode Charlie; 71 55, purge fuel cells, section 2 then section 1; 72 20 to 73 20, D-10 Mode Dog; 73 20 align platform, also D-10 Mode Echo, do that until 73 45; 73 45 S-29; 74 20 power down platform; 75 00 X-ray on Beta with mag through sleep period; 75 18, T-2 Mode Alpha, sequence 1;

75 50 eat period; 76 06 CSQ, PLA update block eight, purge fuel cells, section 1 then section 2. Give us a cryo read, leave cryo read in H2 for sleep period; 76 25 Hawaii, crew status report, H2 heater on, raise pressure to 667 pounds, H2 heater auto; 76 30 to 84 30, sleep period, also D-10 Mode Fox trot, did you copy?

Did you copy Gemini?

SC Roger, I think I got most of that. Would you say again at 75 18 please?

HOU 75 18, T-2, Tango 2, Mode Alpha, sequence 1.

SC Roger, and then the pressure for the H2 heater before going to auto.

HOU 667 pounds.

SC Roger, 667.

HOU And we are ready for a 30-second 02 purge on both sections.

Gemini 12, do you copy 02 purge?

SC Negative, say again please. Didn't get any of that.

HOU Roger, we'd like to have you do a 30-second 02 purge for both sections.

SC I understand, 30-second 02 purge both sections now.

HOU Roger and we'd like to update your TSR and give you a load for 16-1. Would you turn your computer to prelaunch?

SC Roger, computer is prelaunch, it's on, standby for a diagnostic.

HOU Make that 60-1.

SC Okay. Looks like on the purge I get an indication on the FDI needles in detent.

HOU Roger, we'll have ECOM and G & C think about that.

SC It showed a yaw to the right.

HOU Roger.

Gemini 12, Houston. We understand that you are able to get 1 T-2 pass, do you have any data for us?

SC Roger, standby just a minute.

HOU Okay.

SC I wouldn't worry about that FDI needle moving to much, that accounts for the fact before I put that one on.

HOU Copy and you are go for 60-1.

SC 60-1, roger.

HOU You got a good load and we're done with the computer.

SC Done with the purge?

HOU Roger, copy, done with purge.

SC	(garbled)
HOU	Roger, standby we are reading you quite garbled.
FD	Bermuda go remote
BDA	Bermuda remote.
HOU	Gemini 12, Houston Cap Com. We are ready to copy your T-2 data.
SC	Roger, I will omit the times, I don't - unless you really want those. The zero bias, 0000.....

END OF TAPE

Aldrin — Roger, I'll omit the times, unless you really want those. 05 00 01, I'll give you just the last two digets, number 2 was 02, number 3 was 59, number 4 was 50, number 5 was 01. Did you copy?

CAP COM — Roger, we copy, thank you.

Aldrin — Roger, I've got several readings here, 18.611, I'll give you the last two digits on the remaining ones, number 2 was 06, number 3 was 04, number 4 was 08, number 5 was 04, number 6 was 04, number 7 was 09, number 8 was 06, number 9, I inadvertently turned the knob, number 10 was 08, number 11 was 11 and for the last three I switched to a slightly different using the thumb instead of the finger to turn the knob, and I got 05 for all three of them.

CAP COM — Roger, we copy.
Gemini 12, Houston. You have a good load, you are cleared out of prelaunch at your convenience.

Aldrin — Roger.

CAP COM — Gemini 12, Houston Cap Com, over.

Lovell — Go ahead.

CAP COM — Roger, could you give us your first and last T2 time please?

Aldrin — Roger, the times are reference to 63 hours 14 minutes, 42 seconds, now wait a minute

Aldrin	the times are reference to 63 hours, 6 minutes, 00 seconds. First measurement was at 13 00 8.0 and the last measurement was at 38 51.0.
CAP COM	Roger, copy. Gemini 12, Houston Cap Com, one minute to LOS, five minutes to Canaries.
S/C	Roger
HOU FLT	CYI, Flight
CYI	Go ahead, flight.
HOU FLIGHT	Standing by for your pass, Bill.
CYI	Ok.
HOU FLT	And no special requests.
CYI	Roger. Acq aid contact on the Agena. We are getting TM out of Gemini now, its rather ragged at this time.
HOU FLT	Roger
CYI	Gemini 12, Canary Cap Com. We have nothing for you at this time, we are standing by, sending a TX at this time.
S/C	Roger, CYI.
CYI	Flight, Canary.
HOU FLT	Go ahead.
CYI	(Garbled)
S/C	Looks real nice down there.
CYI	Say again, 12.
S/C	I say it looks real nice down there.
CYI	It is, very very nice.

CYI — Gemini 12, Canary Cap Com. About a minute to LOS. We are standing by and we will see you tomorrow.

Lovell — Roger, Canary.

CYI — We've had LOS on the Agena. And we've had LOS on the Gemini.

HOU FLT — Roger, Canaries.

CYI — And we'll see you tomorrow.

HOU FLT — Ah that's right. Time off, huh?

CYI — That's affirmative.

HOU FLT — Have a good night, Bill.

CYI — Roger will do. It's starting to get dusk over here.

HOU FLT — That sounds like a good time to get off.

CYI — You're right. It's almost like bankers hours this mission.

HOU FLT — Sure, you and Carnarvon.

CYI — I don't think Jim appreciates that.

HOU FLT — OK, we'll see you tomorrow.

CAP COM — Gemini 12, Houston Cap Com through Kano, and standing by.

Lovell — Roger, Houston. Mode C....I don't think... we have any capability of a compass.

CAP COM — Roger.

CAP COM Gemini 12, Houston Cap Com, over.

Lovell Go ahead, Houston.

CAP COM Ok, Jim. If you can't do mode C, try to stay generally SEF heads up.

Lovell Roger, we just got it out of that position now, we were very fortunate..just..to stop it. We can maintain this position somewhat but if we try to do any particular maneuvers, we just yaw all....

CAP COM Roger, we copy.

Gemini 12, Houston Cap Com, over.

Lovell Roger, Houston.

CAP COM On the S-11, if you don't think you'll be able to swing around to the horizon, just take about 12 pictures of whatever horizon you can get.

Lovell Roger, understand.

CAP COM Gemini 12, Houston Cap Com, one minutes to Kano LOS, five minutes to Tananarive.

HOU Tananarive, go remote.

TAN Tananarive, remote.

CAP COM Gemini 12, Houston Cap Com through Tananarive, over.

Gemini 12, Houston Cap Com through Tananarive, over.

Gemini 12, Houston Cap Com, through Tananarive, over

END OF TAP

HOU Gemini 12, Houston Cap Com through Tananarive, over.

Gemini 12, Houston Cap Com through Tananarive, over.

SC Roger, Gemini 12. Go .

HOU 12, this is Houston Cap Com reading you somewhat garbled. Be advised we have talked to the D-10 experimenter. He feels that if you can hold attitudes within plus or minus 20 degrees, 20 degrees, at the various mode data,would be acceptable. If not, go to Mode F, Mode Foxtrot and do S-5, S-6, and S-29 as targets of opportunity. Over.

SC I understand that if we can do D-10 right now after attitudes of 20 degrees it would be acceptable. (garbled) S-6, S-5 and S-29 as targets of opportunity. Is that correct?

HOU Roger, that is S-5, S-6 and S-29 and D-10 Mode Foxtrot.

SC Roger. We don't (garbled) pulse mode B, I'll let you know how we come out.

HOU Roger. We'd also add S-11 as target of opportunity also.

SC S-11.

HOU Whatever you can get, we'll take it.

One minute to Tananarive LOS.

Nine minutes to Carnarvon.

SC Say again.

HOU One minute to LOS and nine minutes to Carnarvon.

SC Roger.

TAN Tananarive LOS.

This is Mission Control Houston at 69 hours 35 minutes and 22 seconds after liftoff. Spacecraft Gemini 12 is within about 2 minutes of acquisition by the Carnarvon, Australia tracking station. We'll come back up with that pass, the pass duration will be 8 minutes and 40 seconds over Carnarvon. To briefly summarize the stateside pass the crew of Gemini 12 were given a GO for landing area 60-1, the flight plan update for the entire day up through the sleep period. The sleep period is scheduled to begin at 76 hours 30 minutes and run through 84 hours 30 minutes ground elapsed time. During the sleep period the D-10 experiment will be turned on in random mode, random data and drifting flight. Also, they were given several runs of the D-10 in other modes for yaw and roll attitude measurements of this Ion-Sensing Attitude Control Experiment. One run - one sequence of the T-2 sextant space sextant experiment was passed up to the crew. This is scheduled to take place at 75 hours 18 minutes ground elapsed

time and it will be a measurement of between the stars Betelgeuse and Rigel. Carnarvon now has acq aid contact and telemetry contact with Gemini 12. Both systems are go on the ground. We are awaiting for spacecraft communicator at Carnarvon to put in a call to the spacecraft. Carnarvon is standing by, let's listen.

CRO Gemini 12, Carnarvon standing by.

SC Roger, Carnarvon. We are still doing D-10 Mode B, with respect to our control system, I think that the experiment is coming along quite well and it gave the proper response on the pilot side.

CRO Okay.

CRO C and S-Band track at Carnarvon.

HOU How is the S-band temperature.

CRO Standby.

144 degrees.

HOU 144 roger.

HOU Carnarvon is the computer on?

CRO That is affirmative.

HOU Would you send us a couple of OBC's?

CRO Roger, we have.

HOU Really makes him happy.

CRO I can imagine.

Rather a quiet pass over Carnarvon. We still got 3 minutes and 57 seconds remaining in the Carnarvon pass. We'll continue to standby for any air to ground conversation that might transpire.

END OF TAPE

HOU FLT Carnarvon from flight.

CRN Go ahead.

HOU FLT LOS OBC, please.

CRN Roger.

Gemini 12, Carnarvon. One minute to LOS, 18 minutes to Hawaii.

Lovell Roger, that sounds good.

CRN Los Agena.

HOU FLT Roger, Carnarvon.

CRN Los Gemini. All systems LOS.

And this is Mission Control Houston. We have had loss of signal at the Carnarvon, Australia tracking station. The Spacecraft will be coming over the Canton Island voice remoting station and subsequently the Hawaiian Station within about 8 minutes. We'll come up again at that time with any conversation that happens during these two passes. At 69 hours, 46 minutes and 33 seconds after liftoff, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, let's join the conversation in progress between spacecraft Gemini XII and the Mission Control Center through the Canton Island voice remoting station.
This is Mission Control, it's rather quiet right now, but earlier in this pass when contact was first established, spacecraft communicator Pete Conrad advised the crew that picture taking opportunities during the upcoming stateside pass were quite good. And then he advised them that he was standing by. There may not be any further conversation during the Canton Island pass. We'll stand by... the Canton Island pass blends in to the pass over Hawaii and we have approximately 13 minutes remaining over both of these stations and then it bridges across over in to the stateside pass. We'll continue to stand by.....

This is Mission Control again. According to today's flight plan, the crew should be in the midst of two runs of the D10 experiment, Ion Sensing Attitude Control. Both of these runs scheduled, well the first one will be in the roll attitude mode, the second in the pitch attitude mode. We have about 5 minutes left, actually about 30 minutes left in the pitch attitude mode. Approximately 45 minutes they will do a run of the S11 airglow horizon photography as they approach their sunset. We'll continue to standby for any air to ground conversation over Canton Island and Hawaii.

Canton go local

HAW Hawaii has TM both vehicles

HOU Roger, Hawaii. Should be quiet pass in the middle of that D10. Standing by.

HAW Gemini 12 Hawaii Cap Com standing by.

S/C Roger, Hawaii. We have just completed the D10 mode D.

HAW Roger.

HOU We copy.

HAW ....showing computer on mode 1. Remains on.

HOU Roger.

END OF TAPE

HAW Gemini XII Hawaii, we'll have LOS in one minute.

S/C Roger.

HOU HAWAII leave the C-band beacon on please.

HAW That's a little tough to do, I'll wait until TX clocks out and then I'll turn it back on at over the hill.

HOU Okay.

HAW He's had LOS with 3 transmitts C-band beacon on He thinks it should be on.

HOU Fine thank you.

And this is Mission Control Houston, at 70 hours 11 minutes and 22 seconds after liftoff. We have had loss of signal at the Hawaii tracking station. We have just a few moments gap here between Hawaii and the first station on the stateside pass, the California station. Two minutes away from acquisition at California, as Pete Conrad mentioned during the Canton Island pass, the weather today over the states is in real fine shape for picture taking. Also there is planned a voice relay exercise using an aircraft during the pass over the Texas station. We'll stand by for conversation during the picture taking and try to determine which areas of the states crew is taking pictures of. Less than one minute now to California acquisition. Conrad is calling Gemini 12 now.

HOU Houston standing by California.

S/C Roger, we've completed D10 mode d, before we go on we're pitching down now slowly to get in position

for some S5 and S6 photos of the states.

HOU Roger. And during your Texas pass, we'd like to work some remote through one of the Ryan aircraft and so I'll give you a little chatter there and if you talk back over Texas we'll appreciate it.

S/C Okay fine.

(Acquisition of telemetry Gemini)

HOU On your next pass across the states we got a little HF music for you to lighten the load.

S/C You're so sweet there Petey.

HOU I always take care of my pals.

HOU Guaymas go remote California go local

CAL Califor.....

END OF TAPE

HOU Gemini 12, Houston. We're coming up to the Texas pass, how does the weather look?

SC (garbled)

HOU Say again.

SC Just passed (garbled)

HOU Very good, and when you have a chance would you give us a - after you've got the time passing the states - a 30-second 02 purge please.

SC Roger.

HOU Would you switch the quantity switch to 02 flight please?

HOU Gemini 12, Houston. How do you read me now?

SC Loud and clear. We're coming up right over Houston.

HOU Roger, you are transmitting to us through the aircraft, could you give us a little description?

SC Roger. For one thing, half of those kids of yours are up on the roof again.

HOU They can't be, they are suppose to be in school.
If that's the case they are playing hooky besides being on the roof.

SC Beautiful sight of Houston, just right over it. Very clear today.

HOU Got you.

Can you see the Dome?

SC Roger.

HOU Very good.

12, Houston. Are you calling?

SC Negative.

HOU 12, Houston, now we are back to you through the Cape.

12, Houston.

SC Go ahead.

HOU Roger, the sextant people passed me this information they took from your readings and your bias error is minus 7.20 seconds and the standard deviation was 9.10 seconds.

SC Roger. Try and do better.

END OF TAPE

HOU 12, Houston. Could you give us your 30 second purge here. We would like to watch it.

S/C Roger. Coming up on 30 second purge.

HOU Thank you. And on your next pass across the States, don't forget to run out your HF adapter antenna there and we will play you a little tune.

S/C Okay.

GTI LOS GTI.

GTI LOS Turk.

HOU Gemini 12, Gemini 12. Houston. One minute until LOS Antigua. We will see you over Ascension.

S/C Roger.

ANT LOS Antigua.

And this is Mission Control Houston at 70 hours 35 minutes and 40 seconds after lift-off. We have had loss of signal at the last station in the Eastern Test Range, Antigua. We will be coming up over the Ascension Island station at approximately 5 minutes. The Ascension Island voice remoting station. We will come up again at that time with the conversation through that station. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston at 70 hours 40 minutes and 33 seconds after liftoff. Spacecraft Gemini XII has just come up over the Ascension voice remoting station and we'll stand by for any conversation from Mission Control through the crew of Gemini XII. The duration of the pass over Ascension will be 6 minutes 54 seconds. Pete Conrad is getting ready to put in a call to the crew. Let's eaves drop....

HOU Gemini 12 Houston, standing by at Ascension.

S/C Roger we're going to try mode.....(garbled)

HOU Say it a little slower, you're not too high yet.

S/C We're trying S11-3 to see if we could do it.

HOU Roger, copy.

This is Mission Control Houston, a rather quiet pass over Ascension Island the spacecraft Gemini XII just went in to darkness. They're running another run in the pitch mode of S11 Ion Sensing Attitude Control experiment at the present time. In approximately 9 minutes they'll be coming over the Tananarive voice remoting station.

HOU Gemini 12, Gemini 12 Houston one minute to LOS Ascension

We are less than one minute from loss of signal at the Ascension Island voice remoting station. Gemini 12 at the present time is in orbit with an apogee of 157.8 nautical miles and a perigee of 142.7 nautical miles. We'll continue to stand by however, it is unlikely that any further conversation will take place over the Ascension Island. Tannanarive is coming up in approximately 8

minutes.

This is Mission Control Houston apparently we have had loss of signal at the Ascension Island station. The flight plan calls for the crew to be conducting the S11 airglow horizon photography experiment at the present time. At 70 hours 49 minutes and 54 seconds after liftoff, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston. Gemini 12 is coming up over the Tananarive voice remoting station, field of acquisition. Spacecraft communicator Pete Conrad will be conversing with the crew through the station. There he goes. Let's listen.

HOU Gemini 12, Gemini 12, Houston standing by at Tananarive.

S/C Roger....

HOU 12, Houston, say again.

S/C ....

HOU Roger. Copy.

TAN Tananarive has LOS.

And this is Mission Control Houston 71 hours 4 minutes and as you were 71 hours 5 minutes after lift-off. We have had loss of signal from the Tananarive voice remoting station. That was a minimum conversation pass. We are coming up over Carnarvon in approximately 7 minutes. We will come back up at that time with the pass over the Carnarvon, Australia station. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, Spacecraft Gemini 12 is now entering the acquisition range of the Carnarvon, Australia tracking station. Let's listen in.

CRO 12, Carnarvon standing by.
C and S-band track Carnarvon.

SC Carnarvon, 12. We have just completed S-11 Mode C.

CRO Okay.

CRO All systems GO on Gemini..

HOU Roger.

CRO Flight, Carnarvon

HOU Go ahead.

CRO Roger, our first Gemini main was no good due to a bad time label. Get you another one.

HOU Okay, thank you.

CRO Roger, this happens when he switches the hours G.M.T.

HOU Okay

AFD Carnarvon, AFD

CRO Go ahead

AFD Would you leave the C-band on for Wheeling?

CRO I have already initiated TX, I'll try and get it back on again.

HOU Roger

CRO One minute to LOS at Carnarvon, standing by.

CRO ....all systems GO at LOS.

This is Mission Control Houston. We've had loss of signal at the Carnarvon, Australia tracking station. Spacecraft Gemini 12 will be coming up over Hawaii in approximately 16 minutes. At 71 hours 21 minutes and 43 seconds after liftoff this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston at 71 hours 38 minutes and 25 seconds after liftoff. We have just had acquisition by the Hawaii Island tracking station. Let's listen in between... for the conversation.

HAW Gemini 12, Hawaii Cap Com.

S/C Hawaii 12, go ahead.

HAW We have a short flight plan update for you whenever you're ready to copy .

S/C Roger, go ahead.

HAW Okay, it will be for 45 over Kanos. It's S5 and S6 remote Bravo, over Mexico. S5 mode Alpha sequence 2 and 6; S5 mode Bravo sequence 7; a red dye marker 20 miles south of the mouth of the Mississippi, over.

S/C Roger, that was on the next Rev?

HOU The one coming up.

S/C ...on the one coming up right now. Okay S5, S6 mode Bravo over Mexico, S5 Mode Alpha, sequence 2 and 6 S5 mode Bravo sequence 7, red dye 20 miles south of the Delta.

HAW Roger.

S/C This is the last chance all experimentors come and get it.

HAW Righto. Okay, in general information the data from D10 experiment has been very good. It looks like you are doing real fine on your attitude control.

S/C Okay, understand..... (faded out)

HOU Hawaii from flight.

HAW Go flight.

HOU And we want to leave the C-band on for the states track.

HAW Okay, I'll real time him off the....or do you want maybe just go ahead and leave TM on.

HOU Yeah, let's just leave the TM on also.

HAW Okay.

HAW Gemini 12, we'll have LOS in a minute.

S/C Hawaii Roger. Thank you.

HAW Everything is looking real good for you.

HOU Roger Hawaii.

HAW Have LOS Agena still got Gemini

HOU Roger. Okay Hawaii see you next pass.

And this is Mission Control Houston, we have had loss of signal at the Hawaii Island tracking station. We should be coming up momentarily on the California station on the first station of the stateside pass. During this pass the crew will take photographs of some terrain objects in Mexico and also a red dye marker that is in the sea, some 20 miles off the mouth of the Mississippi Delta. And also on the high frequency or what is called, air to ground

two loop, some music will be piped up to the crew for their relaxation. We're standing by and California should be acquiring any moment now. Let's listen in.

HOU Gemini 12 Houston standing by at California.

S/C Houston 12 Roger

HOU And if you've got your HF on we'll be bringing you the music in about 3 or 4 minutes.

S/C Roger

END OF TAPE

HOU ...and before you get busy, could I get a PQI and a water gun count from you.

S/C PQI is 25 percent.

HOU Roger, 25 percent.

S/C Water gun is 2033.

HOU Roger 2033, and after you make your photography over the states, while we are still in Antigua acquisition, we would like full hydrogen fuel cell purge and a 30 seconds O_2 purge. You can do that at your convenience, after you get done.

S/C Understand - full hydrogen and 30 second O_2.

HOU That's correct, thank you.

S/C That's section 2, then 1.

HOU That's affirmative.

HOU Guaymas go remote, California go local.

GYM Guaymas remote.

CAL California local

HOU 12, Houston, the music is rolling now, I'm not sure you are getting it right now, it's coming out of the Cape.

S/C Oh, out of the Cape eh, okay.

(music)

HOU Your fuel cell Delta P circuit breaker open or did the lights go out.

S/C The circuit breaker is open, it was open for S-11.

HOU Okay

S/C Standby now?

HOU That's affirm.

HOU Are you getting any music yet.

S/C No, we have it turned way up.

HOU It sounds great here on the ground.

S/C Just coming in now.

HOU Very good.

S/C Man, we got the music.

HOU Very good.

S/C Trying to think what it was.

HOU It's "Sound of Music".

S/C Very good.

END OF TAPE.

S/C We couldn't pick it up. There is some cloud coverage over that area.

HOU Roger.

S/C It is coming through nicely now.

HOU Very good.

S/C Pete, we are over your favorite islands.

HOU Roger. I noticed that. Would you care to name it?

12, Houston. If you care to name it, you can join a very exclusive club.

S/C Roger, understand it is...

HOU That is affirm.

12, Houston. Any time you can give us the fuel cell purge in the next 3 or 4 minutes, we would appreciate it, if you can.

S/C Okay. Here we go now.

HOU Okay, 12 we saw the purge. Would you give us your cyro switch to hydrogen position, please?

S/C H_2.

HOU Very good. Thank you. Still getting the music?

S/C Just about faded out, Pete.

HOU 12, Houston. You can put the cyro switch to off.

Thank you.

GTI LOS Turk.

END OF TAPE

(MUSIC PLAYING)

HOU 12 Houston, one minute to LOS Antigua, see you over Ascension.

S/C Roger.

LOS Antigua

And this is Mission Control Houston at 72 hours and 11 minutes and 2 seconds after liftoff, with spacecraft Gemini 12 going over the hill in the eastern test range to Julia Andrews singing "My Favorite Things" from "The Sound of Music". This is Mission Houston.

END OF TAPE

This is Mission Control Houston 72 hours 16 minutes and 4 seconds after liftoff. They have had acquisition of signal at the Ascension Island voice remoting station. We'll stand by for any possible conversation between the spacecraft and Houston. Let's listen now.

HOU Gemini 12, Gemini 12 Houston standing by at Ascension.

HOU Gemini 12, Gemini 12 Houston standing by at Ascension.

HOU 12 Houston through Ascension, we're about one minute 30 seconds to LOS standing by.

S/C Roger, we're in D10 mode,

HOU Roger, D10 mode B

And this is Mission Control Houston, 72 hours 25 minutes and 7 seconds after liftoff. We've had ascension loss of signal. Approximately 8 minutes spacecraft Gemini XII will cross the Tananarive voice remoting station. We'll come back up at that time with any conversation. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston at 72 hours, 32 minutes, and 57 seconds after liftoff. Coming into the acquisition area of the Tananarive voice remoting station. Duration of this pass will be 6 minutes and 50 seconds. We are standing by for Pete Conrad to put in a call through Tananarive to the crew of Gemini 12. It may be just a standby call. There he goes, let's listen.

HOU Gemini 12, Gemini 12, Houston through Tananarive standing by.

S/C Roger

HOU Okay

HOU Gemini 12, Houston, one minute to LOS Tananarive.

S/C Roger.

TAN Tananarive LOS

And this is Mission Control Houston. 72 hours, 40 minutes and 21 seconds after liftoff. We have had loss of signal at Tananarive. Carnarvon in approximately 8 minutes. This is Mission Control Houston.

END OF TAPE

This is Mission Control at 72 hours 48 minutes and 34 seconds after lift-off. Spacecraft Gemini 12 is coming over the hill at Carnarvon, Australia tracking station. And they now have telemetry somewhat at Carnarvon. We will stand by to monitor any air-to-ground conversation. Let's listen in.

CRO — Carnarvon standing by.

S/C — Roger. When we finish up on D-10, I think we have time to sneak in mode C. I think we can do that. We will do a minute in mode D.

CRO — Okay. See an S-band track at Carnarvon.

HOU — Carnarvon Com Flight.

CRO — Go ahead.

HOU — What mode did he say he was going to try that sneak in while he had time.

CRO — Charlie.

HOU — Roger. Carnarvon Com Flight.

CRO — Go ahead.

HOU — We want to leave the C-band on.

CRO — Okay. I will turn it back on for you. 12, Carnarvon. 1 minute until LOS, see you tomorrow.

S/C Roger, and thank you.

CRO Carnarvon has LOS Gemini and Agena. All systems go at LOS.

HOU Okay, Carnarvon. Sounds like it is time for breakfast.

CRO Roger, that.

And this is Mission Control Houston. We have had loss of signal from Carnarvon, Australia tracking station. That was the last pass for today over Carnarvon. The next revolution will bring the spacecraft Gemini 12 over the first pass for the tracking ship Coastal Sentry South of Japan. Our next station in this revolution is the Hawaii Island tracking station. In approximately 18 minutes, we will come back up at that time for that pass. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, 73 hours 13 minutes and 19 seconds after liftoff. Gemini XII is just coming over the hill at Hawaii. Should be getting contact through telemetry and air to ground. We'll stand by for contact to be established. This is an 8 minute 8 second pass over Hawaii. Let's listen in.

HAW	Gemini XII Hawaii Cap Com
S/C	This is 12 Hawaii, we're finishing up D10 mode C
HAW	Roger.
	I have one item update for you whenever you are ready to copy.
S/C	Roger, stand by
	Go ahead.
HAW	Roger, this will be on this upcoming night pass. There is an S29, from FDS pitch up, 90 degrees east, 4 minutes after sunset to acquire saturn. Libration region then is approximately on camera axis if S11 bracket is used.
S/C	Roger, understand, pitch up 90 degrees 4 minutes after sunset, pick up saturn and the S11 bracket will be pointing at the libration region, thank you.
HAW	Roger.
HOU	Hawaii from flight.
HAW	Go flight

HOU Hawaii from flight.

HAW Go flight.

HOU The Agena wants to know when you do get that load in, the clock load.

HAW Yeah, it's in, and verified.

HOU Thank you.

HAW Rog.

S/C Hawaii 12

HAW 12 Hawaii

S/C Do you have sunset time or a time 4 minutes after sunset?

HAW Stand by

HOU Hawaii flight

HAW Go flight

HOU Sunset GET is 73 + 44 + 51

HAW 12 Hawaii, your sunset time will be 73 + 44 + 51

S/C Roger 73 44 51

HAW Roger

Flight we've got a problem on our time label on our automatic summaries so there probably not getting in there.

HOU Okay, thank you we'll watch for it.

HAW Roger, we're looking for it right now.

The first two went out and then we hit the problem

HOU Okay

HAW Gemini 12 Hawaii, one minute to LOS

S/C Roger

HAW We've had LOS both vehicles.

And this is Mission Control Houston. We've had loss of signal at the Hawaii Island tracking station. While we are waiting for them to come over the hill at California we'll summarize briefly the conversation over Hawaii. The crew of Gemini XII was giving pointing instructions for a run of the S29 librations region photography experiment which would use the planet saturn as a reference point. This will occur some 4 minutes after their sunset which will be at 73 hours 44 minutes and 51 seconds ground elapsed time. We're standing by now for California acquisition.

END OF TAPE

Still standing by for the State side pass. Now Conrad is putting in a call to Gemini 12.

HOU 12, Houston standing by California.

S/C Roger

HOU Ed, do you still have your HF up.

S/C We can get it up.

HOU Okay, why don't you get it up, we got one more pass there and we got a little tune or two for you.

S/C Very well.

HOU Guaymas go remote, California go local.

GYM Guaymas remote.

CAL California local.

HOU Are you picking up any music yet 12.

S/C Not yet.

HOU Okay.

S/C We are doing D-10, Mode A now Houston.

HOU Roger, very good.

HOU 12, Houston, we are reading your D-10 on the ground, and it looks like you've got a real good alignment.

S/C Yes sir, it looks like all these thrusters degraded so much they are coming out even now.

HOU Right. You picking up any music yet.

S/C Nope, haven't picked up any music yet, looks like we are passing over Acapulco again.

HOU Roger. Everybody in Amoco is enjoying the music, sorry we are not getting to you.

HOU 12, Houston, any time you can, we would like another 30 second oxygen purge at your convenience.

S/C Roger.

HOU Texas go remote, Guaymas go local.

TEX Texas remote.

GYM Guaymas local.

(Music)

END OF TAPE

HOU (Music) Thank you for the purge. Did you get the music?

S/C Roger. What song were they playing?

HOU Going Back to Houston. What else?

S/C Yes.

HOU We had a meeting in the office this morning and we just voted you two guys the two astronauts that can get the most attitude control out of the least thrusters. Congratulations.

S/C Fine. Say, as a matter of interest, Pete, that smudge on the window looks like it is on the outside of the first window, Buzz wipped my window off and it is pretty clean now.

HOU Roger.

ANT LOS Antigua.

GTI LOS GTI.

HOU 12, Houston, was he in plat mode? Was it working all right?

S/C Yes, it fired off...if you get it right in there it looks it holds. There is very very little disturbance. She will just sit there for awhile. ...hit the deadbands yet.

HOU Roger.

S/C It is holding a little bit, Houston. However it could maintain...

HOU I am sorry I did not copy the first part of that. Would you say again?

S/C It is holding, but it is...needles.

HOU You mean you are sitting up against deadband. It looks to us on the ground, 12, like you are sitting right up against the deadbands.

GTI LOS Turk.

HOU 12, Houston. We are about 1 minute 30 seconds to LOS. It looks to us on the ground like it was holding within the deadbands.

S/C Yes, that is right. She is holding.

END OF TAPE

HOU 30 seconds, see you at Ascension

LOS Antigua

And this is Mission Control Houston. We've had loss of signal at the Antigua station of the eastern test range. Be coming up on Ascension Island voice remoting station in approximately 8 minutes. At this time the crew should be getting set up for their libration regions photography experiment. It was reported that they have some 210 pounds of usable propellant remaining. Also during this just completed stateside pass more music was piped up to the crew over the second air/ground loop. One portion of the music included "Going Back To Houston". At 73 hours 45 minutes and 3 seconds after liftoff this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston. The spacecraft Gemini 12 has just been acquired by the Ascension Island voice remoting station. We are standing by for Pete Conrad to put in a call through the station to the crew of Gemini 12. There he goes, let's listen.

HOU Gemini 12, Gemini 12, Houston through Ascension - Over.

HOU Gemini 12, Houston through Ascension. You don't have to acknowledge this, when you finish your S-29, you can go ahead and power down your platform.

This is Mission Control Houston standing by at Ascension for any further conversation. There is a little over a minute remaining of this pass over the Ascension Island station and we will continue to standby until loss of signal.

HOU Gemini 12, Houston, one minute to LOS Ascension.

S/C Roger

And this is Mission Control Houston, apparently we have had loss of signal at the Ascension Island tracking station. We will come back up during the pass over Tananarive voice remoting station in approximately nine minutes. At 73 hours, 59 minutes, and 23 seconds after liftoff, this is Mission Control.

END OF TAPE

This is Mission Control Houston. 74 hours 8 minutes and 4 seconds after lift-off. Gemini 12 is coming up over the Tananarive voice remoting station. Should be getting acquisition any moment. Let's listen in to the conversation.

HOU Gemini 12, Houston standing by at Tananarive. Gemini 12, Houston standing by at Tananarive.

S/C Roger.

HOU Now that you have had time to fly a little bit, does it seem like you have gotten any of your thrusters back or a little more stuff out of them or are you in about the same shape?

S/C We are in about the same shape. It is just that....I think we get a little bit of thrust out of them. ..or just dumping fuel out. Now with this type of work, we are not moving the spacecraft around...

HOU Roger. Very good.

S/C ...yaw left or try to roll left, you pitch up and things like that.

HOU Roger.

S/C Houston, 12.

HOU Go ahead.

S/C .....

HOU Say again.

S/C Powering down. We just finished S-29.

HOU Very good. You are really clicking them off. Looks good.

And you can go ahead and power down the platform anytime.

S/C Roger.

HOU Three or four more days up there and you will really get them all done.

S/C Thanks a lot.

HOU 12, Houston. One minute until LOS Tananarive.

S/C Roger.

TAN Tananarive LOS.

And this is Mission Control Houston. We have had loss of signal at the Tananarive voice remoting station. The next station to be acquired will be the tracking ship Coastl Sentry. In approximately 15 minutes. At 74 hours 16 minutes and 32 seconds after lift-off, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston. Gemini XII is coming up over the Coastal Sentry tracking ship. They have acquired the Agena and we're standing by for Gemini to be acquired by electronic gear aboard the tracking ship. We have solid telemetry on Gemini. Gemini is go. Standing by for spacecraft communicator Bill Garvin to put in a call...there he goes, let's listen.

CSQ	Gemini 12 CSQ
S/C	go ahead..
CSQ	The only thing we've got for you this pass is an S6.....experiment
S/C	What is it?
CSQ	It's a Midway area. It's a cloud photography. Time 74 47 24, that's yaw zero at pitch down 30.
S/C	.....time again CSQ?
CSQ	The time was 74 47 34?
HOU	24
S/C	Delta time CSQ, I'm reading you 35.
CSQ	Roger.
S/C	Copy, you would like a count from us. I copy, you want a count from us, affirmative?
CSQ	Roger.
S/C	.....CSQ?
HOU	Come in CSQ.
CSQ	Go ahead

HOU Go ahead

CSQ Houston, he's completely powered down, he's got the B pumps on.

HOU He's got the B pumps on?

CSQ flight

CSQ Go ahead

HOU Just for the record we ought to have that Delta P circuit breaker on when the crew is ready to do it.

CSQ Do you want me to have them turn the Delta P circuit breaker on?

HOU Affirmative. When they are ready to.

CSQ Okay

CSQ 12 CSQ

S/C Go ahead

CSQ You can go ahead and turn the Delta P circuit breaker on.

CSQ CSQ is one minute to LOS

S/C November Delta Tango

CSQ LOS on Gemini.

HOU CSQ are you copying that Tango?

CSQ Roger. Flight. A term the question the people are working in loops.

HOU Say again.

CSQ I say, somebody's working on the circuit.

And this is Mission Control Houston at 74 hours 37 minutes and 30 seconds after liftoff. We have had loss of signal on Gemini 12 from the

tracking ship Coastal Sentry. During that pass instructions pointing instructions for an S6 synoptic weather photography experiment picture were passed up to the crew. Near midway Island at an elapsed time of 74 47 24. This is about 10 minutes from now. Gemini 12 will be acquired by the Hawaii tracking station in approximately 9 minutes. At 74 38 minutes and 16 seconds after liftoff this is MIssion Control Houston.

END OF TAPE

This is Mission Control Houston, 74 hours, 49 minutes and 4 seconds after liftoff. Should be acquired by the Hawaii Island tracking station at any moment. Standing by for indications from the spacecraft communicator out at Hawaii, Keith Kundel. He is putting in a call now, let's listen in.

HAW Gemini 12, Hawaii standing by.

S/C Roger.

HAW And he has closed the Delta P circuit breaker.

HOU Roger.

HAW He said that the power relay would not reset on the Agena, so we sent the command.

HOU Roger.

HAW Pilots internal lead indicates that is loose. At least we are not getting anything out of it.

HOU We had that earlier.

HAW Okay, just thought we would check on it.

HAW Okay, he just turned the OAMS control system back on again.

HOU Roger

HAW Playing the tape dump on Gemini.

HOU Roger

HAW Gemini 12, Hawaii, one minute to LOS.

S/C Roger.

HAW LOS Hawaii, all GO.

HOU Roger, Hawaii - see you next pass.

And this is Mission Control Houston. We have had loss of signal at the Hawaii station. In approximately one minute the spacecraft Gemini 12 will be coming across the California, Guaymas, Texas acquisition areas. However, it will not be what you would call a stateside pass in that they stay off shore during this pass in the Pacific and eventually cross the West coast of South America at approximately Bolevia. They will not come over the stations of the Eastern Test Range. This will also be the last stateside pass of the evening. Let's join the conversation.

HOU Gemini 12, Houston at California - over.

S/C Roger - Gemini 12.

HOU Okay, I've got your sunset time for your

.....

END OF TAPE

HOU Okay I've got your sunset time for your T2 mode A sequence 1 if you are ready to copy.

S/C Go ahead

HOU Roger. 75 + 15 + 01

S/C Roger

HOU And you can turn your x-ray on Beta with mag and leave it on for the rest of the night please sir.

S/C Okay

HOU And that's it, we're standing by.

S/C Roger.

HOU Guaymas go remote California go local

GYM Guaymas remote

CAL California local

This is Mission Control Houston again. A fairly quiet pass this time over the states or over the stateside stations at any rate. So far the only conversatinn is involved updating on sunset time of the upcoming T2 Space sexton experiment. The experiment is scheduled on the flight plan for 75 hours 18 minutes ground elapsed time and it will be measurements angular measurement with the sexton between the stars Betelguese and Rigel. The ground measured angles are 18.6 degrees and an earlier measurement with the sexton in the mission they have come up with measurements out to 3 decimal points. 18.611 with the sexton which is pretty close probably more accurate than the ground measurements. We'll continue

to monitor the air/ground during this final stateside pass of the evening for any further conversation.

HOU 12 Houston

S/C Go ahead

HOU Roger, after you get these readings this time if you could pass those to CSQ we'd like to look at them tonight to influence what we give you tomorrow with respect to the T2.

S/C Okay. we'll give it a try.

HOU Okay and I thought you ought to know that we've got the big TR clock started up and counting on' the board. It's 18 53 58 and counting down.

S/C Sounds good.

CSQ Texas go remote Guaymas go local

HOU Texas remote

GYM Guaymas local

HOU 12 Houston, one minute to U.S. LOS

S/C Roger

HOU Have a pleasant evening.

S/C A night on the town.

HOU Tonight is the big fight here in Houston between Clay and Williams. We'll keep you advised.

S/C It is tonight.

And this is Mission Control Houston. Apparently we've had loss of signal off the lower edge of the Texas station. Gemini XII will pass at the very extreme northern hitch of the Rose Knot tracking

acquisition area. The elevation angle during this pass will be .25 degrees which is just barely over the horizon. At 75 hours 9 minutes and 41 seconds after liftoff this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston at 75 hours 43 minutes and 4 seconds after lift-off. Gemini 12 is coming up over the Tananarive voice remoting station. We will stand by for any transmission from Mission Control here through the Tananarive station. The pass over the Tananarive station will last about 8 minutes and 12 seconds. The crew should be beginning their eat period at approximately 7 minutes. Retrofire clock here in Mission Control now shows 18 hours 15 minutes and 35 seconds until retrofire. Still standing by for any possible air-to-ground communication through Tananarive. Here we go.

HOU	12, Houston standing by Tananarive. Houston, Gemini 12.
S/C	Roger, copy.
HOU	Okay, are you busy?
S/C	Well, we are trying to fix it...stow to get ready for dinner.
HOU	Okay, I got a couple of things if you can copy, if not we can give it to you at CSQ.
S/C	I will get it at CSQ, Pete.
HOU	Okay. 12, Houston. You need not acknowledge, but right now CSQ air-to-ground, both transmitters are out and they may not be up on your pass over them.
S/C	Roger, understand, CSQ is out at this time.

HOU Yes. (PAUSE) 12, Houston. One minute until LOS Tananarive.

S/C All right.

TAN Tananarive LOS.

And this is Mission Control, Houston. We have had loss of signal through the Tananarive voice remoting station. The next station pass will be the Coastal Sentry in approximately 15 minutes. Meanwhile, the present weather in the prime landing area in the Western Atlantic, we have scattered clouds at 2500 feet, winds from the north at 13 knots, visibility 10 miles, waves 2 feet high, no swells. Forecast for tomorrow in the prime landing area, 2000 feet scattered broken, - scattered to broken clouds, wind out of the north at 15 knots, 10 miles visibility, 4 foot waves, 5 to 7 foot swells. A weak cold front is due to pass through the prime landing area early Tuesday morning. At 75 hours 53 minutes and 9 seconds after lift-off and 18 hours 6 minutes 46 seconds until retrofire, this is Mission Control Houston.

This is Mission Control Houston. For the world-wide weather outlook, we have with us this afternoon, Mr. Ken Negler, of the U. S. Weather Bureau. He (tape skips) - composite of satellite series of photos of weather. Ken, that looks like

the Indian Ocean area. Is that correct?

NEGLER Yes, this is the Indian Ocean area. A picture taken earlier today by the ESSA III satellite. Now in our weather support of manned missions, we have used weather satellite information for a number of years. But this is a new form of this data. A mosaic whereby the data is printed out in map form and it turns out to be very usable. Here, in the - this is the Arabian pensula here, Africa, and this is the remanents of a tropical storm, a typhoon which moved from the Arabian Sea into Arabia. And here, over India, is another tropical storm which moved in and is dissipating over India today. As you can see, you can very clearly make out the ocean and continents on this new mosiac. Here is another map, this was taken yesterday afternoon of the North Atlantic area. Here we have drawn on the continental boundaries, because they didn't show up quite so well, but this shows the type of very broad coverage that we can see each day, from the weather satellite.

NEGLER Of interest here was the frontal weather that we had moved through yesterday. This has cleared out. Today of course. And this is a disturbance in the Central Atlantic that we have been watching, but it is well to the east of our landing area out there. We just thought this would be rather interesting because it does give us such a very broad view of the cloud systems and all around the world, each day.

MISSION CONTROL In all likelihood, then, the crew of Gemini 12 has been photographing these areas in the S-6 Synoptic Weather Photography experiment. This should be quite interesting to see when they get back. We thank you a lot, Mr. Negler, and we will be talking to you later as we approach splashdown tomorrow morning. This is Gemini Control.

END OF TAPE

This is Mission Control Houston, 76 hours, 5 minutes, 44 seconds after liftoff. Spacecraft Gemini 12 has just been acquired by the tracking ship Coastal Sentry South of Japan. During this pass over the Coastal Sentry there is a series of planned landing updates that will be passed up to the crew. Purge of the fuel cells and a readout of cryogenic oxygen remaining. We will standby for the conversation... there it starts.

CSQ Gemini 12, CSQ.

S/C Roger.

CSQ Go ahead, start your fuel cell purge whenever you are ready. Section 1 and then section 2. Regular purge.

S/C One and then two.

CSQ And I've got a PLA update for you and also a flight plan update.

S/C You want to give me the flight plan update, Mike.

CSQ Okay.

S/C .... garble ...

CSQ Cryo 75 5920 - 4889. .2 degrees East - right Ascension. 10 hours, 17 minutes. 761614 S-6 yaw left 43 degrees, pitch down 30 degrees - Marcus Island. 762233 S-6 yaw 10 degrees, pitch down 30 degrees - Midway Island. 76:28:26 S-6 yaw right 0 degrees. Pitch down 30 degrees - Hawaii Islands. That's the end of the update.

S/C For the S-6 yaw left

CSQ The second S-6 was yaw 0 degrees, pitch down. The first one I gave you was yaw left 43 degrees.

S/C Roger - have it.

CSQ The spacecraft ... Flight

HOU Roger

S/C ..... 2 minute purge check.

CSQ That's affirmative.

S/C. ....

CSQ Okay, 49-3 Alpha. 77:21:04 ... 0 + 38, 26 + 16. The bank angles for all areas are roll at 85, roll right 95. The weather is good in all areas. Area 50-3 Alpha 78:56:38 30 +28 25 + 58, Area 51-3 bravo 80:32:16 20 + 02, 25 + 30, Area 52-CC 82:06:10, 19 + 44, 25 + 09. Area 53-AC 83:02:46, 20 + 14, 26 + 05. Area 54-AC 84:36:59, 20 + 25, 26 + 13. Area 55-A 86:12:39, Uh delay that, that's 86:42:36, 20 + 36, 26 +20. That will be the update.

S/C Roger, have them all - thank you.

CSQ Flight, CSQ.

HOU Go ahead.

CSQ Okay, the purge is going good, we're just about finished.

HOU Okay. Glad to hear you have your air-to-ground.

CSQ Got some good techs out here.

CSQ Flight, CSQ

HOU Go ahead

CSQ Uh, we show the Agena ... load reset.

HOU Roger - Okay, have you got everything down then except T-2.

CSQ Say again Flight.

HOU Did you get all your pass side completed.

CSQ I have not got the cryo readout yet. I'll wait until they finish this purge.

HOU Okay, and then see what you can get on T-2, he said he would try to read them down over your site.

CSQ I can't read you too well Flight.

HOU And he also said he would try to read you the T-2 numbers.

CSQ P-2 numbers?

HOU Tango 2 numbers.

CSQ Okay

CSQ Would you put the cryo switch to O_2. We are standing by to copy the T-2 numbers if you get a chance.

S/C Roger, we switched to O_2.

CSQ Okay, would you go to H_2.

S/C ..... pressure reads 75. +2 00 +37 ... 25 ... 50 55 ... .5 ..... 45 ... 105 ....438 38 ... 18.04 .... 05 ... B ... 08 4 .... 05 (fading)

HOU CSQ, Flight.

CSQ Go ahead Flight.

HOU Did you get all the way through it.

CSQ Negative, I got LOS here. I copied a part of it, didn't copy all. The air-to-ground was pretty rattie.

HOU Okay, send in what you have.

CSQ Roger, will do.

And this is Mission Control Houston. We have had loss of signal at the tracking ship Coastal Sentry. Coming up on Hawaii in approximately 9 minutes. We will standby and come up again at that time. At 76 hours, 15 minutes, 41 seconds after liftoff, and 17 hours, 44 minutes, 14 seconds until retrofire, this is Mission Control.

END OF TAPE

This is Gemini Control 76 hours 24 minutes 3 seconds in to the mission of Gemini XII. Gemini XII spacecraft is approaching the Hawaii tracking station we should hear comments between the crew and Hawaii at that time. Hawaii should acquire the spacecraft as of 1 second ago.

That's affirm

HOU Okay we've got initial contact, still pretty shakey.

HAW Rog.

HAW .....just taking pictures here.

This is Gemini Control we've had no voice contact yet with the Hawaii station, but we should be completing.....

HAW Hawaii.

S/C Go ahead Hawaii, 12 here.

HAW We were having LOS on the CSQ could you give another readout on your T2 experiment? Please.

S/C Roger, did you copy any of it?

HAW Oh, we might have gotten some of it let's do the whole thing over again.

HOU Hawaii AFD

HAW Go

HOU Like all the Agena sums at your LOS

S/C Okay, the reference time is 75 12 00, first measurement 05 elapsed time 08 14 1/2. Give you the last

two numbers. 95 95 95 05 03 star to star measurement 18.604 the remaining will be the last two numbers 05 08 05 09 04 05 06 06 05 04 05 06 04, did you copy.

HAW That's affirmative 12, thank you.

S/C And the last measurement elapsed time from the reference 29 11 point zero.

HAW Roger

S/C And at the 05, the reason for jump the first three to the last two is that the cog seems to hang up in the vicinity of zero and it jumps across there if your're very careful, I'll have to look at that a little bit more.

HAW Roger. Thank you.

HOU Hawaii AFD

HAW Stand by. Okay, go ahead, I was trying to make sure I got it all copied down while I still remember.

HOU Okay, did they get the H2 heater on to raise the pressure, then go back to auto?

HAW Negative, not as yet. As far as I know on the H2 stand by one.....Okay we're showing 265 on H2 which is up pretty high.

HOU Say again the number

HAW 265 PSI

S/C 12 Hawaii, could you give us a PQI please.

HAW its....about 23 or 24 percent

S/C Roger, thank you.

HAW What do you think AFD

HOU Go ahead

HAW Do you still want to bump it up higher?
We don't think the heaters on here.

HOU Bill, get us a crew status report here before you lose them.

HAW Rog.
Okay, the crew status reports verify the H2 heater is in auto.

HAW Gemini 12 Hawaii, would you verify the H2 heater is in auto.

S/C Roger, it's in auto, do you want us to at this time run it up to 667 right?

HAW Rog. And we'd like a clear status report.

S/C The drink counter is 2074. We haven't had a change of pressure yet. The pilot has eaten three meals today, the command pilot only two since he was trying to find Hawaii all this time. And I'll try and get at it as soon as I can. And no sleeping so far today.

HAW Okay, thank you much.
12 Hawaii we'll have LOS in about a minute here and we would like to say Good Night from the Garden Island of Hawaii.

S/C Thank you. Garden Island.

HAW Aloha

S/C Rog.

This is Gemini Control, we will have no further conversation from the crew this evening. They are now in their sleep period at 76 hours 32 minutes 20 seconds in to the mission. The wakeup time should be about 84 hours 30 minutes. A short recap, the weather in the west Atlantic landing area as you heard before is anticipated to be good for tomorrow. The planned landing time .....you just heard the crew status report, the pilotate three meals, the command pilot ate two meals today. The H2 heater is on automatic position, the PQI as it is referred to or the propellant quantity in the OHMS orbittal attitude maneuvering system stands at 23.4 percent. The spacecraft is in good shape everybody said good night to them, they are now in a sleep period. At 76 hours 33 minutes 14 seconds in to the mission this is Gemini Control....

END OF TAPE

This is Mission Control 77 hours 3 minutes (skipped)..1 seconds into the mission of Gemini 12. The position of this Gemini 12 spacecraft presently is over the South Atlantic. The Tananarive tracking station should acquire at 77 hours 10 minutes 23 seconds. The crew entered their sleep period at 76 hours 32 minutes, which is a half an hour ago. Presently, in MCC we have the White Team on duty. This is the only team in the history of Gemini, I believe, that changed its color in the middle of the mission. We started as the Blue Team. We are now the White Team. Gene Kranz is acting as Flight Director. We have relieved the Black Team. Astronaut Gordon Cooper is presently in the Control Center conversing with Bill Anders and with Gene Kranz on the flight. During the sleep period, the D-10 Ion-sensing attitude control equipment will be on in mode foxtrot, for random data during drifting flight during this sleep period. The Flight Director has checked out his controllers; all controllers indicate that systems look okay. The fuel cells are operating in good condition. This is the last night and the last flight in the Gemini Program. 77 hours 4 minutes 55 seconds into the mission, this is Gemini Control.

END OF TAPE

This is Gemini Control 78 hours 3 minutes 31 seconds in to the flight of Gemini 12. The position of the spacecraft is in the acquisition area of the Hawaii tracking station. The pilots entered their sleep periods one hour and one half ago at 76 hours 32 minutes in to the mission. We have had no voice contact with them since that time. The Hawaii tracking station reports the command pilot is asleep, the pilot is probably awake at this time. At 78 hours 4 minutes 6 seconds in to the mission, 15 hours 55 minutes 48 seconds until retrofire, this is Gemini Control.

END OF TAPE

This is Gemini Control, 78 hours, 24 minutes, 5 seconds into the mission of Gemini 12. We have come up to a position here now where the Flight Director Gene Kranz, because of the hydrogen pressure in the fuel cell system, has decided that he should wake the crew up at the Rose Knot tracking ship on the West Coast of South America and request the pilot to check to be sure that the hydrogen, the H_2 switch is in the Auto position. We are standing by now for the Rose Knot contact with the astronauts in Gemini 12.

RKV

HOU Okay, Bill, after you are through with that if the crew has time, if Jim comes up, ask them since they are awake, you could have them give you a 30 second O_2 purge.

RKV Roger. ... 04 reads 350.

HOU 350

RKV That's affirm.

HOU Okay, wait until you get about another 30 seconds in your pass and then wake the crew up.

RKV Roger -They don't look like they are asleep.

HOU Okay.

This is Gemini Control, in about 28 seconds the RKV will wake the crew up and you heard the instructions given by Gene Crance, the Flight Director, we are now awaiting that time to find out about the H_2 switch.

RKV Gemini 12, RKV.

RKV Gemini 12, RKV.

S/C Go ahead RKV.

RKV Hate to bother you Gemini 12, but your H_2 looks like it is building up a little bit. Would you verify the position of the H_2 switch as being OFF.

S/C That's right it is OFF, we noticed the same thing .....

RKV Okay, would you place the H_2 switch to OFF.

S/C It's off.

RKV Roger, apparently .....

HOU[RKV Com Houston Flight

RKV Roger - standby one. - Go ahead Flight.

HOU Roger, did he place the switch to OFF when you ask him, or did he have it off.

RKV He had it in Auto, and the pressure was still building up, and then he placed it to OFF.

HOU Okay, while you got them, you might as well ask them for a 30 second fuel cell purge, O_2 purge there, and you can tell them we will watch it for the next rev.

RKV Gemini 12, RKV

S/C Go ahead

RKV Okay, we are sorry we woke you up, give us a 30 second O_2 purge, and leave your H_2 switch in the OFF position now, and we will be looking

at it through this next rev.

S/C Roger.

This is Gemini Control. You heard that exchange between Gemini 12 and the Rose Knot tracking ship. The Gemini 12 crew was advised that on the Automatic position for the H_2 switch pressure was building up in the hydrogen system so they were advised to cut the H_2 switch off. This they did, they had an O_2 purge and Gene Kranz, the Flight Director advised RKV to advise the crew that we will watch it for the next revolution. The reactant supplies for the fuel cells are located in the adapter section in vaccum insulated containers. These containers store hydrogen fuel, which is the fuel for the fuel cells and oxygen and these are stored at super-critical pressures and cryogenic. Cryogenic are very extremely low temperatures. Heaters are employed in the system to energize and have a slight rise in temperature which causes the liquid to expand since these gases are stored in the liquid state. When the expansion takes place in those tanks the pressure rises and the gas molecules combine with the liquid molecules into a homogenous state. When those heaters remain on, naturally, as I said, the pressures continue to rise, causing venting of the system. We do not desire to have the hydrogen system vent too much. We are watching it for one more pass at 78 hours, 29 minutes, 51 seconds into the flight, this is Gemini Control.

END OF TAPE.

This is Gemini Control 79 hours 3 minutes 31 seconds into the flight of Gemini 12. The Gemini 12 spacecraft has just left the east coast of Africa. The Coastal Sentry tracking ship should acquire the spacecraft at 79 hours 17 minutes 6 seconds into the mission. To recap a little bit on our fuel cell problem, it was noticed a short while ago about 25 minutes ago over the Rose Knot ship or around that time, when Rose Knot had acquisition, that the hydrogen tank pressure was high in the fuel cell system. Gene Kranz, the Flight Director, directed that Rose Knot inquire of the astronauts if the H_2 heater was in the automatic position. This was done. The astronauts indicated that it was in an automatic position and the pressure was still high. This possibly could indicate a malfunction in the switch. We don't know at this time. There was a further exchange with the astronauts over the Rose Knot where it was indicated that they should cut the circuit breakers off on the heaters and Gene Kranz advises that with the pressure in both the oxygen and the hydrogen system at their present level, they are high enough to sustain the fuel cells through the night and through the mission. So it does not appear as we have an occasion or will have an ocassion to wake the crew again. We are keeping a close look on it and we will advise you if there is any further happening in that direction. Gene Kranz also advises the Rose Knot that they have a singular

position out there, because this is the third night in a row where the crew was awakened prematurely. At 79 hours 5 minutes 36 seconds into the flight of Gemini 12, this is Gemini Control.

END OF TAPE

This Gemini Control. 80 hours, 3 minutes, 30 seconds into the flight of Gemini 12. Gemini 12 is just coming over the Western Coast of South America. RKV our Rose Knot tracking ship has acquired the vehicle. He reads out that the spacecraft is GO. The sleep period was entered at 76 hours and 32 minutes into the mission and will end at 84:45. All of this is not sleep time however, they were awaken once shortly after the sleep period was announced. They have gone to sleep though. Our doctor advises here in the Control Center at 79 hours approximately, the pilots entered a sleeping state. Heart rates are - for astronaut Lovell 50 beats per minute, astronaut Aldrin 45 beats per minute. Respiration for Lovell 15 per minute, Aldrins 10 per minute. Our present apogee is 157.5 nautical miles, present periogee 142.9 nautical miles. A short recap on the situation that happened with the fuel cells might serve a purpose. It was noticed in the last revolution, revolution 49, that the hydrogen tank pressure fuel cell was not too high, but tending to go high. It was also indicated that we should wake the crew up by Gene Kranz, Flight Director, indicated we should wake the crew up and have them check that the H_2 heater was in the Automatic position. This was done at Rose Knot tracking ship, on the last pass. The heater was in the Automatic position so Mr. Kranz had them turn off the heater. The pressure in both oxygen and hydrogen systems are sufficient to complete this sleep period and also we have enough in both systems to complete the mission for that matter. The heater circuit breakers have been

and both tanks have been pressurized to that extent. We have 30 percent roughly of hydrogen left, which is a comfortable quantity, and at this time there is certainly no cause for concern. At 80 hours, 6 minutes, 31 seconds into the mission this is Gemini Control.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/14/66, 11:50 PM CST

This is Gemini Control, 81 hours, three minutes, 30 seconds into the mission of Gemini 12. The Gemini 12 spacecraft is over the west Pacific Ocean at this time. The next contact by telemetry will be with Canton station at 81 hours, nine minutes, 52 seconds into the mission. The astronauts are in a sleep period. They are asleep. We have had no voice contact, therefore, with them. They have been in this period for some four hours, 35 minutes. Their wake-up time is scheduled to be 84:45 -- 84 hours, 45 minutes. The fuel cell pressures and quantities for the hydrogen and oxygen systems have settled down very satisfactorily. The H_2 pressure currently is 334 pounds per square inch. Quantity -- 30.9 per cent. Oxygen is 820 pounds per square inch. Quantity -- 19.6 per cent. This is very satisfactory. Gene Kranz, the flight director, indicates that at this time Gemini 12 is go. At 81 hours, four minutes, 48 seconds into the flight of Gemini 12, this is Gemini Control.

END OF TAPE

This is Gemini Control, 82 hours, three minutes, 31 seconds into the flight of Gemini 12. The current position of Gemini 12 is just passed over the west coast of Africa. The Kano tracking station has telemetry acquisition at this time. We're in a sleep period still, some four hours and 35 minutes into it. Wake-up time is 84 hours, 45 minutes. Our fuel cell hydrogen and oxygen pressure and quantities are much the same as the last report. That is, for the hydrogen -- 334 psi pressure. Quantity -- 30.9 per cent. Oxygen -- 820 pounds per square inch. 19.6 per cent. We have a good box score so far on this last flight in the Gemini program. We have accomplished rendezvous and docking. We have accomplished the tether exercise. We have accomplished two stand-up EVA's and one umbilical EVA. We have accomplished our experiments. We have not accomplished our 400-mile apogee over the United States because we did not have a primary propulsion system burn on the Agena. Tomorrow, hopefully, we will accomplish also the automatic reentry of our spacecraft Gemini 12. The weather in the prime -1 area is satisfactory. We have scattered clouds forecast at 2500 feet. The wind 350° or roughly out of the north at 13 knots. We have ten miles visibility forecast. We have four-feet waves forecast, and we have five to seven-foot swells forecast. That is certainly satisfactory weather for the prime landing area. At this time in the mission, all goes well with Gemini 12. This is Gemini Control at 82 hours, five minutes, 49 seconds into the mission.

END OF TAPE

This is Gemini Control, 83 hours, three minutes, 31 seconds into the flight of Gemini 12. Our position is approaching west coast of South America. Acquisition by Rose Knot tracking ship should occur within approximately six minutes. The astronauts are still in a sleep period. They should be awakened in approximately one hour, 40 minutes from this time. We have some readouts on the fuel cell hydrogen and oxygen systems here. The H_2 pressure now stands at 327 psi -- pounds per square inch. Quantity -- 30.1 per cent. The oxygen pressure -- 790 pounds per square inch. Quantity -- 18.8 per cent. This is well within the ball park. The flight director, Gene Kranz, is well satisfied with these readings. We have an update on our flight plan -- a tentative update on our flight plan for today. At 84 hours, 45 minutes, over the Rose Knot, the X-ray will be turned off and the beta spectrometer turned off. They will begin their eat period. At 85 hours, 10 minutes, Canary Islands. The S-3 unit will be fixed on mark. They will purge fuel cells two then one. The cryogenic O_2 and H_2 readouts and the cryo read off. The flight plan update -- planned landing area update. At 85 hours, 40 minutes, they will end their eat period. At 85 hours, 45 minutes, the T-2 manual navigations star sightings experiment -- mode A, sequence two. At 86 hours, 20 minutes, they will load module four. At 86 hours, 30 minutes at Antigua, they will have a crew status report. At 86 hours, 40 minutes, the S-6 synoptic weather experiment. At 86 hours,

50 minutes, the S-5 mode A,sequence four synoptic terrain photography experiment. At 87 hours, 15 minutes, we will have another T-2 manual navigation star sightings, mode A,sequence two experiment. At 87 hours, 50 minutes, we will have more S-6 synoptic weather photography. At 88 hours, five minutes over Antigua, they will pass up thruster test procedures and turn A pumps on. At 88 hours, 10 minutes, more S-6 synoptic weather photography. 88 hours, 25 minutes, more S-5 synoptic terrain photography, mode A, sequence four. At 88 hours, 40 minutes, they will power up the platform of Gemini 12. 88 hours, 45 minutes, the T-2 manual navigation star sightings experiment, mode B, sequence one. 88 hours, 50 minutes, at Carnarvon, purge the fuel cells, section one then two. Cryogenic O_2 and H_2 readouts. 89 hours, 20 minutes, the platform will be aligned. 89 hours, 40 minutes, the D-10 ion sensing attitude control experiment in mode G. 89 hours, 55 minutes, thruster test. At 90 hours, 30 minutes into the flight, they will stow equipment. 91 hours, 30 minutes will be an eat period until 92 hours, 30 minutes when they will begin retro preparations. All looks well in the recovery area as far as weather goes. We have a forecast which shows waves one to two feet. Wind out of the north at eight knots. Visibility 10 miles, the cloud base 2000 feet, scattered. That looks like ideal weater in the recovery area. At 83 hours, eight minutes, 18 seconds into the mission of Gemini 12, this is Gemini Control.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/15/66, 2:50 AM CST

Gemini Control, Houston, 84 hours, three minutes now into the flight of Gemini 12. Jim Lovell and Buzz Aldrin in their sleep period -- the final stages of their sleep period are now passing within acquisition range of the Coastal Sentry Quebec. This is an interesting landmark in the flight of Gemini 12 and in the Gemini program in that this will be the last pass made over the CSQ in Project Gemini. The Gemini 12 spacecraft is now in its 53rd revolution at this time. Its apogee, perigee readings are 157.3 for apogee, 142.9 for perigee. Meanwhile in Mission Control Center, Houston, we are undergoing a change of flight control teams. The green team of flight controllers is now aboard and ready to take over from the white team which will be relieved momentarily. At 84 hours, five minutes into the flight of Gemini 12, the final flight of the Gemini program, this is Gemini Control, Houston.

END OF TAPE

Gemini Control Houston, 84 hours, 50 minutes into the flight of Gemini 12 now. The decision was just made in the Control Center to awaken the crew over the Rose Knot Victor. The RKV is talking to the crew now and let's pick up that conversation.

S/C ...one telemeter is off, so we concur and we'd like to go over to zero.

RKV Roger.

HOU RKV, you might as well get his X-ray and Beta off and go ahead with the eat period since they are awake.

RKV Okay. 12, as soon as you get a little bit awake here, I've got some information for you.

S/C Okay.

RKV Would you turn your X-ray and Beta off?

S/C X-ray and Beta going off.

RKV Roger. When you get over Canarys the next pass, at 85:06:00, they'll have a flight plan and PLA update for you.

S/C Roger. Flight plan update and PLA update.

RKV Roger, that's it.

HOU RKV, Houston Flight.

RKV Go Flight, RKV.

HOU We would like to get a 30 second O_2 purge at this time, both sections.

RKV Roger.

RKV 12, RKV.

S/C Go ahead.

RKV Roger, we'd like to get a 30 second O_2 purge at this time on both sections.

S/C Roger, 30 second purge both sections coming up.

RKV Roger.

HOU RKV, Houston Flight.

RKV Go, Flight.

HOU You might remind them to go ahead and start eating.

RKV Roger. Okay, 12, when you -- at your convenience, you can start your eat period and I think it's planned between now and 80-- 85:25:00.

S/C Roger.

RKV And you are about one minute to our LOS, and I just want to say Adios, see you at the Apollo program.

S/C Roger, thank you very much. You've been a help all through the flight.

RKV Agena TM off.

Flight, we didn't get the complete purges. We didn't copy them in real time.

HOU Okay.

RKV We had to get the TM off. We have LOS both vehicles. Both vehicles go.

Gemini Control Houston. We've just had loss of signal with the Rose Knot Victor. As you just heard, the crew was awakened over the Rose Knot Victor. They are now performing a fuel cell purge, and as was indicated last night, or yesterday evening, in the commentary, the final night of sleep for a Gemini crew in space was interrupted -- interrupted by a buildup in hydrogen tank pressure. To alleviate this problem, the crew was awakened and pulled their circuit breakers which in turn stabilized this pressure. The pressure reading had gotten up to 337 psi. There was some concern that a buildup beyond 350 psi might cause the hydrogen to vent, which we did not want to happen. The hydrogen tank pressure is -- has since stabilized. At our last reading over the Rose Knot Victor indicated 317 psi, so we are in good shape. In Mission Control, Cap Com Bill Anders is now aboard. Bill Anders, who has talked to the crew through the three EVA's of this mission, again is wearing cowboy boots to work. This has become quite a tradition here in the Control Center. Pete Conrad, the other Cap Com, has traditionally worn his billed cap, which he had aboard the recovery ship following Gemini 11. Our next station to acquire will be Canary. Acquisition time is 85:05:26. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 85 hours, 5 minutes, into the flight of Gemini 12 at this time. We are approaching acquisition with the Canary tracking station. We are in the beginning of the 54th revolution. We expect contact with the Gemini 12 crew momentarily, and we are standing by for that contact.

HOU Canary Cap Com, Houston Flight.

CYI Go ahead, Flight.

HOU Okay, you have any questions?

CYI Negative.

HOU Okay, just go ahead in real time on this flight plan update until you get to 85:45, so he doesn't have to copy all that jazz. In other words, do the fuel cell purge, the S-3. Copy?

CYI Copy.

[illegible] Gemini 12, Canary Cap Com.

S/C Go ahead, Canarys.

CYI Good morning.

S/C How are you?

CYI Fine thank you and you?

S/C Well, we had another fuel cell stack went out, that's all.

CYI Roger. We've got a special fuel cell purge we want to pull here. We'd like to do a 30 second O_2 purge on section 2.

S/C A 30 second O_2 on section 2, roger. We just did a 30 second O_2 on both sections.

CYI Roger, they want another one.

S/C Roger, another one on section 2.

CYI And when you finish that one, then we'll do 30 seconds more on section one O_2 purge.

S/C Two 30 seconds coming up, on section 2.

HOU Canary, from Flight.

CYI Go ahead, flight.

HOU Can one copy while one purges?

CYI Roger. I thought you wanted to step through this purge, though?

HOU Yep.

CYI Okay.

HOU We've got a lot to do.

S/C Section 2. You ready for one now?

CYI I've got a lot of stuff for you to copy, if you can copy while we're purging here.

S/C Go ahead.

CYI Okay, I've got a notal update. Time 83:28:29, rev 53. 25.8 degrees west, right Ascension, 10 hours, 07 minutes.

S/C Okay.

CYI Okay, we'd like a 12 second H_2 purge on section 2, then 12 seconds on section one.

S/C Twelve seconds on 2, then 12 on 1.

CYI Roger. Okay, I've got some flight plan updates here for you.

S/C Okay.

CYI 85:45; T-2, load A, sequence 02. 86:20, load module 4. 86:29 at Antigua, crew status report. Okay, now on the purge, we'd like a 90 second O_2 purge on section 2 followed by a 90 second O_2 purge on section 1. Gemini 12, Canarys.

S/C Go ahead.

CYI Okay, we'd like to fix unit 2 of the S-3 experiment on your mark. Roger, stand by for the mark.

S/C Roger, you ready?

Ready.

S/C Fix the unit 2, 3, 2, 1, Mark.

...(garbled)

CYI Okay, we've got that. Okay, I'll continue the flight plan update here. At 86:44, S-6, sequence 01, north of track. 86:54, S-5, mode A, sequence 04. 87:15, T-2, mode A, sequence 2. 87:57, S-6, sequence 08, south of track. 88:15, S-6, sequence 07, strip photos, north of track. 88:30, S-5, load A, sequence 04. At 88:40, powerup platform. At 88:45, T-2, load B, sequence 1. At 88:51, at Carnarvon, purge fuel cells, section 1, then 2. At 89:20, align the platform. At 89:40, D-10, mode G; we've got about 30 seconds to LOS, so I'll stop here. We'll pick up the rest of it later.

HOU Kano go remote.

S/C Roger, I copied.

KNO Kano is remote and we have acquisition.

HOU Gemini 12, Houston, Cap Com through Kano, over.

S/C Roger, Houston through Kano.

HOU Good morning. I'd like to give you this PLA block update, now, Jim.

S/C All right, stand by.

HOU Gemini 12, Houston Cap Com, over.

S/C Go ahead.

HOU Roger, you ready to copy a PLA block?

S/C Righto.
Send it up.

HOU Roger. Area 56, Alpha, Charlie. 87:49:32, 20 + 34, 26 + 19, 57 - 1 Alpha. 89:13:48, 20 + 36, 26 + 24, 58 - 1 Bravo. 30:49:24, 20 + 36, 26 + 19; correction to 58 - 1 Bravo. That's 90:49;24.

S/C Houston, number GETRC?

HOU That's GETRC for 58 - 1 Bravo. We have 30 seconds to LOS. We'll pick up the rest later, Gemini 12.

S/C Roger.

HOU And, were you able to complete your purge?

S/C Roger, purge is complete.

HOU 30 seconds to LOS.

KNO Kano has LOS.

Gemini Control Houston. We've had loss of signal over Kano. We are out of range of Kano now. During this pass, we've passed both over the Canary Island station and went immediately into Kano where Cap Com Bill Anders talked -- remoted through that African station. The S-3 referred to in the pass over Canary is the S-3 experiment. That's the frog egg growth experiment. On the time hack or mark you heard given by the Canary Cap Com, the crew activated a lever or actuated a lever for the second frog egg unit. The first unit was activated midway through the Gemini 12 mission. This is the second of two units. We'll be a long time now before we have our next station contact. Next station contact as a matter of fact is over Antigua and this is at 86:hours, 29 minutes, and 1 second GET. Over an hour from this time. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 86 hours, 3 minutes into the flight of Gemini 12 at this time. The Gemini 12 spacecraft with its crew of Jim Lovell and Buzz Aldrin is now passing over the south Pacific well out of range of tracking stations at Canton and Hawaii, and during this quiet pass, we have preliminary times for the retro sequence, which is scheduled for early this afternoon. The GET for retro that we are looking at at the present time, is 94 hours, 1 second. Time for retro adapter separation would be time of retro plus 45 seconds. Time for 400,000, 400 K, would be retro plus 20 minutes, 10 seconds. Time to begin blackout, retro plus 22 minutes, 21 seconds, time for end of blackout, retro plus 27 minutes, 19 seconds. Time for 50 K, drogue chute deploy, retro plus 29 minutes, 7 seconds. Time for main chute deploy, retro plus 30 minutes, 49 seconds. Time for splash, retro plus 35 minutes, 10 seconds. Weather advises that weather conditions in the prime recovery area in the western Atlantic, this is recovery area 60-1, are satisfactory for splashdown this afternoon. We forecast partly cloudy skies with very isolated showers in the vicinity of the aiming point area, with winds at -- to be northerly at 15 knots and wave heights 3 to 4 feet. Our predicted weather in the prime recovery area appears almost identical to that which we had for the Gemini 11 splash. With the exception of our forecast wind direction. At 86 hours, 6 minutes, into the flight of Gemini 12, at this time, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 86 hours, 29 minutes now into the flight of Gemini 12. The Gemini 12 spacecraft is approaching acquisition at Antigua. We're standing by for this pass. We expect a crew status report to take place during this pass. Standing by this is Gemini Control.

S/C Roger, Houston.

HOU Roger, if you have module 4 loaded you can turn your computer off, please.

S/C It's not loaded yet. Houston, we want to check a procedure with you.

HOU Go. Go ahead. Gemini 12, Houston. Go ahead.

S/C Roger, we've run out of water and we have put the squeeze bulb .... down below and opened up the valve next to the ... and we just want to check that our H_2O switch should go to the off position. Is that correct? We don't have that in the procedures book.

HOU We'll check it out for you. We'd like to give you a flight plan change in update if you're ready to copy.

S/C Go ahead.

HOU Roger, the item we gave you at 88:15 and 88:30 we'd like to have you delete them and substitute at 88:10 thruster test. Copy?

HOU Do you copy Gemini 12?

S/C Houston, did you say at 88:10 we'd have a thruster check?

HOU That's affirmative. I'll tell you about it later. Delete the items at 88:15 and 30. We're substituting them, at 89:50 do the S-6, at 90:06 do the S-5. Understand?

S/C Roger, stay in sequence?

HOU Okay, was the same S-6 and S-5 at the times we deleted.

S/C Roger.

HOU Okay, 90:30 stow equipment; 91:30 eat period; 92:05 Carnarvon, preliminary reentry update; 92:30 retroprep; 92:50 U. S. pass, update; 94:00 retrofire. Copy?

S/C Roger, was retrofire 94:00?

HOU That's rough. We'd like you to give us a 30-second O_2 purge on each section.

S/C Roger, 30-second O_2 purge in each section.

HOU And could you give us a crew status report?

S/C Pilot slept medium to good, five and a half hours; Command Pilot about four hours, fair; water gun count is 2215; Pilot finishing breakfast and Command Pilot has not had anything yet.... water.

HOU Roger, after you have module 4 loaded we'd like to have you turn the computer off.

S/C Right.

HOU And then turn your A pumps on. Copy? Gemini 12, do you copy? Computer off after module 4 loaded and then A pumps on.

S/C Roger, computer off and then A pumps on.

HOU Roger. I'd like to talk to you about this thruster check now. The configuration we would like to have you in is rate gyros on, FDI's rate scale low, attitude control direct. And using your OAMS thruster circuit breakers we'd like to have you fire each attitude thruster and fore aft maneuver thruster independently in order to establish a rate of approximately 1 degree per second on the FDI's. If you can't get these rates let the thruster fire for 25 seconds. We'd like for you to record the GET of the test for postflight correlation. Understand? Gemini 12, do you copy the thruster fire check?

S/C I'm trying to write it down.

HOU Don't write it down. We'd just like to have you add these - all the circuit breakers off and bring one of them on at a time and fire that thruster for either one degree per second or 25 seconds, whichever comes first.

S/C Roger, rate gyros on, FDI's rate scale low, attitude

control direct, we use OAMS thruster circuit breakers to fire each attitude and maneuver thrusters separately to get 1 degree per second or 25 seconds.

HOU Roger, we're only interested in the fore and aft maneuver thrusters, not the radio maneuver thrusters.

S/C Only fore and aft maneuver thrusters.

HOU Roger, and if this thruster check looks okay we'd like to do D-10 Mode G at 89:40 without the computer by having you fire one second in each lateral direction and then one second aft to take out the forward component. Copy? Gemini 12, did you copy? That's negative on the A pumps on.

S/C Okay, if you guys get together. Negative on the A pumps on, huh?

HOU Roger, let us change our mind. We'll give you that word on the water over Canary. Do you copy that about the D-10 Mode George?

ANT LOS Antigua.

Gemini Control Houston, 86 hours, 37 minutes into the flight of Gemini 12 at this time. The thruster check that the Gemini 12 crew will be going through is designed primarily, the philosophy behind it, is to gain data for post-mission analyses. As you will recall, we've had thrusters 2, 4 and 8 go out earlier in the mission of Gemini 12. Our next station to acquire will be Canary and that's 86 hours, 39 minutes, 41 seconds into the mission. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 86 hours, 39 minutes now into the flight of Gemini 12. We're coming within range of Canary tracking station at this time. We expect conversation between the Canary Cap Com and the Gemini 12 crew to be coming in very shortly and we're standing by for any conversation which might transpire.

CQU	... the four stacks are looking pretty good. The purges evidently helped over your site last time.
CYI	Okay.
CYI	Flight, Canarys.
HOU	Go ahead.
CYI	Okay, those Delta P lights are out. I don't know whether he's got the circuit breaker pulled or what. Want to find out about it?
HOU	Yes, you might ask him.
CYI	Gemini 12, Canary Cap Com.
S/C	Go ahead, Canarys.
CYI	Okay, we're going to try to get the water answer to you over our site here. Your four stacks are looking real good in the fuel cells. Evidently that purge we did last rev helped them out a little bit. And do you have the Delta P circuit breaker open at this time?
S/C	That's affirmative. We just finished checking them out.
CYI	Okay.

S/C (garbled)

CYI Say again? 12, I didn't copy.

S/C I pan it on for just a minute so you can see that the Delta P lights are still on.

CYI Rog. We got it.

HOU We don't have any preference on that Cap Com. If he wants to leave it open.

CYI He opened it back up again.
Flight, Canarys.

HOU Go ahead.

CYI Okay, we're back to sending the TX's again?

HOU Affirmative.

CYI Okay. 12, Canarys, sending you a TX.
Flight, Canarys.

HOU Go ahead.

CYI How far did we get on that PLA update over Kano last time? You want to finish it off now?

HOU We got down to 59 -1 Bravo.

CYI Okay, do you want to finish it off now?

HOU If it's convenient for them, why don't you go ahead and finish it off?

CYI Roger.

HOU If not, we can pick it up next pass.

CYI 12, Canarys.

S/C Go ahead.

CYI If it's convenient for you at this time, we can finish off this PLA update.

S/C It's not convenient at this time, Canarys.

CYI Okay, we'll pick it up next rev.

HOU Canary Cap Com, Houston Flight.

CYI Go ahead, Flight.

HOU Okay, we are a little confused about his query here. Trying to figure out what we copied, but we think his question was should the H_2 valve be to off and it should be H_2O valve to pressure off.

CYI H_2O valve to..

HOU Pressure off.

CYI Pressure off.
That's where you want it, right?

HOU Right.
Then you pump up the bulb. Better get that to him.

CYI Rog. Gemini 12, Canarys.

S/C Go ahead.

CYI Okay, in regard to your query, they want the H_2O valve to the pressure off position and then you pump up the bulb.

S/C Roger. I thought so, I just wanted to check.

CYI Roger.

HOU What did he say, Canary?

CYI He said that's what he thought, he just wanted to check.

HOU Okay.

CYI About a minute to LOS, standing by.

We've had Agena LOS. LOS Gemini. Both vehicles are go.

HOU Roger.

Gemini Control Houston, 86 hours, 49 minutes into the flight of Gemini 12. We have just passed out of range with Canary. The statement regarding the four remaining stacks which was passed up to the crew refers of course to the fuel cell. We have four good stacks aboard the Gemini 12 spacecraft at this time. These four stacks are holding good. Stack 1-C was turned off when the crew was awakened this morning. Awakened over the RKV, and the purges which -- fuel cell purges which have taken place have proven successful thus far. At 86 hours, 50 minutes into the flight of Gemini 12, this is Gemini Control Houston.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/15/66, 6:04 A. M. CST

Gemini Control Houston, 87 hours, 17 minutes now into the flight of Gemini 12. The Gemini 12 spacecraft with Command Pilot Jim Lovell and Pilot Buzz Aldrin is approaching acquisition over Carnarvon now and the backside of its 55th revolution in this mission. Carnarvon will acquire the spacecraft shortly and we're standing by for conversation.

CRO	And telemetry solid.
CRO	Carnarvon has TM solid Gemini.
HOU	Roger.
CRO	All systems are go on Gemini.
HOU	Roger.
CRO	Gemini 12, Carnarvon.
S/C	Go ahead.
CRO	Okay, We know you're in the middle of T-2 and all that, but as soon as possible we'd like to get a 30-second purge on each section in the O_2, section 1 and then section 2.
HOU	After they finish T-2.
S/C	Is it required during the day pass, we'll be all night at this?
HOU	Negative, after they get out of...(interrupted)
CRO	All right, after you're through.
S/C	Okay.
CRO	Okay, we'd like to know how you're doing out of

	water?
S/C	Well, you can scrub the rehydratables. We can get a little water out of there but it goes down very slowly so you can't put any water in the bags so it's strictly dry food and drinking water.
CRO	Okay.
CRO	12, for your information, your T-2 data looks real good.
S/C	Right.
(PAUSE)	
CRO	Carnarvon has one minute to LOS, we'll be standing by.
S/C	Roger.
CRO	Carnarvon has LOS Agena.
HOU	Roger.
CRO	LOS Gemini. All systems go at LOS.

Gemini Control Houston, 87 hours, 23 minutes now into the flight of Gemini 12. We've just gone out of contact with the Gemini 12 spacecraft at Carnarvon tracking. The next station to acquire will be Grand Turk at 88 hours, two minutes into the flight of Gemini 12. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 87 hours, 44 minutes now into the flight of Gemini 12. The Gemini 12 spacecraft is on its 55th revolution passing over the South Pacific at this time. And during this quiet pass over the South Pacific out of range of tracking stations to the north, we have a bit on our -- a bit of insight on our difficulty with the water gun aboard the Gemini 12 spacecraft. Our preliminary thoughts in the Mission Control Center are that Gemini 12 does have sufficient water aboard. An early insight here is that we are not receiving sufficient pressure from the system to push the water out of the gun. We had a comparable situation in Gemini 9 when the water gun played out shortly before reentry. In that instance, however, there was a mechanical problem with the gun itself. From the description given by Jim Lovell to the ground, we don't believe this is the case in Gemini 12, however. Our next station to acquire will be over the Eastern Test Range. And this will be at 88 hours, 2 minutes into the flight of Gemini 12. This is Gemini Control Houston.

END OF TAPE

Gemini Control, we're acquiring over the Eastern Test Range at this time.

SC Well he can't get water out of it, it just dribbles out very slow pressure, very small pressure at this low rate.

HOU Okay, I think there is more to the manual shutoff valve that is shown on the schematic on the GCH. We kind of feel down here that this shutoff valve ought to be off when you are pumping. This acts as a check valve which does not allow the 02 to bleed back out as it normally would in the on position. The on position is used in measuring blood pressure when you're letting the pressure out of the cup. So try it with the valve off.

SC Are you talking about the check valve in the blood pressure cup itself?

HOU That is right. We think it's a little sliding sleeve, is that correct?

SC A sliding sleeve, I thought I had her off, I'll check it again.

HOU Okay, look if that doesn't work, then pump it up and remove the bulb and I think that will let the check valve operate.

ANT AOS Antigua

HOU Did you copy that about removing the bulb?

SC Yes, okay, we'll pump it up and remove the bulb.

HOU You should be able to pump as hard as you can stand on that to build up the pressure. It s should check if you have that shutoff valve on. Correction off.

SC Right, the 02 water valve - the H20 valve is in the off position now and we're pumping up the bulb..

HOU Okay. I'd like to talk to you about your D-10 Mode George at 89:40. Did you copy the change that we had into your procedure on that?

SC Wait a minute let me check.

HOU Okay, we were talking to you at about LOS on the last stateside pass.

SC I have - have D-10 Mode G that is all I have at 89:40.

HOU Okay, in your procedures it calls for you to bring up the computer and use address 80. Rather then bring the computer up we'd like for you to leave it off and burn each radial thruster for 1 second. Then burn aft for 1 second to take out the resultant forward delta V. Understand?

SC Leave the computer off, burn each radial for 1 second then burn aft for 1 second to take out the delta V.

HOU Roger, the radials will give you a little forward, we want to take that out with the aft thruster.

Okay.

SC Roger.

HOU Okay, you can bring your A pumps on the line now. We're all agreed to it.

Were you able to get the 30-second 02 purge in between Carnarvon and the states?

SC Roger.

HOU Very good.

Gemini 12, confirm that you understand that you are suppose to burn aft with the forward thrusters on this D-10.

SC Roger, we're to take out the residuals at the lateral they give us.

HOU Very good. Would you give us another 30-second 02 purge? Section 2 then section 1.

SC Another 30-seconds 02 purge, section 2 then section 1.

Roger I have my right hand man here, he is doing the pumping right now, be with you in a second

HOU Okay. I'd like to make a change to your post retro jet checklist, if you can get it out.

SC Okay, just .....

HOU There is no rush on this, either now or anytime we get your next....

SC Section 2 purge.

HOU That is affirm.
Gemini 12, Houston. When you start to power up the platform at 88:40, if you can't maintain a 22 volts minimum on the main bus, we want you to go ahead and power down again.

SC Understand, 22 volts minimum on the main bus.

HOU Roger. We'll - later on we'll have you bring the main batteries on the line before you bring your computer up for reentry.

SC Okay.
Purge complete.

HOU Roger, complete.
Are we keeping you busy this morning?

SC Yes, you are doing pretty well.
Everytime I try to eat something, I'm either getting ready to purge fuel cells, taking updates, write down something ....

HOU What are you doing with your left hand?
We want you to eat so if you are getting into a bind, just drop one of the S-5 or S-6 and go ahead and get a bite.

SC Yes, they are on borrowed time, we have just about over 150 of those magazines now.

HOU Roger, understand.
Gemini 12, we show your B pumps are on, you want to just go to just A pumps.

SC Understand, A pumps in primary and secondary.

HOU Roger, A pumps only.

SC Houston, 12.

HOU Go ahead 12.

SC Roger, we're following your updates now almost exclusively. If we miss anything in the flight plan it is because we don't have them both open out at the same time.

HOU Roger.
Roger, we've given you everything in the update Gemini 12. The only thing you might need the other flight plan for is for your acq time.

SC Roger.

HOU We got about a minute and a half to LOS. Have you got that post retro jet checklist out, we can get that?

SC Okay, go ahead.

HOU Roger. This is pre retro checklist opposite the page that says nominal 92 45 41, we have Agena power circuit breaker .....

END OF TAPE

HOU We have Agena power circuit breaker open. That's in about the middle of the page.

S/C .... retro jet now?

HOU Roger, this is in the - right after the page that gives you all the MDIU reentry quantities. You got that?

S/C Okay, that's preretro jet.

HOU Rog. Opposite where it says emergency RCS on.

S/C Okay, I copy. Go ahead.

HOU Agena power circuit breaker, it says open; we want it closed for the S-3. We have checked this out and that will be okay for landing.

S/C Understand leave the Agena power circuit breaker closed. That comes before G & Control circuit breakers. You want that..... Is that right? Uh, disregard.

HOU Just the Agena power, the Agena power circuit breaker closed.

S/C Roger, understand.

HOU You're at LOS.

Gemini Control Houston. We're standing by for Canary acquisition, in two minutes.

ANT LOS Antigua.

(PAUSE)

CYI Canaries have acq aid contact Agena.

HOU Roger.

CYI TM solid, go.

CYI Acq aid contact Gemini.

HOU Roger.

CYI TM solid Gemini, Gemini is go.

HOU Roger.

CYI Gemini 12, Canary Cap Com. We've nothing for you at this time. I'll be standing by, sending you a TX.

S/C Canary, 12. Roger, thank you.

S/C I'm sure glad. I just had a call to nature.

CYI Say again, 12.

S/C I said I'm glad you don't have anything for us. I just have a call to nature.

CYI Roger.

HOU Canary Cap Com, Houston Flight. I didn't quite copy that. What did he say?

CYI He said he has a call to nature right now.

HOU I copy that.

CYI Roger.

CYI He was glad we had nothing for him.

HOU Nothing yet.

(PAUSE)

HOU Canary Cap Com, Houston Flight.

CYI Go ahead Flight.

HOU We need another 30 second purge, 1 then 2, O_2 only.

CYI Roger. Section 1 then 2, right?

HOU Affirm.

CYI Gemini 12, Canary.

S/C Go.

CYI Okay, we need another O_2 purge only, section 1 then 2. 30 seconds each section.

S/C Roger, I copy.

HOU Canary Cap Com, Houston Flight. Send us another Gemini main, please.

CYI Roger.

CYI He's finished section 1 and he's on section 2.

HOU Roger. Send us a main when he completes, two will you?

CYI Roger.

S/C Purge complete.

CYI Roger, copy.

Gemini Control Houston, we're continuing to stand by during our pass over Canary. No conversation at this time.

CYI Did you get all our summaries, Flight?

HOU As far as I know, Canaries, yes.

CYI Okay, we're sending you three Gemini mains now

and we did notice one thing here, that after the purge, his main bus voltage dropped two tenths.

HOU Dropped two tenths after the purge?

CYI And also his load dropped about six tenths.

HOU Rog.

(PAUSE)

HOU Canary Cap Com, Houston Flight.

CYI Go ahead Flight.

HOU Send us an LOS main Gemini, Please.

CYI Roger.

CYI We've had LOS on the Agena.

CYI Gemini 12, one minute to LOS.

S/C Roger..... pressure check.

CYI Roger.

HOU Kano go remote, Canary go local.

KNO Kano's remote.

HOU Gemini 12, Houston Cap Com through Kano. Standing by.

S/C garbled

HOU Reading you garbled, Gemini 12. Standing by.

S/C Roger, we are through with the thruster check.

HOU Understand you are through the thruster check.

S/C That's correct.

HOU Roger.

END OF TAPE

Gemini Control Houston. We have just had loss of signal over Kano. Almost no contact with the crew during this pass. Conversation with the crew during this pass. We are on the 56th revolution of the mission of Gemini 12. Our next station to contact the Gemini 12 will be Carnarvon. This is scheduled at 88 hours, 50 minutes, 48 seconds into the flight of Gemini 12. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 88 hours, 50 minutes now into the flight of Gemini 12. The Gemini 12 spacecraft is presently coming within range of Carnarvon, and we are standing by -- standing by now for any conversation between the Carnarvon Cap Com and spacecraft Gemini 12.

CRO Carnarvon has acq A contact, the Agena.

HOU Roger.

CRO Carnarvon has telemetry solid, Gemini.

HOU Roger. How is your main buss?

CRO Twenty-two volts on the meters. We're checking closer.

HOU How about load?

CRO We've got intermittent TM right now.

HOU Okay.

CRO How about 35 or 36?

HOU Did you check that 22, is that right?

CRO No, we haven't got valid data on the cam right now, Flight.

HOU Okay, let me know.

CRO 21.9.

36.1 amps total current.

HOU Say again.

CRO 36.1 amps total current.

HOU Roger.

CRO 11.1 on 2 and 25.0 on 1.

HOU Say again, 1.

CRO 25.0.

HOU Copied.

CRO Gemini 12, this is Carnarvon. Guess what we've got for you to do.

S/C Not another fuel cell purge?

CRO Make that 2 and then 1, O_2 purge.

S/C 30 seconds?

CRO That's affirmative.

S/C You want them now?

CRO As soon as possible, right.

S/C I'm right in the middle of a helmet T-2. Do you want us to hold the T-2?

HOU Stand by.

Carnarvon, from Flight.

CRO Go ahead.

HOU Forget the T-2.

CRO Roger. Skip that T-2.

S/C Skip the T-2, huh?

CRO That's affirmative.

S/C Okay.

30 seconds 2, then 1, coming up.

CRO Roger.

Okay, I'm going to send you a TX.

S/C I think we can get this T-2 anyway. We'll purge and by the time I get in position here we'll get it. By the way, we checked the thrusters.

Four and eight are dead completely. Two takes 12 seconds to build up to one degree and 7 takes 17 seconds I believe. All the rest of them check out.

CRO Okay. Thank you.

C-band track at Carnarvon.

HOU Carnarvon, from Flight.

CRO Go ahead.

HOU Was that 7 seconds on number 2? Is that what you copied?

CRO Twelve. 12 seconds.

HOU Twelve, copied. How is your main buss voltage now Carnarvon?

CRO The same. We're keeping a close eye on it.

HOU Okay.

S/C Purge is complete.

CRO Roger.

No change on the voltage.

HOU Carnarvon, from Flight.

CRO Go ahead.

HOU Is he doing any better on his water?

CRO Okay, I'll query him.

Have you made any progress on that water pumping process?

S/C Yeah, we're getting a little more water out now, I believe. I think it was the bladder. She must

CRO Okay.

HOU Carnarvon, from Flight.

CRO Go ahead.

HOU Stand by. Carnarvon, from Flight.

CRO Go ahead.

HOU Okay, you might tell him if he can get anything else out of T-2, to go ahead. We don't think we have anything else for him.

CRO Okay.

HOU And standby a minute Carnarvon.

CRO Right.

HOU Carnarvon from Flight.

CRO Go ahead.

HOU Okay, also, or first Bill, tell, Jim, tell him that we are running 21.9. Is that what you still have?

CRO Affirmative.

HOU On the main buss..

CRO Make that 21.8.

HOU Okay, if it's started to sag at all, to power down.

CRO Okay.

HOU And we'll talk to him at the States.

CRO Okay. 12, Carnarvon.

S/C Go ahead.

CRO Okay. Number 1, your main buss volt is reading about 21.8. Keep a close eye on it, and if it

goes down any more, power down.

S/C Okay, we have fast heat on now for the platform. Watch it for us. We have all the lights/~~on~~ out right now. Let us know when you get LOS.

CRO Okay. And also, if you can get anything else on T-2, you can go ahead on that.

S/C We're doing that right now. That's why the lights are out.

CRO Okay.

One minute to LOS at Carnarvon.

Okay, 12, this is Carnarvon. We're about to loose you. There's been no change on your main buss voltage. 21.8.

S/C We'll hold it right there, then, till we get to the next acquisition.

CRO Okay.

HOU Hold it till he gets what?

CRO Till next acquisition. We've had LOS both vehicles.

Gemini Control Houston. We picked up the crew over Carnarvon while they were performing the T-2 experiment. This is the handheld sextant experiment with the helmet and gloves on. And the visor down. You will recall that this experiment is performed two ways;

both with helmet and gloves on and with helmet gloves off. The fuel cell purge by the way that was discussed here was a flight plan scheduled item unlike some of the fuel cell purges on our previous passes.

END OF TAPE

.....some of the fuel cell purges on our previous passes. Also Jim Lovell advised the Carnarvon Cap Com that their problem with the water gun was alleviated somewhat. Apparently it was a bladder that had slipped. Our next station to acquire will be Texas and this is at 89 hours 33 minutes, 26 seconds into the flight of Gemini 12. This is Gemini Control Houston.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/15/66, 8:20 A. M. CST

Gemini Control Houston at 89 hours, 33 minutes into the flight of Gemini 12. The Gemini 12 spacecraft is coming up on the final phases of its 56th revolution and at this time is approaching acquisition with the Texas station. We'll stand by for any conversation.

HOU Texas go remote.

TEX Texas remote.

HOU Gemini 12, Houston Cap Com, over.

S/C This is 12, go ahead Houston.

HOU Roger, Jim. We see the main bus voltage is down to 21.6. We'd like to have you take your platform off the line. We'll bring it back on at 91 hours.

S/C Okay, platform going off the line.

HOU We'd like to have you do the best you can on Mode G without a platform.

S/C Okay, we just had it aligned nicely too.

HOU Sorry about that.

HOU Gemini 12, Houston. When we bring the platform back up at 91 hours, if you have any trouble aligning with OAMS we'll activate the RCS and align on one ring.

S/C No, we're not having any problems. We can do with ..... Did you get my report I purged at Carnarvon?

HOU Roger.

[illegible] team [illegible]

S/C Okay, it seems like so many of them failed that they're counteracting each other or complementing each other, I should say.

HOU Understand your ability to align now is somewhat improved and you think you'll be able to do it on the OAMS. Is that correct?

S/C Yeh, so far we're able to align on the OAMS using the maneuver and the attitude control thrusters.

HOU Roger, well, it was our plan to give you a good try on the OAMS and go to the RCS if that didn't work.

S/C Roger.

HOU Gemini 12, Houston. Will you go back to both B pumps on - both A pumps off.

S/C Roger.

HOU Main bus voltage is up to 25. Looks good.

S/C Roger, we're back in both B pumps.

HOU Roger.

HOU Gemini 12, Houston Cap Com. Would you believe two 30 second O_2 purges, section 1 then section 2, prior to leaving the U. S. pass?

S/C You want two 30 second purges, right?

HOU Right, one purge on each section.

S/C Okay, fine, will do that. Want us to do that now?

HOU At your convenience.

S/C Okay. Houston, 12 here.

HOU Go 12.

S/C I'm sure glad this is a GP 7.

HOU You had us fooled. Ask Frank Borman if he'd like a good morning story.

S/C All right.

HOU Gemini 12, Houston. Confirm you stop the O_2 purge. Very good.

S/C Stand by one.

HOU We're standing by.

Gemini Control Houston, still standing by.

(PAUSE)

HOU Gemini 12, Houston Cap Com, over.

S/C Houston, 12 here.

HOU Roger, we'd like to get this D-10 Mode Golf over the ETR if you can go ahead and do your thruster firing before LOS, we'd appreciate it.

S/C Roger.

S/C Houston, 12 here. We're not in a FC.. position. Would you prefer to get the thruster firings in the present attitude before we leave ETR?

HOU That is affirmative. You have about three minutes. Go ahead and fire them in your present attitude.

S/C Roger.

(PAUSE)

HOU Looks good, 12.

S/C What's that?

HOU Looks good.

S/C Okay.

GTI LOS Turk.

HOU Gemini 12, Houston. One minute to LOS. Besides your preliminary reentry update at Carnarvon, we'll be giving you the rest of ... PLA's.

ANT LOS Antigua.

Gemini Control Houston, 89 hours, 48 minutes now into the flight of Gemini 12. The EECOM here in Mission Control is closely monitoring his displays. We turned the platform off during this last pass since we received a main bus voltage reading of 22 - or 21.6 rather. We want to keep around the 22 voltage level at least. We turned the platform off to kick that reading up a bit. It presently looks good. On that last reading we read 25.3 volts. At 91 hours, as was indicated to the crew, we plan to bring the platform

back up. Standing by for acquisition with Canary this is Gemini Control Houston.

HOU Canary from Flight.

CYI Go ahead.

HOU They put a TX in to turn the adapter off after your LOS.

END OF TAPE

CYI ...what was that?

HOU They put a TX in and turned the adapter off after your LOS.

CYI Then the TX is already in, right?

HOU Affirmative.

CYI Okay, fine.

CYI We have TM solid on the Agena.

HOU Roger.

CYI And TM solid on the Gemini.

HOU Roger.

CYI Both are go.

Gemini 12, Canary Cap Com standing by.

S/C Roger, Canarys.

Gemini Control Houston. We continue to monitor this pass over Canary.

CYI Okay, main buss is now showing 25.3.

HOU Roger.

CYI 19.6 amps.

HOU Roger.

Gemini Control Houston. Still no conversation with the crew during this pass. They are no doubt quite involved with the ion sensing attitude control experiment, the D-10 experiment. Still standing by however, this is Gemini Control.

CYI Gemini 12, Canarys.

S/C Go ahead, Canarys.

CYI Would you place your C-reentry radar to the continuous position please?

S/C Roger.
Would you give us the GET time acq please?

CYI Roger. I'll give you one at 89 hours, 58 minutes, and 45 seconds.

S/C Roger.

CYI 3, 2, 1, Mark, 89 hours, 58 minutes, 45 seconds.

S/C Thank you.

CYI And we're just about to LOS.

HOU Kano go remote, Canarys go local.

KNO Kano is remote and has acquisition.

HOU Gemini 12, Houston Cap Com through Kano, over.

S/C Go ahead.

HOU Roger, 12. If you're not getting enough water, you're having trouble getting the volume you'd like, you can take the hexnut on the back of the water gun and turn it one turn counterclockwise.

S/C Roger.

HOU That should give you about a five-fold increase in flow.

S/C Have you ever seen that cartoon with that guy holding his nose in the glass shower?

HOU Rog. You'll be another first in the space program. I got the rest of the PLA's. We'd like to get up to you here sometime if you have time to copy them now we can slip them in.

S/C Standby.

HOU Okay.

S/C Just a minute.

HOU Okay, this is the rest of block nine, 59 1 Bravo, 92:24:55, 20 + 29, 26 + 01, 60 - 1 Alpha. 94:00:50 20 + 10, 25 + 36, 61 - 4 Bravo. 96:49:37, 20 + 35, 26 + 18, 62 - 4 Bravo. 98:52:09, 20 + 27, 26 + 01, roll right, 85, correction, roll left, 85, roll right, 95, and weather good, for all areas. Over.

S/C Got them down, thank you.

HOU Roger. Correction to GETRC of 62 4 Bravo. Should read 98:25:09.

S/C Roger, 98:25:09.

HOU That is affirmative.

CYI ..LOS.

S/C Roger.

CYI 23 minutes to Carnarvon.

Gemini Control Houston, 90 hours, 5 minutes into the flight of Gemini 12. The earlier reference to Carnarvon or to correction -- to the water gun in the conversation between Bill Anders and the Gemini 12 crew, Cap Com Anders was referring to a seal on the back of the gun,removing the seal on the back of the gun. Where he jestingly suggested that it might increase the flow of water five-fold. ...

END OF TAPE

Gemini Control Houston 90 hours 25 minutes into the flight of Gemini 12 at this time. We are approaching acquisition with Carnarvon tracking station. And meanwhile in Mission Control Center, we are continuing to countdown our retro time at 94 hours 1 second for our planned landing area, 60-1. We have just acquired spacecraft 12 and we are standing by.

CRO Carnarvon has TM solid, Gemini.

Gemini 12, Carnarvon.

S/C Carnarvon, Gemini 12.

CRO Roger, we are here with you again. And if Buzz is ready for his finger exercise, we need a normal fuel cell purge, section 1 and then section 2.

S/C Roger, normal, fuel cell purge, section 1 and then 2. That is 2 minutes in O_2.

CRO That is affirmative. 12, this is Carnarvon. Will you go manual on your O_2 heater and bring it up to 700 onboard?

S/C 12, Roger.

HOU He has the circuit breaker open, Carnarvon.

CRO Say again.

HOU He has the circuit breaker open.

CRO The heater circuit breaker, is that right?

HOU[That is affirmative.

CRO Okay. No, we are showing it on up there.

HOU Okay, fine.

CRO Sorry about that. I thought I was flying...

HOU Carnarvon Com Flight.

CRO Go ahead.

HOU Okay, you might, we casually mention, power up around 91 hours, we will have acquisition at 91:04. We will power him up over the States this pass.

CRO Okay. You want them to hold off on that power up until you have State side coverage.

HOU Yes, just tell them we will have them power up when we get acquisition at the States.

CRO Okay.

HOU Everything is looking good.

CRO Roger. 12, Carnarvon.

S/C Go ahead.

CRO Okay, it was mentioned to you about power up at 91 hours and we will have you power up over the States at 91:04 approximately.
12, Carnarvon, 1 minute until LOS. You O_2 pressure is coming up nicely. The fuel cells looking okay, we will see you next rev.

S/C Roger. Thank you.

CRO Carnarvon has LOS Agena.

HOU Roger.

Gemini Control Houston 90 hours 35 minutes now into the flight of Gemini 12. The Gemini 12 spacecraft with Command Pilot Jim Lovell and Pilot Buzz Aldrin has just passed out of range of Carnarvon. The next station to acquire will be Canton. This acquisition time is 90 hours 47 minutes into the mission. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston. 90 hours 46 minutes 35 seconds now in to the flight of Gemini XII. The Gemini XII spacecraft is now approaching contact to the outer limits of the range of Canton tracking station. It is in its 57th revolution now into the mission and we are standing by for acquisition with Canton.

HOU Gemini XII Houston Cap Com through Canton is standing by.

CTN Roger.

Gemini Control Houston. We're still standing by during this pass. We've had no contact with the crew as yet.

Gemini Control Houston. As we continue to stand by during this pass, the Gemini XII spacecraft is in an apogee 156.8 nautical and a perigee 142.8 nautical. Standing by this is Gemini Control.

HOU Gemini 12 Houston Cap Com one minute to Canton LOS

CTN Roger, we'll give you your power up sequence over the states,Gemini 12.

S/C Understand, power up sequence over the states.

HOU That's affirmative.

Canton has LOS

Gemini Control Houston. 90 hours 53 minutes into the flight of Gemini XII. We've just gone out of range with the Canton tracking station. The next station to acquire will be Guaymas at 91 hours

4 minutes 17 seconds in to the mission of Gemini XII. This is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, 91 hours, 4 minutes now into the flight of Gemini 12. The Gemini 12 spacecraft is approaching acquisition with Guaymas tracking station. We are standing by for that pass over the states.

HOU Guaymas go remote.

GYM Guaymas remote.

HOU Gemini 12, Houston Cap Com through Guaymas over.

S/C Roger Houston.

HOU Okay Gemini 12, I have your power up sequence for you. First of all I would like to assure you we are not going to give you a purge on this pass.

S/C Hey, great.

HOU Okay, we would like to have you do - to test your main batteries.

S/C Main batteries testing. 32.8 up - no more.

HOU Copy.

S/C 33.9 on number 2

HOU 33.9.

S/C 33.9 on three. 34.0 on four

HOU Roger, copy 24.0. We will continue the rest of your power up when we start getting TM through Texas.

S/C Roger

HOU If it's convenient we would like to have you

try to get a readout on your reentry water tank bladder position or if you can't do that, give us an estimation of how much water you have drunk out of the reentry tank. We need this to calculate a good reentry weight for you.

S/C I tried to look at the reentry tank a little while ago Bill, I can't even seem to find it. Let me talk with Buzz and see how much water we drank.

HOU Roger. It figures as much.

HOU Texas go remote. Guaymas go local.

TEX Texas remote.

GYM Guaymas local.

S/C We used about 40 ounces of water.

HOU Roger, understand 40 ounces. That is total, is that correct.

S/C Roger

HOU Okay, Roger, we are ready to have you put Main battery number 1 and number 4 on the line.

S/C Roger. Number one and number four on the line.

S/C Houston the water gun reads 2308 right now so we can give you a reading later on so you can figure it out.

HOU Roger, gun readings are not valid with low pressure Gemini 12.

S/C Okay.

HOU Okay Gemini 12, we would like to have you bring both A pumps on the line, B pumps off.

S/C A pumps on, B's off.

HOU Okay, Gemini 12, you can bring your platform on line.

S/C Roger, platform is guage BEF.

HOU Roger, we will leave your computer off until we have had a change to take a look at your voltages. In any event it will be after fast East drop out.

S/C Roger, any time.

HOU If you are ready to copy, I have a water valving procedure that we would like to have you go through prior to retrofire and after your last drink.

S/C Roger, go ahead.

HOU Okay, this is after your last drink. Place your H_2O valve to normal. Condensate valve to "tank fill". Urine valve to "off". Gemini 12, do you want to check your IGS power supply. Very good.
Okay, to continue with the water valving, after landing if you want to get a drink, turn your condensate valve to normal and your H_2O valve to "pressure off". That's it.

S/C Got it.

HOU Mighty fine.

HOU Looks like your voltages are holding pretty good.

HOU Gemini 12, Houston. Be advised that our data shows that our deep end sensors are probably still working.

S/C Roger, they were working fairly well going into the last night pass SES and then we got busy and let it go. Looked like we were getting some oscillation from both of them occasionally.

HOU Roger.

HOU Gemini 12, Houston Cap Com - Over.

S/C Go ahead.

HOU Roger. We would like to have you turn your rate gyro's to Primary.

S/C Roger, gyro's go Prim. Say, do you happen to know what orbit it is we go to QSE.

HOU Well, it looks like you are in a 157 by 143.

S/C Thank you, just wanted to see which we will do.

HOU Give or take a little. Both are looking pretty good.

HOU Bermuda go remote.

END OF TAPE

FD Bermuda are you remote.

BDA Bermuda remote.

HOU Gemini 12, Houston Cap Com, one minute to LOS, 3 minutes to Canary.

SC 12, Roger.

HOU You are sounding pretty chipper today.

SC He wants to do one more EVA.

HOU I would like to get a few more D-10's there too.

SC Say again.

HOU Disregard.

SC Hey, what happened to the Agena?

HOU It's still out there.

SC I thought after that phasing maneuver we might go chase it.

HOU No we just stopped you and let you hold your own there.

FD Canary Islands from Flight.

CYI Go ahead.

FD Next to your last pass coming at you Bill.

CYI Roger.

FD Send us a number of mains and contigency alpha, we're trying to let the batteries warm up, want to watch the bus voltage before we bring the computer on.

CYI Okay, you want a main and an Ulta Gemini.

HOU Yes, a couple of them through your pass.

CYI Roger, okay. We'll give them to you about every 10 minutes.

And, this is Mission Control Houston. Apparently we have had loss of signal at Bermuda. We are coming across to the Canary Islands tracking station in a couple of minutes. At 91 hours 23 minutes 48 seconds after liftoff and 2 hours 36 minutes and 8 seconds before retrofire, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, Gemini 12 has just been acquired at the Canary Islands station. We'll stand by for any commentary between the spacecraft communicator, Bill Bastedo at Canarys and the crew of Gemini 12. Let's listen in.

CYI He does not have his scanners on.

HOU Say again?

CYI He does not have the horizon sensors on.

HOU Okay.

CYI Pulse mode.

HOU Okay.

CYI Gemini 12, Canarys standing by.

S/C Roger, Canarys. C-band and S-band keep dropping out of range.

CYI Say again, 12.

S/C C-band ... keep dropping out on the platform.

CYI Roger.

HOU We copy.

CYI Okay, we're not getting any C-band, Flight. Here it comes.

HOU Roger,

We need another Alpha and a main, please Canarys.

CYI Roger, coming at you.

We've got real ragged TM this time. We're trying to get good solid block before he sends you these summaries.

HOU Okay.

CYI Okay, he's got a secondary horizon scanner on now.

HOU Roger.

CYI Flight, Canarys.

HOU Go ahead.

CYI Okay, this TM we're getting is real ragged. We notice that there's a lot of C-band interference with the TM, so we'll try to get a good lock here before we send you these summaries.

HOU Okay, do the best you can.

CYI Gemini 12, Canarys. About a minute to LOS.

S/C Roger.

CYI LOS Agena.

HOU Roger.

Kano go remote. Canary go local.

KNO Kano is remote and we have acquisition.

HOU Gemini 12, Houston Cap Com through Kano and standing by.

S/C Roger.

HOU Gemini 12, Houston. We'll be bringing your computer on the line after we've had a chance to take a look at you over Carnarvon.

S/C Roger.

HOU Roger.

HOU Gemini 12, Houston Cap Com. One minute to Kano LOS.

S/C Roger, Houston.

HOU Five minutes to Tananarive.

S/C And as I understand it, Carnarvon will give us our reentry update, right?

HOU Roger, we'll give you the preliminary update at Carnarvon. Give the MDIU quantities over the States.

S/C Okay.

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/15/66, 10:27 A. M. CST

KNO Kano LOS.

Gemini Control Houston. We have had loss of signal from the Kano, Nigeria, voice remoting station. Spacecraft Gemini 12 will be coming up over the Tananarive voice remoting station in approximately four minutes. At 91 hours, 41 minutes and 24 seconds after liftoff and two hours, 18 minutes, 32 seconds before retrofire, this is Mission Control Houston.

END OF TAPE

This is Mission Control, we're 91 hours 45 minutes and 35 seconds after liftoff. Coming up over the Tananarive voice remoting station. They have had contact there. We'll stand by for spacecraft communicator here in Mission Control to converse with the crew. The spacecraft just went in to darkness. Let's listen in.

HOU Gemini 12 Houston Cap Com through Tananarive and standing by.

This is Mission Control. We're still standing by over Tananarive for any further conversation. It is unlikely that there will be any, but we'll leave the light open in case either Pete Conrad makes another call to the spacecraft from Tananarive.

HOU Gemini XII Houston Cap Com through Tananarive and standing by.

TAN Roger Houston

CRO Flight Carnarvon

HOU Go ahead.

CRO Roger, Just two questions. One is retrofire update our remarks say Bluebird day

HOU Say again.

CRO Under item #6 under remarks it says Bluebird Day, I'm wondering about that.

HOU Recovery says that means it's a beautiful spring day.

CRO Hmm. Not any SOP

HOU That's okay, we'll add it.

CRO Okay. One more question

HOU Gemini 12 Houston Cap Com one minute to Tananarive LOS

TAN Roger.

HOU Eight minutes to Carnarvon

CRO That other question on on the accelerometer bias check, how many minutes you want to run this thing?

HOU Stand by I think it's three. Three minutes.

CRO Okay, thank you.

HOU On that message you have I would like to change the order of 2, 3 and 4; items 2, 3 and 4 under weather to 4, 2 and 3. And read them up in that order that's the way they are ready to copy it. Got it?

CRO Yeah, did they change their form up there?

HOU That's what cap com tells me.

And this is Mission Control Houston. We have had loss of signal through the Tananarive voice remoting station. Carnarvon will acquire in one minute, 92 hours one minute which is approximately eight minutes from now. Meanwhile we have a report of photographic effort made during the Gemini XII mission to this point in time , estimate made on the ground of course. Color photographs made with a 70 mm Hasselblad, they're estimated 350 exposures made at this time. With the Maurrer, 1 magazine of 50 exposures in color, 80 exposures

in ultraviolet. Two magazines in high speed black and white, for a total of 80 exposures. With a sixteen millimeter motion picture camera they have used an estimated 20 magazines for, 50 feet each, for a total of one thousand feet of movie film. This was all shot at 6 frames per second. Some further numbers now for the retrofire and landing in area 60 dash 1. The current time for retrofire is ground elapsed time of 93 hours 59 minutes and 58 seconds. The time of 400,000 feet will be 20 minutes 14 seconds after retrofire. The target area is now positioned at latitude 24 degrees 35 minutes north by 70 degrees west longitude. These numbers may change a few seconds one way or the other as we get additional tracking over Carnarvon and over the next stateside pass, but the numbers shouldn't significantly change except plus or minus two or three seconds. At 91 hours 55 minutes and 52 seconds after liftoff and 2 hours 4 minutes and 3 seconds before retrofire, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston 92 hours 1 minute and 4 seconds after lift-off. We have established contact with Gemini 12 from the Carnarvon, Australia tracking stations. All systems are go on the ground. He is putting in a call. Let's listen.

CRO Gemini 12, Carnarvon.

S/C Go ahead.

CRO Okay, we are giving a check on your voltage here and we will be letting you know about the computer in just a minute.

S/C Okay.

CRO Showing 23.7 on the cam.

HOU Good. Okay, we are ready for the computer and accelerometer bias.

CRO Okay, 12, this is Carnarvon. You can turn your computer on. Prelaunch, we would like to do an accelerometer bias check.

S/C Computer is on prelaunch.

CRO Roger.

HOU How does the bus look after the computer, Carnarvon?

CRO I am showing 23 something. We will get you a readout in a minute.

HOU Okay.

CRO 23.2.

HOU Good.

CRO Okay, I have a short preretro for you whenever you are ready to copy.

S/C Roger, stand by a second. Go ahead.

CRO Okay, this is for area 16-1 Alpha. Your nominal IVI aft 302 down 113. Your initial deflections will be updated over the States. Pitch gimbal at 400K 92. You will have a lighted horizon at retrofire and also at 400K. RET begins blackout 22 plus 29. RET end blackout 27 plus 30. RET drogue at 29 plus 16. RET main 30 plus 50. MDIU quantities also over the States and now for the weather. Cloud cover, 2000 scattered, high broken. Visibility 10 nautical miles. Wave height - 3 feet with 4 to 5 foot swells. Wind 360 at 15. Altimeter setting - 29.94. Recovery call signs Air Boss 1, 2 and 3. The carrier is the WASP. And under remarks you might add it is a blue bird day.

S/C Roger, Carnarvon. Could you tell me just where the carrier will be with respect to the target point so I, you know, so I can get a little English on it.

CRO You don't want to hit it. Okay, stand by.

CRO Can you get that for me Flight?

HOU Stand by. We are checking on it.

CRO They are checking on that, 12. You will probably see the carrier before we have an answer for you.

S/C Right, I was just..

HOU Carnarvon Com Flight.

CRO Go ahead.

HOU With respect to where the carrier will be, it will be 4000 yards downstream of the target point.

CRO Okay.

4000 yards downstream of the target point, 12.

S/C Sounds good.

Did you have a preliminary GETRC report?

HOU Preliminary preliminary

CRO Stand by. Go ahead. I am listening.

HOU Preliminary at this time is 93 hours 59 minutes 58 seconds.

CRO Okay. Preliminary GETRC for 60-1 Alpha 93 59 58.

S/C 93 plus 59 plus 58.

CRO Roger that.

HOU And we need a Gemini Charley, please.

CRO We will try and get one out there. Telemetry is

CRO pretty bad right now.

HOU Okay.

CRO 12, Carnarvon. We have about 1 minute until LOS. We will be standing by.

S/C Roger.

HOU And have them do a 30 second O_2 purge. Each section.

CRO A 30 second O_2 purge. On each section. Let me check which one first. Which one first.

HOU Doesn't matter.

CRO Your choice.

S/C Good. Do you have any readouts down there on how well we are aligned?

CRO Your telemetry is coming in pretty bad. How about that. You look pretty good now. Good solid telemetry. Okay, you look good and solid, BEF.

HOU Okay. Did you tell them that, Carnarvon?

CRO That is affirmative.

HOU Okay.

CRO We have had LOS. All systems were go at LOS. And this is Mission Control Houston. We have had loss of signal at Carnarvon. At 92 hours 10 minutes 12 seconds after lift-off and 1 hour 49 minutes 43 seconds before retrofire, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, 92 hours 20 minutes and 11 seconds after liftoff. Coming up now over the Canton Island station. This will be an 8-1/2 minutes pass over the Canton Island voice remoting station. We'll just skim by the lower edge of the Hawaii tracking station. Likely there will not be any contact made during the Hawaii pass. This will be the next to the last stateside pass coming up. Bill Anders putting in a call, let's listen.

HOU Gemini 12, Houston Cap Com through Canton, over.

SC Roger Houston.

HOU Roger, 12. We'd like to confirm that most of your exposed film is in the center line camera box. Over.

SC That is right. Most of the film is in the center line camera box. .....

HOU Roger, 12. Be advised you're fading in and out. We'll be counting you down over this site. Next pass about 3 minutes to the pass.

SC Roger.

HOU How are we reading you?
How are you reading us?

SC We are reading you four by four.

HOU Roger, same. By the way, 12, Muhammad Ali sends his regards.

SC Thank you very much.

HOU He is the greatest.

SC He sure was great last night.

HOU Yea.

Gemini 12, Houston Cap Com, through Canton how do you read?

SC Loud and clear.

HOU Mighty fine.

And, we've had loss of signal from the Canton Island voice remoting station. We are at 92 hours 27 minutes and 41 seconds after liftoff and 1 hour and 32 minutes 14 seconds before retrofire. Spacecraft Gemini 12 will be coming up over the next to the last stateside pass in approximately 10 minutes. We'll come up again with that pass. This is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, 92 hours, 38 minutes after liftoff. Standing by for this next to the last Stateside pass. There goes the call from Bill Anders , let's listen in.

HOU Gemini 12, Houston Cap Com - over.

HOU Gemini 12, Houston Cap Com - over.

HOU Guaymas go remote, California local.

GYM Guaymas local.

CAL California local.

HOU Gemini 12, Houston Cap Com - over.

S/C Gemini 12 - go.

HOU Roger, I have your retro update if you are ready to copy.

S/C Roger, go ahead.

HOU Roger, your GETRC remains the same 935958, RET 400 K, 20 + 14, RET RB 26 + 02, Bank left 50, bank right 60. Down range deflection 0 degrees plus 230 55 degrees plus 64, 90 degrees minus 80. Read back.

S/C Roger, understand 50 - 1 GETRC 935958, RET 400 K 20 + 14, RET RB 26 + 02,bank left 50 degrees, bank right 60 degrees, ... RBI's aft 302, aft 113 down, deflection 0 degrees 230 55 degrees plus 64, 90 degrees minus 80.

HOU Roger, that's correct Gemini 12.

S/C Houston, 12, did you copy.

HOU Roger, we copy, that is correct.

S/C And the pitch at 400 K is 92 degrees, right.

HOU That is affirmative.

HOU Texas local, Guaymas remote.

HOU Gemini 12, Houston, will you put on Main batteries 2 and 3 on the line.

S/C Two and three on the line. ...batteries on one.

HOU That is affirmative.

HOU Gemini 12, Houston Cap Com, will you put section two to warm-up. We gonna start turning it off so you won't have to worry about it.

S/C Roger, Section 2 warm-up.

HOU Gemini 12, Houston Cap Com will you put your computer in pre-launch for your retro load.

S/C Roger, computer is in pre-launch.

HOU Roger

HOU Roger, here comes your retro load - mark

S/C Roger, we got it.

HOU Roger,it looks good on the ground. And Gemini 12 are you ready for your MDIU quantities.

S/C Roger, ready to copy.

HOU Roger, Address 63 22 correction Address 63 23 324, Address 04 68 694, Address 65 correction Address 05 06 812, Address 66 69 224, Address 67 27 427, Address 08 40 088, Address 09 07 366, Address 10 02 444, Address 11 29 000.

S/C Roger, I update the MDIU quantities.

HOU Roger, and it looks good on the ground.

HOU Gemini 12, could you put your quantity read switch to H_2.

HOU Gemini 12, standby for transmitting TR.

S/C Go ahead.

HOU One - mark.

S/C Roger, received it.

HOU Roger.

HOU Gemini 12, your TR looks good on the ground.

S/C Roger.

HOU Gemini 12, will you put your Section 2 power switch OFF.

S/C Power switch two OFF. - The Delta P light went out.

HOU Roger, we would like to give you a check on your TR, Gemini 12.

S/C Go ahead.

HOU Will give you a mark at 71:30:06.

S/C You are fading out.

HOU Roger, we would like to check your TR, we will give you a mark at 71:20.

S/C Understand 71:20

HOU Roger, 5 seconds, 2, 1 - mark - 71:20.

S/C Roger, 71:19.

HOU That's good.

END OF TAPE

HOU Gemini 12, Houston Cap Com. RCS ring A rate pressure shows slightly high, will you pulse it a few times?

S/C Will you say again, Flight?

HOU RCS ring A rate pressure shows slightly high, will you fire RCS ring A a couple of times?

S/C Roger, ring A.

HOU Gemini 12, Houston Cap Com. We'd like for you to hold off firing ring A for a little awhile. We'd like to watch it.

ANT AOS Antigua.

S/C Roger, A ring off.

S/C Houston,..... fire B.

HOU Roger, B looks good.

HOU Gemini 12, Houston Cap Com. Don't be too surprised if the com through Canton is not too hot the next pass.

S/C Understand. We'd like for you to give us a 22 - .... 22 time hack.

HOU Willco.

HOU Bermuda go remote.

BDA Bermuda remote.

(PAUSE)

HOU Gemini 12, Houston Cap Com. One minute to LOS. We'd like you to not use ring A till we advise you over Canaries in five minutes.

S/C Roger.

HOU Canaries from Flight.

CYI Go ahead, Flight.

HOU I want you...(interrupted)

And this is Mission Control Houston. Apparently we have had loss of signal over the Eastern Test Range, the Antigua station. Be coming up next over the Canary Islands Station for the last pass for this mission. As a matter of fact, for the last pass for the Gemini program. We're about three minutes from Canary. We'll be back up at that time for that pass continued through the Kano, Nigeria voice remoting station pass. At 92 hours, 58 minutes, 43 seconds after liftoff and retrofire minus one hour, one minute and ten seconds, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston, Gemini 12 is coming up over the Canary Island tracking station. This will be a fairly low elevation angle pass. 2.47 degrees above the horizon. For a duration of 4 minutes and 20 seconds. We are standing by for Canary Cap Com to put in a call to the crew. The Canary pass will blend into the Kano, Nigeria voice remoting station pass. Let's listen in.

CYI Gemini 12 Canary Cap Com.

S/C Go ahead Canary.

CYI Okay, your radiator rate pressure is up a little bit. You want to use it a little bit to see if we can bring this rate pressure down?

S/C Okay....

CYI Say again.

S/C Okay, I understand. ...

HOU Let me know when he starts using it and what it comes down to.

CYI Roger.

HOU How is it coming Canary?
Is he using it?

S/C How does it look Canary?

CYI Say again 12.

S/C How does it look?

CYI ...reads 413 right now.

HOU Use it. Use it. Have him use it.

CYI Go ahead and use some more.

HOU Out of ring A.

CYI Out of ring A now.

S/C I am using ring A only.

HOU And is it coming down, Canary?

CYI It is coming out right now.

HOU Say again.

CYI 379. This time.

HOU Okay.

CYI Want them to use a little bit more?

HOU Yes, use a little more.

CYI Okay 12, it is down to 379, use a little bit more.

HOU And what is the source pressure?

CYI Stand by.

2.35.

HOU Okay.

And what is it now please?

CYI We are getting some bad data right now. Stand by.

HOU Okay.

CYI Do you want us to find out what he is reading onboard?

HOU He can't read reg.

CYI You are right.

HOU And we want to stay on ring A and advise him to use ring A for the rest of the activity Canary, just to keep this situation relieved.

CYI Gemini 12, Canary.

S/C Go ahead.

CYI Okay, we would like for you to stay on ring A for the rest of your activities here. So we can keep this pressure down. It is 310 down here now.

HOU Okay. Okay, normal operation in ring A.

CYI Say again.

HOU Okay.

CYI Complete the last in ring A. Roger. Got about a minute until LOS. And have a good trip home.

S/C Thank you.

HOU Canary Com Flight.

CYI Roger, Flight.

HOU Keep a close eye on that and let me know if you think the regulator is working there. You probably don't have much time.

CYI Now we have some real bad data too.

HOU Say again.

CYI Well, we have some real spotty data here.

HOU Okay, what was the lowest reg you got?

CYI 310.

HOU Lowest reg was 310?

CYI Roger.

HOU Okay, Bill, thank you. What was his final source?

CYI Stand by one, we will camp it out. 2.33 final source. I will give you a final reg here in just a minute.

HOU Say again source.

CYI 2.33

HOU 2.33 thank you. And he copied to go to normal operation on ring A. To keep it relieved. Did he not?

CYI Roger. 306 three zero six.

HOU That was your last reading?

CYI Roger. We have had LOS.

We have had loss of signal at Canary. We will stand by for the Kano pass, for further conversation.

HOU Canary Com Flight.

CYI Go ahead Flight.

HOU Did it look like he was firing a lot, or did it look like he was settling out more. Oh, you don't have thrusters, okay.

CYI We don't have the thrusters.

HOU Yes, okay.

HOU Kano go remote.

KNO Kano remote with acquisition.

HOU Gemini 12, Houston Cap Com through Kano. Over.

S/C Okay, Houston.

HOU Roger, with respect to RCS ring A, we would like for you to do the rest of your normal maneuvers on ring A rather than B or OAMS.

S/C Roger, we now have ring A only, we are aligning the platform with ring A....

HOU That is affirmative. And we would like to have you use both rings for retrofire, use ring A first for entry.

S/C Roger, both rings for retro and ring a for reentry.

HOU And what do you have for an RCS onboard readout?

S/C Ring A reads 2250... and 58 - 57 degrees, ring B reads 2450 psi and 67 degrees.

HOU Roger, copy. Gemini 12, Houston Cap Com, 1 minute to Kano LOS. Could you give us an RCS source pressure.

S/C Roger....

HOU Copy 2250.

KNO Kano has LOS.

This is Mission Control Houston. We have had loss of signal at the Kano, Nigeria voice remoting station. To summarize briefly what has been going on during the Canary and Kano pass, apparently the source pressure in ring A of the reentry control system of Gemini 12 was slightly overpressurized. And to relieve this over pressurized condition, the crew was instructed to use Ring A during the platform alignment and other activities prior to retorfire. So that some fuel would be used thereby, relieving the overpressurization condition. At 93 hours 15 minutes 24 seconds after lift-off and 44 minutes 32 seconds before retrofire, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston. We have had acquisition at Tananarive voice remoting station. Pete Conrad is calling the crew now. Let's listen in.

CONRAD — Gemini 12 Houston at Tananarive Could we have an RCS ring A source please.

S/C — 2150 is the RCS ring A

HOU — Roger 2 1 5 0 thank you. Standing by.

Gemini 12 Houston, the data is good, the load is valid we will not change it and we'd like to get one more ring A source pressure from you please. We're about 1 and 1/2 LOS.

S/C — Roger, ring A now 2125.

HOU — Roger 2125, we'll see you during the count, over Canton.

Tananarive LOS

And we have had loss of signal at the Tananarive voice remoting station. Meanwhile in the prime recovery area in the west Atlantic, one of the air force air rescue service HC130H "Herky-Bird" aircraft has been diverted to investigate a life raft seen floating some 90 miles south east of Grand Turk Island. Other aircraft from Kinley Air Force Base in Bermuda have been deployed to take up the slack in the situation with the rescue aircraft. At 93 hours 29 minutes 38 seconds after liftoff and 30 minutes and 17 seconds before retrofire this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston. Coming up over Carnarvon for the last pass of this mission and the last Gemini spacecraft to pass over the Carnarvon station. This will be a relatively high elevation angle pass, 57 degrees for a duration of 8 minutes and 42 seconds. They have had initial contact with the spacecraft. Let's listen in now.

CRO 12, Carnarvon.

S/C This is 12, go.

CRO Okay, we have about a minute and 20 seconds for your TR 22 minute time hack.

S/C Roger, standing by.

Carnarvon, Gemini 12. Preretro checklist is complete.

CRO Roger.

HOU What is his source pressure please?

CRO 2150.

HOU 2150. Thank you.

What is his reg A now, Cap Com?

CRO 30 seconds. 387.

HOU 387 okay.

Give him your mark and then let him know it is still a little bit high and we want him to use it.

CRO Roger.

CRO 10 seconds. 5 - 4 - 3 - 2 - 1. Mark 22 minutes.

S/C Roger, we read 2159.

CRO Say again.

S/C Roger, read 2159 out of the computer.

CRO Roger. Okay, you are a little high on your reg pressure. How about using that ring A a little bit.

S/C ...fire it.

CRO 391...

S/C ..entry.

HOU 390 are you reading?

CRO That is affirmative.

HOU Is he using it?

CRO Affirmative.

HOU Let me know when it is coming down.

CRO Holding at 391 Flight.

HOU 391?

CRO That is affirmative.

..391.

HOU Okay, have him fire it, bring it down. I would like to get it down to about 350 where you are.

CRO Okay.

CRO 12, Carnarvon.

S/C Go ahead.

CRO Okay, we are still a little high on that hydrogen pressure. You guys can do a better job than that.

S/C ...

HOU Tell them what you are at, Jim.

CRO Okay, we are showing about 392 here on the ground. We want to get it down to about 350. No change, Flight. 2110 on source pressure.

HOU Roger. Ring B look good?

CRO That is affirmative.

S/C ...

CRO Let me give a quick look-see.

HOU Say again.

CRO I was talking to the crew. Hey, bully for you guys, you have got it down 1 psi. Use a little more. Down to 387. Use a little more.

HOU And send us a Gemini main, please?

CRO Roger. Still 2110 on source.

HOU Okay.

S/C How does it look.

CRO Let me check. Okay, you can stop now. Relax.

HOU What have you got, Jim?

CRO 325.

HOU Okay, tell them that ought to be great for retrofire.

CRO Okay, 12, this is Carnarvon, we are down to about 325 and that is good for retrofire.

HOU And what is the source?

And what is your source pressure, Carnarvon?

CRO Checking on it now.

HOU Okay.

CRO Same, 2110.

HOU Okay. Jim, tell them we are very happy with that.

CRO Okay. Giving it one more check, here. And it is 325.

HOU Okay.

CRO 12, Carnarvon.

HOU In the blind, Jim.

CRO Gemini 12, Carnarvon, your rate pressure looks real good at 325, and steady.

S/C Roger.

HOU Carnarvon Com Flight.

CRO Go ahead.

HOU And how is source and reg on B?

CRO Stand by.

We will get you a couple of cams on that.

CRO 2580 on source pressure.

HOU Okay.

CRO 12, Carnarvon, 1 minute until LOS and it has been a pleasure working with you guys, see you back in Houston.

S/C Roger, thank you. Thank you very much Carnarvon.

CRO Bye.

296 on reg pressure.

HOU Okay, 296.

LOS main, LOS OVC.

CRO Roger. They are already on their way, Flight.

HOU Okay.

CRO We have had LOS Gemini. All systems as stated.

HOU Okay, good job.

And this is Mission Control Houston. We have had loss of signal at the Carnarvon, Australia tracking station. Meanwhile, the situation reported earlier where a life raft had been sighted near Grand Turk Island, the Coast Guard has taken over the operation and it appears that a civilian aircraft is down in the water at that location. The air rescue service aircraft out of KindleyAirforce Base in Bermuda have gone back on station to support Gemini 12. At 93 hours 46 minutes and 5 seconds after lift-off, 13 minutes 48 seconds before retrofire, this is Mission Control Houston.

END OF TAPE

This is Mission Control Houston. Spacecraft Communicator, Pete Conrad, has begun conversation to Gemini 12 through the Canton Island station. They are up to three minutes before retrofire. MARK - three minutes to retrofire. Let's join the conversation.

HOU MARK three minutes and counting.

SC Checklist is complete.

HOU Houston, roger.

The crew of Gemini 12 will have a balmy 77 degree temperature in the prime landing area. In addition to the prime recovery vessel the USS Wasp in the prime recovery area, there is the Destroyer Lloyd Thomas; four SH3A helicopters off the Wasp; two P3A's out of Jacksonville, these are aircraft with Air Boss aboard, Air Boss 1 and Air Boss 2; two HC-130H Herky Bird Aircraft at both ends of the landing footprint; two JC 130 Aircraft, these are tracking aircraft from the Eastern Test Range and two JC 130 Aircraft who act as communications relay aircraft. We are now one minute and 18 seconds to retrofire. MARK - one minute. We've had separation of the adapter section. Thirty seconds - MARK. 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, RETROFIRE. We have confirmation all four retrofire rockets have fired. Let's join the conversation.

HOU Houston copy.

SC Retro Jett

HOU Roger, retro jett. We didn't copy the left - right IVI's. Did you have any?

SC Left four.

HOU Roger, left four.

SC (garbled)

HOU This is Houston, say again.

SC Roger, 301.4

HOU Roger, 301.4.

SC .....down

HOU Roger, copy.

FD Canton go local.

HOU Standing by for you Hawaii. Send us some mains and some OBC's.

HAW We got C-band on the vehicle we got no TM.

HOU Roger.

HAW Gemini 12, Hawaii

SC Go ahead Hawaii.

HAW Roger, would you confirm that you are on real-time and acq aid with TM.

SC (garbled)

HAW Roger, go to real-time and acq aid please.

SC Roger, real-time and acq aid.

HAW Roger, we got it. Thank you.

HOU How does RCS ring A look to you Hawaii?

HAW 298 at the present

HOU Roger, 298.

HOU Hawaii, do you want to give him an RET time acq.

SC Postretro jett checklist is complete.

HAW Roger, on your relay, MARK at + 5 minutes in about 30 seconds if you want it.

SC Roger, we MARK.

HAW 10 seconds

3, 2, 1, MARK.

SC Roger.

HAW Okay, and your source pressure in ring A is looking good, reg pressure good.

SC Thank you.

HOU Hawaii from Flight.

HAW Go ahead Flight.

HOU Just for the record, does it look like ring A reg is operating in the band of the regulator?

HAW It is in there right now, Flight

HOU Okay.

HAW To bad we lost those thrusters.

You know that indication of the RCS ones.

END OF TAPE

... They are looking real good from here.

HOU Roger

HOU Hawaii will you send us a couple more OBC's.

HAW Roger, Wilco.

HOU And a couple more Mains.

HAW Roger

HOU Hawii from Flight.

HAW Hawaii - one minute to LOS - Go Flight.

HOU Based on IVI's initial deflections, 61 nautical miles up. Pass that on please.

HAW Okay, initial deflection based on the IVI should be 61 nautical miles up.

S/C Roger, 61 up.

HAW Roger.

And this is Mission Control Houston. We have had loss of signal at Hawaii. Should be coming across the California station in about a minute and a half. Hawaii Cap Com reports there is no problem at all during this final pass over the Hawaii station. We will continue to monitor air-to tround for contact when it is established through the California on this final Stateside pass. The target point for Gemini 12 stands at 24 degrees, 35 minutes North latitude by 70 degrees West longitude. This is some 600 miles East of Cape Kennedy. All recovery forces are deployed on station. Standing by for contact at California.

Gemini 12 at the present time is at approximately 117 nautical miles in its reentry path. We are at retrofire plus 12 minutes, 26 seconds. Conrad is calling through California, let's join the conversation.

S/C 12 here.

HOU Roger, we are standing by, I'll pass you the data as soon as I can get it.

S/C Roger.

Gemini 12 at this time should be at 109 nautical miles altitude. We are at 13 minutes, 45 seconds after retrofire. 20 minutes and 33 seconds before splash.

HOU Guaymas go remote. California go local.

GYM Guaymas local ... guaymas remote.

CAL California local.

Gemini 12 at the present time should be at about 95.88 nautical miles in altitude, crossing the 120 degrees West longitude Meridian .....

END OF TAPE

GEMINI 12 MISSION COMMENTARY, 11/15/66, 1:03 P. M. CST

This is Mission Control again. We're down now to 88.6 nautical miles altitude as Gemini 12 crosses the coastline of Baha, California. Gemini 12 will cross just to the north of the Guaymas, Mexico, station. We're about three minutes now from 400,000 foot mark. Let's continue to monitor air-ground for any conversation.

HOU — Guaymas go local, Texas go remote.

TEX — Texas remote.

GYM — Guaymas local.

HOU — Gemini 12, Houston. Your 400 K time 20 + 08.

S/C — 20 + 08, thank you.

This is Mission Control. Gemini 12 should be down to approximately 400,000 feet. The ground track is passing just south of San Antonio. Let's join the conversation.

HOU — RETRB 26 + 03.

S/C — RETRB 26 + 03, bank left 46, bank right 56.

HOU — 12, Houston. We passed you 20 + 08 for 400 K time and we thought you said 28 back. 20 + 08.

S/C — 20 + 08 for 400 K, thank you.

HOU — Roger.

HOU — 12, Houston. Your drogue time, 29 + 02. Your main, 30 + 26.

S/C — Roger, understand. 29 + 02 drogue, main 30 + 26.

HOU — 12, Houston. Begin blackout and end blackout times are good.

S/C Roger.

HOU Have a good ride.

This is Mission Control. Gemini 12 should be entering the blackout period at this time, is at 52.21 nautical miles altitude just south of the Mississippi Delta. We're now 11 minutes, 27 seconds till splash. Retrofire plus 23 minutes.

Still in the blackout.

10 minutes, 20 seconds till splash. Still in the blackout. Gemini 12 is just crossing the Florida peninsula at the present time. Should be down to about 40 nautical miles in altitude as it crosses the southern portion of the Florida peninsula.

END OF TAPE

This is Mission Control Houston. We're coming up on the end of blackout. We're still 7 minutes and 26 seconds till splash. At 27 minutes after retrofire. We've had radar contact off the Wasp confirmed. Mark. End of blackout. They've had acquisition at Grand Turk Island.

HOU Gemini 12, Gemini 12 Houston standing by.

Gemini 12, Gemini 12 Houston standing by.

S/C Roger, automatic reentry.

HOU Houston Roger.

12 Houston, our data says you're right in the money.

S/C Roger. Address 86 reads 2441

HOU Roger

S/C (garbled)

HOU Copy

S/C (garbled)

HOU Roger

S/C ..... reads 2436

HOU Roger 2436

12 Houston, we've got you on the "Boob tube" you look good.

Visual contact

HOU Gemini 12, we have you on the tube.

12 Houston, smile you're on the tube

And this is Mission Control, Gemini XII has gone to 2 point suspension it's off the starboard beam of the prime recovery vessel Wasp.

The rendezvous and recovery can of Gemini XII spacecraft is drifting alongside Gemini XII as they near the water. The Wasp reports that both the spacecraft and the R & R can are in visual sighting of the carrier. The carrier Wasp reports that the helicopters are right with the spacecraft, we're 35 seconds to splash. 20 seconds to splash. Mark. Should be splash. We've had splash down confirmed. Rough estimates from the Wasp indicate that the splashdown occurred some 2 and 1/2 to 3 miles abeam of the Wasp, however, this will likely be refined and the numbers will change several times before we come up with a final number.

END OF TAPE

This is Mission Control again. One comment from Mission Director Bill Schneider here in Mission Control was as he saw the splash-down occur "Well, I am out of a job." We are now at some 36 minutes 45 seconds after retrofire. The last estimates of distance of Gemini 12 from the WASP were something like 4 miles. We are standing by here in Mission Control for any air-to-ground contact between the crew, I should say water-to-ground contact.

..pick up Air Boss live on air ground.

Okay is that on...

And it looks like he is talking to the astronauts.

I can't tell at the present time. ....spacecraft is rolling quite a bit. Airborne ... plugged in and the... around the spacecraft at this time. ... and we have a signal from the swimmers that the astronauts are okay. A signal from the swimmers that the astronauts are okay. He has plugged in the spacecraft and is in communication with them, they are okay at this time. The collar is about 3/4ths of the way around the spacecraft and it appears that it is being attached right now. Search 3 is hovering downwind, watching the proceedings on photo 1. The parachute is still on the surface, the air bubbles are keeping it up... package is not in sight at this time. The collar is completely around the spacecraft now, all the antennas are erected and no communications have been

established...radio, with the astronauts in the last few minutes. However, the swimmers have ...spacecraft and they are okay. I can see the astronauts's helmets. The glass through the port, but you cannot make them out at this time. The collar is still around, as not yet inflated, however. ...upwind about 50 feet away, one swimmer is going over to retrieve the raft now. Wind is about 15 to 20 knots .... due north.. 1 mile south of the spacecraft at this time, making an approach. A very close recovery. Spacecraft was watched all the way down until it hit the water and was a beautiful recovery. At this point it looks like the collar is about to be inflated.

PHOTO 1 This is Photo 1 reporting that Gemini 12, switch 2 and now switch 3 are on station and the swimmers operating from that point...pulling the raft back over to the spacecraft and it looks like the collar is firmly attached now. The spacecraft is floating normally and we have a ... that the astronauts are okay. This is Photo 1, Air Boss 1 62 and 63 are now...and Search 1 arriving in just a few

PHOTO 1

minutes. There are now 4 helicopters at the scene. No troubles at this time. The... of the spacecraft...slowed down somewhat because the collar is attached and is floating very steadily. They made ...I don't believe we will cover that. ....The port side of the spacecraft inflation collar being inflated and the starboard side coming up now. The starboard side is almost full, port side is completely full at this time. All swimmers are in the water. No difficulties at this time, but the astronauts are signaled that they are okay. The crew has completely inflated now, the collar is completely inflated around the spacecraft and there appears to be no difficulty whatsoever. All the antennas are up on the spacecraft and the...indicators shows evidence of having been scarred by the atmosphere. The rubber boat has been inflated and has now been pulled over to the spacecraft and is now being pulled over to the spacecraft and now being attached by the swimmers. The U. S. S. WASP is now steaming about a half a mile east of the spacecraft, getting in position for recovery.

PHOTO 1 ..barely able to see the spacecraft in the water at this point because....details of people can be made out on deck. The number 1 swimmer is now climbing up on the spacecraft and to attach the top of the flotation collar more securely around the heat shield head. This is Photo 1 reporting recovery of Gemini 12 astronauts. The astronauts have signaled they are okay. ...was a good recovery....Everything appears to be going normally at this time. Now there are 2 swimmers, one in the... and one up on the floatation collar. ...secure to the collar and the ..swimmers in ..with the astronauts. There appears to be no difficulty at this time. ...in the water and the U.S.S. Wasp is maneuvering up north of the spacecraft up wind in order to get in position for pickup. Search 3 is hovering slightly downwind and to the west and there are 4 helicopters and Air Boss 1. The swimmers are talking to.. now and secured the last... collar. The astronauts have signaled that they are okay. The astronauts are okay, the spacecraft is floating normally. The Gemini 12 recovery is a beautiful

PHOTO 1 shot, watching it at least 2000 feet all the way down and had some ... spacecraft as it descended. No difficulties whatsoever..it looks like .. not in sight... and it is doubtful whether the .. package can be recovered since we don't have it in sight. ...two up on the spacecraft and ...back in the water. Photo 1 over to Search 3 for ... port side, west side of the spacecraft. Search 3, we are ferrying the swimmers...rubber raft...spacecraft at this time. They are tying the raft to the collar with light twine. Now maneuvering the craft

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... to the spacecraft. They are tying the raft to the collar with light lines. They are maneuvering the raft to the far side to attach it on the far side. They have attached small amounts of line to the rubber raft. They are now moving the raft to the up wind side of the spacecraft where they will attach it. The dye line is very visible and apparently the spacecraft has not been bound independently .... point. say about three with the swells. There is no problem at all. From this side we are observing them attaching the rubber raft to the collar at this point. The antenna is still erected, very visible from our position. Also the dye marker is very vivid against the blue water. This is .... back to .. one.

This is .... one 0 one. There now seems to be a little activity now they have attached the raft to the floatation collar. The hatches are still closed. I have not seen one of the astronauts yet. They have signaled that they are Okay. Our crew is out of the water, one on the collar. .... are climbing up. They have taken off their aqua lungs for better maneuverability around the spacecraft. ..... is now moving up wind getting ready for the pickup of the spacecraft. They don't have far to go, an extimated 2 to 2-$\frac{1}{2}$ miles maximum from the point of splashdown. .... 170 (garble). This is 401 reporting Gemini 12 (garble) .. (garble). There is no one pulling on the spacecraft and it seems to be floating comfortably ... (garble). This is 401, nothing further to report, we have had a (garble) ..

a rather pretty day. The spacecraft is observed to be about 2000 feet (garble). The spacecraft reported leaving a nice trail of dye in the water and we have at least two smokes on the sceen. (garble). Okay the port hatch is now open ... taking the antenna down. .... did you see the astronauts from your position. Over to you.

This is .... 3.We have a very good view at this point .... now the third swimmer (garble) from the port hatch and waving to the astronauts from the port hatch. The astronauts have removed their helments and he is very well visible from this point. (garble) the swimmers at this time. We will shortly be getting signals from the swimmers. They have not completely retracted the HF antennas. ..... (garble) ..... with the Astronauts (garble).

This is .... It looks like the port hatch is completely opened now and Lovell is getting out of the port side, the swimmers are hovering around. (garble) he has inflated his (garble). It looks like his ..... is in place (garble).... Capt. Lovell is in the rubber boat (garble). No difficulty encountered at this time. The swimmers are beginning to put the equipment back in and getting ready to close the port hatch. No, they are not going to close the port hatch, the main (garble).... We have encountered no difficulty what so ever at this time. Major Aldrin is completely out of the spacecraft (garble) in the rubber boat. Now it looks like

we are going to have to get the boat separated from the spacecraft in order to get away from that ... antenna. (garble). And both are going to help the helicopter get the true hold. Astronauts are motioning and talking together. The swimmers are in the boat with them holding them on.. (garble). The swimmer is attempting to close the hatch and having a little difficulty with it. The astronauts are looking worried about closing the hatch and they have got the ... wrench out and getting ready to close it. There is no difficulty at this time, the astronauts appear to be well and look good (garble) This is 401 reporting the Gemini 12. They are having a little trouble getting the top hatch closed, now they have got it and they are going to lock it tight. The astronauts appear to be riding comfortably in the boat. The hatch is now closed and the floatation collar is inflated.. Major Aldrin gave a big wave to the helicopter and he appears to be in good spirits. The crew is now shaking hands with the astronauts, waiting for the pickup (garble)... They are going to open the hatch again for some reason. Yes they are and they have got ... they have opened the hatch again, Cpt. Lovell is going back in. I assume he is going to retract the antenna. Capt. Lovell is now back in the spacecraft and we expect the antenna to go down momentarily. The Wasp is circling the spacecraft a radius of about one-half mile. (garble). The Wasp is now directly West of the spacecraft and circling waiting for the pickup of the astronauts

so they can pick up the spacecraft. Capt. Lovell has gone back into the spacecraft and the HF antenna is beginning to retract. (garble) the antenna is about four feet up and Lovell is sitting there in the open spacecraft putting it down. Okay, the HF antenna has now been completely retracted. And we commence helping Cpt. Lovell get back out of the spacecraft and that will be very shortly. (garble)..... waiting for the pickup. All three swimmers are standing by.... .... static electricity.....

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WASP All three swimmers are standing by ready to hoist - and the sling is now in the water to discharge the static electricity and .... is moving in all of the astronauts. There is the signal from the lead crew, number 1 Swim team is ready for the pickup. They'll move in all around the spacecraft and the sling is ..... swinging in a little bit due to the whirling blades of the helicopter and the swimmers are going to grab the sling - Okay, they've got the sling now and they're putting it on Captain Lovell first. Captain Lovell will be the first one up and it's all around him. Search 3 is maintaining a very good position and Captain Lovell is signalling he's ready to come up and there comes the astronaut. Captain Lovell is being hoisted just clear of the water now. Search 3 is doing a very good job of hoisting him up. He's about half way up holding on ..... No difficulties at this time. Now the Astronaut Captain Lovell is almost up to the helicopter..... They've got him up to the edge of the floor and he's now inside the helicopter. He's out of the sling and they're lowering down now to pick up Major Aldrin. Captain Lovell is inside the helicopter. One astronaut recovered and the second astronaut ready to be

picked up. Major Aldrin is giving us the signal ..... No difficulties at this time. Search 3 has now moved in back over the spacecraft to see thesling gets in the water to make sure there is no static electricity so the astronauts will not get shocked when they touch it. This is Photo 1 reporting the Gemini 12 astronaut recovery. It is proceeding as planned. No difficulties whatsoever at this time. The sling is now directly over the astronaut and is being lowered. The wind and the spray has pushed the sling away a little bit. One of the swimmers is retrieving it. They are bringing it right over to him. He now has the sling.....is giving him the sling. He has the sling on completely now is giving the signal to be pulled up. Search 3 is doing a very good job of hovering over the spacecraft. No difficulties encountered. There's the up signal from Major Aldrin and there goes Major Aldrin out of the little boat. He's being hoisted now. He's about one third of the way up. Search 3 has got the second astronaut and hoisting him now.He's one half of the way up. No difficulties at this time. The spacecraft is still floating normally. Major

WASP — Aldrin is about two thirds of the way up approaching the cabin floor now. And he is being hoisted inside. Major Aldrin is now in the helicopter and they are all shaking hands and they are getting the Major out of the sling. This is Photo 1 over to Search 3.

SEARCH 3 — And they appear to be ready for the landing on the Wasp. The Wasp is only one half a mile from the recovery area and we'll be landing shortly aboard in about two minutes. This is Search 3, back to Photo 1 preparing to switch to Wasp....

PHOTO 1 — Roger, this is Photo 1. Both the astronauts are abpard helicopter no. 66, designated Search 3 and are approaching the Wasp now for a .... landing. Search 3 and 4 - Search 3 and 4 will be landing .....immediate approach of the spacecraft. ....the signal will be that the doctor has also given the pilot in helicopter no. 66 the okay and the helicopter is approaching the Wasp. This is Photo 1 by .... power circuitry atop the .....

END OF TAPE

GEMINI 12 MISSION COMMENTARY, NOVEMBER 15, 1966, 2:01 pm CST

This is Gemini Control Houston. When Lovell and Aldrin stepped out on the deck of the carrier they got a tremendous ovation here in the Mission Control Center. The room was filled to over flowing and is still densely populated, by both NASA people and contractors. Among them Frank Cary from the Martin Company who has directed all of the Titan launches. We can also see a soft drink executive here in the person of John Glenn,a retired astronaut and Al Shepard, the Mission Director of course, Bill Schneider. Bill is still here, he is preparing to go to the Cape later this afternoon. Many handshakes and many cigars. We are planning to have a Press Conference here in Houston in about 15 minutes, featuring the officials of the program. We'll continue coverage on the Agena operations as they go on later this afternoon. We would expect that coverage to continue another 4 hours. This is Gemini Control Houston.

END OF GEMINI MISSIONS.....