This is Gemini Launch Control. Our countdown on the Gemini 10 mission T-313 minutes and 40 seconds and counting. All is proceeding excellently both at Pad 14 and Pad 19 at the present time. The Prime Pilot's, Astornaut's John Young and Mike Collins are still in bed at the crew quarters at the Kennedy Space Center at this time. The backup pilot's Alan Bean and C. C. Williams are aboard the Gemini 10 Spacecraft at Launch Complex 19, going through a complete series of preliminary checks. They'll be ready to report to the prime pilot's later this afternoon when they arrive at the Launch Pad. Bean and Williams have now been in the spacecraft for about 60 to 70 minutes at this point. Weather forcast continues to look favorable and all is proceeding very satisfactorily at this time. Now at T-312 minutes and 54 seconds and counting. This is Gemini Launch Control.

END OF TAPE

GEMINI 10 MISSION COMMENTARY, 7/18/66, 11:26 AM, TAPE 2, PAGE 1

This is Gemini Launch Control T-287 minutes 43 seconds and counting and all still proceeding excellently with the Gemini 10 countdown. The prime pilots, John Young and Mike Collins are abed at the Kennedy Space Center at their crew quarters. If they do remain asleep, they will be awakened at 1 p.m. Eastern Standard Time, this afternoon. The backup pilots Alan Bean and C. C. Willaims are still aboard the Gemini 10 Spacecraft making the early checkouts at this point. At Launch Complex 14 we are preparing for one of our key steps in the countdown and that is loading fuel aboard the Agena second stage. This will begin some 7 minutes from this time as we proceed to load some 4000 pounds of the unsymetrical-diamethyl-hydrazine fuel aboard the Agena. Following the loading of the fuel aboard the Agena stage, we will then remove the gantry service structure and proceed to load the oxidizer, the acid, aboard the Agena stage. Our countdown is continuing and going very satisfactorily at this point. The Gemini spacecraft joined the countdown at the T-360 minute mark, about 70 or 80 minutes ago and all is proceeding well with the spacecraft. The final key member of the countdown, the Gemini launch vehicle will be joining us about 40 minutes from this time. When the Gemini launch vehicle comes in on the count at T-240 minute mark, we will then have some nine countdowns going simultaneously for this afternoons dual launch. The launch times that we have at the present time, based on the data of the orbiting Gemini 8 Agena

and of course, also based on later information this afternoon, the status of that Agena and the Agena 10 that will be launched this afternoon. The present launch times we have in Eastern Standard Time are 3:39 and 4:44 p.m. Eastern Standard Time for the Atlas/Agena with the Gemini launch vehicle aiming for 5:20 and 30 seconds p.m., Eastern Standard Time. Now coming up on T-285 minutes. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control T-282 minutes and 41 seconds and counting. We just received a report from the crew quarters at the Kennedy Space Center that the prime pilots, John Young and Mike Collins are now awake and, as a matter of fact, just got up a short time ago. They will start the astronaut portion of the countdown about a half an hour from this time when they're scheduled to take their physical examination. This will be followed by a lunch at the crew quarters at the Kennedy Space Center. John Young and Mike Collins now are up. Apparently, they had a very good night's sleep. They went to bed about two a.m. EST this morning. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control, T-265 minutes and counting. All preceeding very satisfactorily on the Gemini 10 countdown, as it has for the complete 6 hours and 45 minutes or so that it has been in progress. At this point in the countdown we are completeing the fuel loading aboard the Agena second stage at Launch Complex 14. We are due to complete this about 5 minutes from this time. We will then prepare to move the Gantry Service Structure back to its parked position, continue with the count with the next major item being loading the oxidizer, the acid aboard the Agena second stage. That will complete the propellant loading of the Agena and the final propellant loading, the liquid oxygen that comes aboard the Atlas Launch Vehicle will come a little later in the count, about an hour or so from this time. Astronaut's John Young and Mike Collins the Prime Pilot's for the mission are up at the crew quarters at the Kennedy Space Center on Merritt Island. They've been up for about a half hour or so. They'll be starting their phase of the countdown at about 1:15 p.m. eastern standard time, when they begin their medical examination. This will be followed by their breakfast, which is expected to be the usual astronaut fare of Filet Mignon, Scrambled Eggs, Toast and Coffee. We'll have a later report on that. The weather man in the meantime gives us a GO for the launch as far as the weather conditions here in the Cape Kennedy area and around the world wide track. All systems looking good at T-263 minutes 23 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-248 minutes, 40 seconds and counting, and we're still proceeding very well with the Gemini 10 countdown. Astronauts John Young and Michael Collins are now taking their pre-flight physical examination at the crew quarters at the Kennedy Space Center. The brief examination is being conducted by two NASA physicians, Drs. D. Owen Coons and Norman Pincott. Drs. Coons and Pincott are conducting the examination. The pilots will be sitting down about ten or fifteen minutes from this time for what will be their breakfast. They woke up on their own at 12:15 P. M. EST and now is reported are taking their physical examination. At Launch Complex 14 we are getting ready to pull back that gantry service tower and bring it to its park position as we continue the countdown at 14. This will be coming up in about two minutes, take some thirty minutes to get the gantry service structure back, and we will then proceed - we will then continue with our propellant loading of the Agena. That is, loading the acid oxidizer aboard. The back-up pilots, astronauts Alan Bean and C. C. Williams are still aboard the Gemini 10 spacecraft at Launch Complex 19 continuing their checkout. All still going well. T-247 minutes and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. We just passed the 240 minute mark in the count. Now at T-239 minutes 37 seconds and counting. All still going well with the dual countdown at this time. The Gemini Launch Vehicle has just come into the count. It came in at the T-240 minute mark and this gives us a total of some 9 countdowns now running simultaneously. They will culminate in an Atlas Agena launch at 3:39 p.m. and 44 seconds eastern standard time this afternoon, followed by the Gemini Launch Vehicle ignition at 5:20 and 30 seconds p.m. eastern standard time. Astronaut's John Young and Mike Collins have just completed their physical examination and should be sitting down to their breakfast shortly at the crew quarters at the Kennedy Space Center in Merritt Island. Our weather forcast looks very good. We will have some scattered clouds in the launch area, some low scattered clouds at 2500 feet, then another layer of scattered clouds at about 15,000 feet. Visibility of 10 miles and the sea state off the Cape is about two to three feet. Winds will be from the northeast at about 12 miles per hour with gusts up to 18 miles per hour. The weather man forcast a very low probability of any thundershowers this afternoon that could affect the launch operations. There maybe some thundershowers in the general central - the central Florida area but he doesn't expect any thundershowers or lightning will affect us this afternoon at Complex's 14 and 19. The remainder of the wide world track all the weather looks good we have scattered clouds in both the east and west Atlantic and about similar conditions in the Pacific Ocean. So we are GO as far as the weather is concerned. Now at T-237 minutes 53 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-228 minutes, 41 seconds and counting. All still proceeding very well at Launch Complexes 14 and 19 for today's Gemini 10 Mission. The prime pilots John Young and Mike Collins are now sitting down to their breakfast at the crew quarters at the Kennedy Space Center. The breakfast menu - breakfast or lunch menu - consists of the fillet mignon, scrambled eggs, toast and coffee. Their guests for their luncheon this afternoon are, Astronaut Gene Cernan, who was the Gemini 9 pilot, and on this mission, is acting as STONEY. That is the call sign for the capsule communicator in the blockhouse at Launch Complex 19. Also having lunch is Jim Lovell, who will be the Gemini 12 Command Pilot, and of course, was the pilot on the Gemini 7 Mission. And the final member of the party is Donald K. Slayton, who is Director of Flight Crew Operations for the Manned Spacecraft Center. The crew is having their breakfast or lunch at this time and will be departing from the crew quarters at about an hour from this time. They have completed their physical examination. They have been given a clean bill of health by Drs. Owen Coons and Norman Pincott, who conducted the brief examination at the crew quarters. In the meantime at Launch Complex 14, the gantry service structure is moving back into its park position shortly. The crew then will start the final propellant loading of the Agena second stage. That is, loading the acid oxidizer aboard the Agena stage. All still going well at Launch Complex 19 with the back-up pilots, Alan Bean and C. C. Williams, still aboard the Gemini 10 spacecraft. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-210 minutes 43 seconds and counting. They are still proceeding very well with the Gemini 10 countdown at complexes 14 and 19. All systems looking good at this time as we continue to load the acid oxidizer, the final propellant loading of the Agena second stage at complex 14. Meanwhile at complex 19, we are starting to clear the White Room for the launch vehicle pressurization. That is the nitrogen pressurization of the Gemini launch vehicle which will be coming up 20 to 25 minutes from this time. The backup pilots, Alan Bean and C. C. Williams have been in the spacecraft some 3 hours, have just departed from the White Room. They will come back in again after the vehicle has been pressurized. The prime pilots for the mission, John Young and Mike Collins still at their crew quarters at the Kennedy Space Center having their lunch at the present time. They will be leaving the crew quarters about a half an hour from this time for the ready room, that trailer at Launch Complex 16, where they will don their suits and make the final preparations for the mission. All systems looking good at this time, T-209 minutes 36 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control, T-201 minutes 42 seconds and counting. All still going well with the Gemini 10 countdown. Astronaut's John Young and Mike Collins still at their crew quarters at the Kennedy Space Center. They are finishing up their lunch and they'll be departing some 25 minutes from this time to the Ready Room at Launch Complex 16. We have cleared the White Room at Launch Complex 19 as we begin to gear up at that pad to pressurize the Gemini Launch Vehicle. Prior to pressurizing the vehicle which will come about 15 minutes from this time we will connect the distruct system initiators on the Launch Vehicle itself. We use dummy initiators during the early checks of the countdown, but now the actual connections are made at this point in the count. At Launch Complex 14 we are proceeding very well with the acid oxidizer fueling of the second stage, that is bringing the oxidizer aboard the Agena second stage to complete the propellant loading. That should be completed in about 15 or 20 minutes from this time. All going well in the count, 200 minutes 39 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-193 minutes, 42 seconds and proceeding very well with the Gemini 10 Mission at this time. We have just completed loading the acid oxidizer aboard the second stage of the Atlas vehicle. That is the Agena stage and we completed it in good time, some 25 minutes to load it aboard. So we completed our propellant loading of the Agena stage at 14. Meanwhile at Launch Complex 19, we are gearing up for the launch vehicle pressurization, which will be coming up in a matter of minutes from this time. Astronauts John Young and Mike Collins are in their crew quarters at the Kennedy Space Center. They'll be departing for the ready room in about 16 or 17 minutes from this time. Now T-193 minutes and counting. This is Gemini Launch Control.

END OF TAPE

GEMINI 10 MISSION COMMENTARY, 7/18/66, 1:16 PM, TAPE 11, PAGE 1

This is Gemini Launch Control. We are T-178 minutes 42 seconds and counting. Gemini 10 pilots, John Young and Mike Collins are on their way to the ready room at Launch Complex 16. They departed from their crew quarters at Kennedy Space Center about 5 minutes ago. Shortly after they do arrive at the ready room they will get a briefing on the status of the mission. Participating in that briefing will be the backup pilots, Alan Bean and C. C. Williams. They may or may not be there, but the astronauts will be briefed on the status of the mission and they will be told that in these 8 and a half hours or so that the countdown has been in progress, that all has been going excellently with the countdown, both at Launch Complex 14 and Complex 19. At this point in the countdown, we are pressurizing or just completed pressurizing the Gemini launch vehicle and the crews will be coming back into the pad area shortly. We do clear the pad area during this pressurization, when we pressurize the tanks in both stages of the Gemini launch vehicle, with nitrogen. All going well at this point in the count. T-177 minutes 35 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control, T-171 minutes 42 seconds and counting. All still going well with our simultaneous countdown at this time. The prime crew, Astronauts John Young and Mike Collins have arrived at the Ready Room at Complex 16, where they will start donning their spacesuits. They will actually come aboard the Gemini 10 spacecraft at about the 1:25 minute mark in the count. All systems still going well both at Complex's 14 with the Atlas Agena and 19 with the Gemini Launch Vehicle and spacecraft at this time. We're aiming for a launch of the Atlas Agena at 3:39 and 44 seconds p.m. Eastern Standard Time. Because of the status of the Agena 8 spacecraft and the overall Gemini 10 mission, we will have a window of some 27 minutes and 20 seconds in order to launch from the time that was just announced. Gemini Launch Vehicle will have a T-0, that is ignition, at 5:20 and 30 seconds p.m. Eastern Standard Time. This is if all goes well and there are no problems encountered. If we do get off perfectly on that time the hold time at the T-3 minute mark will last some 5 minutes and 46 seconds. We are now at T-170 minutes 22 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. We're at T-164 minutes, 41 seconds and counting. All still proceeding very well with our dual countdown. The back-up pilots, Alan Bean and C. C. Williams, have returned to the Gemini 10 spacecraft. The pressurization of the Gemini Launch Vehicle has just been completed. We are on a go condition at both Launch Pads at this time. Coming up at Launch Complex 14, now that we have the propellants aboard the spacecraft, will be a guidance command test with some ten minutes duration. It's one of the final major checks of the Radio Command Guidance System that carries the Atlas Agena - or actually the Agena stage - into orbit. All systems still going well at this time in the count. We're now T-163 minutes, 56 seconds and counting. This is Gemini Launch Control.

END OF TAPE.

This is Gemini Control Houston, 5 minutes and 42 seconds away from the Agena launch. The launch team of flight controllers has moved into the Control Center here in Houston. They came to work approximately 45 minutes ago. Four hours previous to that, Flight Controllers had been working with stations here checking around the world and the Flight Director, Glen Lunney, who will be on duty for the launch has just polled the various stations and he gets reports like these. The Recovery Room reports, we're ready in all respects, we even have good weather for you all the way around the globe. The voice levels to all the stations are exactly what they should be this afternoon. The only equipment problem we show right now in the network status is a data processer at the Grand Turk station. Their estimating that this data processer will be ready to support the launch about 20 minutes from now. At 58 minutes away from the Agena launch, we'll switch now to the Cape for an update there.

This is Gemini Launch Control at the Cape. We are at T-153 minutes 25 seconds and counting. All still going very well at Complex 14 with the Atlas Agena and Complex 19 with the Gemini Launch Vehicle and spacecraft. Astronauts John Young and Mike Collins still in the Ready Room in Complex 16 where they are checking out their spacesuits at this time. Their backups Alan Bean and C. C. Williams still aboard the Gemini 10 spacecraft making final checks. They'll be ready to report to the prime pilot's when they come aboard some 25 to 30 minutes from this time. The next highlight coming up at Launch Complex 14 will be the final propellant loading. That is loading the liquid oxygen aboard the Atlas vehicle. This comes at about the T-140 minute mark in the

count or 45 minutes prior to the planned Atlas Agena liftoff. We're aiming once again, to report once again, the liftoff time is 3:39 and 44 seconds p.m. EST. Now at T-152 minutes 23 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-144 minutes and 42 seconds and counting. We're some 50 minutes away from the planned Atlas/Agena liftoff, the first of two key launches today on the Gemini 10 Mission. All systems still going well at the Complexes 14 and 19 as they have throughout the complete countdown today. We now have nine different countdowns involved in this simultaneous count. All of them are going well. We're gearing up at Launch Complex 14 to prepare for the liquid oxygen loading which will come up about five minutes from this time. At Launch Complex 19 they've just completed a series of telemetry checks with the Air Force Eastern Test Range - between the Range and the Launch Vehicle. Those also have gone very well. All systems still looking good at 144 minutes and counting. This is Gemini Launch Control.

END OF TAPE

GEMINI 10 MISSION COMMENTARY, 7/18/66, 2:01 PM, TAPE 16, PAGE 1

This is Gemini Launch Control. T-133 minutes 41 seconds and counting. We are now some 39 minutes away from the planned Atlas/Agena liftoff. All still going well at complexes 14 and 19 as our simultaneous countdown continues. At Launch Complex 14, some 5 minutes ago we started loading the liquid oxygen supply aboard the Atlas vehicle. This is the oxidizer that burns with with the so-called RPI fuel that was loaded aboard the Atlas several days ago. We will be loading some 18 500 gallons of liquid oxygen aboard the vehicle and loading it at about 2000 gallons a minute until we reach the 95 percent supply. Then we will continue to top off down to several minutes before the planned liftoff. Because of the extremely low temperature of the liquid oxygen, it will boil off and we must continue to replenish the supply down to the final moments before liftoff. At Launch Complex 19, Astronaut C. C. Williams has just been reading out a status report from the spacecraft to the blockhouse concerned with the fuel cell. He has been giving a series of readings on its status. All appears to be going well at this time. The astronauts are due to depart from their ready room some 15 minutes from this time. It is now T-132 minutes 24 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-124 minutes, 43 seconds and counting. Some 30 minutes away from the Atlas/Agena liftoff at this point in the countdown. Also at this point, the prime pilots, Astronauts John Young and Mike Collins, should be just about ready to leave the ready room at Launch Complex 16 to proceed to pad 19 and their Gemini 10 spacecraft. In progress at Launch Complex 14 at this time is the check of the autopilot system of the Atlas Launch Vehicle. The autopilot is the system that swivels the engines in flight to give it proper direction. During this test, which lasts about 15 minutes or so, we actually will swivel those engines at the base of the Atlas vehicle to ensure that they are in working order. All systems still looking good as we await the prime pilots' departure from Complex 16. This is Gemini Launch Control.

END OF TAPE

GEMINI 10 MISSION COMMENTARY, 7/18/66, 2:12 PM, TAPE 18 PAGE 1

This is Gemini Launch Control. T-122 minutes 42 seconds and counting. About 28 minutes now away from the planned Atlas/ Agena liftoff. The prime pilots of Gemini 10 mission, Astronauts John Young and Mike Collins now arriving at Launch Complex 19 or they will be there shortly. Shortly after their arrival they will board the elevator at the complex and go to the 100-foot level where they will board their Gemini 10 spacecraft. They are due to be inserted into the spacecraft about 7 minutes from this time. They will get a quick briefing from the backup pilots, Astronauts Alan Bean and C. C. Williams when they arrive in the white room. Our checks still going well also at Launch Complex 14 with the Atlas/Agena as we continue with the loading of the liquid oxygen supply and continue with guidance checks with the vehicle itself. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-119 minutes, 42 seconds and counting. Astronauts John Young and Mike Collins now in the White Room at the 100 foot level at Complex 19. They will be going aboard the spacecraft shortly. Just as they entered the White Room, the Pad crew, just in a kidding fashion, presented John Young with an oversize pair of pliers, and Mike Collins with an oversize monkey wrench. This was to kid both the pilots - the pliers were in reference to a utility cord that Young has aboard the spacecraft. This is just like an electrical extension cord that he can plug in to cameras and a number of other items. During some of his checks he had reported that he had minor problems with a plug on this cord which is about a half an inch in diameter, and expressed a desire to, perhaps, bring some pliers along with him on the flight. Under the same conditions with Mike Collins, the monkey wrench is presented because he was talking about some minor difficulties he had with the nitrogen hookup line for the Handheld Maneuvering Unit that he'll use during his extra-vehicular activity. So he was presented with a monkey wrench for that purpose. The astronauts will be aboard shortly. In fact, they are getting aboard at this time. We'll be closing the hatches about a 100 minutes in the countdown and aiming for the Atlas/Agena liftoff at T-95. All still going well at the Cape at this time. We now switch you to Mission Control, Houston.

And this is Gemini Control, Houston. Earlier we reported some difficulty with the data processor at the Grand Turk Station. That

data processor now is fixed and our board is completely green now around the world. All stations reporting they can support the launch. The Agena 8, which will be one-third of the vehicles planned to be used in this flight controller dream mission, is presently at an altitude, apogee and perigee, of 217 by 215 nautical miles. It's showing a revolutionary period of 99 minutes, and it's inclination of the equator is 28.8 degrees. If we succeed in getting the vehicles, the spacecraft, off on the appointed time, the 8 Agena will be 480 miles behind the spacecraft and about 50 to 75 miles above it. At 22 minutes away from launch, this is Gemini Control Houston.

This is Gemini Launch Control, T-114 minutes 42 seconds and counting. Some 20 minutes away from the Atlas Agena liftoff. All atill going well at both launch pads on our simultaneous countdown for Gemini 10. Astronauts John Young and Mike Collins getting settled in the Gemini 10 spacecraft at this time. While down at Pad 14 we're making some final checks of the distruct system aboard the Atlas vehicle. These checks/are between the Air Force Eastern Test Range and the vehicle itself. Coming up during the final phases of the Atlas Agena count, the hatches will be closed on the Gemini 10 spacecraft at about the 100 minute mark or 5 minutes away from the planned Atlas Agena liftoff. Two minutes prior to that time or at 1:02 in the count the Agena second stage goes on internal power. For the first time it will be using those six flight batteries that are aboard the vehicle. It's been on ground power up to this time. There are a number of activities that go on during the final 3-1/2 minutes or so and we'll outline them for you at this time because it gets rather busy when we do get down to that mark in the count. Starting at about T-3 minutes and 30 seconds in the Atlas count, the telemetry of the vehicle goes on - goes internal. The Agena distruct system is armed at 2-1/2 minutes before liftoff. The liquid oxygen vents in the first stage are closed at 2 minutes and 10 seconds. We then have our complete supply of propellants aboard the vehicle. At the two minute mark all commands within the vehicle go to internal power and we start to pressurize the locks. The liquid oxygen tank and the fuel tank of the Atlas vehicle we start pressurizing with helium. At T-1 minute and 45 seconds the ignition system is on. That is, we then have the capability to ignite. One minute and 40 seconds the

complete vehicle goes on internal power, that is, the Atlas goes on its batteries. At 1 minute and 20 seconds the range safety light comes on meaning that the crew has an OK from the range to launch. We go on the automatic sequencer at 18 seconds in the count. There may be a brief hold at that time as the sequence starts. Once the sequence starts we're completely automatic down to the four second mark when those five engines of the Atlas start to ignite. Those are the two veniers on the side of the vehicle followed by the twin booster engines and the sustainer engine, building up some 390,000 pounds of thrust. We'll be looking for liftoff at about the zero mark in the countdown. Now T-112 minutes and 5 seconds and counting. This is Gemini Launch Control.

END OF TAPE

GEMINI 10 MISSION COMMENTARY, 7/18/66, 2:25 PM, TAPE 21, PAGE 1

This is Gemini Launch Control. T-109 minutes 42 seconds and counting. Some 15 minutes away now from the planned Atlas/ Agena liftoff, all going well. Our checkouts continue at Launch Complex 14 during these final phases of the countdown with the Atlas/Agena. At Launch Complex 19, we are still getting the prime pilots, John Young and Mike Collins fitted into the Gemini 10 spacecraft. They should be coming up with some communication checks shortly. All systems still going well now 109 minutes 13 seconds and counting. This is Gemini Launch Control

END OF TAPE

This is Gemini Launch Control, T-166 minutes, correction -- T-106 minutes, 39 seconds and counting. All still going well. Just about a minute ago those two hatches on the Gemini 10 spacecraft were sealed, we're a little early actually. Some six minutes early in the count for that particular event. But, the two crewmen were ready and the hatches were closed. They will now begin to purge the Gemini 10 spacecraft to about -- to 100% oxygen environment and will start to proceed with some communications and medical checks. All systems still looking good -- T-106 minutes, 7 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-103 minutes, 42 seconds and counting, some nine minutes away from the Atlas/Agena liftoff. In the blockhouse at Launch Complex 14, the Launch Director is now going through a final status check of all systems and they are reporting GO. We are on a GO condition also at Launch Complex 19 where Astronauts John Young and Mike Collins are making some early checks in the Gemini 10 spacecraft. All systems looking good at this time. The Agena spacecraft has just gone on internal power. T-103 minutes, 11 seconds and counting. This is Gemini Launch Control.

END OF TAPE

GEMINI 10 MISSION COMMENTARY, 7/18/66, 2:35 PM, TAPE 24 PAGE 1

This is Gemini Launch Control. T-99 minutes 43 seconds and counting. We are aiming for a liftoff of the Atlas/Agena of 39 minutes and 44 seconds after the hour. We have just gone through some final status checks with the Atlas/Agena and all systems report go. T-99 minutes 27 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-97 minutes, 43 seconds and counting, some two and a half minutes away from the planned Atlas/ Agena liftoff. All systems still looking good at this time. We have had a report that the Atlas telemetry system now is on internal power. Now we're at two minutes and 28 seconds and counting. Going through another final status check. We have a GO from the Range to launch. We have a temperature of about 81 degrees and surface winds at about 16 knots. All systems still looking good here during the final phases of the count. Now two minutes and 10 seconds and counting.

This is Gemini Launch Control. The Agena destruct system has been armed. We're at T-2 minutes and counting. Liquid oxygen tanking has been secured. Those vents are closed. T-1 minute, 46 seconds and counting.

This is Gemini Launch Control. T-1 minute, 38 seconds and counting. The ignition system has been armed. We will be ready to turn on the sequencer at the 18 second mark in the countdown. Now one minute and 26 seconds and counting. Back at Launch Complex 19 Astronauts John Young and Mike Collins getting reports on the status of the countdown but they will not be able to see the launch. T-1 minute, 13 seconds and counting. The launch vehicle is now completely on internal power as we come up toward the one minute mark. T-60 seconds and counting. T-60. The helium supply that pressurizes the vehicle is now on internal power. T-50 seconds and counting. T-40 seconds and counting. For most of the remainder of time, the Launch

Vehicle Test Conductor will be looking at a series of ready lights on his console. They will turn from amber to green as the automatic sequencer clicks off the various events. Now coming up on 25 seconds and counting. T-20 seconds and counting. T-19, 18. We have the automatic sequencer in. Now 15 seconds and counting. Aiming at an ignition at four. T-10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 - IGNITION.

And we have a liftoff, it looked liked 46 seconds after the hour. Plus 12 seconds. Trajectory is good and so is range safety. Beginning to program. Plus 40 seconds. Plus 50 seconds, and the Flight Director checks with range safety, he says we look good. One minute, six seconds and we're through the area of maximum dynamic pressure for the Atlas. One minute, 20 seconds. One minute and 35 seconds and we have completed now 20 - 30 second period of steering, which went very nicely. Altitude about 20 miles and we're about 25 miles down range. Mark - two minutes. Coming up on Booster Engine Cutoff. Flight Dynamics says everything looks good to him. BECO. Two minutes, 15 seconds into the flight. BECO programmed at two minutes and 11 seconds. It looked like it occurred right on the mark. The booster engines have dropped away. The 57,000 pound thrust sustainer now driving the vehicle up and out over the Atlantic. Two minutes, 50 seconds, the Range Safety Observer confirms that everything looks good to him from his post at the Cape. Mark - three minutes. Altitude, 60 miles. We're 125 miles down range. Our next major event coming up at four minutes and 39 seconds. That will be the sustainer engine cutoff. We're presently showing three minutes, 25 seconds. Three minutes, 40 seconds. Flight Dynamics again confirms we look good.

Mark - four minutes. We are about thirty seconds away from the cutoff point. Four minutes, 26 seconds and everything looks good. We are 300 miles down range and about 105 miles in altitude. We have SECO, sustainer engine has shut down. We now go through approximately a 20 second coast period before separation occurs. After the separation sequence there's a 52 second coast until the secondary propulsion system lights off on the Agena at approximately - a little more than - one minute later we should have primary propulsion lights off on the Agena. We're five minutes and 20 seconds and we look good in all respects. Five minutes, 50 seconds, and now we've got the secondary propulsion system has come in. The small thrusters ignited right on schedule. Six minutes, 5 seconds. And we've got the primary propulsion system has ignited on schedule. Six minutes, 10.2 seconds. Flight Dynamics has confirmed the engine start on the Agena engine, the big engine. This burn has to carry a little more than three minutes with shutdown occurring at nine minutes and 16 seconds into the flight.

END OF TAPE

We have a report of shroud separation. This event was to take place 6 minutes 20 seconds. We are now at 6 minutes and 50 seconds. Altitude 155 nautical miles and we are 700 miles downrange and counting. Seven minutes 10 seconds into the flight. Seven minutes 38 seconds into the flight and the flight director as he polls the video console or the Agena console again and again, it is a looks good report. We are 160 miles now in altitude. About 900 miles downrange. Eight minutes and 3 seconds into the flight. And we are approximately 1 minute away from Agena engine shutdown. Eight minutes 40 seconds. Agena reports a little intermittent - some intermittency on the telemetry signal but it is generally continuing on in a good healthy signal. The Agena now leveling out at the 161 mile mark. Nine minutes. We are 1100 miles downrange. We have got cutoff on the primary propulsion system. The Agena controller advises us we had a normal shutdown and now we will await a report from flight dynamics. He advises that the cutoff looked nominal in all respects to him, the flight dynamics officer. Commands now being sent to the Agena to disable the command destruct system receivers aboard. Ten minutes into the flight. The assistant flight director is advising the range stations around the world that we had a good cutoff and we looked good. Ten minutes 35 seconds into the flight and the launch displays that we follow, the trajectory lines have been taken down from our big board here in the control center. We are back on the world map and we are standing by for a command to the Agena to unrigidize the docking

collar. And the flight dynamics officer advises that the first rough cut on the orbital elements of this Agena are 165 by 159, 165 by 159 nautical miles. These will be refined as we move through this first orbit. We are 11 minutes and 27 seconds into the flight, which appears to be - the flight of the Agena which appears to be successful in all respects. We will switch now to the Cape for an update there.

This is Launch Control at the Cape. T-83 minutes and 21 seconds and counting for the Gemini launch vehicle and spacecraft at Launch Complex 19. Astronauts John Young and Mike Collins have been keeping - have been kept abreast of the Agena performance and they were happy to hear that we have apparently put an Agena in orbit. They are getting right to work however, or right back to work as far as the spacecraft is concerned, going through the start of a whole series of checks that will be going on for the next 10 minutes or so. This is the astronaut's switch list checks in which both pilots John Young who is designated crewman no. 1 and Mike Collins crewman no. 2 and the Gemini spacecraft will check just about every switch in the spacecraft on their various consoles to insure that they are in the proper position prior to launch. The spacecraft, of course, has been sealed. They are on a 100 percent oxygen environment at the present time. They were given permission a short while ago by the spacecraft test conductor to move up their faceplates. That is, actually open the face masks. All systems looking good at this stage with the Gemini count also. T-82 minutes 11 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control, T-77 minutes 46 seconds and counting. Our countdown with the Gemini Launch Vehicle and spacecraft still looking very good at this time. They just made some final checks of the spacecraft as far as the purge and leak checks are concerned and the pad leader reports that these tests went well. We're starting to break up the so called White Room now. That is, the platform that surrounds the two astronauts in the spacecraft at the 100 foot level. The crew at the 100 foot level will be leaving shortly and as soon as they have departed we'll start gearing up to bring down that erector at Launch Complex 19. All our checks still going well. Young and Collins were informed that we apparently have a good Agena and a good orbit and they responded with a "very good" reaction. T-76 minutes 54 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control, T-69 minutes 45 seconds and counting. All still proceeding very well with the Gemini countdown. Astronaut Mike Collins has just completed a series of checks on the spacecraft environmental control system and the crew that has been working with the spacecraft at the 100 foot level now has departed. We will be bringing down the erector about a little less then 15 minutes from this time. That will be the next major highlight in the countdown. We will have a built in hold at the T-3 minute mark in the count in order to coincide the ignition of the Gemini Launch Vehicle to 5:20 and 30 seconds p.m. EST. This hold time will be in the area of 5 minutes and 45 seconds to 6 minutes, depending on the actual parameters that we receive a little later in the count on the performance of the Agena 10 spacecraft in orbit. At the T-40 minute mark the Flight Director, Glen Lunney will bring us up to date here at the Cape and in the Block House on the status of the Agena spacecraft and at the 18 minute mark in the count he will tell the launch vehicle test conductor the exact time that he wants to launch. When that time is given at the 18 minute mark the exact hold time will be determined. Now at T-68 minutes 19 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-54 minutes, 45 seconds and counting. All systems still looking very good at this time. In a matter of moments we should be ready to bring down that 138 foot erector at the Complex, leaving the Gemini Launch Vehicle and spacecraft to stand free. To repeat, we will have a hold in the countdown, a planned built-in hold in the T-3 minute mark to adjust our launch time to 5:20 and 30 seconds P. M. EST. That actually is the ignition of the launch vehicle and some three to four seconds thereafter we will liftoff. The gantry service structure should be ready to come down here shortly. Correction, the erector should be ready to come down shortly. In the meantime, we have opened the free valves for the oxidizer in the first stage. The purpose is to use a standpipe to prevent any pulsations. That is, oscillations in the oxidizer system. This has been accomplished and the check worked well. The erector is now coming down. It will take some ten to 15 minutes. The astronauts are commenting on it at the present time. T-53 minutes, 34 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Control Houston, 48 minutes away from liftoff of the Gemini 10. It has been a little more than 46 minutes since we launched the Agena. It's moving across the Indian Ocean in an orbit still unrefined. It will be refined further during a pass across Australia starting in a very few minutes. Woomera, Carnarvon due to acquire at 30 minutes after the hour, some four minutes from now. Some of the voices you may hear from this control center during the launch phase should be identified. The Flight Director of course is Glen Lunney, 29 years old and he is directing his first manned flight. He is a veteran flight dynamics officer, native of Scranton, Pa. Assisting him is Chris Kraft our Director of Flight Operatinns here. The capsule communicator today is Gordon Cooper. On this launch team another personality who may show up on the voice tape is Scott Carpenter the second American to orbit the earth. Scott is working the tank pressure monitor console. At 47 minutes away from liftoff this is Gemini Control Houston.

END OF TAPE

This is Gemini Launch Control, T-42 minutes 45 seconds and counting. All still going very well with the Gemini launch countdown at the present time. Shortly after the erector came down Astronaut Mike Collins commented on the weather, reported that there was a light overcast as he saw it outside the - through the spacecraft window and he felt it was good because it could shade their eyes and he said "you can't beat that".In the meantime they are continuing with their checks in the spacecraft and we're coming up on a major test with the Gemini Launch Vehicle about five minutes from this time. This is the so called program sequence test. It's the final major check of the launch vehicle guidance system. This will be - last some five to ten minutes during this period. We're still aiming for an ignition time for the Gemini of 5:20 and 20 seconds p.m. EST. We will have a built in hold at the T-3 minute mark in the count to coincide our ignition and liftoff to the time we want in order to coincide it with the Agena 10 which is now in orbit. Now at T-41 minutes 36 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-34 minutes, 35 seconds and counting. Our countdown still going very well as it has all morning. At this point in the count we're in the programmed sequence test at Launch Complex 19. As reported earlier this is a final major exercise of the launch vehicle guidance system in which the crew in the blockhouse feed in commands for pitch, roll and yaw, and then they watch the engines in the two stages of the vehicle to see that they respond to the commands from the programmer in the launch vehicle. The engines actually swing or gimbal, as it's called, in response to the programmer's directions. This test is going on at this time. The backup pilots' Alan Bean and C. C. Williams along with their boss, Deke Slayton, now returned to the Mission Control Center from the Launch Pad. They're manning the old capsule communicator console here in the Control Center at the Cape. T-33 minutes and 48 seconds. For an update on the Agena 10 in orbit, we switch to the Mission Control Center Houston.

And this is Gemini Control in Houston. The Agena 10 was acquired right on schedule by the Carnarvon station. They reported a good C-Band track. Four commands were sent up to the Agena. All were received and verified and one of these commands was to execute a 90 degree yaw maneuver, a left yaw maneuver. They report the vehicle looks stable and GO in all respects. Hawaii will acquire the Agena at 57 minutes after the hour, and this is Gemini Control Houston.

END OF TAPE

This is Gemini Launch Control, T-27 minutes 45 seconds and counting. All still going very well with the Gemini 10 countdown. At this point in the countdown we're gearing up for the static test of the spacecraft propulsion system, which will be coming up about 7 minutes from this time. The astronauts in the spacecraft will check their various dials concerned with this system, before, during, and after the propulsion test. During this test we actually fire the 25 pound thrusters located at the base of the adapter on the spacecraft. This is just to make the final check that they will be in working order for their use in orbit. We are aiming toward a liftoff time - and ignition time of 20 minutes and 30 seconds after the hour. We have a window of 36 seconds in order to get off, in order to make the rendezvous on the fourth revolution as planned for the Gemini 10 mission. Thirty-six seconds from the time announced. We are now at 26 minutes 43 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. We're at T-25 minutes 25 seconds and counting. We're still continuing to count very well at this point. To repeat the planned launched liftoff times and the window we will be encountering we will repeat that information at this time. We will go into our hold at T-3 minutes, we'll learn the exact time shortly. It will be in the area of about 5 minutes duration of the hold. We'll be aiming toward an ignition of the launch vehicle at 20 minutes and 20 seconds after the hour. We'll be looking for liftoff of the Gemini Launch Vehicle 20 minutes and 24 seconds after the hour. From that time we have about 36 seconds in which to launch. That is if we do not reach the exact launch time planned. We have a 36 second window. Now at T-24 minutes 35 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-19 minutes, 46 seconds and counting. Our countdown still continuing to go very well. The astronauts and the crew from the blockhouse have just completed a check of the so-called OAMS propulsion system. That's the Orbit Attitude and Maneuvering System that will power the Gemini spacecraft in orbit. During this test we fired the 25 pound thrusters located at the base of the adapter section of the spacecraft and went around the base of the spacecraft in the following manner, using the thrusters to yaw left, pitch down, yaw right, pitch up, and yaw left. The astronauts monitored this in the spacecraft as we did in the blockhouse. The test has been completed successfully and we are continuing with the countdown. All systems still looking good at this point. T-18 minutes, 53 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control, T-13 minutes 45 seconds and counting. All still proceeding very well with the Gemini 10 countdown. We will go into a planned built in hold at the T-3 minute mark in the count. The duration of this hold is expected to be some 5 minutes and 34 seconds. We'll be looking for an ignition of the Gemini Launch Vehicle now at 20 minutes and 23 seconds after the hour. These times have changed and may change again as we get down in the late part of the count as we refine our data concerned with the Agena 10 in orbit. Right now we will hold at T-3 minutes for a duration of 5 minutes and 34 seconds aiming for ignition of the Gemini Launch Vehicle 20 minutes and 23 seconds after the hour, with a window of some 37 seconds in which to launch. We have received an update for the spacecraft computer of flight parameters from the Houston computer. After we come out of the 3 minute hold the radio command guidance system here at the Cape will feed the roll angle to the Gemini Launch Vehicle Guidance System which of course is the primary guidance system for the flight. This will be the final update for the Gemini Launch Vehicle at the same time, by radio signal we will send an update of flight parameters to the Gemini spacecraft. If the Gemini spacecraft does not receive this update, we will still continue with the count and will launch with the information we have at T-15 minutes. The Gemini spacecraft computer of course is a backup to the primary guidance system which is in the launch vehicle. We now switch to the Manned Spacecraft Center at Houston.

This is Gemini Control Houston. Based on Australian data, we are now showing and Agena orbit of 159 by 163. The orbital period rather the revolutionary period of 90.5 minutes and our first estimate on cutoff velocity on the Agena reads 25,365.9 feet per second. This against a planned cutoff velocity of 25,367 feet per second. A flight path error of .01 degrees had been planned. We achieved - that's in a yaw right angle had been planned we achieved a yaw left .034 final inertial flight path angle. All the controllers are very well satisfied with the circular shape of this Agena orbit preceeding toward the spacecraft launch. This is Gemini Control Houston.

END OF TAPE

This is Gemini Launch Control at six minutes and 46 seconds and counting for Gemini 10. We will be going into a planned built-in hold at the three minute mark in the count. Duration of the hold about five minutes and 35 seconds. We will then resume our countdown aiming for an ignition of the Gemini Launch Vehicle of 20 minutes and 23 seconds after the hour. The liftoff should come some three to four seconds thereafter. We've just gone through a complete status check in the blockhouse and the spacecraft itself and all systems report GO at this time. Now six minutes and 12 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. We are at T-3 minutes and holding. T-3 - just as this announcement came up, the hold was declared. This is the planned built-in hold, the duration is about 5 minutes and 35 seconds. We will then resume our countdown at T-3 minutes, aiming for ignition of the launch vehicle at 20 minutes and 23 seconds after the hour. We have a window, a period in which we can launch, of about 37 seconds. This is the launch plan at the present time. Following resumption of the count, some very important information will be going to the launch vehicle and spacecraft. These are the update flight parameters. The launch vehicle guidance system, of course, is the primary system that directs the vehicle, during the powered phase of the flight. We send signals by hardline here at the Cape to the launch vehicle to put in the proper parameters. By radio signal we send flight parameters also to the Gemini spacecraft computer which acts as a backup guidance system in the event the primary system fails during flight. If, as on the Gemini 9 mission, the spacecraft computer does not receive the update signal at the T-3 minute mark, we will continue with our countdown because the computer has information that was stored aboard at T-15 minutes in the count. If the spacecraft computer does accept the information we will make a check to insure this information is correct as we continue down the final 3 minutes of the count. We are holding at T-3 minutes. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. We have resumed our countdown. We are now at two minutes and 50 seconds and counting. Two minutes and 50 seconds and counting. All systems still looking good at this point. The update information should be coming to the launch vehicle and spacecraft. We understand the launch vehicle has received the update at this time. T-2 minutes and 33 seconds and counting.

This is Gemini Launch Control. T-2 minutes and 22 seconds and counting. Both the launch vehicle with the primary guidance system and the spacecraft computer with the secondary or backup system both have received the proper update information shortly after we resumed the countdown. All systems are still looking good at this time as we come up on the two minute mark.

END OF TAPE

This is Gemini Launch Control, T-1 minute and 50 seconds. We now have confirmation here in the Control Center that the updates received by the launch vehicle and spacecraft are correct. We are in a GO condition at this point in the countdown. During the final moments of the count, the vehicle will go on internal power on its two batteries in the launch vehicle at 1 minute and 30 seconds, right at this point, T-90 seconds and counting. Some 10 seconds from now the engines will be gimbaled once again as a final check. The launch vehicle test conductor will alert the astronauts that this event will take place because you can actually feel it in the spacecraft itself. Now 1 minute and 11 seconds and counting. Most of the work in the Block House at this point is all monitoring the various consoles. We are on a complete automatic sequence now at T-60 seconds and counting. T-50. T-40 seconds and counting. During these final moments of the count the prevalves in the launch vehicle will open to permit the fuel and the oxidizer to come down toward the chamber of the vehicle. Thirty seconds and counting. T-20, quick check in the Block House all systems looking good. T-15, T-10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0, IGNITION.

Ignition and we've got a liftoff. We have confirmation that the clock did start. Mike Collins reports the pitch program has started. Thrust looks good. T+20 seconds. Roll program complete. The pitch program has started. Thirty-five seconds into the flight, Gordon Cooper advises the crew they're looking mighty good. We have the proper roll and pitch programs in and both guidance systems are go. Cabin sealing at 5.7 pounds, mark 1 minute. Ground and

spacecraft clocks are in sync. One minute 15 seconds. One minute 30 seconds, 40 miles in altitude. Surgeon reports the crew looks fine to them. One minute 45 seconds. We are 120 miles downrange, the crew reports an update has been received in the spacecraft. Two minutes 4 seconds and the crew has been given a GO for staging. Ten is go for staging Young reports. Two minutes 20 seconds. The crew reports they received another update. We've got first stage cutoff. Flight Dynamics confirms staging and second stage thrust looks good. Young says his guidance displays look good onboard and they look good here in this control center. Three minutes 12 seconds into the flight. We're 120 miles downrange, approximately 60 miles altitude. Three minutes 30 seconds. Three minutes 44 seconds into the flight. Altitude now about 70 miles. Guidance says both guidance systems are exactly what they ought to be. MARK 4 minutes. Final status check being taken now by the Flight Director, Glen Lunney. He gets a go from every station. Tells Gordon Cooper to give 10 a go and Young reports he is also go. Four minutes 24 seconds into the flight. Four minutes 44 seconds into the flight. The velocity reading 17,000 feet per second, altitude a little more than 80 miles. We're about 320 miles downrange. Cooper says everything still looks good here. Five minutes 16 seconds into the flight and we've achieved 80 percent of the desired velocity. We are now reading a little more than 21,400 feet per second. Cooper checks with Young to be sure they received that point 8 mark and Young says we got it. Very little conversation coming back from the crew. Good SECO. There it is 5 minutes 46 seconds. Five hundred and twenty miles (520) downrange, 87 Lunney says your go all the

way to proceed with the IVAR routine. The insertion velocity authority routine. The spacecraft is firing its thrusters and Young says we look good. They're leaving the second stage. Mike Collins now reading some numbers out of his computer on-board. The solutions compare very favorably with the ground situation here calling for a 26 - 25 feet per second forward burn and that is what Young is executing. Six minutes 53 seconds. Seven minutes. Seven minutes 20 seconds, Mike Collins .....

END OF TAPE

....20 seconds, Mike Collins in jest suggested we conclude this simulation and proceed with the debriefing which normally follows that type of activity. This, of course, is no simulation. Seven minutes, 55 seconds into the flight, and from all appearances we have achieved - we certainly achieved a 87 mile perigee. Flight Dynamics just confirmed without passing on any numbers that all of his values look good. Eight minutes into the flight. The Flight Director now querying the Flight Dynamics Officer, asking him for any peculiarities of the cutoff conditions. Flight Dynamics says it may have been that he was, perhaps, five feet per second low on his cutoff, well within tolerances, however. We have now the conversation of the taped conversation during the liftoff phase. It's minimal conversation, compared to past Gemini flights. Most of it coming from Young. You hear a comment or two from Collins. The tape is ready - we're checking now. It is ready. We'll roll it for you now.

9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 - IGNITION - LIFTOFF!

S/C	Roll program is starting now.
HOU	Roger, on roll.
S/C	Roll program complete.
HOU	Roger, complete.
S/C	Pitch program started.
HOU	Okay. Looking mighty good.
HOU	50 seconds.
S/C	Mode II ....
HOU	Roger.
S/C	Cabin seal 5.9.

HOU	5.9, roger.
HOU	One plus 40.
S/C	To Mode II
HOU	Roger.
S/C	Update received.
HOU	Roger, update.
HOU	Roger, 10, you're GO for staging.
S/C	Roger, two minutes to go for staging.
HOU	Roger.
S/C	Update received.
HOU	Roger, on update.
S/C	.....SECO, 52.
HOU	Roger. Thrust looks good from here.
	10, we will not update your data ..... Never mind.
S/C	Roger, never mind, got it. Data looks good.
HOU	Roger.
HOU	Everything looks good from here.
S/C	....It looks beautiful up here.
HOU	Yeh, you're right on the lines here.

This is Gemini Control Houston. Our initial data on this 10 flight shows the spacecraft to be in an orbit 87 by 146 nautical miles, 87 by 146. That's one mile off the planned value in apogee. The spacecraft is now over the central Atlantic. It should be in touch with Ascension shortly. We're 13 minutes and 52 seconds into the flight which at this point has been as clean, or cleaner, than any Gemini flight we can recall. The precise seconds on the liftoff was 26 seconds which was our planned value. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston. We are 29 minutes 37 seconds into the flight. The spacecraft now over the Southern Africa, going across for the first time and Gemini 10 follows the Agena 10 now by 850 nautical miles, trailing the spacecraft is the Agena 8, trailing by about 500 miles in this three-way race around the globe and the spacecraft hopes to see both of these Agenas as we move through the flight. We expect the next major status report to come from the Carnarvon station, Carnarvon to acquire at 49 minutes after the hour - I am sorry, 49 minutes elapsed time, presently showing 30 minutes elapsed time. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston. We're 44 minutes 38 seconds into the flight of Gemini 10. We've had no contact with the crew since they left the Tananarive area. We did not talk to them over the Tananarive station. We will talk to them about 5 minutes from now via Carnarvon. Their maneuver table for this first rendezvous calls for a first maneuver at a lapse time of 2 hours 18 minutes into the flight. The duration of that burn will be 52.4 feet per second. It will be a phasing adjustment. According to the present arithmetic no height adjustment will be needed. This was taken care of with the IVAR burn as they left the second stage of the Gemini Launch Vehicle. Their second maneuver would come at 2 hours 29 minutes into the mission. This would be a plane change. It's presently calculated at 9.2 feet per second. That maneuver at 2 hours 29 minutes into the flight. At 3 hours 47 minutes into the flight, they would perform the co-elliptic maneuver. This requiring 52 feet per second. At 4 hours 34 minutes into the flight, they would begin their terminal phase period and this would require a burn of 33.4 feet per second. And their terminal phase final maneuver coming at 5 hours 07 minutes into the flight with a burn of 45.3 feet per second. Their onboard fuel supply presently shows something a little over 900 pounds of fuel remaining. If each maneuver is carried out precisely as planned they would still have 699 pounds of fuel aboard. The spacecraft of course carrying 200 additional pounds of Oams fuel. Sometimes referred to as the Super Oams System. That's the best advice we have on the maneuvers to come on this first Agena the Agena 10 rendezvous phase. We are 47 minutes 20 seconds into the flight. This is Gemini Control Houston.
END OF TAPE

This is Gemini Control Houston. Forty-nine minutes 56 seconds into the flight. And as I started talking, Carnarvon raised 10 and the first words there report was that spacecraft 10 was go. It should be a talkative pass. Let's follow it as it develops.

CRO Two - Mark. Make that 50 15. Let's try that all over again.

S/C Okay.

CRO I will give you a mark now, 50, 30, 3 - 2 - 1 - mark.

S/C Pressure off...ignition

CRO Okay

S/C Garbled

CRO Do you want to set it up?

S/C No, it is okay like it is.

CRO Okay, I have got an Agena ac update for you.

S/C Ready to copy.

CRO GET stage vector, 13800 1300708 14 6 5 5 0 5 7 5 3 2 1 0 8 7 6 8 2 3 9 6 1 7 0 9 1 4 3 1 8 1 6 7 0 7. Did you copy?

S/C Certainly, we will have this for you to read. Okay, we got you.

CRO Roger. We are standing by. We have nothing else for you.

This is Gemini Control Houston. We are following the conversation as the spacecraft moves across Carnarvon for the first time. We should get additional information on accelerometer other

systems performance during this pass. We will go back and monitor.

HOU Carnarvon, Houston Flight.

CRO Go ahead, Flight.

HOU Be sure to give us an LOS summary again.

CRO Roger.

HOU Carnarvon, Houston Flight.

CRO Go ahead.

HOU Have you put those SPC's in the Agena yet?

CRO That is affirmative.

HOU Okay.

CRO And they are verified.

HOU Rog. How about an X-ray summary, Carnarvon? For Agena.

CRO ...tape and on Flight.

HOU Roger.

CRO Flight, Carnarvon.

HOU Go ahead.

CRO Okay, on this O_2 tank pressure, it started off on our OAS as 590 and is down to 566.

HOU Roger. Carnarvon, mention it to the crew and have them dump it up.

CRO Okay. 10 Carnarvon.

S/C Go.

CRO Roger. Your tank pressure is dropping a little bit. Try and keep an eye on it.

S/C Roger, we will keep any eye on it.

CRO Okay.

This is Gemini Control Houston. During this lull, it is worth noting that surgeon reports that both pilots, during the liftoff phase showed a heart rate of approximately 100 beats. One hundred beats on both Young and Collins. They commented that this is an extremely low and a very - is the first flight we can recall where both pilots ran about the same rate. Let's go back to the Carnarvon pass now.

S/C (Garbled)

CRO Roger.

HOU That is about what we are seeing here.

S/C 10...accelerometer...left..check..reading

CRO Negative.

Say again, Flight

HOU Those ... are about what we are seeing here, too.

CRO Roger. We thought there was quite a bit of fluctuation there, it looked like.

HOU Is it in the TM or in the measurement?

CRO In the TM.

HOU No, I mean, did you see anything happen to your TM at that time.

CRO Well, we got a bunch of red lights on ...lovely.

HOU How does it look now?

CRO It looks all right.

HOU Okay.

HOU Did you send us a Gemini main, please.

CRO Roger, Gemini main. 10, Carnarvon, we are through with the accelerometer bias.

S/C Roger.

HOU TM Aeromed. Go ahead, Aeromed.

AEROMED Roger, I was just advised by surgeon that the blockhouse reported the data was very clean, without any of the squiggles that we are seeing. I was wondering, this of course, gives evidence of the fact that it would be an internal problem rather than a spacecraft problem.

HOU Roger, how are you noticing these Biomeds now from Carnarvon?

AEROMED They are still the same quality as before.

HOU In other words, they are more noisy than they have been?

AEROMED Not more noisy, but the noise is still much greater than we have lived with before in the past.

HOU Roger, we will definitely check this out here, right after Carnarvon.

AEROMED Okay, fine. Thank you very much. Give me a call when you have something.

HOU Roger, we will have a display up there shortly.

AEROMED Okay, very good. Thank you.

SURGEON Surgeon here.

HOU Go ahead, TM.

SURGEON Okay, just one more word on this...

This is Gemini Control Houston. Carnarvon loss signal has lost approximately 6 or 8 seconds ago and they will be refining the data they took on an accelerometer check over that station, If any updates are need, if any undue bias is noted on the onboard accelerometers, it will be fed into the onboard guidance system either over Hawaii or during this first state-side pass. The general feeling here is that the accelerometers appear to be right on the money. Based on the first cut look at the launch data. At 59 minutes and 16 seconds into the mission, this is Gemini Control Houston.

END OF TAPE

HAW Gemini 10, Hawaii Cap Com.

S/C Go ahead Hawaii.

HAW How yall doing up there?

S/C Fine.

HAW Okay, we're showing you looking real good here on the ground. You got some data from.....(garbled).

S/C Roger, we got a phase adjust maneuver at 2 19 + 52, 58 feet a second. A burn maneuver at 49 13 46 feet a second .....(garbled).

HAW Okay, its very hard to read you. Standby one. Do you want to go UHF flight?

HOU FLIGHT Let's try it.

HAW Let's switch over to UHF 2, if you don't read me in 20 seconds, come back to UHF 1.

S/C Roger, can you read me now okay?

HAW Okay, its a lot better now. Will you give me the phase adjust again?

Ten, Hawaii, you're loud and clear, will you try it again, please?

Roger. 2 19 52, and 58 feet a second posigrade, and the MSR 3 49 13 and 46 feet a second posigrade.

HAW Okay, I copy that okay. It looks like your cryo 2 pressure is up pretty well now you're in good shape.

S/C Roger.

HOU FLIGHT Hawaii, from Flight.

HAW Flight, Hawaii.

HOU FLIGHT Clarification, what did the dischrage voltage do after

HOU FLIGHT you sent unrigidize twice at the end of the sequence.

HAW It stated 3.88 volts.

HOU FLIGHT Roger. Even when you sent in unrigidize.

HAW That's affirm.

HOU FLIGHT Okay.

HAW Okay, I'm going to give them a maneuver update. Ten, Hawaii.

S/C .....(Garbled)....

HAW Okay, I've got some data for you.

S/C .....(garbled).....

HAW Okay, the first one is your phase adjust. 2 18 -- correction -- I'm sorry -- the Delta V is 56.2 Yaw and pitch are zeros. 425 00 562. It will be thrusters aft the maneuver posigrade.

S/C Roger.

HAW The next one is your plane change. It will be Delta V of 9.5.

S/C Wait a minute, are we supposed.....(garbled)... Okay, go ahead.

HAW You are 90 right. Maneuvers out, thrusters aft.

S/C Roger.

HAW And for the next one, the co-eliptic will be Delta V of 48.7, yaw zero, pitch 11 up, posigrade up, thrusters aft. Over.

S/C Roger. .....(garbled)....

HAW Say again, you're hard to read.

S/C .....(garbled)....

HOU FLIGHT Hawaii, from Flight.

HAW Go ahead Flight.

HOU FLIGHT I didn't copy you reading him the GET of the burn.

HAW Okay, the GET B of the phase adjust is 2 18 09. GET B of the plane change is 2 30 22, and the co-eliptic 3 47 34.

S/C Roger.

HAW Flight, Hawaii.

HOU FLIGHT Go.

HAW You got a little note here, it says update ... Oh, I see what you said. Okay, never mind.

HOU FLIGHT We got you. Buy one for me.

HAW LOS on Agena.

HOU FLIGHT Hawaii, from Flight.

HAW Go ahead.

HOU FLIGHT What did you copy here NSR solution to be and Delta V?

HAW The NSR is 3 49 13, 46 feet per second.

HOU FLIGHT 46, roger.

HAW Telemetry looks real good and solid.

HOU FLIGHT Roger.

HAW And the modules are switching around.

HOU FLIGHT Hawaii, I'd like a Gemini LOS made.

HAW Roger.

HOU FLIGHT Hawaii, from flight.

HAW Go ahead, Flight.

HOU FLIGHT When you got good contact did he do something with the antennas there.

HAW I don't think so, I was going to -- he was going to switch to UHF 2 and he said, how do you read me now and he said fine.

HOU FLIGHT Why don't you ask him if he found anything with it?

HAW Rog. Did you happen to switch antennas when the com got better that time.

S/C .....(garbled)....

HAW Rog. I'm right down near LOS, Flight, it's hard to read him.

HOU FLIGHT Rog.

HAW LOS telemetry and LOS C-Band.

HOU FLIGHT Did you copy what he said when you asked him the question?

HAW No, I couldn't read him too well. I'll listen to my tape recorder, but his com was real bad, I think we ought to try that UHF2 or change the antennas.

END OF TAPE

objects

GEMINI 10 MISSION COMMENTARY, 7/18/66, 6:14 PM TAPE 46 PAGE 1

This is Gemini Control Houston 1 hour 53 minutes into the flight. The spacecraft now down over the Ascension area in the southern Atlantic. In the pass just completed across the states four things showed up worthy of note. For one, we found we do have a communications problem between this control center and our Guaymas station. The situation is that we hear Guaymas quite clearly, but they do not hear us. We can hear the spacecraft through Guaymas, but again, we could not remote through Guaymas. This problem is being worked on and very likely will be solved before the next rev. During the course of the pass the ground noted hydrogen pressure dropping somewhat. The crew was advised of this and suggested that they look at their circuit breaker panel and they did find a heater circuit breaker open. This was closed and the pressure has started climbing back to the proper value. It should be running at about 220 or 225. Also based on Hawaii readouts and based on crew solutions, the onboard solution has been very carefully compared with the ground solution and the principle events, the times of maneuvers were found to be on the order of 1 to 2 minutes different. Therefore the flight director ruled that the onboard solution was no go. The crew will perform with the ground solution. Also in the course of the pass, John Young noted two bright objects in the orbital path of Gemini 10. He said they are going right along with us and shortly after he reported this he advises they had just disappeared. Young said he guessed that they were satellites of some kind. He did not say how far away

they were from the satellite nor did he describe their size. We have got the tape of the stateside pass and we will play it for you now.

GYM Guaymas has Gemini Agena PCM solid.

HOU Okay, Guaymas and work the crew on your pad. We don't have anything special for them. Confirm that he did get the maneuvers that we read up to them, and is satisfied with them.

GYM Okay.

HAW Flight, Hawaii.

HOU Go ahead.

HAW He said he switched microphone positions.

HOU Okay. Okay, that...explain. Guaymas, Flight.

GYM Go, Flight.

HOU One more thing. We have had some indications of a module indicator changing. Would you take a look at that?

GYM Sure will. ...looks good Flight.

HOU Roger.

Hawaii Com Flight.

HAWAII Hawaii.

HOU Did you have any trouble at all with the telemetry; did it appear noisy?

HAW Negative. It looked real good, the only problem I had was I misread your message.

HOU Okay.

HAW One for me.

HOU Guaymas, Com Flight.

GYM Go ahead, Flight.

HOU Take a look at the H2 pressure; if it is dropping, it is possible that we popped a circuit breaker on it.

GYM Okay, will do. Gemini 10...

We read about 182, Flight, on H2 tank pressure.

Houston Flight, Guaymas.

HOU Go ahead.

GYM I can hardly read you, Flight. Houston Flight, Guaymas. I cannot copy. Would you repeat one more time?

HOU I was talking to Guaymas on voice data.

Guaymas, Cap Com.

I am copying somebody.

AFD Houston AFD, got a voice conference.

Voice, I am copying you loud and clear. What does Flight want?

Stand by. I have to get a make good. I have lost my conference circuit.

GYM I can read you barely, Flight go ahead.

HOU The hydrogen pressure is...

GYM I cannot copy. I repeat, I cannot copy.

S/C Houston, this is Gemini 10. Over.

HOU Go ahead, Gemini 10. Houston here.

GYM Gemini 10, Guaymas Cap Com.

S/C I read you loud and clear, Guaymas.

GYM Roger.

Goddard Houston Com Tex Goddard Voice. You are about due by and I am trying to get conference switched to 58294.

S/C Residuals down to - find a good place for it.

GYM Okay, did you copy all the update from Hawaii.

S/C Roger, I would like for you to go through them again though because we were in a hurry in here when they were talking to us.

GYM Okay, do you want me to give you all three of them again?

S/C Roger, go ahead.

GYM Okay, phase adjust 21809 address 25 00562 burn time of 1 + 16, plane change GET of the burn is 23022 address 2790095, burn time 0 +13. Your coelliptical 34734 address 25 00479 address 26 90091 burn time 1 +05. Do you copy?

S/C Roger.

GYM Okay.

Okay, Gemini 10, you are looking pretty good.

GYM Houston Flight, Guaymas, we have had LOS.

GODDARD You are still ...me loud and clear Guaymas.

GYM Is that on net 1 Goddard.

GODDARD Affirmative.

GYM Okay, Houston Flight, Guaymas. I did not copy. His circuit breaker had opened. We got them closed.

HOU Roger.

GYM Okay, he did not have his maneuvers. We passed him up all three maneuvers. Stand by and I will get you a reading, on that H2 tank pressure at LOS.

HOU Roger.

GYM H2 tank pressure at LOS still reading 182, Flight, but he did close his circuit breaker.

HOU Can you read me now?

CAP COM Dan, Houston here. Roger, we are standing by here. Roger. We are standing by here, you got your maneuver load all right and your pressure seems to be coming up on your hydrogen all right.

S/C Say again.

HOU All right, your pressure seems to be coming up on your hydrogen now that you have got your breakers back in.

S/C Roger.

HOU You got your maneuver load okay from Guaymas. Is that affirm?

S/C Yes, could you say again the delta V of that time of the phasing adjust. Over.

HOU Okay. GET - do you want the GETB? or the burn time?

S/C No, the GETB.

HOU Roger. For the phase adjust, GETB, 2 +18 +09.

S/C Roger, we got it.

HOU Okay. You might watch that hydrogen heater circuit breaker that cryo heater circuit breaker to see if it comes down any. 10, this is Houston. We won't need to update your accelerometer bias. It is okay.

S/C Roger.

HOU Okay, you did copy us on keeping an eye on the heater circuit breaker?

S/C That is affirmative.

HOU O. ay.

S/C This is 10, Houston. We have two bright objects up here in our orbital path. I don't think they are stars-they look like we are going right along with them.

HOU Roger. 10, Houston.

S/C 10, go.

HOU Roger, you asked that solution is no go. TPI is about 9 seconds early, 9 minutes early and coelliptic is approximately 9 miles.

S/C Roger.

HOU Where are the objects from you.

S/C Roger.

HOU If you can get us a bearing, maybe we can track them down.

S/C They just disappeared. I guess they were - guess they were satellites of somekind.

HOU Roger.

GT Loss of acquisition, Grand Turk.

This is Gemini Control, Houston. That concluded the state-side pass. There was an additional attempt to contact the crew over Ascension. The conversation however, coming back was unreadable. We will turn this tape over to the transcriptionist to see if they can make anything out of it. We could not understand anything, that came back from the approximately 2 minutes of acquisition. The Agena controller reports a slight rise in the temperature of the C- and the S-band transponders - transmitters aboard the Agena. They are not alarmed at this, but they are watching the rise - it is a slow rise at this point. The C-band is showing 127, the S-band, 144. These temperatures on the 8 Agena the past experience showed stablized out about 153 after a fairly gentle climb. That pretty well wraps up the situation at this point. Two hours, 4 minutes into the flight, of Gemini 10. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 2 hours 14 minutes into the flight. The spacecraft has been in touch with the Tananarive station, we'll have that conversation for you a little later here. To update things, the Gemini 10 spacecraft now is - trails the Gemini 10 Agena by about 400 nautical miles. In exactly three minutes the crew is to perform their first maneuver to lead to the rendezvous with the 10 Agena. This will be a 55.5 foot per second burn, small end forward and the effect of this burn will be to adjust the phases between the two vehicles. The crew did advise during the Tananarive pass that their orbital determination check was no go. This is the check in which the crew sights on stars, yaws around in all planes and attempts to determine their orbit by star sighting method. We do not know precisely why the orbital determination did not work out but they did advise it did not work. Here now is the tape via Tananarive.

HOU Houston standing by.

S/C Roger the (garbled) term factor was no go, even though the residuals were (garbled). They didn't get any bigger than about 3/10ths over.

HOU Rog I read orbit determ no go and you were blurred after that.

HOU Carnarvon this is Houston Flight do you read?

CRO Flight, Carnarvon go ahead.

HOU Okay, we copied over Tananarive that he was no go on the orbit determ. We fully expected him to burn the maneuver we read up at the Ascension station, besides the normal flight plan items see what you can get on - by

way of a report on the burn from them and confirm that he did the burn that we read.

CRO OK that's that phase adjust, is that affirmative.

HOU That's correct.

CRO OK, and you want me to uplink this plane change?

HOU Standby on the plane change a minute and I'll let you know what we want to do about that.

CRO OK.

END OF TAPE

This is Gemini Control Houston, 2 hours 29 minutes into the flight. Over Carnarvon which is still in contact with them, Young reported that he had completed his phase adjustment maneuver without difficulty. He checked the time of his next maneuver which is to occur about 1 minute from now. This is a plane change maneuver where he will burn 9.6 feet per second in a short burn to make the planes coincide. As we've been talking Carnarvon loss signal. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 2 hours and 44 minutes into the flight. We've had no contact since the Australian pass. We can assume the circularization maneuver has been completed and our charts show the spacecraft now laging behind the Agena 10 by approximately 350 miles. The next maneuver is planned for 3 hours 47 minutes into the flight. This will be the co-elliptic maneuver. Hawaii is due to - I'm sorry it's a plane change maneuver just completed not the circularization maneuver. The Hawaii station is to acquire Gemini 10 at 2:49 some four minutes from now. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, we are 3 hours into the mission. The spacecraft now lags behind the Agena 10 by 250 nautical miles and during this upcoming stateside pass the crew should acquire the Agena 10 radar lock on toward the end of the pass. Somewhere east of the Texas station. The range then would be about 200 miles. A few minutes ago over Hawaii we had this conversation.

HOU C-band track for Gemini Hawaii

HAW Roger. That first Agena summary we sent you may not be a good one, we're getting a lot of drop outs. We're going to send you another one.

HOU Roger.

HOU Hawaii from Flight. Are you seeing the SPC's clock out.

HAW That's affirmative flight. They're clocking out.

HOU Roger.

HAW Now we have telemetry solid on Gemini.

HOU Roger.

HAW Gemini 10, Hawaii Cap Com.

S/C Gemini 10, go.

HAW How are you doing?

S/C Roger, just fine.

HAW OK, you're looking pretty good here. I'd like some data on how you did with your plane change.

S/C Roger. 80 minus 1/10, 81 plus 1/10, 82 was minus 5/10ths.

HAW OK, got that all right. I'd like a quantity read-out please.

S/C Roger, reading 84 percent.

HAW Roger. OK all your constants look good. They're going to give you interstar solution over the states.

S/C Roger.

HAW What module do you have loaded?

S/C Roger, module 3.

HAW OK thank you.

HAW Flight, Hawaii

HOU Go

HAW OK did you copy the plane change data?

HOU Affirm, prop quantity 84, module 3 loaded.

HAW Right it doesn't correlate here on the ground.

HOU Yes I understand we've had some trouble doing that.

HAW Roger

HOU Because of the mode he's in. Did you get all the L-beacon bright, approach and acq lights on the Agena?

HAW Affirm they all clocked out on time.

HOU OK. Looks good Hawaii.

HAW He's looking real fine.

10 we'll be standing by if you need us just give us a shout.

S/C Gemini 10, roger.

HOU Hawaii, from flight.

HAW Flight, Hawaii

HOU Al Bean and C.C. got here one rev later than Gemini 10.

They came the short way.

HAW Are they wearing their blue suits?

HOU Affirm.

HAW Roger. What you ought to do one of these days everybody ought to show up in orange flight suits and match colors.

HAW Everything looks good.

HOU Roger.

HAW S-Band LOS at Hawaii.

HOU Roger Hawaii, your affirm.

HAW Roger.

HAW Agena LOS at Hawaii.

HOU Roger

HAW All systems Gemini LOS at Hawaii

HOU Roger.

This is Gemini Control Houston. While the tape was playing the Gemini 10 spacecraft has come into the Guaymas area of acquisition. The ground simply noted they had acquired them and the crew rogered back. There has been no additional conversation. We'll pick it up as it occurs. We do expect Gordon Cooper to talk to the crew, via the Texas station. We'll standby for this conversation.

This is Gemini Control Houston, the crew is attempting to establish radar lock on with the Agena. It requires the work of both men, which probably accounts for the silence on the line.

S/C Houston this is Gemini 10. We're getting intermittent locks and we read range of 240.7 right

now.

HOU Roger, we copy.

CAL California local.

S/C (garbled) steady on us from now on.

HOU OK.

Did you copy that Houston?

HOU Roger, 240.7, I'm sure we'll get it this time.

GYM Flight, Guaymas that cryo 2 is really hanging in there now it's about 840 I guess. Just about right.

HOU Roger

GYM Computer TM Agena

HOU Go ahead.

GYM You should have dated by now.

HOU Roger, let me check him.

GYM Not on the computer we don't.

It's coming on the ground station but not on the

HOU There it is.

GYM Guaymas has Agena TM LOS

HOU Roger

GYM You can see the L-Band switching flight. You can tell he's interrogating it.

HOU Roger.

OK, we've got data 10 thank you.

GYM Guaymas has Gemini LOS all systems go flight.

HOU Roger Guaymas.

HOU 10 Houston here.

S/C This is 10 go.

HOU Roger. I'll have you a little data here shortly. Your constants are all good and don't use your orbit rate torque compensation. It looks like your doing all right on the range there. We had calculate 180 at 3 + 18.

S/C Roger. Lights been on solid since 234 43.

HOU Very good.
I'll have an SR update for you shortly.

S/C Roger.

HOU Have you purged already?

END OF TAPE

...	Roger, we got earth via Midvac, thank you, sir.
HOU	Roger, Goddard did not have the line switched.
...	Oh Ho. You better ..... for that.
HOU	Gemini 10, I have the Agena sunrise time for you.
S/C	Okay, go.
HOU	5 plus 17 plus 09.
S/C	Understand, 5:17:09.
HOU	That's 5 plus 17 plus 09.
S/C	Roger.
GTI	Acquisition Turk - Grand Turk.
...	Readout, Agena electrical.
...	Go ahead, Agena electrical.
...	Charlie 038.
...	That's reading .35 percent, Agena electrical?
...	Point 35 percent.
...	Roger.
...	Can you tell me what the PCM count is?
...	Roger, stand by one. We have a PCM count on 9.
...	PCM count of 9, thank you.
...	Roger.
...	Readout, electrical.
...	Go ahead.
...	Was that based on a 255 PCM count?
...	That's affirmative.
...	Thank you.
HOU	10, could you go to H_2 on your cryo readout? Switch.
S/C	Now on H_2.

HOU Rog.

HOU 10, I have your coelliptic NSR data.

S/C Roger, go.

HOU Roger, GETB 3 plus 47 plus 34. 25, 00 4 7 9. 26 is 90065. 27 is zeros. Thrusters is aft, posigrade up. And the pitch..., yaw zero, pitch is 8 up. Delta V 48.4. Burn time one plus 05.

S/C Roger, we copy. 3 plus...34. One plus 05 time. 25, 0047.9. 26, 90065. 27, all zips. Aft posigrade, 8 degrees up. Delta V 48.4.

HOU Rog.

HOU You can go back to O_2 on your cryo read switch.

S/C Roger.

HOU 10, this is Houston. Agena is TDA North. All the loads are nominal and checked out. SPC is disabled and is all ready for you.

S/C Oh, roger.

This is Gemini Control Houston. You heard Gordon Cooper brief the Gemini 10 crew on the status of the Agena 10. The crew reported intermittant lock. It appeared to work itself into a solid lock at approximately 240 nautical miles. They were also advised that their terminal phase initiate maneuver - their terminal phase initiation point - would move up about two minutes. Two minutes earlier than the earlier calculations. This also has meant a small movement in the coelliptic maneuver. Time approximately a little more than a minute earlier than the value quoted some two hours ago.

The time of the coelliptic maneuver now is three hours, 47 minutes, 34 seconds into the flight. The spacecraft now is moving across the northeast coast of South America and we do not expect any further communication in this pass. This is Gemini Control Houston.

END OF TAPE

GEMINI 10 MISSION COMMENTARY, 7/18/66, 7:50 PM, TAPE 52 PAGE 1

This is Gemini Control Houston, 3 hours 30 minutes into the flight. The Rose Knot Victor parked down off the southeast coast of South America has had its first opportunity to talk with the crew tonight and the conversation went like this.

RKV RKV has the Agena as go.

HOU Roger, RKV.

RKV RKV has TM solid, Gemini.

HOU Roger, RKV.

RKV Flight, RKV. I am showing a cryo load to Bravo Alpha 07 reading on 960 psi meter.

HOU 960

RKV That is right. It came out at 974.

HOU So it is going down now?

RKV Well, we will check it again here, in a little bit. Gemini 10, RKV.

S/C Gemini 10, go.

RKV Roger, we have nothing further for you this time. We are just standing by. We show you go.

S/C Roger.

HOU RKV, Flight. Get that 02 pressure?

RKV Roger. Stand by. Still reading 960 on the meter.

HOU It is holding steady, is it?

RKV Affirmative, Flight. Holding 970 on the cam.

HOU Roger. Let me know what that 02 pressure reads in another minute.

RKV Roger.

HOU RKV, did the currents reflect that the manual heater is on?

RKV Stand by one. (Garbled)

HOU Say again.

RKV We will cam it out here.

HOU All right. Your summary here reflects that the heater is off, so you would expect that pressure to drop a little bit.

RKV Total current is 50.3N.

HOU Roger, that confirms it is off. What is the pressure reading now?

RKV Okay, the O_2 has dropped down to 951 ..followed it down ..cam.

HOU Roger. RKV, Flight.

RKV Go ahead, Flight. RKV.

HOU We are going to have an update on this.., but we will let the Cap Com do that through Ascension.

RKV Roger. I will inform him.

HOU Okay.

RKV 10, RKV. You will have an update on the N_{SR} and it will be updated over Ascension.

S/C Roger.

HOUSTON 10, this is Houston. Roger, 10, Houston, I have a coelliptic update for you.

S/C (Garbled)

HOU Roger, GETB 3 +47, +34, 25 00431, 26 90076, 27 is zips, aft thrusters posigrade up, 1 +05, and that is yaw zero and 9 up on pitch.

S/C Roger. We got it.

HOU Houston standing by.

ASC Ascension has LOS.

This is Gemini Control Houston. The acquisition rings on the Rose Knot Victor and Ascension overlap each other as you probably followed there, the pass started off taking via the Rose Knot Victor and then Gordon Cooper came in remote through the Ascension station. Our next contact will be via Tananarive at 3 hours 43 minutes into the flight about 7 minutes from now. And shortly after leaving the Tananarive circle, the crew will perform their N_{SR} burn or their coelliptic maneuver to place them in the ellipticity in order to rendezvous with the Agena 10. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston. Three hours, 44 minutes into the flight. And at this point in the flight Gemini 10 lags the Agena Target Vehicle by approximately 100 nautical miles. Buzz Aldrin has relieved Gordon Cooper temporarily at the capsule communicator position. He just checked in with the 10 spacecraft via Tananarive. We're standing by on the ground and apparently the crew had nothing for the ground. They simply rogered the communication. It's worth noting that once we achieve this rendezvous point in the flight which should occur according to the present estimates at 5 hours 8 minutes into the flight. The rendezvoused vehicles will lead the Gemini 8 by some 2800 nautical miles. Agena 8 is in a 217 x 215 orbit. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston. Three hours, 59 minutes into the flight. We've had no acquisition.since Tananarive. The next station to acquire will be the Coastal Sentry Quebec parked out North of the Phillipines. They'll be seeing the combination for the first time tonight. That acquisition to come at 4:07 or about 7 minutes from now. We do have a brief conversation recorded by the Tananarive station. Buzz Aldrin talking to the crew and here it is.

CAP COM Tananarive, go remote.

TAN Tananarive, remote.

Tananarive has acquisition.

HOU Gemini 10 this is Houston standing by at Tananarive.

S/C Go ahead, Tananarive.

TAN Go ahead.

Go ahead.

HOU Gemini 10, Houston standing by for whether your burn was radar NSR or ground solution and residules.

S/C The radar and NSR approximately the same numbers, presently. And we'll give you ground solution and residules before too long, because they could be wrong The address is 2600.....

HOU Roger, understand. Could you give us some estimate as to what the burn was?

S/C Roger. We burned 6 ft per second up and 48 forward.

HOU Roger, understand. Six feet per second up and 48 forward.

TAN Tananarive has LOS.

END OF TAPE

This is Gemini Control Houston, 4 hours 14 minutes into the flight. We're about 22 minutes away from our next maneuver which will be the terminal phase initiate maneuver, 33.8 delta V foot per second burn. Over the CSQ in the past 5 minutes John Young has been carrying on a running conversation with the controller aboard the Coastal Sentry Quebec. Their interested in solving a problem that seems to be - has turned up in core 26 of the computer onboard. During the pass just previous to this, Young noted that an improper value came out of the - that particular address on the computer. The people here on the ground have been looking at the situation, they think they can explain it. They asked that a certain set of numbers be put in to find out precisely what's wrong. Here's how the conversation went.

HOU CSQ, AFD are you receiving a special (garbled)

CSQ That's affirm.

HOU OK, that's the message we need.

CSQ Roger

RKV ...have contact. Gemini.

HOU Roger RKV did you get our messages?

RKV Roger the last one is printing out now.

HOU OK

CSQ Gemini 10 CSQ.

S/C CSQ, Gemini 10 over.

CSQ Roger, we have you go here on the ground.

S/C Roger, we're going up here

CSQ OK, I have a procedure here for you on your problem on address 26.

S/C Roger, go.

CSQ OK, we'd like for you to enter address 99 00 001, and we'd like the value of the residuals in address 26.

S/C Roger. You want it here and right now, huh?

CSQ Well I'll read the next line of the procedure to you then we'd like for you to enter all zeroes in address 26 and attempt readout. Depress START COMP and see if IVI's zero.

S/C Roger. We're allowed to be a little honorary with you here, are you sure you want to do this now?

HOU Have them enter a logic choice, that's all.

CSQ Standby, begin Flight.

HOU Have them enter 99.

CSQ OK. Just enter the 99. Just enter the value into address 99.

S/C All right.

CSQ And I have the terminal phase backup for you when your ready to copy.

S/C Go

CSQ 435 42, 48 + 08, 34 + .0 - 34.0, 0 + 45, address 25 00 30 6, address 26- 00 14 8, address 27 - 00 01 2, 34.0 forward, 0.6 down, 1.0 right, range 38.5, range rate 155, 0.2 right, 26.7 up, range rate - range and range rate are valid at 2 minutes and 10 seconds prior to TPI.

S/C Roger. We copy.

CSQ Roger

HOU CSQ, Flight

CSQ Go Flight

HOU Let them know that that logic choice - let them know the reason we want to put that in is that it may have to be reset from the previous loaded module. We're putting it in there to be sure that we don't have the orb rate compensation in.

CSQ You're putting it in to make sure you don't have the orbit rate compensation.

HOU Affirm.

CSQ Gemini 10, CSQ

S/C This is 10, go

CSQ OK, the reason we're putting this 99 in at this time is to make sure you don't have the orbit rate compensation in.

S/C Roger. We never entered that, over.

CSQ Roger.

CSQ Gemini 10, CSQ
Your cryo 02 pressure is down to about 640 and dropping. You might ought to keep an eye on it.

S/C Roger and we're watching it.

CSQ We have about 1 minute until LOS Flight.

HOU CSQ, make sure he did put that address in, 99.

CSQ Roger.
Gemini 10, CSQ have you entered address 99 yet?

S/C Roger, we entered it.

CSQ Roger thank you.

CSQ They have it entered Flight.

HOU Roger, I copy.

Are you getting the Agena tape dump?

CSQ Say again Flight.

HOU Are you getting the Agena tape dump?

CSQ Roger, we've completed the Agena dump.

HOU OK.

CSQ We have LOS both vehicles.

HOU Roger, did you send all your summaries, Jerry?

CSQ Standby. We've got most of them sent but a 10 Agena was left.

HOU Keep sending.

CSQ Their on their way.

HOU Roger.

END OF TAPE

This is Gemini Control Houston. Just four minutes ago John Young reported over Hawaii that he had the Agena 10 Target in sight out his window. He was looking at it through the reticle which allows for some magnification. Both he and the Agena were in a daylight area. They will shortly enter a night cycle. The terminal phase initiation maneuver is four minutes away from now, calling for a foot per second Delta V of 34.6. And the terminal phase final maneuver is now predicted at five hours, six minutes and 15 seconds into the flight. Here's how the conversation was going over Hawaii.

HAW	Agena S-Band track. Agena TM solid.
HOU	Roger.
HAW	And we have Gemini TM solid, Hawaii.
	Gemini 10, Hawaii.
S/C	Gemini 10, go.
HAW	How are you doing?
S/C	Just fine.
HAW	Okay. You look pretty good down here. We won't have anything for you. We'll ..... on your telemetry, that's about all.
S/C	Roger. We estimate we're about two miles slow here.
HAW	Two miles slow?
S/C	Two miles low at Delta 8.
HAW	Okay. They tell me they were predicting one mile low prior to your last burn.
S/C	Roger.
HOU	Hawaii, Flight.
HAW	Go ahead, Flight.

HOU Are you going to be able to get their reset in - time of reset in?

HAW That's already done.

HOU Okay.

HAW Looks like you've pumped up your O_2 there about 900 psi.

S/C Roger, and we can see the target out the window now.

HAW Very good. Flight, Hawaii.

HOU Go.

HAW He can see the target out the window and the tape dump looks real good.

HOU Roger, copy.

HAW He's about a half a degree right with the reticle and he's right on the pitch, really good.

HOU Really hacking it, huh?

HAW Right.

HOU Giving him all those pitch figures?

HAW Roger.

HOU Hold those attitudes straight, I'll tell you that. Pitch up about 25 degrees?

HAW No, about 22.

HOU You're reading better than my meter.

HAW To be exact it's 23.1.

HAW Flight, Hawaii.

HOU We'd like to update the GETB of our TPI backup. We'd like to update it to 4 plus 34 plus 05.

HAW Okay, repeat it. 4 what?

HOU 4 plus 34 plus 05.

HAW You're dying out on me, Flight.

HOU 4 plus 34 plus 05

HAW I can't read you. Try one more time.

HOU 04 plus 34 plus 05.

HAW I got that, Flight.

HAW 10, Hawaii.

S/C 10, Go.

HAW I got a new GETB of your TPI backup.

S/C Roger, go.

HAW 4 plus 34 plus 05.

S/C Roger.

HAW Flight, Hawaii. How do you read me?

HOU I read you loud and clear, Ed.

HAW You're loud and clear now. You were just dying right off in the middle of it. He's got the backup time and we completed the tape dump.

HOU Right. His new ETNSR is 46 plus 31.

HAW Roger. I got a new ETNSR for you.

S/C Roger, go.

HAW 46 plus 31.

S/C Roger.

HAW And we have Agena S-Band LOS.

END OF TAPE

This is Gemini Control Houston. Four hours 46 minutes into the flight. And we can assume now the crew has completed their terminal phase initiate maneuver. Terminal phase is final to occur at 5 hours 6 minutes into the flight. The maneuver calling for the 8.5 foot per second for the burn. And the next acquisition should be by the Rose Knot Victor at 4 hours and 56 minutes. That's about 9minutes from now. Meanwhile we've been advised of a slight accident with an aircraft involving two of our pilots, neither of them hurt, we're happy to note. A T-38 piloted by Ed White and Rusty Schweickart went off the end of a runway at El Paso International at 7:45 CST The two were taking off at the time and they had stopped at El Paso for gas. They were enroute to Los Angeles. In the takeoff, it seems they lost the after burner on the T-38 and they tried several times to relight it but could not get it to relight. And then they started braking severely and they rolled approximately 50 feet off the end of the runway. Neither pilot was in any way hurt. They are continuing their trip to Los Angeles by Commercial Air. We have now the tape, a brief conversation via Guaymas. We'll play it for you now.

GUAYMAS Guaymas has TM solid; both vehicles.

HOU Roger.

GUAYMAS They're both go, flight.

HOU Roger.

GUAYMAS Go flight.

HOU Let me know as soon as you see the burn.

GUAYMAS Roger flight. We have seen ATDA indication at all yet.

Still no indication flight.

GUAYMAS We're showing a little attitude control flight. We're setting up for it now.

HOU Yes, I believe he's already burned it.

GUAYMAS Evidently. Do you want me to ask him about it?

HOU Guaymas, send another name please?

GUAYMAS Roger flight.

HOU Their balance summary (interruption)

CAL California has LOS. California local.

HOU Guaymas flight, could we have an Agena name?

GUAYMAS Roger.

HOU Guaymas flight, another Gemini name?

GUAYMAS Another Gemini name?

HOU Do we have OBC's every 100 seconds?

GUAYMAS Roger, flight, we are about 30 seconds from LOS.

HOU Yes.

GUAYMAS Flight, Guaymas.

HOU Go ahead.

GUAYMAS We've had LOS now.

HOU Have you just been watching that main buss voltage on the Agena. It seems to be dropping just a little bit every reel.

GUAYMAS We're down to 25.7 at LOS.

HOU Okay.

END OF TAPE

This is Gemini Control Houston, 4 hours 59 minutes into the flight. And we are about 6 minutes away from our terminal phase final maneuver. We also have a little additional information on that aborted take off out at El Paso involving Ed White and Rusty Schweickart. It seems the crew lost the after burner in their roll for take off. They tried twice to light the after burner and at that point they got a compressor stall in the engine, which is what caused them to abort the take off. They then applied the brakes and in applying the brakes, they blew both tires on the T-38 and they also lost a nose wheel, apparently flattened and the spacecraft rolled off the runway. It did not overturn, it stayed upright and want to emphasize again there were no injuries to either pilot. They are continuing their flight to LA by commercial means. I am sorry, I called it a spacecraft and I should have called it an airplane. The spacecraft called Gemini 10 is now over the Rose Knot Victor and the crew has advised they have got a good radar lock on. I am sorry the Rose Knot Victor is advising that both vehicles are go. Let's tune in on this conversation as it transpires.

S/C We are showing the encoder as being off.

HOU You say you are seeing the encoder as off.

S/C Negative, Flight. We do not show encoder...

HOU Roger.

This is Gemini Control Houston. We are standing by and assuming that the crew will call us. We will not call them as they prepare for their terminal phase final maneuver, scheduled

some 2 minutes from now. We will go back and monitor. This is Gemini Control Houston. Anticipating a successful rendezvous and docking here, our display, our computer solution shows that the first primary propulsion burned with the docked vehicles is to occur at 7 hours 38 minutes into the flight. This will be a burn requiring a delta V feet per second of 420. This would drive them up to an altitude of - with an apogee of approximately 407 nautical miles. That maneuver at 7:38 elapsed time. 420 foot-per-second burn. This is Gemini Control standing by while we have - I think we have now wrapped up the RKV pass, Victoria - I am sorry, Tananarive will be the next station to acquire and that acquisition to come at 5 hours 17 minutes or 12 minutes from now. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 5 hours 14 minutes into the flight. We've had no contact since the RKV pass. In comparing notes with the Flight Director here he says he expects the crew will be station keeping when we next acquire via Tananarive. That acquisition is scheduled for 5 hours and approximately 18 minutes or 3 minutes from now. During the - this final approach on the Agena, Mike Collins work of course which is largely involved the computer for the last three or four hours, will go over to sending commands to the Agena. The first few commands he is to send, one at 500 feet range to turn off the acquisition light and he will disable the stored program controller. Meanwhile John Young will be nulling his approach rate until he gets it down to on the order of a half a feet per second, when they finally achieve station keeping position. His flight plan also calls for him to start a 16 mm camera to record the final approach. We have no additional contact from the flight, as I say we should have it very shortly. We'll come back to you when we raise the spacecraft. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, Tananarive has acquisition now and Gordon Cooper is putting in his first call to the spacecraft. He has not yet got an answer. We'll standby and monitor this transmission.

This is Gemini Control Houston, all we're getting is dead air and no voice signal from Gemini 10. We've also got some cross circuits on our line today so you'll have to forgive those.

HOU Gemini 10 this is Houston

S/C 10, go

HOU Roger, are you station keeping?

This is Gemini Control Houston, we're still standing by. Gordon Cooper put in another call, he's got no response.

S/C This is Gemini 10, go ahead Houston

HOU Roger, what's your status.

S/C Garbled

HOU Roger, are you there yet?

S/C Roger, we're there.

HOU OK. Do you want to turn that Agena C-Band to off

This is Gemini Control Houston, Cooper has established voice contact with Young. He said simply are you there yet and Young said Roger, we're there. This would indicate to us that they are station keeping and closing on the Agena, probably very slightly. That transmission came through at 5 hours 21 minutes into the flight. The flight plan calls for the actual docking to take place assuming that everything is right on both vehicles, shortly after 6 hours elapsed time. Still no more conversation although we have several minutes of the pass left. This has to be one of the most untalkative space flights to date. It had - that had been

in the planning largely to see if the crew could perform much of their work onboard when the solutions didn't compare favorably of course it was decided to take the ground solution. But the crew in general has remained altogether quite through this first four revs. We can only recall hearing from Mike Collins on two or three occasions.

HOU What's your range now 10.

S/C Say again, over

HOU What's your range now?

S/C Our range is about 40 feet.

HOU O.K.,

This is Gemini Control Houston in all that static, I hope you can make out Gordon Cooper asking John Young what his range was. Young came back and said about 40 feet. About 4 0 feet. This is Gemini Control standing by.

Go ahead TMC

TMC GCO-1 low

HOU 10 did you get the Agena C-band off and leave the S-band on?

S/C 2.20 , roger.

(garbled)

This is Gemini Control Houston, we expect now no additional conversation by Tananarive. The crew broke into the sun light in an elapsed time of about five hours and 17 minutes into the flight, which put them in a good position to acquire their target. They, of course, saw it before they went into the last nights side leading up to this rendezvous. The CSQ should acquire the space-craft Tananarive advised they have had a loss of signal. Both vehicles were in good order, when they lost that signal. The CSQ

should acquire an elapsed time of five hours and 40 minutes or about 13 minutes from now. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, we've had a slight little change in our flight plan here. The first docking maneuver is to take place now at an elapsed time of 5 hours 50 minutes into the mission. We presently show 5 hours 33 minutes into the flight. We except a rather complete status report via the CSQ, we can here the CSQ pretty well tonight, but they're having great diffculty in receiving our transmission. Of course we're much more interested in theirs. As I said the flight plan calls for the first docking to take place between 5:50 and 6 hours, to be followed by a bending mode test, and a little later at 7 hours 38 minutes into the flight the first burn with the docked Agena. The duration of the burn is to be 12.1 7 seconds, and the total Delta V will be 413.9 feet per second, that's with the big Agena engine, the 16000 pound thrust engine. This will put us in an apogee altitude of 409 nautical miles, 409 nautical. It would convert to about 470 statue. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston. Our CSQ Flight Controller reports that he has solid telemetry contact with both vehicles. He reports them quite stable. We have no position report as yet. There's the first voice callup and John Young advises that everything is going okay. He says we're just about ready to dock. Let's cut in on this conversation. (Dead-Air) Houston here. That's almost predictable and when we expect this crew to talk, that's it. It's come in very short spurts tonight. The flight plan as we pointed out calls for a docking maneuver to start at 5:50 although it is pretty much crew option. They will align their platform first and do a very careful electric charge monitor test prior to docking. Now we've got more conversation. Let's go back.

S/C C-band off .and the S-band off. Over.

CSQ That should be S-band on and C-band off.

S/C Roger.

We show them both off at this time.

CSQ Okay, turn your S-band on.

S-band on is ....

S/C S-band on command is zero-one-zero.

CSQ Roger. You said it.

S/C Roger. We show it.

HOU CSQ, does it look alright for docking?

CSQ Roger. Everything looks good here, flight.

HOU Okay. Tell them it looks alright for docking and is he in to the charge monitor test yet?

CSQ Standby and I'll check.

10, CSQ.

S/C 10, go.

CSQ Roger. Everything on the ground looks okay for docking. Have you started the charge monitor test yet?

S/C Not yet. We're starting it now.

CSQ Roger.

HOU CSQ flight. A Gemini main.

CSQ Roger.

HOU CSQ, we need an Agena main also.

CSQ Roger.

This is Houston. We're still standing by for additional reports. The Gemini 10 spacecraft is equipped to readout any electric charge difference between the two vehicles if any actually exist. Once the two vehicles are docked, the plan is to perform a bending mode check over the Hawaii station wherein the spacecraft will yaw around 180 degrees. Yaw the entire dock configuration. Turn it around. The flight director is talking to the CSQ Flight Controller again. Let's go back.

CSQ I'm checking the AGena main. We look like the electric charge monitor went off okay. We'll have to get the data points readout after the pass.

HOU Okay, do you see any dock yet?

CSQ Negative.

HOU CSQ, flight.

CSQ Go flight.

HOU Would you get an RSDP readout of GCOl OAMS switch pressure?

CSQ Roger. Will do.

CSQ Flight, CSQ.

HOU Go ahead CSQ.

CSQ GCOl is reading 1544 psi.

HOU 1544 psi.

CSQ Roger.

HOU Dock yet?

CSQ Negative.

HOU Did you get a quantity readout, an OAMS quantity readout?

CSQ Will do.

Gemini 10, CSQ.

S/C Gemini 10, go.

CSQ Roger, how's the docking?

S/C Roger, we're still (garbled).

CSQ Okay, could you give us a performance quantity readout please?

S/C We're reading 36 percent.

CSQ 36.

S/C Roger.

CSQ Thank you.

END OF TAPE

S/C Do you copy, Flight?

HOU FLT Yes, I sure did.

CSQ LOS minus one.

CSQ CSQ has one minute to LOS and standing by.

This is Gemini Control Houston. The Flight Controller you hear talking from the CSQ is Gary Scott, Flight Control Engineer from the Manned Spacecraft Center here stationed out on the CSQ. From all appearances now the actual docking will not take place while we still have contact by CSQ. It will more likely take place between CSQ and Hawaii. The two vehicles are right on the eastern edge of the CSQ acquisition area at this time and they should lose contact momentarily. At five hours, 15 minutes into the flight, this is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston. We're 5 hours 59 minutes into the flight, at 5 hours 58 minutes the Flight Controller Ed Fendell at Hawaii reported that the two are docked, they are docked. We've had no voice contact with the crew as yet, however they're reading out the telemetry on the ground at Hawaii. We'll come back as more information develops.

END OF TAPE

This is Gemini Control Houston. Ed Fendell, the Flight Controller of Hawaii has been talking with John Young. Young advised that he did use his closed loop solution to perform the rendezvous as we said earlier the two are docked at this moment. He was queried specifically on the high usage of OAMS fuel to accomplish the rendezvous and John said that he had no good explanation for it. It just seemed to use a little more than planned, but he said that he was a little surprised that it used as much as it did. According to our estimates we should have something on the order of 680 pounds of fuel remaining. We have instead of that about 350 pounds. Based on everything we know right now, we can continue to do the major maneuvers and the other rendezvous planned for this flight, but it looks very much like we will have to curtail the experiment load. Here now is the tape conversation as the spacecraft passes over Hawaii, we are still in the Hawaii circle. Here it is.

HAW We are showing a good solid Agena telemetry and the vehicle is go.

HOU On the Agena?

HAW Right.

HAW Gemini 10, Hawaii Cap Com.

S/C This is Gemini 10, go.

HAW O.K., first, I have got a couple of questions. What's your position..of your TM / control switch?

S/C The TM/control is in command.

HAW O.K., I would like/to you read out a OAMS SOURCE HELIUM pressure.

S/C Roger the OAMS SOURCE pressure is 1400, over.

HAW 1400, O.K., and an OAMS/PROP-QUANITY read out.

S/C Roger, it is 35 percent.

HAW How much?

HOU 35, ED.

HAW O.K., I've got a couple of other questions before you start through.

S/C Roger.

HAW O.K., what kind of a solution did you use and what did you think of it?

S/C We used 41 forward and three up, I thought it was a little swift and subsequent closed loop solution showed up to be the case.

HAW O.K.

HOU Was that his closed loop solution?

HAW Was that your closed loop solution?

S/C That's affirmative.

HAW Did you send the C-band command on?

S/C We..in turn..roger, we did send the C-band...we turned the S-band on and the C-band off, over.

S/C That's correct. Do you want the C-band turned on, over?

HAW Negative, we would like you stay where you are.

S/C Roger.

HAW O.K., you seemed to have used a tremendous amount of fuel, the propellants between the RKV and the CSQ, did something different than ordinary happen?

S/C No, just seemed like a tough break, I think, but it didn't seem like it would use that much, over.

HAW O.K., we are waiting for your bending moment tests.

S/C Roger.

HOU Alright Hawaii.

HAW We don't have any C-band track, but I turned it on.

HOU O.K.

HAW Hawaii has C-band track....three seconds up. Mark three seconds up.

HOU Roger.

HAW I am going to send you a TX, you are going to get a light.

S/C Roger.

HAW Flight, Hawaii.

HOU Go.

HAW O.K., using the bending moment, we show on 600 PSI, I'll talk to him on the CRYO 2 when he gets some...data on the solution he used and all that.

HOU Roger.

HAW We are LOS minus one flight.

This is Gemini Control Houston. The crew has just reported that they have completed the bending mode check, which involves a yaw left, completely around 180 apparently nothing happened during this bending mode check. The spacecraft probably will lose signal with the ground here very shortly and we will have a fairly long quiet pass until we reach the Rose Knot Victor, that acquisition will take place at six hours 32 minutes into the flight. We are presently reading six hours and seven minutes. For at least the next half hour there will be a good deal of wandering here in the Control Center as further attempts to explain the extraordinary use of fuel in the docking. As we stated earlier, it appears now that we can go ahead with the planned maneuvers. The major maneuvers, it will undoubtfully mean curtailments on the experimental activity. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 6 hours 25 minutes into this flight of Gemini 10. We've had no additional contact with the crew since the Hawaii pass, there of course has been a good deal of discussion on the fuel usage in the rendezvous and a lot of figures will be checked and prepared with quantities given us by the spacecraft in later passes to try to come up with some better understanding of this usage. During the upcoming pass across the Rose Knot Victor the crew will take a very careful dosimeter reading. A radiation reading they have of several active instruments onboard with which they can take a reading and the plan is that this will be compared with a later reading once they are at the higher altitude after their Agena burn. Over the Rose Knot Victor also the velocity meter, which will be a key element in this big engine Agena burn, will be loaded with the proper value. The 420 feet per second is the velocity change, this will be achieved by about a little bit more than the 12 second burn on the Agena engine. That maneuver is to occur at 7 hours 38 minutes. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston 6 hours 38 minutes into the flight. The crew has been in conversation with the Rose Knot Victor off the south east coast of South America and many questions are going up and answers are coming back on this duel usage problem. We are going to do a lot more investigation in the next orbit. But at this point we've also called into the Control Center, Tom Stafford had been in the viewing room. Tom has to be the worlds most experienced rendezvous man having been involved in four of them, one on his Gemini 6 flight with Wally Schirra and he performed three on the Gemini 9 flight in which he was command pilot. He's in conversation with the Flight Director here in the Control Center. Meanwhile we have this tape conversation that is occurring and still going on over the Rose Knot Victor. Here it is.

RKV Roger

S/C ...both cases are go.

RKV Roger

RKV Gemini 10 RKV.

S/C Gemini 10, Bill.

RKV Roger, standby for a TX.

S/C Okay.

RKV Gemini 10 this is RKV would you turn your encoder off, so we can load the Agena please.

S/C The encoder is off and up to a, b, c.
Did you get that RKV?

RKV That's affirmative Gemini 10.
Turn your adapter C-band to continuous.

S/C C-band ready to copy.

RKV Roger, g.e.t., burn, 07 38 17, Delta T, 1 + 38, Delta T of main engine burn, 0 + 14, core 25, 04 1 39, test start C, posigrade.

S/C I copied 07 38 17, Delta T 1 + 38 which is 14 seconds on the main engine, 25 is 04 13 9 CPS bag C,(garbled) over.

RKV That's affirmative. Okay and I'd also like to check on your OAMS stop situation. You used it excessively and what was it used for, do you have any idea?

S/C Roger, we got 41-4, we burned 41-4. The first midcourse correction was 15 aft and 22 down. Fuel burn 15 aft and 14 down. One-four 25 aft and 5 right. We burned 25 aft and 5 right. We had evidence of footage. We weren't set up too well, initial on our sight control, but ...

RKV Would you give us ampere start down on your TPR, please.

S/C It was 46 minutes on TPR, ...power. RKV did you copy on that.

RKV Roger, TCL 1.

M/C Now 1, 15, 15 00 and hold.

RKV Quantity still holding 35 percent, their OAMS thrust pressure is still holding 15.

M/C Roger

M/C RKV did he spend a lot on the breaking, final breaking.

RKV Say again Flight.

M/C Did he spend a lot on the final breaking?

RKV I'll check with him.

Gemini 10 did you spend a lot of fuel on the final breaking moment.

S/C Not to pronounced to me, it wasn't any where near that much, over.

RKV Roger, understand. He didn't think it was that much.

M/C Roger copy.

M/C RKV, Flight.

RKV Roger.

M/C Did he confirm you on FC2?

.....

RKV We're ... FC2.

M/C What direction?

RKV O O, Flight.

M/C Right.

RKV, Flight.

RKV Go ahead Flight.

M/C Ask him if he felt his PQI pretty much followed the thrust profile he was following or the usage profile.

RKV Flight you're very weak.

M/C Ask him the PQI followed the usage profile he followed.

RKV Did the PQI followed the profile is that what you want?

M/C The usage profile, yes.

RKV Gemini 10 did the PQI radar follow the Houston profile?

S/C Like the (garbled).

RKV Say again Gemini 10, you're breaking up, you did say you followed the Houston profile. Is that affirm?

S/C I don't understand what the Houston profile is.

RKV Roger, standby.
Copy that Flight.

M/C I was trying to find out if he felt the gage fall, what was he doing with the stick in the handle.

RKV Say again Flight you're breaking up.

M/C I was trying to find if the gage followed what he was doing with the stick and the maneuver controller.

RKV Roger.
We're wondering 10 is the gage followed what the maneuver controller was....indicating.

S/C If the gage followed what, the maneuver controller?

M/C RKV Flight.

RKV Go ahead Flight.

M/C You're garbling it, we're trying to find out

M/C if the gage came as he used the attitude handle and the maneuver controller.

RKV Roger.
10 we're trying to find out if the gage came down as you were using the attitude controller and the maneuver controller.....

M/C Let me see if I can copy the numbers. His TPI burn was 41 and he burned it, the 1st solution was 15 aft and 22 down and he burned, 15 14. His next solution was 25 down, and 5 right and he burned that. Is that the way you copied them?

RKV That's right I'll break my ... and make sure all those numbers are right that's what I copied, okay.
Not set up to well for the TPI.

M/C Right.

RKV And the start time for the TPI was 4 6 minutes after NSR.

M/C Yes, I copied that.

RKV Say again Flight.

M/C Did you send the load?

RKV Got the load in.

M/C It had a memory compare in the hold slash.

This is Gemini Control Houston, we're 6 hours 46 minutes. That wrapped up the Rose Knot Victor communication. Tananarive should reacquire the spacecraft at 6, and elapsed time of 6 hours 53 minutes, about 7 minutes from now.

However, if communications from Tananarive are no better than they have been from the two earlier passes tonight, it should not be a very productive pass. We've had unusually high static in trying to contact the spacecraft via Tananarive, following Tananarive the Coastal Sentry Quebec will acquire at 7 hours 16 minutes into the flight, and we should get a very clear assasment at that time. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston. Six hours, 56 minutes into the flight. The Tananarive station has reached Gemini 10. Gordon Cooper put in a call and the only business that they have discussed to date was the dosimeter readings. Gordon asked him what the dosimeter read as he went through the South Altantic anomaly and John Young reported nothing. He came back a little later and said zero. We have this on tape, we are still in range of Tananarive. We may have additional conversation, but here is how it started.

TEX Tananarive go remote.

TAN Tananarive remote.

HOU Hello Tan, Houston here.

TAN Go.

HOU Roger. One little reminder on the PPS burn, there will be a six foot per second tail off after you get velocity cutoff.

TAN We read you, roger.

HOU And we didn't get one of those ZD readings over RKV, could you give us one?

TAN Would you say again, over?

HOU We need one of those dosimeter readings sometime along about there.

TAN Roger, It's on and it's reading perfect, over. It's two in a row.

HOU O.K. very good.

TAN We read it zero.

HOU Rog.

This is Gemini Control Houston. We are right at seven hours into the Flight. Seven hours even. Apparently we will have no conversation, no additional conversation by Tananarive. We have been advised here by the

Flight Director that it is very likely now that we will exercise an option available to us, a preplanned option, after the big PPS burn and after the sleep period tomorrow, it looks very much now like we would remain docked to the Agena during the stand of the EVA exercise tomorrow afternoon. That exercise to come at roughly at 23 hours into the flight. The idea here will to be, that we will use the Agena, the Agena propulsion system for small tweak maneuvers and some burns that must accompany the that period just before the standup EVA. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston. Seven hours and 14 minutes into the flight of Gemini 10. And within the next several minutes the Coastal Sentry Quebec should acquire the spacecraft. It's now off the Indo China peninsula and we've had no contact since Tananarive. At this point in the flight plan, or just before CSQ acquisitioned, the crew is to take another dosimeter reading. This is another contrast with the opposite side of the South Atlantic anomaly. And exactly half way around the world from that point. This data will be carefully calibrated and in approximately 5 minutes the Flight Controller in Hawaii, ED Findell, has been comparing notes with the Flight Control Team here in Houston, discussing and reanalyzing every maneuver involved in this primary propulsion system burn and which should happen within the Hawaii area of acquisition. That burn is scheduled for 7 hours 50 seconds into the flight. It will drive the spacecraft up to an apogee of 406 nautical miles. It will have a perigee of approximately 160 miles. Still no contact with the CSQ. We'll come back when we have some.

END OF TAPE

This is Gemini Control Houston, seven hours, 26 minutes into the flight. The Coastal Sentry Quebec has talked with the crew in the last few minutes. We will have that tape conversation for you. Of interest is the fuel budget and how it was expended during these last maneuvers leading up to the rendezvous. After the terminal phase initial maneuver, there was 743 pounds of fuel remaining aboard the spacecraft. After the terminal phase final maneuver there were 358 pounds remaining. We are still reading in that same ball park 350 to 358 pounds. Here is the conversation as it occurred between CSQ and Gemini 10.

CSQ Gemini 10, CSQ

S/C Gemini 10 go.

CSQ Roger, I am going to transmitt you the TX.

S/C Roger.

CSQ We would like for you to turn your/encoder switch off, so we can check your VM load.

S/C Roger, and off.

CSQ O.K., the VM looks good.

S/C Roger.

CSQ O.K., we confirm that VM mode is in direct,(garbled)

CSQ Roger, we confirm that the VM mode is to direct.

S/C Roger.

CSQ Standing by for your NDP readout.

S/C Ready, our main is 38 seconds, the secondary is three minutes and 27 seconds and gas is 85 percent.

CSQ Roger, I copy. You can turn your encoder back on when you are ready.

S/C Wish us good luck.

CSQ We would like for you to watch your primary 02 tank

S/C Roger.

CSQ Thank you.

CSQ 10, this is CSQ

S/C Go.

CSQ O.K., everything looks go for the burn except you are not to FC-6 as yet.

S/C Roger and out, we are going to intercept 20.

CSQ Roger.

CSQ Flight, CSQ.

HOU Go ahead.

CSQ Roger, will you confirm me on the ground?

CSQ Flight, CSQ are copy /can you copy before he gets back? ....get it back?

HOU I missed the main count.

CSQ 58 seconds...5 8 seconds.

HOU 58 seconds, roger. 3 plus 27 and 85 percent.

CSQ Roger, and he is now is in FC-6, he is go for the bird.

HOU Roger, TDA forward.

CSQ Say again.

HOU TDA forward?

CSQ Affirmative.

HOU CSQ, flight.

CSQ CSQ, flight.

HOU Verify shoulder harness with the crew.

CSQ Say again.

HOU Verify the shoulder harness with ...the crew.

CSQ I can't copy what you asked me to verify.

HOU Verify the crew has put on their shoulder harness for the burn.

CSQ Roger, understand. 10, CSQ.

S/C 10, go ahead.

CSQ Roger, have you fastened all your restraint harness?

S/C Roger, we are tightened down.

CSQ Roger, understand. We have 30 LOS and standing by.

S/C Roger

HOU CSQ, Flight. LOS the main Gemini.

CSQ Roger.

END OF TAPE

This is Gemini Control Houston. Seven hours 35 minutes into the flight. The Hawaii station has acquired the two vehicles. The ground readings show they look good. According to Ed Findell the prime Flight Controller there, he has given them a go for their dock burn. We're standing by for that burn. The burn itself takes up 14 seconds and, as somebody said here, "Don't blink, or you'll miss it." It's all quiet here in the Control Center as we wait any further information from Hawaii. John Young advises that the additives are holding very well on both vehicles. No unexpected slosh at all. We're something under a minute from the burn and again Findell reassures the Flight Director, Glenn Lunney, here that everything looks real good and recommends we proceed with the maneuver. The orbit requested is, shows 410 nautical miles apogee. Perigee of 160. Secondary propulsion system has been initiated and is looking good according to Hawaii. Hawaii reassures us that everything looks okay. The big engine has initiated. The big engine is firing. Showing 3 degrees in yaw. And the primary propulsion system has shut down. Ed Findell has just called the crew and John Young came back, "That was really something." We got a real spectacular tailoff, going right now, Young reports. A tailoff, this was to go on for perhaps a second and a half. The burn seemed to be right on time. Total duration of about 14 seconds including the tailoff. And apparently we have achieved the 410 nautical mile apogee and we show perigee as 160. This will be refined with the additional tracking data later. Meanwhile, let's play this tape which, as soon as we can roll it back here, sort of replay the whole situation.

END OF TAPE

Young is being queried now about how the attitudes look during that big engine burn and he said that he noticed a little yaw right, but then they steadied out and held right on the planned value. He's reading computer addresses out now. I believe we have the tape ready now and we'll start playing that.

HOU Okay, we got C-band track, Gemini.

HAW Roger. We're getting intermittent telemetry on both vehicles.

And we're showing the vehicle on FC 7.

HOU Roger. FC 7.

HAW Both vehicles are go.

HOU Roger.

HAW And the attitudes are good. We're going to give them a go.

HOU Alright.

HAW Gemini 10, Hawaii Cap Com.

S/C Gemini 10, go, we're on FC 7. Over.

HAW Okay. I'm going to send you a TX mark.

S/C Roger, we got it.

HAW Okay. You're looking real good. We're giving you a go for the burn. I'll give you a time hack at 1 minute prior to your GETB.

S/C Roger.

HAW Having a little trouble with the Gemini telemetry The Agena is real solid. It's looks good. Hold

HAW the attitude. Real fine.

S/C Roger.

HAW It was solid on both vehicles and as the Doctor says, they're real stable on their rates.

HAW Looking real good. You're holding the attitude real fine.

S/C Roger. The auditors have been real fine on this machine. No disparity between ours and theirs.

HAW Very good. Got about 30 seconds from my 1 minute mark. 10 seconds. 5 4 3 2 1 mark. 1 minute. We'll standby and watch you go. Okay, flight, it looks real fine, ready to go.

HOU Roger, we're copying.

HAW Start C. B is ready. SB is initiate. Attitudes are looking great.

S/C Rog.

HAW Just a little roll, but he's okay.

S/C Rog.

HAW .... valve is open. DPS initiate.

S/C Roger.

HAW Plus 3 degrees in yaw.

S/C Roger.

HAW We have TM cutoff.

S/C TM cutoff.

HAW That's shutdown.

S/C Roger.

HOU What kind of excursion did you get in pitch.

HAW TDS stop. Pitch was about normal. Now to go to the crew.

HOU Roger.

HAW 10, Hawaii.

S/C That was really something.

HAW Pretty wild, huh?

S/C When that baby lights, there's no doubt about it.

HAW You're trying to tell me something.

S/C We've got a real spectacular tailoff going right now.

HAW Okay, don't turn the recorder off yet.

S/C Roger.

HAW Status of breakdown, looking good.

S/C Roger.

HAW Okay, go ahead with your flight control mode 6 now and continue on down. Just don't send recorder off. Let me know when you get to that point.

S/C Roger.

HAW We've got your flight mode 6.

S/C Roger.

HAW Okay, just hold off now on your recorder off and we'll get the tailoff and then you can go ahead on with what you have to do.

HOU Ready from flight?

HAW Flight, Hawaii.

HOU Why don't you ask him how he felt the additives when .....

HAW Okay. How did you feel the additives when, during the burn?

S/C Right on. We got a little over to the right looking ahead but to the left looking ahead but got right back on.

HAW That's affirm. Did you show your plus 3 degrees on yaw.

S/C Roger. Our address 80 is 00011. Address 81 is 00133. Address is 82 is minus 008.

HAW Okay 80 is 00011. 81 is 00133. 82 minus 008.

S/C 0008 on 82.

HAW Okay.

Okay. Standing by for your TM count now. Okay. We got your telemetry back. Gemini LOS. Agena LOS and Ahoy.

This is Gemini Control in Houston. The data from Hawaii on that big engine burn has been refined and the Flight Dynamics Officer advises that burn went extremely well. He gave us an orbit of 411.9 nautical miles apogee. Perigee 160 nautical miles. This would convert to about 462 statute on top. We may have some slight out of plane in the burn which you heard Young mention a three degree yaw right error this is not pinned down precisely yet, but it looks like something on the order of 10 to 11 feet per second needed to correct the out of plane. Certainly an acceptable error. That's 7 hours and 48 minutes into the flight. This is Gemini Control, Houston.

END OF TAPE

This is Gemini Control Houston eight hours, 9 minutes into the flight of Gemini 10. We should reach our new apogee point that at 411.9 nautical miles at approximately 20 minutes from now or about 831 elapased time. The perigee of course will be in the area of Hawaii. Actually will be about 15 degrees west of Hawaii on this next rev. and we have established contact within the last few minutes by the Rose Knot Victor. We'll play..give you that conversation now.

RKV Gemini 10, RKV.

S/C Alright, go.

RKV Roger, will you turn your encoder off? We need to command the Agena tape dump.

S/C Roger, the encoder is off.

RKV Roger.

S/C Is that the last burn for this evening.

RKV That's affirmative.

S/C Roger, that was very spectacular, the tail off at brim there.

RKV Roger, understand.

S/C It lasted for a good 30 seconds and right at front that very pretty pictures, I hope that we got some.

RKV Roger, your burn looked good on the ground, your orbit is now 411 by 160.

S/C O.K. Rog, for a TX?

RKV O.K., Gemini 10, I would like to have that dosimeter reading, please.

S/C Roger, it reads 04rads, and the dose rate is below 1/10th rad per hour.

RKV Roger. Would you give me the SPC meter readings please.

S/C Roger, the main time reads 45 in amps seconds, secondary time reads three minutes and 20 seconds and the atitude gas is at 80 percent.

RKV Roger, I copy, stand by for a TX. Mark.

HOU Say again.

RKV The 02 crew pressure is nine...979,

RKV Gemini 10, I would like you to preform a VOX check on during this pass if you would.

S/C Roger, will do.

HOU Cut off RKV manual heater?

RKV Standby I'm letting him get....

ASC RKV,ASC.

S/C Affirmative on the overhead panel about six inches over head, over.

RKV Roger.

RKV I'm going back to 02 heaters on when your crew is at manual.

S/C Roger, we are through and the manual is here in order.

RKV Start your fuel cell purge. Section two purge and then section one.

S/C Roger, we are purging now.

HOU Have you got the tape dump going?

HOU Do you have the tape dump going?

RKV The tape dump is going.

HOU O.K., can you tell by the currents that he is in the auto position?

RKV Stand by one. (garbled) We could command he put this thing in FC-1, what do you think, over?

RKV Do you want him to go to FC-1

HOU Roger.

RKV Roger, it is alright Gemini 10 to go to FC-1.

S/C Roger.

HOU It is in CYRO readouts also.

RKV Roger, we will go CYRO.

RKV Our total current is 45.1 VM. Do you copy?

HOU Roger, that's all.

RKV Gemini 10, RKV. Will you turn your encoder off, please?

S/C Roger encoder off.

RKV Tape dump completed at RKV.

HOU Roger, RKV.

RKV Gemini 10, you can now turn your encoder back on.

S/C Roger, the encoder back on.

RKV O.K., Gemini 10 will you go to your CYROS switch to the O2 position ?

S/C Roger, at O2.

RKV Gemini 10 CYRO switch to H2, H2. O.K., you can turn your CYRO switch off.

S/C Cyro switch off.

RKV Roger you can be powering down in your spacecraft at this time.

S/C Roger, we're powering down.

HOU RKV, will you read me your SDP.

RKV RKV, go.

HOU Roger, read me your status display reading again.

RKV You are unreadable ADC.

ASC O.K. Let me just send you an O's pass.

RKV I hear you ASC, will you say again?

ASC Send us a message.

RKV Roger. Can you read me real good, and I can pass this information on to you.

ASC O.K. all I want is for you to reconfirm the status display panel readouts.

RKV He was real clear when he came in, I can try with him again if you want.

ASC No, I just want you to read them to me, what you copied.

RKV O.K., main time 45 minutes three zero seconds, sec time three minutes, 20 seconds , attitude gas 80 percent.

ASC Give me the main time again.

RKV Main time 45 minutes , three zero seconds.

ASC Can't have any minutes in that.

RKV Say again.

ASC You can't have minutes in your main time, we started out with 58 seconds. All you can work by is seconds.

RKV Let me confirm with him again.

ASC There you go.

RKV Gemini 10, RKV, would you confirm the main time on your SDP?

ASC And get that other dosimeter reading.

RKV We still have three minutes til LOS.

RKV 10, RKV will you confirm the main time please?

S/C Roger, reading 45 and one half seconds.

RKV Roger, standing 45 and one half seconds.

S/C Roger.

RKV Reads 45 and one half seconds, ASC.

ASC Roger, we copy.

RKV Gemini 10, RKV, would you give me another dosimeter reading, please?

S/C Rads dose and the dose rate is still less than one tenth rad per hour.

RKV Would you give me the number of rads again, please?

S/C .18 rad.

RKV Roger, understand .18 rads and the rate is less than one tenth per rad per hour.

S/C Right, affirmative.

RKV Roger, we have nothing further for you at this time, we are standing by.

S/C Roger.

AFD RKV, AFD.

RKV AFD, RKV.

AFD We would like to confirm that he is going to leave adapter C-band to continuous for the remainder of the night.

RKV Roger.

RKV 10, RKV, we would like to have you let the adapter C-band in continuous for the remainder of the evening.

S/C Roger.

RKV Roger and over.

RKV RKV has LOS and Gemini good solid drop on TX.

HOU Roger RKV, good pass.

RKV LOS AGENA.

HOU Roger.

END OF TAPE

This is Gemini Control at nine hours and 29 minutes and 37 seconds after liftoff. Gemini 10 docked with the Agena presently is over the CENTRAL Pacific nearing the end of the seventh revolution. Earlier in this revolution, during the pass over the Tananarive voice remoting station, there was some conversation between the spacecraft communicator Buzz Aldrien here in Mission/Control and the Gemini 10 crew. Later in that revolution over the tracking ship Coastal Sentry the spacecraft communicator reported that all systems looked good on the ground. He also passed up to the crew several plan landing area updates and also got a water gun readout of 195 counts from the crew. At 1:00 a.m. Houston time the crew was scheduled to begin a sleep period. A few moments ago during the pass over the Hawaii tracking station, the spacecraft communicator Ed Fendel out there said that the crew was resting quietly but not sleeping yet. We now have tapes of the pass over the Tananarive voice remoting station and the tracking ship Coastal Sentry, that we will roll for you now.

HOU Gemini 10, this is Houston. Gemini 10, Gemini 10, this is Houston, do you read?

S/C Houston, this is Gemini 10. How do you read, over.

HOU Roger, Gemini 10, this is Houston. Read you loud and clear. Gemini 10, Gemini 10, this is Houston, over.

S/C This is Gemini 10, go ahead., over.

HOU Roger. We're wondering if your dosimeter is still snubbed?

S/C No, it is not still snubbed, it is now reading .23 rad.

HOU Understand .23.

S/C Roger.

HOU O.K., it looks like the decay rate is less by a factor of about 10 and there is no sweat down here on that.

S/C Alright.

HOU Gemini 10 say again. Gemini 10, this is Houston, say again.

S/C (garbled)

HOU Gemini 10, this is Houston, I didn't copy, will you say again.

S/C Roger. This is beautiful, a little more .....to the earth.

HOU 10, Houston, I did not copy.

S/C He said that (garbled) wished you could hear us a little bit better.

HOU Roger, understand. Gemini 10, this is Houston. Do you read me well enough to get part of a flight plan update, over.

S/C Affirmative, we'll give it a try.

HOU Roger, at 17 hours and 30 minutes Gyro compus Agena to ATDA south. At 19 hours, 00 minutes Gyro Compus Agena to TDA aft. Dual rendezvous burns planned at the following times, NH 20 20 57, Delta-V 3 36 feet per second, Retrograde plane change 21 50 48, 15.7 feet per second south, did you copy?

S/C Roger, NH at 20 20 57, 336 feet , retrograde PC 215048 15.7 feet per second , 15.7 feet per second south.

HOU That's affirmative. NSR 22 37 53, Delta-V 84.4 feet per second, posigrade plan to stay docked for tweak maneuvers, over.

S/C Roger, NH 336 feet per second retrograde, PC NSR .223753 84.4 feet per second posigrade/stay docked for tweak maneuvers.

HOU That's affirmative. 10, Houston, 336 feet per second altitude adjusts.

S/C Roger, 336 feet per second altitude adjust.

HOU Rog., I think that is what you said before.

TAN Tananarive has LOS. Tananarive local.

AFD CSQ Cap Com, Houston AFD.

CSQ AFD, CSQ.

AFD O.K., do you have our special on the PLA update?

CSQ Roger, just repeated it.

AFD O.K., we want you to pass that PLA update to the crew this pass. We want you to tell them to bump up the altitude to 800 onboard and that will be 960 ground reading.

CSQ Roger.

AFD Tell them to turn the encoder off and get an Agena tape dump and a reset time at reset, get the crew status report, that changed with our DCI number 31,

CSQ Roger, I have it.

AFD O.K., get SPP readings.

CSQ Roger.

AFD And we'd like you to tell them that our ground computation agree with the propellent quanity remaining onboard, do you copy?

CSQ O.K. and...

AFD And get a Prop quanity reading.

CSQ Roger.

AFD Do you have any questions?

CSQ Negative.

AFD CSQ, AFD.

CSQ AFD, CSQ.

AFD O.K., make a it a void check, you should have acquisition in about 10 seconds.

CSQ We have it now. All systems look good.

AFD Roger.

CSQ Gemini 10, CSQ. Gemini 10, CSQ.

S/C Gemini 10, over.

CSQ Roger, could you turn your encoder switch off so we can get a tape dump?

S/C Roger, encoder off.

CSQ O.k., I have a PLA update for you, when you are ready to copy.

S/C O.K., Rog, go ahead with the PLA update.

CSQ Roger, ..dash three, 115530, 23 plus 31, 28 plus 11, 90, weather is good. 9 dash echo, 133410, 22 plus 15, 27 plus 42, all bank angles will be 90. Weather is good. 10 dash echo, 15083722 plus 30, 27 plus 52, weather is marginal, 11 dash alfa, 164339 22 plus 34, 27 plus 46, weather is poor, 12 dash alfa, 182324 21 plus 19, 28 plus 17, weather is good. 13 dash 2, 193459 31 plus 50 35 plus 31, weather is good.

S/C Over Roger, got your update.

CSQ O.K., we'd like for you to (garbled) The CRYO 02 pressure up to 800 PSI onboard.

S/C Roger.

CSQ The ground computations on your propellent, the greens

CSQ are the spacecraft readout.

S/C Roger.

CSQ We'd like an onboard readout at this time.

S/C Roger, it's reading about 32 percent now.

CSQ Roger, could I have your SPC readout, please?

S/C (pause)

AFD CSQ, AFD.

CSQ Go ahead, this is CSQ.

AFD Did you send command 12 reset time to reset?

S/C Roger, we can't see the status display panel clocks right now the sun is still in the wrong direction it is too bright, over.

CSQ O.K., we understand.

S/C (garbled) last time

CSQ Roger, understand.

CSQ Say again AFD.

AFD Did you send command 12 reset time to reset?

CSQ Roger, it's been sent.

AFD Roger, thank you.

AFD CSQ, AFD.

CSQ AFD, CSQ.

AFD How about the crew status report?

CSQ I was getting to that I wanted to make sure that he got the tape dump correct. 10, CSQ.

S/C This is 10, go.

CSQ Roger, we're standing by for your crew status report.

S/C Roger, our crew status is go.

CSQ Roger, have you had anything to eat today?

S/C Roger, a couple of meals and some goodies that we carry in our pockets.

CSQ Roger, understand.

AFD Get a water gun reading, CSQ

CSQ Gemini 10, this is CSQ, could you give a water gun readout?

S/C Roger, it is 195 counts.

CSQ Roger, copy.

AFD CSQ, AFD.

CSQ AFD, CSQ.

AFD Was that 195 counts.

CSQ That's what I copied.

AFD Roger, thank you.

CSQ 10, CSQ. I'm going to send you a TX.

S/C O.K.

CSQ Roger. CSQ, we are through with the tape dump, you can turn the encoder on when you like.

S/C Roger, thank you CSQ, encoder is back on.

CSQ We have one minute to LOS, and are standing by.

AFD CSQ, AFD.

CSQ AFD, CSQ.

AFD O.K., send us an Agena LOS A-alpha, bravo and a main.

CSQ Roger copy.

AFD And a Gemini main.

CSQ Is that a Gemini main?

AFD A Gemini main and Agena main and an Agena alpha and Bravo.

CSQ Roger, copy.

AFD CSQ, AFD.

CSQ AFD, CSQ

AFD O.K., also send us a Gemini bravo..

CSQ Ro er, will do. We have LOS both vehicles.

AFD Roger.

END OF TAPE

This is Gemini Control, 10 hours 29 minutes and 37 seconds after liftoff. Gemini 10 and its Agena in docked configuration are now over India in the mid-point of the seventh revolution. The Coastal Sentry tracking ship will acquire the spacecraft in approximately eight minutes. At the present time the Gemini 8 Agena trails Gemini 10 by some 2900 nautical miles with a closing rate of approximately 600 nautical miles per revolution. The present orbit of Gemini 10 stands at 413.6 nautical miles apogee by 160.2 nautical miles perigee. At the present time around the Flight Director console there's a huddle of several people who are sorting out the flight plan items for the coming day's work, making adjustments in the flight plan. It includes Deke Slayton, Astronaut Alan Bean, Assistant Flight Director Charlie Harlan, Spacecraft Communicator Buzz Aldrin, Jeremy Jones, who's a flight plan specialist from the Flight Crew Support Division, and Mr. Chris Kraft. At 10 hours 30 minutes -- as you were, at 10 hours 31 minutes after liftoff, this is Gemini Control.

End of tape

This is Gemini Control, eleven hours, 29 minutes and 39 seconds after liftoff. Spacecraft Gemini 10 has just begun the eighth revolution and should be acquired by the tracking ship Rose Knot within a few seconds. Midway through the seventh revolution on the passes over the Coastal Sentry tracking ship, the spacecraft communicator out there reported that both vehicles looked real good. The flight surgeon aboard the Coastal Sentry believes that both the crewmen were asleep at that time. Heart rates were recorded aboard the Coastal Sentry, the command pilot recording 55 to 60 and the pilot 48 to 60. The assistant flight director at the present time is relaying instructions to the spacecraft communicator aboard the Rose Knot. This will be a quiet pass in that the crew is still asleep at this time. At 11 hours 30 minutes and 42 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control at 12 hours 44 minutes and 38 seconds, after lift-off. The crew at Gemini 10 at this time is about mid-way through the 8 hour sleep period. Meanwhile the tracking ship Coastal Sentry and Rose Knot are feeling the pulse of the spacecraft and the crew during each pass. Getting heart rates of the crew as well as the system status aboard the spacecraft. During the last revolution just nearing its completion, that's the 8th revolution. The heart rates have been running around 70 for the command pilot and in the 60's for the pilot. The spacecraft at the present time is over the south central Pacific, nearing the end of the 8th revolution. At 12 hours 45 minutes and 29 seconds after lift-off, this is Gemini Control.

END OF TAPE

This is Gemini Control 13 hours and 29 minutes, 37 seconds after liftoff. Gemini 10 docked with the Agena is now crossing the African coast and is in the acquisition of the Canary Islands tracking station. The spacecraft communicator at Canary Islands reported that both spacecraft are in a go condition and earlier in this revolution, the spacecraft communicator aboard the Rose Knot tracking ship also reported both vehicles were go. At that time they commanded a tape dump of telementary data from the spacecraft. At the beginning of the ninth revolution and at 13 hours 30 minutes and 18 seconds after liftoff this is Gemini Control.

END OF TAPE

This is Gemini Control at 14 hours 29 minutes and 38 seconds after lift-off. Gemini 10 at the present time is over the south central Pacific nearing the end of the 9th revolution. The recent pass over the tracking ship Coastal Sentry was the last pass of the day until the revolution shift over the ship again later on today. At 14 hours 30 minutes and 4 seconds after lift-off, this is Gemini Control.

END OF TAPE

This is Gemini Control at 15 hours 29 minutes and 37 seconds after liftoff. Gemini 10 midway through its 10th revolution now is over the Arabian Peninsula. At the beginning of this pass over the stations of the Eastern Test Range the telemetry was rather ragged however, it looked good, according to the people here in Mission Control. During the pass over the Canary Island station both vehicles were go on the ground. The crew of Gemini 10 is still in its sleep period but they are due to wake up in approximately an hour and 15 minutes. The spaceflight meteorology group of the U.S. Weather Bureau said this morning that weather conditions continue satisfactory in the zones of prime concern to the flight of Gemini 10. In the Eastern Atlantic landing zone, centered about 400 miles west of the Cape Verde Islands, skies this morning will be partly cloudy with winds from the northeast at 18 knots and wave heights of 5 feet. In the primary landing zone in the Western Atlantic, centered about 800 miles east of Miami, partly cloudy skies will prevail this afternoon with a few widely scattered showers, southeast winds from 12 to 15 knots will generate three to four foot waves. In the Mid-Pacific landing zone, centered about 300 miles northeast of Honolulu, partly cloudy skies with east winds near 15 knots and waves three to four feet are forcast. In the Western Pacific landing zone, centered about 600 miles southwest of Tokyo, partly cloudy skies with a few showers will be the rule. Winds south at 10 knots and seas four feet. Interesting meteorological features which will be overflown during the day include the remains of tropical storm Nina near

Formosa. Frontal systems in the southern hemisphere where weather is in full swing. At 15 hours 31 minutes and 46 seconds after liftoff this is Gemini Control.

END OF TAPE

This is Gemini Control at 16 hours, 20 minutes and 37 seconds after liftoff. The crew of Gemini 10 has a full day's work cut out for them. Here in Mission Control the flight planners have come up with the day's flight plan activities. They're scheduled to wake up in approximately 10 minutes. As a matter of fact, they'll be crossing the stations in the Eastern Test Range within about four minutes. At the time they wake up there is a scheduled eat period for about an hour and then over the Carnarvon pass - and these times are all in ground elapsed time after liftoff - at 17 hours and 25 minutes, there is a flight plan update, essentially the information I'll be reading now, from the Carnarvon, Australia tracking station. Then at 18 hours and 15 minutes there is the next United States side pass where the crew will report their own status and purge the fuel cells. At 19 hours and five minutes, Carnarvon will give them a GO/NO GO for landing area 29 - 1. At 20 hours, 21 minutes and 22 seconds, the Agena primary propulsion system will be used for a 340 foot per second retrograde height adjust maneuver. And immediately thereafter they'll begin the preliminary stand-up extravehicular activity preparation. And in 21 hours, 20 minutes through 22 hours and 20 minutes is an hour eat period scheduled for the crew. At 22 hours, 38 minutes, 25 seconds there will be a posigrade circularization maneuver of approximately 83 feet per second. The final stand-up EVA preparation will begin at 22 hours and 40 minutes and run approximately an hour to 23 hours and 40 minutes after liftoff. At 23 hours and 52 minutes, 10 minutes before sunrise, they will open the spacecraft hatch. The stand-up EVA procedure will be essentially the same as the flight plan originally except the experiment S-13, the ultraviolet astronomical camera, will be deleted. The MSC-8, color patch

experiment, will be conducted as scheduled. The synoptic terrain photography, S-5, will be done while the hatch is open by astronaut Collins. At 24 hours and 58 minutes, approximately sunset - spacecraft sunset, that is - will be the completion of the stand-up EVA. At 26 hours and 30 minutes through 27 hours, the D-5 Star Occultation Experiment, using the Agena for attitude control, will be conducted. At 27 hours, 15 minutes, the phase adjust maneuver, approximately four foot per second posigrade, will be made using the Agena, and also it will pitch down and take several / S-5, Synoptic Terrain, and S-6, Synoptic Weather photographs. At 28 hours, three minutes through 28 hours and 40 minutes, they will again run the D-5, Star Occultation Experiment, again using the Agena to align the spacecraft. At 28 hours, 55 minutes, the tracking ship Coastal Sentry will give the crew a planned landing area update for several landing areas in advance. Also, a flight plan report. At 28 hours, 40 minutes, through 29 hours, 40 minutes, there is another hour's eat period. At 29 hours, 20 minutes, Hawaii will take the crew status report and also a flight plan update. The crew at this time will purge both fuel cells, one and two. At 29 hours, 40 minutes through 39 hours, ground elapsed time, there is a sleep period. During the sleep period, ending at the present time, there has been no propellant used by the - in the - OAMS system. Approximately 380 pounds of propellant are remaining; of this, 180 pounds are fuel, 200 pounds of oxidizer. Originally loaded aboard the spacecraft were 950 pounds of propellant. At 16 hours, 34 minutes and 34 seconds after liftoff this is Gemini Control.

END OF TAPE

This is Gemini Control at 16 hours 54 minutes into the flight. Gemini 10 is within range of the Canary Island station. The black team of Flight Controllers headed by Flight Director Cliff Charlesworth is in the process of taking over the consoles here in the Mission Control Center and we are estimating a change of shift Press Briefing in the News Center at Houston at approximately 10:00 a.m. CST. This is Gemini Control.

END OF TAPE

This is Gemini Control, 17 hours, 30 minutes into the flight, and Gemini 10 and its Agena are down over Australia within range of the Carnarvon Station. Gemini 10 is in a 413 by 460 nautical mile orbit. The Agena 8 is in a 215 by 217 nautical mile orbit and the spacecraft lags the 8 Agena by about 250 nautical miles. We have a tape from the start of this Carnarvon pass. This is our first contact with the crew since they awakened, and we'll play that for you now.

CRO Carnarvon has telemetry solid with Agena and Gemini. All systems are go.

HOU Roger, Carnarvon.

CRO ....over Canary. Gyro compass Agena TDA aft, spacecraft 000. And when you're aligned and platform warmed up, gauge to Agena and place the Agena in SC 2. Got that so far?

S/C Roger, we're with you. Go ahead.

CRO Okay. ....1945 over the U. S. and Agena tape dump and they'll check your PM level. At 20:21:22 NC1, a DCS maneuver. Gyro compass Agena TDA south, spacecraft 0 minus 90 zero right after the maneuver. Between 20:20 and 21:20, preliminary stand-up EVA prep. Between 21:20 and 22:20, time to eat. 22:20, prepare for NS launch. 22:38:25, NSR PPS maneuver. 22:40 until 23:40, final stand-up EVA prep. 23:52.....

END OF TAPE

This is Gemini Control at 18 hours 44 minutes into the flight and Gemini 10 is over the continent of Africa. We've had some line problems and some electrical problems on the Public Affairs console here in the Mission Control Center that caused us to loose some of the tape on these past tracking station passes. We've gone to a backup source, we now have the Carnarvon tape ready. We will replay that in its entirety and will follow that with the United States pass as soon as that is ready. Now in this Carnarvon pass you will hear a reference to advice from the Cap Com to the crew to keep their heads within the cockpit during a certain time period. This is in reference to a French Nuclear test that was conducted this morning. The spacecraft was to pass over the location of the test however, this country and France had coordinated on both the test and the flight but as an extra precaution we wanted the crew to not look outside at a certain time. Now as it turned out the test had already been conducted so there was - there would have been no problem. This was a test down in French Polynesia in the Pacific. Let's play that Carnarvon tape now and we hope to have the United States pass ready for you as soon as it's over.

CRO Carnarvon has telemetry solid Agena and Gemini all systems are go.

HOU Roger Carnarvon

CRO This is over Canary, gyrocompass Agena TDA aft, spacecraft 000. When your aligned and platform warmed up gage to Agena. and place the Agena into FC-2. Got that so far.

S/C Roger. We're with you go ahead.

CRO OK at 19:45 over the U.S. an Agena tape dump and they'll check your VM load. At 20:21:22 NC-1 a PPS maneuver. Gyrocompass Agena TDA south, spacecraft 0-90 zero right after the maneuver. Between 20:20 and 21:20 preliminary standup EVA prep. Between 21:20 and 22:20 time to eat. 22:20 prepare for NSR. 22:38:25 NSR PPS maneuver. 22:40 until 23:40 the final standup EVA prep. 23:52 to sunrise minus 10 minutes go to FC-6 on the Agena. Open spacecraft hatch, perform normal standup EVA except delete S-13. Following completion of MSC-8 check gravity gradient effect. That's heads up. Then roll heads down into the spacecraft and check the gravity gradient again. Follow all this by the S-5 photographs. At 24:58 that's sunset , completion of standup EVA. After repress maneuver the Agena TDA forward, spacecraft 0 180 0 flight control mode 1. Purge fuel cells section two and then section one and power down the spacecraft.

HOU Carnarvon, Cap Com, Houston Flight.

CRO Standby. Go ahead Flight.

HOU Carnarvon tell the crew to please keep their eyes looking inside of the cockpit from an elapse time of 17:45 to 17:55. Do not look at the ground.

CRO Roger. Copy.

OK, we'll try to line up between 25:00 and 26:30

EVA stowage. OK we've been requested to pass along to you that between time 17:45 and 17:55 keep your eyes in the cockpit, don't look at the ground. That's all we have for you. Did you copy all that?

S/C Roger.

HOU Carnarvon, Houston Flight.

CRO Go Flight

HOU Did you get that ERT in?

CRO That's affirmative.

S/C OK Carnarvon we received all that and we'll do it.

CRO OK fine. We have about a minute before LOS. We're standing by.. All systems look great here on the ground.

CRO Flight, Carnarvon

HOU Go ahead.

CRO Ok reset timer reset was sent at 15:46:03.

HOU OK.

Carnarvon Cap Com AFD. Another Agena alpha please.

CRO Roger. We've had LOS.

HOU Roger. An Agena India also please.

CRO Roger.

This is Gemini Control. This French test did not create hazardous conditions for the Gemini 10 crew. The spacecraft is well above the danger zone. We have the tape of the stateside pass and we'll play that for you now.

HOU Gemini 10 Houston Cap Com.

S/C Gemini 10 GO.

HOU Roger, good morning John. We'd like a crew status report and a radiometer reading please.

S/C Roger. Crew status is go, gun counter reads 335. We slept pretty good last night. Radiator reads .78 revs and it's off - dose rate is off scale low.

HOU Roger. Would you turn your encoder off for an Agena tape dump please.

HOU Gemini 10, Houston Cap Com. Would you turn the encoder off for an Agena tape dump?

S/C Roger. Encoder off.

HOU Roger and we'd like a fuel cell purge starting with section one.

S/C Roger, fuel cell purge.

HOU Would you switch your A-pump on primary loop.

S/C Roger A-pump is on B-pump is off.

HOU Roger.

END OF TAPE

HOU ...the Cape reports that you had real-time data - dump on the real-time link. Do you agree with that?

S/C Garbled

Did you turn off the dump by any chance?

S/C Negative, it is still going.

Okay.

HOU Gemini 10, Houston Cap Com. Can we have a PQI please?

S/C Roger, same as last night, 32 percent.

HOU Roger.

(PAUSE)

S/C This is Gemini 10, purge is complete, going to O_2 for 10 seconds. Houston, do you copy?

Gemini 10.

HOU Say again, Gemini 10?

S/C I say purge is completed and I am in O_2 if you want a readout the quantity now?

HOU Roger, we would like cryo quantity readout.

S/C Switching over to H_2. And pressure right back to off.

HOU Roger, Gemini 10. Gemini 10, Houston Cap Com.

S/C Gemini 10, go.

HOU After your gyrocompassing, did you send 460 for the horizon sensor to low gain?

S/C That is negative.

HOU Roger, then we will send 76 from the ground since your encoder is off.

S/C Encoder is off.

HOU Gemini 10, Houston Cap Com encoder on.

S/C Roger, got it back on.

HOU Roger.

GT Loss of acquisition, Grand Turk.

LOS Antigua.

Go.

HOU Roger, we have got a PLA update for you when you are ready to copy.

S/C Roger, Stand by. This is 10, go ahead.

HOU Roger. Area 15-1 224505, 23 +50, 29 +06, area 16-1 241318 31 +07 38 +25, area 17-4 270724 31 +07 38 +43 area 18-4 284436 31 +07 38 +45, area 19-3 300451 30 +58 38 +27, area 20-3 31 42 56 31 +05 38 +22. Bank angle for all areas is 9090, weather in all areas is good and you have a SEP maneuver for each area. Area 15-1 is based on retro pitch angle of minus 20 degrees. Area 16-1 through 20-3 are based on pitch angle of 0 degrees. Over.

S/C Roger, we received your update.

HOU Roger, we have got you go here on the ground, Gemini 10 and we will be standing by.

S/C Roger, we are go up here.

CYI Flight Canary Cap Com.

HOU Go ahead.

CYI Okay, Baker Alpha 07 reads 730, do you want to dump it up a little bit?

HOU Stand by. Canary Cap Com, Houston Flight.

CYI Go, Flight.

HOU You might tell the crew that we have seen the pressure drop a little bit, remind him to keep it above 450 onboard.

CYI Roger. Gemini 10, Canary.

S/C 10, go.

CYI We have seen your cryo O_2 pressure drop a little bit, you might want to bump it up.

HOU Keep it above 450.

CYI That is 450 onboard.

S/C 600 onboard.

HOU Canary Cap Com, Houston Flight.

CYI Go, Flight.

HOU Tell him you would like for him to keep it above 450 onboard.

CYI Roger.

10, I meant keep it above 450 onboard.

S/C Roger.

CYI Gemini 10, about a minute until LOS, we will be standing by.

S/C Roger.

HOU Say again, Canary.

CYI I was just telling him about a minute before LOS.

HOU Roger.

Canary, Houston Procedures.

CYI Hello, Procedures.

HOU Did you go by your corrected copy of special 19/0008 or 19/1349 and send all those Agena continuancy and the main we needed? And the X.

CYI Houston Procedures. Canary Cap Com.

HOU Canary, Houston Procedures.

CYI Okay, we are not due to send those until rev 16.

HOU I show rev 12 too.

CYI We sent them on 12. This is Agena 13.

HOU Roger. My mistake. Good show. Okay, you can disregard the BA07 count for now.

CYI Roger. We have LOS.

AFD Carnarvon Cap Com, AFD.

CRO Go ahead.

AFD Okay, just making a voice check. How do you copy?

CRO I read you loud and clear. I have received here a - stand by. We just received a VM load, it does't jive with the TP we received.

AFD Okay, stand by one.

HOU Carnarvon Procedures. You got a conference.

CRO Go ahead.

HOU Okay, have you received GM load 126?

CRO I am questioning that right now.

HOU You are writing it?

CRO I am questioning it.

HOU I see.

CRO It doesn't seem to jive with the ET..

HOU Oh, it doesn't jive with the ET, Roger.

CRO And, would you get Agena and find out what that thing is supposed to read.

HOU Agena is talking to Flight on it right now, Carnarvon.

CRO Okay, standing by.

HOU Carnarvon, Houston Agena.

CRO Go ahead.

HOU Okay, would you ask your question again. What was the question on the VM load.

CRO Okay, I received a VM load and it doesn't jive with this ET that we received.

HOU Okay. What is with the...Jim, I haven't received a copy of my pad message back.

CRO Well, I don't know where the discrepancy is, if it is in the loader or the EC. If - it is pretty close to correct, but it is not quite right. Can you tell me what the VM load is supposed to be?

HOU Let's come up on Goddard Jim, let me pick you up on Goddard.

CRO Okay

END OF TAPE

CRO AFD, Carnarvon.

AFD, Carnarvon.

AFD AFD, go ahead.

CRO Roger, on this flight adjust update, is it necessary to give the words like time Start Command and ... transmitted and including tail off and all that other stuff, or do you just want to hear GETB and Delta V, Delta T.

AFD Stand by one.

AFD Carnarvon Cap Com, AFD.

CRO AFD, Carnarvon.

AFD Roger. We'd like your C-Band track first and your S-Band track.

CRO Say that again. Oh, C-Band track first, roger.

AFD Roger.

HOU Carnarvon Cap Com, Houston Flight.

CRO Go ahead, Flight. Carnarvon.

HOU What's your question on the special?

CRO Okay, I just wanted to know if you want to add those words including, you know, like Start Command time to be transmitted?

HOU Yeh, I don't think that will hurt anything.

CRO Say again.

HOU That won't hurt anything. Go ahead and add it.

CRO Okay. We have telemetry solid both vehicles.

HOU Okay.

CRO Gemini 10, Carnarvon.

S/C Go.

CRO Roger, standing by for your go.

S/C Roger, John says go.

CRO Roger, you're go here on the ground also....We have a hydrogen update for you. Okay? 56. That's the time Start Command is to be transmitted. Delta T, 1 plus 35. That's actual length of burn from command 501 to .... Delta T, a main engine burn, 11 second. Thrusters ETS. And the maneuver is GEA aft retrograde.

S/C Roger. We copied.

CRO Okay. All systems are go here on the ground.

S/C Roger, Carnarvon. Which Delta V is that burn? We need parameters 25.

CRO Okay. Delta V, 340 and that includes yellow.

HOU Carnarvon, Houston Flight.

CRO Go ahead.

HOU Did you give him Core 25?

CRO I gave him Delta V. Do you want me to give him that too?

HOU Say again. I can hardly read you.

CRO He said he wanted Delta V. I'll give him Core 25 if he wants it.

HOU Yeh, go ahead. I think that's what he wanted in the

update.

CRO Okay. Cap Com.

S/C Go ahead.

CRO Okay, let me give you that Core 25, okay?

S/C Roger, go.

CRO 931.

S/C Roger, 933331.

CRO That's affirmative. Do you have the L-Band on right now? Okay.

HOU Carnarvon, Flight. Did you get the load in?

CRO The BM load is affirmative.

HOU Roger. Is the encoder on or off?

CRO The encoder is on, the L-Band is off.

HOU Roger.

CRO We transmitted TX, Flight.

HOU Say again.

CRO I say we transmitted TX.

HOU Roger.

CRO TM was on at our AOS.

HOU Roger.

CRO Was that supposed to be left on?

HOU Right. Carnarvon, Flight. How's the Agena look?

CRO All go.

HOU Roger.

END OF TAPE

This is Gemini Control at 19 hours 14 minutes into the flight. Gemini 10 is just passed out of range at the Carnarvon, Australia station. We will not conduct any docking practices today. The original flight plan had called for Gemini 10 to undock and separate from the Agena 10 immediately after the co-elliptic maneuver today. However, we intend to stay docked to the Agena 10 until tomorrow just prior to the terminal phase initiation for the rendezvous with the 8 Agena. That means that the crew will sleep docked with the Agena 10 again tonight. We have a tape of the Carnarvon pass and we'll play that for you now.

HOU	Standby. I'm reading you very weak Carnarvon.
CRO	Note right there.
HOU	That's better.
CRO	OK we'll use the microphone.
HOU	Carnarvon from Flight
CRO	Go ahead
HOU	Send us a Gemini experiment S-6
CRO	Roger
CRO	Gemini 10 Carnarvon, we have about one more minute before LOS, we'll be standing by.
S/C	10, Roger.

END OF TAPE

This is Gemini Control at 19 hours 29 minutes into the flight and Gemini 10 has gone over the South Pacific. We still show an orbit of 413 by 160 nautical miles for Gemini 10 and its Agena. The Agena 8 orbit 215 by 217 nautical miles. We're less than an hour away now from a primary propulsion system burn on the 10 Agena. That's due to occur at 20 hours 21 minutes elapsed time. This will be a retrograde maneuver and it is designed to bring the Gemini 10 apogee down to 7 miles below that of the Agena 8. This is Gemini Control at 19 hours 30 minutes into the flight of Gemini 10.

END OF TAPE

This is Gemini Control at 19 hours, 44 minutes into the flight. And Gemini 10 is coming up on the Guaymas tracking station. Should acquire within about a minute. We intend to bring you this pass live. We'll be standing by to acquire the spacecraft from Guaymas. The change in the flight plan which keeps the spacecraft docked to the Agena 10 will mean that we will be doing the stand-up EVA while docked, however, we intend to try to carry out all of the EVA flight plan in a docked condition. This would include the S-13 experiment, the ultra-violet experiment. We're standing by now waiting for the spacecraft to get into the range of the Guaymas station. Should occur momentarily.

HOU Gemini 10, Houston Cap Com.

S/C Go.

HOU Roger, request encoder off.

S/C Roger. Encoder's off. We're.....around. TDA aft now.

HOU Roger. Agena recommends that in the future when you gyro compass, they'd like for you to do it in FC6 instead of FC1 so there won't be any problem with this high or low gain switching. It doesn't cause any significant additional fuel.

S/C Okay.

HOU And have you hooked up your shoulder harness and life belts for your PPS burn?

S/C Roger. I don't believe that's necessary but it's about one g negative for CP.

HOU Roger. I just thought I'd get a check with you.

HOU We're standing by.

GYM AFD, Guaymas.

AFD Go ahead, Guaymas.

GYM Okay, we have no signal on Gemini TM. Would you have him turn his TM on please?

AFD You have no signal on Gemini TM, you want the TM on?

GYM Roger.

HOU Guaymas, Houston Flight.

GYM Go, Flight.

HOU We had Carnarvon turn the TM off. We'll turn it on over the States.

GYM Okay.

HOU How's the Agena look?

GYM It looks good, Flight.

HOU Okay.

GYM We can see the giant nosing around now.

(PAUSE)

GYM Houston Flight, Guaymas.

HOU Go ahead.

GYM Okay. He's in our CQ now. He's got an L-Band coder lock at this time.

HOU Roger. How's the Agena look?

GYM Looks real fine.

(PAUSE)

GYM Flight, Guaymas.

HOU Go ahead.

GYM Would you tell the astronauts to send power relay reset, please?

HOU Send power relay reset?

GYM Roger.

GYM We have Gemini TM solid.

HOU Gemini 10, Houston Cap Com.

S/C Okay, go.

HOU Roger. Verify encoder on.

S/C Encoder is on.

HOU Right. Would you send command 271?

S/C Roger, 271.

HOU Gemini 10, Houston Cap Com. Would you turn the encoder off for Agena tape dump?

S/C Encoder is off.

HOU Roger, 10.

END OF TAPE

HOU Gemini 10, Houston Cap Com.

HOU Gemini 10, Houston Cap Com.

S/C Gemini 10, GO.

HOU Roger, the ground is going to send a TPS cut off signal to verify the valve position. No action required on your part, just wanted to alert you.

S/C Roger. Encoder is still off

HOU Roger.

HOU Gemini 10, Houston Cap Com

S/C 10, GO

HOU Roger we show on the ground you have your yaw rate gyro on and the pitch and roll off. Do you confirm this?

S/C That's right. (garbled) helps it.

HOU Roger.

HOU Gemini 10, Houston Cap Com

S/C Roger. Go

HOU Reger the encoder off for this tape dump and VM load verification.

S/C Roger encoder is off.

HOU Roger encoder is off. I'll give you a call when you can put it back on.

S/C Roger.

HOU Gemini 10, Houston Cap Com

S/C 10, GO

HOU Roger, you can turn your encoder back on, we've got a VM compare. You're go for the burn and we've got the dump complete.

S/C Roger.

HOU Gemini 10, Houston Cap Com.

S/C 10, Go ahead.

HOU Roger, we show you're cryo 2 down about 500. Do you want to bump it up before this burn?

S/C Roger. Bump it.

HOU Roger.

END OF TAPE

GEMINI 10 MISSION COMMENTARY, JULY 19, 1966, 12:25 TAPE 91

Tape number 91 was not transcribed. There was nothing but dead air on it.

This is Gemini Control at 20 hours, 16 minutes into the flight and Gemini 10 is over Africa. We're about four minutes away from this primary propulsion system burn of the Agena to lower the Gemini 10 apogee to about 210 nautical miles or seven miles below the apogee of the Gemini 8 Agena. This burn will take place within the range of the Kano, Nigeria tracking station. We will get telemetry information from it, however, we had no voice capability from Kano. We won't be in touch with the crew again until they reach the Carnarvon station in Australia. This is Gemini Control.

END OF TAPE

This is Gemini Control 20 hours 29 minutes into the flight. We were able to contact the spacecraft over the Kano station, we remoted through Kano and Cap Com C.C. Williams had a brief conversation with John Young. John reported a good burn of the primary propulsion system, 340 feet per second burn, duration 11 seconds. We have not been able to refine this orbit yet but we're looking for an orbit of 210 by 160. We have the tape of that Kano pass and some brief conversation with the Canary Islands prior to that. We'll play that for you now.

CYI Canary has TM solid both vehicles.

HOU Roger.

CYI C and S band track.

CYI Gemini 10, Canary Cap Com.

S/C Gemini 10, go

CYI Roger, I'm going to send you a TX.

S/C Roger.

CYI (garbled)

S/C Roger

Update received.

CYI Roger, 10.

HOU Canary, Houston Flight.

CYI Go, Flight

HOU Ok, we're ready for him to go back to auto on the heater O_2 heater whenever the pressure is up okay.

CYI I think he already has the heater off now.

HOU OK. How does the Agena look?

CYI OK. He's still in FC-6 he should be going to 7 here shortly.

HOU Roger.

CYI Gemini 10, Canary. We're - will you go to flight control mode 7.

HOU Negative he goes 3 minutes prior to that

S/C That's where were going now.

HOU OK Canary.

HOU Canary Cap Com, Houston Flight.

CYI Go, Flight.

HOU Send us an Agena main after he goes to FC-7 please.

CYI Roger, will do.

CYI He's in FC-7 now.

HOU Roger.

CYI Gemini 10, Canary Cap Com. You've got a go for your PPS burn.

S/C Roger. I'm in flight control mode 7.

CYI Roger.

CYI Gemini 10, Canary. You can place your quantity read switch to the off position.

S/C Roger. Quantity read off.

CYI OK, Houston Flight, Canary Cap Com.

HOU Go ahead.

CYI His attitudes are holding real stable in there.

HOU Roger.

CYI Looks good.

HOU OK.

HOU Canary Houston Flight.

Send us a Gemini LOS main.

CYI Roger.

CYI Gemini 10, Canary. About a minute before LOS, we're standing by.

S/C 10, Roger.

HOU Canary,Houston Flight

CYI Go, Flight.

HOU Did you check the VM?

CYI That's affirmative.

HOU GO

CYI It is GO.

HOU Roger.

CYI Flight, Canary. We've had LOS all systems. Both systems go.

HOU Roger Canary.

Kano go remote.

KNO Kano is remote.

HOU Gemini 10, Houston Cap Com standing by.

S/C Roger. We're about to burn (garbled) Flight.

HOU Gemini 10, Houston Cap Com.

S/C It was a good burn and we have 13.....

HOU Roger understand you had a good burn. Say again readout.

S/C 81 is - 80 is 00°01.3, 81 is 00 11 9, 82 is 00 00 6

HOU Roger.

S/C It may only be one g but it's the biggest one g we ever saw.

S/C That thing really lights into you.

HOU Roger.

END OF TAPE

This is Gemini Control at 20 hours, 59 minutes and Gemini 10 is just passing off the east coast of Australia. A preliminary look at this primary propulsion burn shows that we achieved about 335 feet per second, instead of 340 and we're showing an orbit now of 213 by 160 nautical miles. This data will be refined later. We have a tape from the Carnarvon pass and we'll play that for you now.

CRO Gyro compass EVA north, spacecraft O..., Agena Flight Control at 2326 sunset, ...A at 2332 and 2342 depress spacecraft and open hatch. S-13 2342. 20 exposures at 20 seconds each. At 2402 sunrise. Camera in bracket. Normal day pass for EVA after depress and maneuver Agena EVA forward. Spacecraft 010. That's it.

S/C These 20 exposures of S-13. What are they taking pictures of. Which star field.

HOU Carnarvon, Houston Flight.

CRO Go ahead, flight.

HOU Tell him there will be no maneuvers required during those pictures, just whatever he's got. Southern sky.

CRO Roger, okay, no maneuvers for those picture.

HOU Just tell him the southern sky.

CRO Okay. Say again. Flight?

HOU I said just take pictures of the southern sky. Of those 20 exposures.

CRO Okay. The southern sky. Okay. John Young.

HOU Carnarvon, Houston, Flight.

CRO Go ahead.

HOU Send us an LOS main Agena.

CRO Roger, flight

HOU FLIGHT How does the Agena look?

CRO Both systems look strong as a rock.

HOU FLIGHT Roger. Having trouble reading you again, Jim.

CRO It must be pretty bad com at this time of the morning. Okay, this is Carnarvon and we've received Agena tape dump and you can turn the recorder back on.

S/C ....(garbled).....

CRO Just about a minute before LOS. Carnarvon has TM LOS both Agena and Gemini, all systems go at LOS.

HOU FLIGHT Roger, Carnarvon.

END OF TAPE

This is Gemini Control, 21 hours, 14 minutes into the flight and Gemini 10 is just passing out of range of the Canton Island Station in the Pacific. We had some brief conversation during that pass and we'll play it for you now.

Canton remote.

HOU Okay, Ed. Evidently the data is changed. We don't show you have a pass at all.

CTN Okay, give me a flight plan nodal update on dash 2 on my voice data and I'll tell my people where to look.

HOU Okay, you want a flight plan nodal update, right?

CTN Roger.

HOU Gemini 10, Houston Cap Com.

S/C Go.

HOU Roger. I have an update for your orbital map and overlay if you're ready to copy.

S/C This is Gemini 10, go.

HOU Roger. Rev 13, 149.3 west, right Ascension, 05 28.

S/C Roger.

HOU Gemini 10, Houston.

S/C Okay, go.

HOU Roger. Did you go TDA forward at 21:20 or immediately after NH1?

S/C Say again.

HOU Roger. We're trying to determine when you went to TDA forward for temperature constraints, over.

S/C	I had a flight plan update over Carnarvon and I gave a TDA forward ....
HOU	Roger. That's fine.
HOU	Gemini 10, Houston.
S/C	Okay, go.
HOU	Please verify your OAMS heater circuit breaker closed.
S/C	Heater is closed.
HOU	Roger.
CTN	Canton has LOS.

END OF TAPE

This is Gemini Control at 21 hours 29 minutes into the flight. Gemini 10 is over Mexico in its 13th revolution. The Cap Com here in Control Center, Al Bean, the backup Command Pilot on this flight started conversation with the crew just a short time ago. We'll pick up the start of that conversation now.

GYM Guymas has Gemini and Agena TM solid.

Guymas remote.

Flight, Guymas. MFC-6 still gyro compassing.

HOU Say again please.

GYM I said the Agena is in FC-6 and it's still gyro compassing.

HOU Roger.

GYM Gemini looks good.

HOU Roger

GYM Flight we had OOO looking good.

HOU Gemini 10, Houston.

S/C Gemini 10, GO.

HOU Roger. We've been taking a look at this rolling heads down maneuver scheduled following the early part of your EVA. Especially considering the hard suit and turning off and on the Agena ACS, and we wonder what your feeling is up there?

S/C That's okay Al.

HOU Roger. We'll - understand then that you'll go ahead and look at it then as you progress through the EVA and if it looks acceptable then

you'll just do it at that time, is that right?

S/C That is correct.

S/C Houston, this is Gemini 10. Over.

HOU 10, this is Houston. Go ahead.

S/C Roger. This next burn the last PPS burn we've got scheduled. Over.

HOU That is affirmative.

S/C OK because I don't want to put up the sun bonnet if we're going to be burning PPS anymore.

HOU We understand. No this is the last PPS burn.

S/C Roger.

This is Gemini Control. We're standing by for further conversation between the crew and the Control Center here.

HOU Gemini 10 Houston. Would you place your encoder switch off. We'd like to perform a tape dump.

S/C Off.

HOU Roger.

HOU Gemini 10 Houston

S/C 10, GO

HOU Roger. We show that the Agena has been using quite a bit of gas in Flight Control Mode 6 since Carnarvon, could you go to Flight Control Mode 1 for coast.

S/C Will go.

HOU That is after we finish the tape dump and encoder is back on again.

S/C OK. Give us the word and we'll send it.

HOU Roger.

HOU Gemini 10, Houston. You can return your encoder switch to on at this time.

S/C Roger. We're going to FC-1.

HOU Roger. We'll be talking to you again on Canary.

END OF TAPE

This is Gemini Control at 21 hours, 44 minutes into the flight and Gemini 10 is about midway across the Atlantic, out of range of any tracking station. This is the time period set aside for the crew's second meal of the day. They're also doing some preparations for the next primary propulsion system burn on the Agena. That is scheduled to come at 22 hours, 38 minutes elapsed time. It will be a coelliptic maneuver to circularize their orbit, raise the perigee and circularize their orbit. We have a very brief bit of conversation between Bermuda and the spacecraft. I'll play that for you now.

END OF TAPE

This is Gemini Control at 21 hours 59 minutes into the flight. Gemini 10 is over Africa on its 14th revolution. Now within range of the Kano, Nigeria station. We've had no conversation remoted from Kano since that station acquired, but we do have tape of some conversation over the Canary Island tracking station and we'll play that for you now.

CYI Gemini 10, Canary Cap Com

S/C 10, GO.

CYI Roger. I'd like to send you a TX first of all.

S/C OK.

CYI 10, Canary. I'd like to have you turn your encoder off so it'll uplink your VM word for the NSR.

S/C Roger. Encoder off.

CYI 10, Canary. I have your update to NSR if you're ready to copy.

S/C Roger. 10 is ready to copy.

CYI OK. Purpose is NSR, DTB 22 36 51, delta V 75.7, delta T 01 + 28, core 25-00 68 9, TDA forward, PPS. That's all I have at this time. I'll update you if I get further information.

S/C Roger. Received it.

HOU Canary, Houston Flight.

CYI Go, Flight.

HOU Did you get his VM load?

CYI That's affirmative.

HOU Good work.

HOU And recorder off.

CYI We're going to do that right now.

CYI 10, Canary. We uplinked your VM word, it's good for NSR. You can turn your encoder back on.

S/C Roger encoder on.

HOU Canary,Houston Flight.

CYI Go, Flight

HOU Did you update the crew with the delta T of the main engine burn which was 4 seconds?

CYI No I gave him the total delta T of 01 + 28. Did you say the delta T of the main engine burn is four seconds, is that right.

HOU That is correct. Four seconds.

CYI Roger.

CYI 10, Canary. Your delta T of main engine burn is four seconds.

S/C Roger. Thank you.

CYI Flight, Canary.

HOU Go ahead Canary.

CYI OK, he's got his quantity read switch in the 02 position. Do you want to leave it there or do you want to turn it off?

HOU Just leave it there.

CYI Roger.

HOU Reading out that pressure.

CYI We've got about a minute until LOS, we'll be

standing by.

S/C 10, Roger.

HOU Canary, Houston Flight. Send us a Gemini main.

CYI Roger.

We've had LOS both vehicles, both were go going over the hill.

Kano go remote.

KNO Kano is remote.

END OF TAPE

This is Gemini Control, 22 hours, 14 minutes into the flight and Gemini 10 is over the Indian Ocean and just passed out of the range of the Tananarive station. There was no conversation with the crew during that pass. The time now on the next burn, the primary propulsion system burn, to circularize the orbit is an elapsed time of 22 hours, 37 minutes and we want a burn of about 75.7 feet per second. This is Gemini Control.

END OF TAPE

This is Gemini Control, 22 hours, 29 minutes into the flight and Gemini 10 is just starting to pass out of the range of the Carnarvon station. There was very little conversation during this pass. Carnarvon Cap Com gave John Young GO for the primary propulsion burn. John replied he was GO for the burn. The quality of this transmission is very bad, a lot of static, and we will not attempt to play the tape, however, we will turn the tape over to the transcript people in the hopes that they can decipher it. This is Gemini Control.

END OF TAPE

HOU Carnarvon Cap Com, Houston, Flight

CRO Go ahead, Flight. Carnarvon.

HOU Ok, you got all your hot scoop?

CRO If you mean update, yes.

HOU Say again.

CRO We've got the backup for this circularization maneuver.

HOU Okay, you have that pad logged?

CRO 15-1? Oh, yeah, I have that one also, Rog.

HOU Okay.

CRO Ok, we have the velocity meter word-loaded, and we are ready to give a Go for the PPS. Now I've got a question. In checking the oxidizer manifold pressure switch and the oxidizer depressure switch, you can only do this by sending a PPS cutoff command, do you want us to do that.

HOU That's affirmative, but before you do it tell the crew what you are doing.

CRO Ok.

HOU And we would like a V/M interrogate from you.

CRO Roger, and we are prepared to do that.

HOU And verify good PIV test signal.

CRO Say again.

HOU Verify good PIV test signal.

CRO Roger, got that too.
Carnarvon has telemetry solid, Agena and Gemini - all systems are go.

HOU	Roger, Carnarvon.
CRO	We have S-band solid track. Gemini 10, Carnarvon.
S/C	10, Go.
CRO	Ah, roger. We are looking at you down here. Everything looks very good now. We would like for you to turn the encoder off.
S/C	Roger. We are in FC-6.
CRO	Roger. We want a V/M interrogate from you, also a PPS cutoff ..
S/C	Roger. Encoder off.
CRO	10, this is Carnarvon, is your encoder back on again?
CAP COM	Stay and go for the burn?
CRO	Garbled
CAP COM	I can't read you.
CRO	That's affirmative
HOU	Ok.
CRO	10, Carnarvon, you are go for PPS burn.
S/C	Roger.
CRO	You got all the info you need?
S/C	I believe so, thank you.
CRO	Roger, we'll be standing by.
HOU	Carnarvon Cap Com, Houston Flight.
CRO	Go ahead, flight, Carnarvon.
HOU	Are you talking to the crew? We can't hear anything. How do you read me?

(Unaired due to poor transmission)

CRO	I read you loud and clear.
HOU	Ok, you are about .5 by .5.
CRO	Carnarvon has telemetry LOS, all systems go at LOS.
HOU	Roger, Carnarvon.

END OF TAPE

This is Gemini Control at 22 hours 44 minutes into the flight. Gemini 10 is in range of the Canton station in the Pacific. The Crew has just reported they completed the primary propulsion system burn to raise their apogee. So far that's been about the only conversation we've had from Canton. We'll play the tape of that conversation for you then we'll standby and see if we have any further transmissions between the spacecraft.

Canton go remote.

CTN Roger, Canton remote.

HOU Gemini 10, Houston Cap Com.

S/C 10, GO.

HOU Roger how was that last PPS burn?

S/C (garbled) or how was it?

HOU How was it?

S/C It was a pretty nice burn. 80 was 05 00 14 (garbled) 81 was 00 0 14 and 82 was minus 00 03.

HOU Roger.

S/C (garbled)

HOU Say again your last.

HAW Flight, Hawaii Cap Com.

HOU Go ahead Hawaii.

HAW Got anything for us this pass?

HOU OK. VM interrogate.

HAW Do we have to turn the encoder off for that?

HOU Affirmative.

HAW Negative on that.

HOU Contigency A and B. That's about it.

HAW You don't want a tape dump on that burn.

HOU No I don't want to bother them. Their in the middle of this EVA prep. Let's hold off and get it later.

HAW OK, very good.

HOU Let's watch those spacecraft systems.

HAW C-band track at Hawaii.

HOU Roger.

HAW 10, Hawaii Cap Com.

S/C 10, GO

HAW How are you all doing?

END OF TAPE

EVA

GEMINI 10 MISSION COMMENTARY, 7/19/66, 3:33 PM, TAPE 103 PAGE 1

This is Gemini Control Houston 23 hour 13 minutes into the flight. The present flight plans calls for the crew to depress their cabin and open their hatch at an elapsed time of 23 hour 30 minutes. The spacecraft at that time will be between Ascension, correction in the area of Kano. Their pass will take them over Tananarive, Carnarvon, Canton Island, Hawaii and the EVA is to be concluded at an elapsed time of 24:40. The spacecraft is presently passing across the United States and in the course of the pass, Donald Slayton, the Director of Flight Crew Operations here at MSC has come up on the line and suggested that maybe the crew should do a little bit more talking. This brought a veritable flood of conversation, primarily from Mike Collins. Among other things the crew reported the 16mm camera on the right side - that would be on Collins' side is inoperative. Collins also reported that there was some film on his window. We will start this conversation and pick it up at the start of the state-side pass.

AFD Guaymas Cap Com, AFD.

GYM Go ahead.

AFD We will be remoting through you.

GYM Roger.

HOU Gemini 10, Houston Cap Com.

S/C Gemini 10, go.

HOU Roger, we are standing by.

S/C Roger, we are in EVA orbit now, going to FD2

HOU Roger.

GYM Flight, Guaymas.

HOU Go ahead, Guaymas.

GYM His cryo load tank pressure is reading 979 psi.

HOU 979.

GYM Roger.

HOU Thank you.

GYM It is going down, Flight, 974.

HOU Okay. Gemini 10, Houston.

S/C ...go.

HOU Roger, this Deke, you guys are doing a commendable job of maintaining radio silence. Since the French stopped shooting at you, why don't you do a little more talking from here on?

S/C Okay, what do you want us to talk about?

HOU Oh, anything that seems appropriate.

Like EVA.

S/C All right. Mike is taking the lid down right now, as a matter of fact.

HOU Guaymas go remote. California go local.

GYM Guamas remote.

CAL California local.

S/C ...We have completed our final preps and made our systems integrity check and we are standing by for sunset at the present time.

HOU Right.

S/C The Agena looks pretty normal except that Velcro patch has partially burned off, releasing the cover which is plastered down on top of it and patches of Velcro appears to very brown and the handle by which you remove it has disappeared. There is just a little stuff on each side.

HOU Roger, Mike.

S/C (Garbled)

HOU Please repeat.

S/C When you light that baby up, it is not like a jet engine, it really kicks. it ...real good. And if you have got some camera experts down there, the 16mm movie camera on the right hand side is broken. It just slowly starts making strange noises and get to the point where it would tick, as if it were timing, but the little ratchet inside which advances itself is not moving.

HOU Roger, Mike.

S/C If you have any suggestions for repair, I don't mean now, but prior to the EVA tomorrow, you might mention it.

HOU We will do it. We will check into it.

S/C Agena has now been configured to flight control mode 2.

HOU Roger.

S/C How is everything going down there?

HOU Just great down here. We can't tell much about what is going on up there, though.

S/C We have been pretty busy. This Agena takes a lot of talking to.

HOU I gather that.

10, this is Houston, you might be interested in

HOU knowing that the Brave Astros dropped four straight to the hardy Mets up in New York and tonight they are back in their hometown, where we hope there is greener grass.

S/C No...at the dome, huh.

HOU They got a new outfield, that is about all.

S/C It will be nice to get this door open to see what the world looks like. Unfortunately, the attitude we have been in, we can just see a little piece of the ball. It looks pretty - it looks almost round up here.

HOU It looks like we will have to reprogram the computer again.

S/C Right. There is also the usual film inside the glass over the right hand latch. It is not too bad, but I think probably just enough to decrease the quality of the pictures a little bit.

HOU Roger. ...keep a check on it, Mike, and see if it gets any worse.

S/C Okay. A very small change, the F-13 extended timer is defunct. So I will be pushing the button by hand and only down to the 22nd period.

HOU Roger, it didn't break off in the shutter did it?

S/C Negative.

HOU Roger.

ANT LOS Antigua

S/C Correction on that F-13, there is still a piece still imbedded down in the shutter activator.

HOU Roger. Have you tried it out, Mike to make sure it works?

S/C I have tried it. Apparently it is working. It advanced the film one time and it appears to be the shutter mechanism appears to be operating normally.

HOU Okay. You all clear on what we would like for you to do on this S-13 and also the S-5 and 6 photo, rolling over if possible?

S/C Roger, all clear.

HOU Okay, John. Gemini 10, Houston Cap Com, we are about 1 minute from LOS.

S/C Understand, Roger.

GTI LOS GTI

END OF TAPE

This is Gemini Control Houston. We're in a elapsed time of 23 hours 27 minutes and some 45 seconds ago we heard from John Young via the Canary station that the crew had depressed the spacecraft and opened the hatch. The time, 23 hours 27 minutes. The crew reported everything looked real good. Just prior to depressurizing the spacecraft both the ground and the crew noted quite a bit of thruster activity on the Agena which they are using for attitude control. It has damped out now, the rates are steady and its - the thruster activity is probably accountable for the movement around involved in opening the hatch itself. Now Mike Collins reports he has taken his first exposure, an ultra violet picture of Beta Centauri. The crew is looking south and Collins will attempt to photograph three stars in the Southern Cross. His primary target will be Beta Crusis. He will also have other target stars, Alpha Crusis and Beta Centauri.

S/C We think the (garbled) on the Agena is going to show up very nicely. These S-13 (garbled)

HOU Roger.

The Canary station has lost acquisition. Kano should pick up the spacecraft momentarily. It will be a peripheral pass and probably the next major conversation would come by way of Tananarive. In addition to the ultra violet photography that Collins is doing during this standup EVA, he will take pictures using a boom on one of his cameras in the cockpit in order to determine the color correction filters and factors required during film processing to produce higher quality pictures particular

on later missions, the lunar missions and the missions between here and the moon. Color experiment is sponsored by the photo lab here in Houston, attempt to correct for some discrepancies in past pictures, particularily the colors, the fidelity of the colors.

S/C (garbled)

HOU Say again 10.

S/C Roger. We're (garbled) hours now taking S-13 pictures. (garbled)

This is Gemini Control Houston. The spacecraft is passing through a region although we're/ lapping acquisition/of Kano and Ascension, the short communication we heard a few seconds ago is not readable. But we should have more readable conversation in perhaps two to three minutes from now. The experiment that Collins is working on now, identified as S-13 or the Ultra-violet astronomical camera is an experiment sponsored by the office of Space Sciences Applications and that's in Washington and also by Northwestern University. The objective of the experiment is to test the techniques of ultraviolet photography and spectrometery under vacuum conditions to obtain spectrograms of selected star fields. A 70 mm camera is used with various lenses.

S/C This is an estimate.The stars I am seeing are probably around sixth magnitude.

HOU Roger Mike.

S/C (garbled)

HOU Understand you retrieved S-12.

S/C (garbled)

HOU Did you say you retrieved S-12?

ASC Ascension LOS

This is Gemini Control Houston. We've had LOS at Ascension, Tananarive is to acquire at elapse time of 23 hours 42 minutes. We presently show 23 hours 37 minutes. You heard C. C. Williams our Capsule Communicator here in Houston attempting to decipher what Collins reported. We think he said he had retrieved the S-12 experiment which is the micrometeorite collection device mounted on the external face of the adapter section of the Gemini. Device is perhaps 11 inches long and five to six inches wide and it contains micrometeorite impact plates. It has been exposed during the flight and will be returned for analysis here on the ground. We'll.....

END OF TAPE

We'll come back in approximately four minutes from now with any additional information that developes over Tananarive.

END OF TAPE

This is Gemini Control Houston, 23 hours, 43 minutes into the Mission and the voice controllers have been advised to remote through Tananarive. We're awaiting the first call out to 10.

This is Gemini Control Houston, 23 hours, 45 minutes. We have reacquired. The transmission quality is very poor via Tananarive this afternoon. Mike Collins did report that he noticed several articles tied down in the cockpit had a tendency to float up; apparently, he has not lost any of the articles, but he did notice that some articles that are secured on tethers were tending to float up. Such as the transmission is, let's tune in and listen to some of it.

S/C Okay, ...

TAN Mark 27..14.

This is Gemini Control Houston. It would take an exceptional ear to decipher the conversation over this loop on this particular pass and it has been quiet now for several minutes. Perhaps worth noting, the effects of these PPS burns that have taken place over the last four hours, the docked configuration is presently in an orbit with an apogee of 208.6 nautical miles by 204.3 nautical miles and it is now trailing the Agena 8 by some 1200 nautical miles. The catchup rate is a very slow one, one and a half degrees per rev. However, other maneuvers are planned later this afternoon and tomorrow to close the distance in setup for a rendezvous with Agena 8. No additional conversation coming from - now we got some. Here we go.

S/C (simultaneously with another voice)
He says he had to struggle to move up or down in the hatch while the suit was pressurized and still use available breath control.....body....suspension.

TAN Okay, thank you.

S/C .....This is Gemini 10. Do you read? Over.

HOU Gemini 10, Houston Cap Com. Say again.

S/C Roger. Have you .... our conversations? Over.

HOU Yes, we've been copying your conversation.

S/C Okay.....

HOU Say again your last.

S/C garbled

This is Gemini Control Houston. That very likely wraps up this pass. The configuration now out in the far eastern edge of the Tananarive circle. Carnarvon is to acquire about eight minutes from now and we'll come back up at that time.

END OF TAPE

This is Gemini Control Houston, 23 hours, 53 minutes into the flight. We have reracked the entire conversation across Tananarive and perhaps you can better understand the conversation by a replay of the entire tape, we didn't catch all of it by going in and out on the conversation. We do get an excellent summary toward the end of the pass from Mike Collins on his status to that point. Here's the tape.

TAN Tananarive remote.

Tananarive has acquisition.

HOU Gemini 10, Houston Cap Com standing by.

S/C Roger, Houston. We have about 10 out of S-13.....(garbled) .....Mike's out there.....(garbled).....hatch open..... (garbled). Tananari Gemini 10, about the only thing is that we've had/in the way of items floating up and down is/after we opened the hatch several loose items such as John's helmet tie down tended to float upward and out the open which hatch, something/we had not noticed when the hatch was closed. Other than that, we haven't noticed anything up or down or left or right.

TAN Roger, Mike.

S/C Collins Picture number 12 ready.....

S/C Young 1703

S/C Collins 1703 is my present separation. 12 out of 22 S-13. It's all going very smoothly. It's really a beautiful view out here. The only one small disappointment is the Lexan visor does filter some of the potential. John, I don't -- I can't see stars in the order of magnitude

S/C Collins I expected. I'm seeing them in about the fifth order of magnitude.

HOU Roger.

S/C Our body positioning has been absolutely no problem. As a matter of fact I sort of have to struggle to move up or down in the hatch. The suit was pressurized and filled the available space with plenty of points of suspension.

TAN Okay, very good.

S/C Gemini 10, Tananarieve, have you heard us?

HOU Gemini 10, Houston Cap Com, say again.

S/C Roger, have you heard our conversation.

HOU Yes, we've been copying your conversation.

S/C Okay, don't forget us.

HOU Say again your last.

S/C Houston, Gemini 10, we're coming up on number 18 and the S-13. It's taken about this long to feel at home out here but I do now and look forward to the sun coming up. Everthing is going very nominally, the body positioning is extremely simple and S-13 has run along like clock work.

HOU Good show, Mike.

S/C You might tell the experimenter we haven't seen anything of the Gamma Volorum so far.

HOU Roger, understand you haven't seen Gamma Volorum

S/C No, we haven't seen it.

TAN Tananarieve has LOS

This is Gemini Control Houston, along about the middle of that pass you heard Mike Collins make reference to the Lexan, this is to the sun visor, which he has pulled down, it's, in effedt a pair of sun glasses that he pulls over his inner visor to shield the sun rays. And he noted that he could not visually acquire the stars with the ease that he thought he would be able to. That he could acquire on the order of fifth magnitude stars only. Carnarvon should acquire within the minute and when they do, we'll come back up. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 23 hours 59 minutes and we're hearing again from the 10 crew via Carnarvon. Mike Collins has started off the conversation by describing the extremely bright object, I believe his theorizing it might be the 8 Agena. Here is how the conversation is going over the Carnarvon.

CRO Carnarvon has temeletry solid. All systems go.

HOU Roger Carnarvon.

S/C Gemini 10. If you read sun is just beginning to come up and we've completed the S-13. Also, to the east we see an extremely bright object. I believe it's to bright to be a planet. It's north of Orion about six or eight degrees. Right now it's approximately eight degrees. Is it the Gemini 8 Agena. Over.

HOU Roger. We copy. Standby.

S/C Pictures that it makes just about an equal lateral triangle with the belt stars in Orion and with Pleiades. It's a.....

HOU Do you notice anything moving relative to the stars?

S/C Possible. I haven't noticed any movement so far and unfortunately the stars are disappearing now and I/can only see this object and one or two other first magnitude.....sun starting to come up.

HOU Roger. Copy that.

This is Gemini Control Houson, during this pause its worth

noting that Collins suit pressure is - has been a very steady 3.8 pounds per square inch. We have been checking here on the surgeons console and he advises the rates - he describes them as casual. About 100 on each man and that's the heart beat. That's approximately what they ran during the launch phase. No additional conversation coming right now although we probably have another three to four minutes in the Carnarvon pass. We'll monitor it.

HOU Carnarvon, Houston Flight.

CRO Go ahead.

HOU I don't know. We've got the Agena 8 at a range of about 1073 at minus 7.8 (-7.8).

CRO Did you say 1073?

HOU Affirm.

CRO Minus 7.8.

HOU Local horizontal.

CRO Copy that.

S/C Houston this is Gemini 10, over.

HOU Go ahead.

S/C Roger. Mike's putting together MSC-8 now and starting to put together telescope, to grab some pictures of the plate. Lost it once, it floated out but he grabbed it.

HOU OK. Incidently the 8 Agena we have it about - a range of 1073 at -7.8, with a local horizontal.

S/C Roger.

HOU Incidently 10, we've got visual sighting of you.

This is Gemini Control Houston. Again the suit pressures, both the left suit and the right showing 3.8 pounds per square inch. Very steady all the way across the Carnarvon pass. The suit inlet temperature on John Young's suit is 48 degrees even and on Mike Collins's 47.8 degrees. That's the inlet temperature and of course the temperature up in the upper body would probably be more like 65 - in the high 60's. In all likely hood now we have completed the conversation for the Carnarvon pass. Hawaii will be the next acquisition, Canton Island may get a little bit before we reach Hawaii. Hawaii is to acquire at 2 - I'm sorry, Canton Island will acquire at 24:21. We're presently 24:07. Let's go back.

S/C That's right.

This is Gemini Control Houston. That undoubtedly wraps up the conversation for this pass. We will be back up in about 11 minutes from now with the Canton Island pass. Presently show 24 hours 9 minutes into the flight.

END OF TAPE

This is Gemini Control Houston, 24 hours and 21 minutes into the flight. We have not acquired the spacecraft via Canton yet but that acquisition should come momentarily. The Canton station now has been remoted, the voice network advises. The duration of our EVA is planned for approximately another 19 minutes. The flight plan calls for the hatch to be closed and repressurization to take place at an elapsed time of 24 hours and 40 minutes. That event would occur approximately over the central United States within the Guaymas-Corpus Christi area of acquisition. All ears here in the Control Center are straining to pick up the first conversation via Canton but as yet we hear nothing.

This is Gemini Control, now C. C. Williams here. Put in a call and Mike Collins is coming back. The crew.....

This is Gemini Control. The crew advises that they are back in the spacecraft, closed the hatch and they are repressurizing the cabin.

This is Gemini Control. Collins is advising that they suspect that there was some small problem cropped up in their ECS system. We don't completely understand this yet but it appears that this problem made them decide to conclude the EVA earlier than planned to get back in and repress the cabin and figure out exactly where they were. We have the taped conversation, or we'll have it here momentarily. The Hawaii station is now acquiring. They have telemetry and we'll start the conversation. The Canton and Hawaii passes overlap this time. We'll start the conversation as it began several minutes ago over Canton.

Canton go remote.

CTN Remote.

HOU Gemini 10, Houston Cap Com standing by.

S/C Houston Cap Com, Gemini 10. We're back in, the hatch is closed and we're repressurized. Do you know what our problem is, over. Houston, can you read me?

HOU Roger, understand you're back in and hatch is closed?

S/C That's affirmative. Hatch is back up. The problem is some - something in the ECS system which caused our eyes to water to the point where we couldn't see. It also smells.....lithium hydroxide, or what it could be.

HOU Rog, understand. Something in the ECS system made your eyes water and smells.

S/C That's right. Neither John nor I could see anything so we came back in and secured the door.

HOU Roger.

S/C We thought at first it might be the coating on the inside of the visor because that is the only thing I could think of that was new but/I'm fairly sure now it's not although..... ECS system and it seems to be clearing now a little bit since we started to repressurize back to a 45 degree position.

HOU Roger.

S/C ....we were sure worried, whatever it is.

HOU Rog. We understand it happened to both you and John, is that correct?

S/C ....That's affirmative. I stopped the thing. When it gets so bad that you can't see what you're doing it's time to call it off.

HAW Hawaii has acq aid contact. Hawaii has C-Band and S-Band track.

S/C .....see and breathe again right now. Whatever it is it's barely noticeable and I suppose.....

HAW Roger, 10. This is Hawaii. How do you read?

S/C I read you loud and clear.

HAW Okay, I notice your cabin is up good and solid. Do you have your face plate open or shut?

S/C Say again, Hawaii.

HAW Are your face plates open or closed at this time?

S/C They're open.

HAW They are open, okay.

S/C I don't know what it is that would smell kind of really pungent and/make your eyes water.

HAW Okay, does the smell remind you of anything else that we can relate it to?

S/C Not that I can relate it to.

HAW Okay.

S/C The only thing other that I can remember, I did smell some lithium hydroxide a couple of years ago and it might be the power of suggestion but up here it's a smell something like that lithium hydroxide.

HAW Okay, stand by one.

HOU Hawaii Cap Com, Houston Flight.

HAW Flight, Hawaii.

HOU Ask him if he could see any flakes around each other's eyes.

HAW Okay. The PC O_2 which would be going up if the scrubber was bad is reading 0.

HAW 10, do you see any flakes around your eyes at all - the other man's eyes?

S/C Negative. They're just slightly red and slightly swollen. They seem to be getting a little bit better.

HAW Okay. PC O_2 scale is slightly off, though.

S/C Roger.

HAW Flight, would you like to run a purge of the O_2 high rate?

HOU Negative.

HAW Okay. The Agena is looking real good, and other than that the astronauts are looking real good from the Doctor's side of view.

HOU Roger.

HAW And in flight control mode 2 we're getting a lot of ACS gas and temperature activity.

HAW Flight, what do you say we go to flight control mode 1 and save some of this gas?

HOU Okay. Has the Agena settled down? Is it holding steady?

HAW Attitudes are pretty well steadied out and holding good.

HOU Stand by.

HOU Concur, Hawaii.

HAW Okay.

HOU Command 451.

HAW Roger, 460, Houston Flight.

HAW 10, Hawaii.

S/C Go ahead.

HAW Okay, we'd like to cut down on some of this ACS gas useage. I'd like you to send command 451, deadband wide and command 460 ACS gain low.

HOU Hawaii, this is Flight.

HAW Go.

END OF TAPE

HAW ...flight control mode 1.

...Flight

Garbled

Say again, Flight...

-59460 been sent.

HOU Find out what pump they have on.

HAW Primary A and secondary B.

S/C That is affirmative, primary pump A and secondary B, that is the configuration we have been in for the last hour - hour and a half.

HAW Okay, very good.

Copy that, Flight.

HOU Hawaii, Flight

HAW Flight, Hawaii

HOU Verify radiator is in flow?

HAW Okay.

Okay, will you verify to me that the radiator is in flow?

S/C Roger, radiator is ...flow.

HAW Okay, any change on the order?

S/C Negative, it sort of appears to get better and worse in waves, our eyes are not watering as badly as they were while I was EVA. They are apparently getting better, but there is definitely still an odor with it.

HAW Okay.

Flight Hawaii

HOU Copy

HAW Okay, the ECS controls valves has just come down

HAW on the scale.

HOU Roger.

HAW Now, I will give you a readout here in a second. All ECS activity has just about ceased now in flight control mode 1

HOU Roger.

HAW Flight, Hawaii.

HOU Go ahead.

HAW Okay, ECS control valve on that primary Charlie Dog zero 3 is 41.0 ECS control valve outlet tripes the secondary. Charlie Dog zero 4 is 52.9.

HOU Roger.

HAW I have my doubts whether or not he was in flow prior to our mentioning it.

HOU Say again, Hawaii.

HAW I have my doubts whether or not he was in flow prior to our saying something to him. Because as soon as he went to - as soon as we mentioned that, that is when the control valve outlet .. came on scale.

This is Gemini Control Houston 24 hour 34 minutes into the flight. Recapping our situation here as we came in to the Canton-Hawaii area in acquisition the crew reported they had concluded the stand-up EVA when they both noted a burning sensation around their eyes and they noted that their eyes were watering somewhat. They also

noted a foreign odor in the cabin. Mike Collins said that he was not sure but he thought it might be lithium hydroxide. This is a chemical used to remove carbon dioxide from the ECS or the breathing oxygen circuit. He is not sure. We recall in the Gemini 4 flight that McDivitt and Ed White had some eye watering and some difficulty with the lithium Hydroxide in the circuit. The cabin temperature is stable at 80. The total vehicle is quite stable. And the environmental control specialist back here in Houston and in Hawaii are looking very carefully at this problem. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 24 hours, 43 minutes into the flight. California has reacquired the 10 spacecraft and in conversation with this control center John Young reports that he had some watering around his eyes during the night pass, during the EVA pass which started over South Africa and across the Indian Ocean. He said he didn't want to mention it. It wasn't too bad, apparently, and he specifically said he was afraid that someone would think he was a sissy if he mentioned it. But then later on, apparently east of Australia, it got worse and apparently about that point Mike Collins reported that he too was having difficulty to the point it was very difficult to see. Their eyes were watering and smarting. It was between Australia and the Canton area that the crew decided to conclude the EVA and find out what was causing the eye irritation. Since approximately Hawaii, the crew has been in the oxygen high rate mode on their environmental control system. This high rate mode bypasses the lithium hydroxide element which could be the culprit here. It's only a suspicion right now. It's not confirmed. But from Collins suggestion, it could be irritation coming from that area. The surgeons are recommending that the crew use little wet cloths available to them to wash around their eyes to ensure that there are no flakes to remove, perhaps, the source of any residual irritations. They are also suggesting that the crew might use some eye drops aboard the spacecraft; specifically, methyl cellulose eye drops, in each eye to ease any lingering irritation. We have now the taped conversation via California.

CAL Any change at all, 10?

HOU Gemini 10, Houston Cap Com.

S/C Okay, go.

HOU Roger, we recommend you close your face plates and go to O_2 high rates. You'll bypass your lithium hydroxide filters and get direct O_2 flow.

S/C Roger, we'll try that.

GYM Guaymas has TM solid. Those control valves look good, Flight.

HOU Roger.

HOU Gemini 10, Houston Cap Com.

S/C Go.

HOU Roger. I'd like to notify the physician of your radiator switch - did you go to flow when we mentioned it or were you in flow when we called you?

S/C We went to flow. We were in bypass when we repassed over.

HOU Roger. Have you noticed any improvement in O_2 high rate?

S/C Yeh. I think so. It's a pretty - it's sort of gradual. I don't think - once we got back in and got our face plates open we got to where we could see what we were doing.

HOU Roger. When did you first notice the problem, John?

S/C Just about sunrise. It was good all through the night. I was quite.....through the night but I

didn't say anything about it because I figured I'd just be a sissy, but, you know, my eyes were watering but I just figured that was just oxygen fluid. And then Mike said he couldn't see anything at all, so well, after he said that I got to where I couldn't see anything at all. So I guessed we had to call it off.

HOU Roger, I think it was a wise move.

S/C It didn't have anything to do with sunlight cause Mike was the only one who looked in the sunlight. I was inside.

HOU Roger. Did you ever roll inverted?

S/C No, never tried that.

HOU Okay.

Guaymas go remote. California go local.

GYM Guaymas remote.

CAL California local.

HOU Gemini 10, Houston Cap Com.

S/C 10, Go.

HOU Roger, recommend you leave your face plates closed, turn off the O_2 high rate, turn the suit fan switch to 1 and 2 and open the suit fan 1 circuit breaker. The reason we're doing this, John, is to check out the suit fans individually. We'll check out suit fan 2 in this manner.

S/C Roger, We've done/it C.C, we've opened the suit fan 1 circuit breaker.

HOU Roger, and you have got suit fan 1 and 2 on?

S/C That's affirmative.

HOU O.K., notice any improvement or degredation?

S/C Stand by one. It is hard to tell right off.

HOU Roger. After you have been there long enough to satisfy yourself that it is not changed significantly we would like for you to switch suit fan switch to the number one position and close the number one suit circuit breaker.

S/C In this configuration, we are starting to smell it again and it is worse now than when it was when we were in 02 hight rate.

HOU O.K., then switch to suit fan number one and turn on the suit fan/one circuit breaker.

S/C O.K, that's done.

HOU Gemini 10, Houston Cap Com, you might try quick 02 high rate flush there to fan out before you check it in the second configuration.

S/C Might try what C.C.?

HOU You might try a quick purging the suit there with going to 02 high rate, then back into this suit fan number one configuration

S/C O.K.

HOU Gemini 10, Houston Cap Com.

S/C Reading loud and clear.

HOU Rog, how is it doing on the number one suit fan?

S/C We're still on 02 high rate to give it a fair shake, let me get out of 02 high rate and we'll try it on number one.

HOU O.K., no rush make sure that you have got it good in purge, Mike.

S/C Yes, I think that we have, we out of 02 high rate and going to fan number one.

HOU Roger.

S/C We still smell it in this configuration. About the only thing we can say for sure is that things are a lot better now than they were a half an hour ago the eye watering and whatnot is very slowly decreasing.

HOU Roger, Mike. Gemini 10, Houston Cap Com.

S/C Go

HOU Have you noticed an excessively high of low humidity in the cabin prior to this problem?

S/C Negative,

ANT AOS, Antigua.

HOU Understand you noticed neither a moist or a dry cabin?

S/C Yes if anything it seems kind of dry like. I don't know how you would tell, it is definity not saturated with water.

HOU O.K., Gemini 10 request encoder off.

S/C Right, encoder off.

HOU Gemini 10, Houston Cap Com.

S/C 10, go.

HOU Roger, has the condition improved or is it about the same?

S/C It is about the same, C.C.

HOU Roger, we are still looking at it.

S/C What do you think it is? Well as long as it doesn't make it so bad that we can't see, we are all right, but when it gets that way we are going to have to do something about it.

HOU Roger, we are with you.

HOU Gemini 10, Houston Cap Com.

S/C 10, go.

END OF TAPE

HOU Gemini 10, Houston Cap Com

S/C 10, GO

HOU Roger. We recommend that you open your face plates. Wipe your face and eyes off with those wet wash pads you've got, being careful not to get any in your eyes. Use the eye drops in the medical kit if required and put the recirc valve to the 45 degree position. If you notice an increase in irritation close up and go to O_2 high rate and we'll watch it for awhile.

S/C Roger.

HOU Have you noticed any nose irritation at any time during this process?

S/C A little bit of stuffiness nothing acute.

HOU Roger.

S/C By the way this is sure a good right hatch. It closes very easily. The hatch forces are very low and the only adjustments are just what they should be.

HOU Very good.. You didn't have to use the over kill.

HOU Gemini 10, Houston Cap Com request encoder on.

S/C Roger. Encoder is on.

HOU Gemini 10, Houston Cap Com.. We've got about a minute to LOS.

S/C Right. You've got about a minute until rest time.

HOU Concur.

END OF TAPE

This is Gemini Control Houston, 25 hours, 13 minutes into the flight of Gemini 10. We've been watching the 02 situation very carefully, this eye watering problem during the course of the pass across the states and down over the Atlantic. The crew has been advised to return to their normal flight configuration, that is face plates open and breathing the normal oxygen flow that circulates through the cabin. They've also been advised should the source of their irritation grow, to close the face plates and return to the oxygen high rate. However, they left oxygen high rate perhaps ten minutes ago on the lower edge of the Antigua pass as they were leaving the state side area. Earlier we heard Mike Collins comment very favorably on how well the hatch worked. This has been a problem in past flights, this one apparently worked extremely well. A lot of effort has gone into it. The theories here in the Control Center, and they are only theories, that are/this is very reminiscent of the Gemini 4 problem when Jim McDivitt noted some eye irritation in the early portion of their four day flight. That irritation went away, it should be noted, after the passage of some hours and they completed their four day mission. We have now a brief tape conversation via the Ascension Island from which the -- over which the spacecraft is at this time. Here is that tape.

HOU Gemini 10, Houston Cap Com.

S/C Ten, over.

HOU Roger, how are you doing there now.

S/C Okay.

HOU Roger, we recommend you continue with face plates open in cabin and recirc and use 02 high rate with face plates

HOU closed as necessary if the irritation comes back.

S/C Roger.

HOU We also recommend that you gyro compass around to the TDA forward configuration.

S/C Roger, TDA forward.

HOU Roger. And after you TDA forward go flight control mode 1.

S/C TDA forward, flight control mode 1.

HOU Gemini 10, Houston Cap Com.

S/C Go ahead.

HOU Have you started your fuel cell purge yet?

Gemini 10, Houston Cap Com.

S/C We show.....(garbled)....

HOU Say again, Gemini 10.

S/C GET time hack 25 10 15.

HOU Roger, GET time hack it will be 25 10 15 on my mark 4-3-2-1 mark. 25 10 15.

S/C .....(garbled)....

HOU Say again, Gemini 10.

S/C Do you have a mark at 25 18 10 right?

HOU Stand by.

Gemini 10, Houston Cap Com.

S/C Go ahead.

HOU Roger, we don't have anything scheduled at 25 18 10.

S/C ....(garbled)....

HOU Say again, Gemini 10, I am not reading you.

S/C Roger. Would like a time hack.....(garbled)....

HOU Roger, we'll give it to you over Tananarive.

S/C Okay.

END OF TAPE

This is Gemini Control Houston, 26 hours 27 minutes into the flight. We have some tape conversation backed up from Tananarive. They include Tananarive and Hawaii. The best summary statement on the eye condition came from Mike Collins in the Hawaii area perhaps 25 to 30 minutes ago and Collins said it is gradually getting better. He said that it is still with us, that is the eye irritation, but it is certainly better than it was a hour and a half ago. This time reference would have been to the first report which we got on the eye irritation which came from Hawaii after the EVA exercise had been concluded. The crew is setting up now to perform the D-5 experiment. This is a star occultation navigational check, wherein the Mike Collins will use photometer instrument held up to his eye. He will take a sighting on as many as six stars and track them to the horizon. This is going to be an extremely difficult control task, because of..the crew plans to use the Agena system as the control vehicle. This degree of difficulty is much greater in controlling the Agena under this set up than it is with the hand controller. In order to get the yaw maneuvers for instance, either right or left, we must depress certain commands available on the Collins' side of the cockpit and send them into the Agena. Therefore it represents a new sort of steering control task and the results should not be prejudged. We have these tapes backups and we will play them now.

TEX Tananarive go remote.

TAN Tananarive, remote, we have acquisition.

HOU Gemini 10, Houston. Gemini 10, Houston. Gemini 10, Houston.

S/C This is Gemini 10, Go.

HOU Roger, I'd like to give you a flight plan update.

S/C Stand by one. Ready to copy.

HOU Roger, first have you completed fuel cell purge?

S/C That's affirmative.

HOU Roger, understand you have completed the purge? Update follows. First concerns the upcoming dock D-5 proceedures. Roger, we recommend that you set up the Agena in flight control mode six TDA forward. Once this is accomplished, send Agena command 420, now in this basic configuration, if yaw right is anticipated, send command 411, then yaw on and off as necessary. If yaw left is anticipated, command 410 followed by yaw on and off as required. When D-5 is completed send Gyro compassing on and go to flight control mode one. As a note leave the horizon sensors and GO rate on during the yaw maneuvers during D-5 and it will aid you in keeping the horizon in the window. Have you copied this much of the update so far, Gemini 10?

S/C Roger, we have got it.

HOU Roger, I'll continue. At 25 55 00 power up spacecraft platform and computer and load module six, at 26 20 00 cage platform to the Agena. At 26 25 00 platform orbriate and set up the Agena for D-5 mode A. 26 29 43 perform D-5, mode A. This will be local sun set time. 27 25 00 at CSQ, you will receive spacecraft vector update for D-5 mode D, which will be taking place on the following night pass. Time 27 45 35 we have an NC-1 maneuver. We will be passing you additional information on it later. At 28 01 41 perform D-5 mode D, and this is

HOU And this is sun set time also. At time 28 40 00 fuel cell purge section one then two. Followed by spacecraft power down. 28 40 00 to 29 40 00 is an eat period. 29 00 00 at CSQ, we will be passing you PLA block update and flight plan update. 29 20 00 at HA, at Hawaii, will be crew status report, flight plan update. Sleep period will begin at 29 40 00 and end at 39 30 00. Did you copy Gemini 10?

S/C Roger, Let's get a time hack, we knocked the visual clock off the line when we were EVA, over.

HOU Roger, on my mark the time will be 25 30 00.

HAW Gemini 10, Hawaii. Gemini 10, Hawaii.

S/C 10, go.

HAW O.k, I had a little UHF problem here on the ground, how are you doing?

S/C O.K.

HAW O.K., how about your eyes, any change in the irritation, or anything in that area?

S/C No.

HAW Are you feeling o.k.?

S/C Yes, we feel fine.

HAW And it is not bothering you too much?

S/C No.

HAW O.K., we would like for you to turn your encoder off, we want to up..make a new time in the Agena.

S/C O.K, roger, encoder off.

HAW O.K., and what positdon is your TM control switch in?

S/C I turned it to real time and ac a while back and in

S/C preparation for this experiment.

HOU O.K., why don't you just leave it there, Hawaii Cap Com?

S/C Do you want it back to command?

HAW Do you want to leave it there, Flight?

HOU Yes.

HAW O.K., they said that they wanted to leave it there in real time and ac.

S/C All right.

HAW We are showing your CYRO two tank pressure down to about 665, you can bump it up a bit.

S/C Roger.

HAW Can Mike say a few words, I would like to hear his voice?

S/C Yes, what can I do you for?

HAW O.K., thank you.

S/C The eye sight bit, I think is gradually getting better.

HAW You think it is clearing up do you?

S/C It is still with us, but I think it is better than it was there an hour and a half ago.

HAW All right. O.K., you can put your encoder back on.

S/C Encoder on.

HAW Flight, Hawaii.

END OF TAPE

HAW Flight, Hawaii.

M/C Go ahead Hawaii.

HAW Okay we to the SPC load in and enabled. The reason I asked to hear' Mike's voice, I wanted to hear whether there was a com, My Dr. thinks John might sound just slightly strained, but they say it's starting to clear up a little bit in there.

M/C Says what Ed?

HAW Said the command pilot's voice might slight strained. Maybe a little depressed.

M/C That's just the way he sounded.

HAW That's what I thought also, but we got a good sound on them they are okay. Sounds like its clearing up a bit. And/Carnarvon's for sake / the clock is working beautifully.

M/C Roger.

Hawaii from Flight.

HAW Go ahead flight.

M/C What's the pump configuration?

HAW Okay he's got his primary a, and secondary b.

~~M/C~~ Just stay on there with the heater in the on position I'll let you know when to turn it off, I've got a real long pass here.

~~HAW~~ Okay, thank you.

M/C Cap Com from Flight.

HAW Flight Hawaii, Cap Com.

M/C Suggest the crew use a secondary a, pump also for the powered up configuration.

M/C Both a pumps.

HAW Roger. 10 they are suggesting you use both a pumps, both primary and secondary, for the powered up configuration.

S/C Both a pumps.

HAW Okay that is confirmed here on the ground.

HAW Okay what are you reading on your cryo 2, right now?

S/C Reading 7 50.

HAW Okay mark that 7 50 which is about 9 12 on the ground go back to auto and you can use the 7 50 as the mark for good, whenever you want to pump it up alone.

S/C Okay thank you.

HAW When they get the over shoot that will put you up to about 9 20, which is a good level off point on that 02.

S/C Roger.

HAW I've got a LOS in about a minute, standby. Guaymas AFT your prime.

GYM Roger.

HAW S-band LOS on the right.

GYM Guaymas has TM solid. Both vehicles go. He is yawing around, Flight.

M/C Roger.

GYM Gemini 10, Guaymas Cap Com your looking good on the ground we're standing by.

S/C Roger.

GYM Still look good flight.

M/C Thank you Guaymas.

S/C Houston, Gemini 10.

HOU Houston, Gemini 10, go ahead.

S/C Roger, I don't think this yaw commands are going to work to well because we get such a big overshoot, but we'll try it and see.

HOU Roger.

M/C Guaymas Flight.

GYM Go ahead Flight.

M/C Can you tell if he is yawing it now?
Yawing the Agena now.

GYM Negative Flight. He's not yawing now.

M/C Okay. Was he at any time during your pass?

GYM That's affirmative.
Okay he's gone to FC 6 Flight.

M/C Roger.

HOU Gemini 10, Houston.

S/C 10 go ahead.

HOU Roger would like you send an S-band off, that's address 05 0.

S/C Roger, 0 50,

HOU Roger. Did you use the pads around your eyes and if so, did they have any appreciable effect?

S/C Use what? Over.

HOU The water pads to wipe around eyes following the eyes watering and irritation.

S/C Yes, seemed to help.

HOU Roger. Did that help or what?

S/C Say again.

HOU What effect did that have?

S/C I don't think it had any effect. I think the thing just cleared up some way.

HOU Roger. We're still a little puzzled exactly what it is, and we're wondering if you recognize this as a distinct odor or rather just an irritation to the eye and it caused a problem.

S/C Seemed to me it was an odor.

HOU Roger. Odor. Did you notice any sort of throat irritation or experience any coughing?

S/C No coughing.

HOU Roger. We're trying to pin the possible sources of these irritations down and I think those two as to definite odor and irritation are two of our best clues right now.

S/C Roger.

HOU Roger and standby for a DCS up-date. Roger. This will be the spacecraft state vector for use in the D-5 mode D experiment next night pass.

S/C Roger.

HOU Gemini 10, Houston. We have maps here indicating load receive.

S/C Ready for up-date when received.

HOU Roger.

Gemini 10 Houston.

S/C Go.

HOU Roger. Was that wetting agent applied to both visors prior to flight and also just prior to EVA?

S/C Say again.

HOU Roger. Was that wetting agent applied to both visors just prior to going EVA?

S/C Say again.

HOU Both visors.

S/C The wetting agensts smells in no way like the irritation we're smelling.

HOU Thank you.

END OF TAPE

CAR Carnarvon has telemetry solid. Agena and Gemini, all systems go.

HOU Roger.

CAR Do you want a TX transmitted on this?

HOU Affirmative.

CAR Roger.

Gemini 10, Carnarvon.

S/C Gemini 10.

CAR Roger, we'd like to get an Agena tape dump, then send it to Tananarive off you.

S/C Roger.

CAR Okay, thank you.

We also need a quantity readout.

S/C We've got O2 now. Going to H2.

CAR What do you read up there?

S/C On the H2 we read about 76%. On the O2, 73%.

CAR Okay.

HOU Copy O2, 73%. Say again high.

CAR 76.

HOU Roger.

CAR Do you want a mark on elapsed time?

S/C Yes please. How about at 25 30 90? Can you do that?

CAR Give us about 10 seconds.

5 4 3 2 1 mark. 25:39:00.

S/C Thank you.

One more mark at 25:39:30 please.

CAR Will do.

Let's make that 40, okay? I missed it.

S/C Okay.

CAR Mark.

Hear the counting?

S/C I could hear it until the 50 mark.

CAR Okay.

Flight, Carnarvon.

HOU FLIGHT Go.

CAR The Agena vehicle clock was not reset.

HOU FLIGHT Say again?

CAR The Agena vehicle clock was not reset; NPC's were disabled,

HOU FLIGHT It was not reset. Did you transmit the command?

CAR He was in FTC mode.

HOU FLIGHT Roger.

CAP COM, from flight.

CAP COM Go ahead.

HOU FLIGHT WE want to send the ERT reset command 12.

CAP COM We have already done that.

HOU FLIGHT Okay. Try her on the other one.

CAP COM Okay.

CAR Flight, Carnarvon.

HOU FLIGHT Go ahead.

CAR Roger. The SCC clock on the vehicle is erratic. Shows no valid time.

HOU FLIGHT Okay. He might have bumped it off.

CAR Trying to find a circuit breaker.

HOU FLIGHT Trying to find it?

CAR Which one is it?

HOU FLIGHT EECOM.

CAR .....is okay and the electronic timer is okay.

HOU FLIGHT That's alright.

CAR Capcom, Carnarvon.

CAP COM Go.

CAR Roger. Check your tone box circuit breaker please.

CAP COM Roger, it's closed.

CAR Roger. Thank you.

HOU FLIGHT Carnarvon, could we have a Gemini main please?

CAR Gemini main, roger.

Carnarvon has telemetry LOS; both vehicles. All systems go on LOS.

HOU Say again Carnarvon.

CAR I said all systems were go at LOS.

HOU Roger.

CAR That SET clock light was erratic throughout the pass.

HOU It didn't just stop then, is that right Jim?

CAR No, it was just erratic throughout the pass.

Can you read me okay?

HOU Yes, I can.

CAR Okay, I transmitted a TX for LOS and telemetry was still on and it looked like after the time the TX should have flocked out. I don't know, maybe that ECS power circuit breaker

CAR might have something to do with it. I can't find that darn thing.

HOU FLIGHT You can't find which one, Jim?

CAR I can't find the circuit breaker associated with that SEP clock.

HOU FLIGHT EECOM says it's that electronic timer.

CAR Okay, but that would knock out the TR clock too, wouldn't it?

HOU FLIGHT Yes, that's right.

CAR Okay, TR is counting properly so it can't be that one.

HOU FLIGHT Carnarvon, can you send us an Agena LOS main?

CAR Roger.

HOU FLIGHT We don't have any answer to your question, Jim, on the circuit breaker.

CAR Roger.

HOU FLIGHT Carnarvon, from flight.

CAR Go ahead, flight, Carnarvon.

HOU FLIGHT I've been advised here by G&C that the summaries show that both your TR and SEP counted correctly in your data so it's perhaps your clock setup. You might take a look at that, Jim.

CAR Okay.

HOU FLIGHT Carnarvon, from flight.

CAR Go ahead.

HOU FLIGHT EECOM also thinks that perhaps this TM switch is still in the real time and acq aid position. That's why your TX didn't take.

CAR Okay.

HOU FLIGHT Hawaii, from flight.

END OF TAPE

This is Gemini Control Houston, 26 hours 59 minutes into the flight. Over Ascension ajoint acquisition area of Ascension and RKV, we had conversation with the crew about five minutes ago. They reported some diffulty in flying the Agena as was predictable. Flying the Agena by pushing the various command buttons to perform this D-5 star occultation experiment. Here is how the conversation went.

RKV TM solid Agena. Have TM solid Gemini.

HOU O.K., RKV.

RKV Both vehicles is "GO".

HOU O.K., RKV.

RKV Go, Flight.

HOU Ask him when he can to take the encoder off, he might be in the middle of a maneuver, but tell him when he can take the encoder off to let you know you'll get a load in quickly and have him put it back on.

RKV Roger, Gemini 10, RKV Cap Com.

S/C 10, go.

RKV Roger, when you have got a few minutes, we would like to load the Agena and let us know when you are free to turn the encoder off, please.

S/C Roger. Why don't you go ahead and do it, we don't have any...

RKV Roger, will you turn the encoder off so we can load for the Catchup maneuver?

S/C Roger.

RKV Gemini 10, you can turn your encoder back on.

S/C Roger.

RKV O.K., you can stand by for ..to copy, your pad. Are you ready to copy Gemini?

S/C Roger, go ahead.

RKV O.K., the purpose, Catchup maneuver. GETB 27 45 36, Delta-P 0 plus 09, Core 25- 00 0 77, Thrusters STS unit two, maneuver TDA forward posigrade, do you copy?

S/C Understand Catchup 27 45 36, Delta-P 0 plus 09 and 25 00 077,STS unit two , ..forward.

RKV Roger. We have nothing further for you at this time, we are standing by.

RKV Flight the VM word is in and verified.

HOU Roger.

RKV He has his encoder back on.

HOU Back on?

RKV Affirmative.

HOU Roger.

RKV Flight, the Agena attitudes are acting up, he has GYRO compass off, do you want him to send command 341? Flight, RKV Cap Com.

HOU Go ahead. Go ahead, RKV.

RKV O.K. he is yawing now.

HOU Go ahead, RKV.

RKV O.K., we showed the Agena as the attitude ~~which~~ is acting up with the Gyro compass off, but he is yawing around now.

HOU O.K, he is doing D-5?

RKV Affirmed.

HOU RKV, do you want to send us an LOS main on the Agena,

RKV Affirmative.

HOU And can you confirm the clock reset on the Agena?

RKV That's affirmative. Power at less than a half a second

HOU Gemini 10, Houston.

S/C Go.

HOU Roger, are you able to perform this D-5?

S/C I find yaw in the Agena everytime we turn it over there and throw its command to solid, it comes right back again. This is Gemini 10, we've got good readings on two stars and so far .Alois.and.Alcade., but that is not very much.

HOU Gemini 10, Houston, did you call?

S/C Say that again?

HOU Did you call.

S/C Roger, say again on D-5, we are getting good measurements on Alois and Alcade, those are the only two we've been able to hold the Agena on so far.

HOU Roger, understand you had good measurements out on Alois and Alcade . We want to inquire if you have the Gyro compassing off. That would be command 340 during this maneuver.

S/C We don't now, we'll try it.

HOU Roger, with Gyro compassing off, it should remain in any of these yaw headings you maneuver to. Gemini 10, Houston.

S/C 10, go.

HOU Roger, in the event that 340 doesn't eliminate the problem and it continues to come back to BEF, you might try it with sending 300 which is the horizon sensors off, perhaps that will allow you to remain

HOU at a off cardinal heading.

S/C This is 10, you are unreadable, say again, over.

HOU Roger, in the event command 340 does not allow you to stabilize at off cardinal headings, try 300 which is horizon sensors off, this may allow you to do so.

ASC Ascension LOS.

This is Gemini Control Houston 27 hours, five minutes into the flight. Questions have been asked regarding the exact time of the EVA maneuver and we have some numbers on that now. According to telemetry records the cabin was depressurized at an elapsed time of 23 hours and 24 minutes. The hatch itself was opened, this we have by oral communications at 23 hours, 27 minutes. The next number on the hatch closure is only an estimate, we do not have this from the crew, we are simply estimating the hatch closure was 24 hours 12 minutes. We do know from telemetry records that the cabin was repressurized at 24 hours and 15 minutes ground elapsed time. The numbers again depressed 23 hours 24 minutes, hatch open 23 hours, 27 minutes, we know that repressurization was complete at 24 hours 15 minutes and we estimated the hatch probably closed about three minutes ahead of the repressurization. The maneuver had been planned to run on till another 25 minutes beyond this repressed point. We do have some additional conversation by Tananarive, a little more than a minutes worth. We're still in Tananarive contact, we'll play that for you now.

HOU Gemini 10, Houston. Gemini 10, Houston.

TEX Tananarive, go remote.

TAN Tananarive remote.

HOU Gemini 10, Houston.

S/C 10, go.

HOU Roger, did turning Gyro compassing off, or horizon sensors off help the problem any?

S/C At this time it is working.

HOU Say again.

S/C I said it is working o.k.

HOU Oh, very good, very good. Gemini 10, Houston, did turning your Gyros compassing off eliminate the problem or was it the horizon sensors off that did it?

S/C Gyro compassing off.

HOU Gemini 10, Houston.

S/C Gemini 10, go.

HOU Roger, understand you have the horizon sensors off at this time?

S/C (garbled) we don't have the horizon sensors on.

HOU Roger.

END OF TAPE

This is Gemini Control Houston, 27 hours 29 minutes into the flight. The CSQ just tagged up with Gemini 10, and the crew reported the problem, the eye problem, was getting better. Getting better. It's a fairly short message, but a reassuring one and here's the tape.

S/C ...CSQ Cap Com, ACS gas pressure 7 6 3 pounds at 31 degrees.

CSQ Okay.

CSQ Gemini 10, CSQ.

S/C Come in fellow.

CSQ Roger could you turn the encoder off for just a second so we can check the VM.

S/C It's off.

CSQ Roger.
Okay it looks good you can turn it back on.

S/C Thank you.
Eye problem is better.

CSQ Say again.

S/C Said our eye problem is getting better.

CSQ Roger we copy.

M/C Did he say getting better or getting worse?

CSQ I thought he said it was better flight.

CSQ Flight CSQ. (garbled)

S/C (garbled)

CSQ Say again.

S/C We want a time hack.

CSQ Roger.
I give you a time hack at 2 7 hours, 2 9 minutes.

CSQ 3, 2, 1, mark. 2 7 hours 2 9 minutes.

S/C Roger, thank you very much.

M/C CSQ, Flight.

CSQ Go Flight.

M/C Need an Agena LOS main

CSQ Roger LOS main, which bird.

M/C Agena.

CSQ Roger.

CSQ Flight CSQ. He's just about got it yawed around now, he lacks a little bit.

CSQ 10 CSQ we have about 45 seconds to LOS, we're standing by.

M/C CSQ from Flight.

CSQ Go Flight.

M/C I want you to tell them not to use any more Agena control fuel, till we get a chance to look at this a little more.

CSQ ACS

M/C ACS

CSQ Roger.

M/C FC1.

CSQ Roger.

CSQ 10, CSQ. We'd like for you to go FC1. Do not use any more gas until we look at this a little bit further.

S/C Roger, we'll go to FC1.

CSQ Roger.

S/C Gas is down to less than 20 percent, we don't think

S/C we better do D-5.

M/C We agree.

CSQ Roger.

M/C We agree Cap Com.

CSQ Again.

M/C We concur to knock them off.

CSQ Okay we concur with that 10.

CSQ We have LOS Flight.

M/C Roger.

This is Gemini Control Houston, that concludes the CSQ pass. The next maneuver is programed for an elapsed time of 27 hours 45 minutes, about 11 minutes from now. This will be a phase adjustment. It should occur in the middle of the Hawaii pass, up coming. Hawaii is to acquire at 27 41, the burn will be a 7.7 foot per second burn. The spacecraft's attitudes will be 0 blunt/end forward, in other words 0 18 and 0 in pitch. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston 27 hours, 44 minutes into the flight. We're one minute away from our adjustment burn phase adjustment burn over Hawaii. The burn again is a 7.7 foot per second burn, using the secondary propulsion system on the Agena. We've noted during the CSQ pass and again over Hawaii, that approximately 36 pounds of fuel remain in the secondary propulsion system and this will force a curtailment of any additional star occultation experiment activity during the next nightside pass. Additional D-5 work had been planned. It is now being scrubbed because of the shortage of control gas in the secondary system in the Agena. Standing by for the burn. We have an SPS ignition. The burn should be completed. Hawaii has verified. The ground said that the burn looked good to them and John Young reports that they have a readouts onboard to show that they made as much as 10 feet per second. Instead of the required 7.7, but that data will be looked at. We'll start this tape now at the beginning of the Hawaii pass and play the complete pass, we are still in contact with Hawaii and the spacecraft directly north of the island. Here is the conversation.

HAW Hawaii has C-band track. O.K., Flight Dog 058, ACS supply pressure .698, ACS supply temperature 39.0 that's dog 070.

HOU Did hear .698.

HAW That's KPSI, roger.

HOU Thank you.

HAW The temperature is 39.0.

HOU Roger.

HAW Gemini 10, Hawaii Cap Com.

S/C Gemini 10, go.

HAW O.K., we'll get you set for this SPS burn. We

HAW would like you to go to FC-7.

S/C Roger.

HAW Need any command numbers?

S/C Negative.

HAW O.K., TM solid, Hawaii, both vehicles are "GO".

HOU Roger.

S/C Hawaii, this is Gemini 10, I don't know if you've noticed it, but we have just noticed a big drop in gas pressure out of that D-5.

HAW Roger, we've got all of that, do you want to stop doing any more D-5's and we'll keep a close look on you ACS. Are you all squared away in your flight control mode 7?

S/C Roger, I think it is squared away.

HAW O.K., I 'll give you a time hace one minute prior to GETB.

S/C Roger.

HAW And you are looking real good down here.

HAW Flight, Hawaii.

HOU Go ahead.

HAW We've got a torque rate on yaw of about three degrees, but the position Gyro is about one half a degree.

HOU Roger. He should be O.K.

HAW O.K., minus one minute time hack in about nine seconds. We're showing you "GO" for the burn. 5, 4, 3, 2, 1, Mark. We will be standing by. SPS ignition, Flight.

HOU Roger.

HAW We have cut off.

HOU Thank you.

HAW O.K., 10 how are you.

S/C 10, go.

HAW It was real good here, how did you do?

S/C We indicate that we made 10 feet per second instead of seven.

HAW Roger, we'll check out the burn time here in the.. on the ground and we'll work it up for you. Do you want them to go back to flight control mode one, Flight?

HOU Affirmed.

HAW O.K., will you turn TM off and then back on again and then go back to flight control mode one.

S/C Roger.

HAW Flight, Hawaii.

HOU Yes.

HAW It appears to me that the burn was just a little bit long.. Delta-T.

HOU Roger.

S/C This is 10,80 was 0002.3, 81 was 0005..it was0005 and 82, minus 0007.

HAW O.K., 80, 0002.3, 81 0005, and 82 was minus 000.. was that 7?

S/C Roger. 0007.

HAW O.K., I have got that.

HOU And 81 should be negative also.

HAW Negative? O.K.

HOU Roger.

HAW All systems LOS in Hawaii.

HOU Copy.

This is Gemini Control in Houston. California should acquire momentarily. There goes the first call out from Houston Cap Com, here. Several people have remarked here on the extraordinary versitility of the Agena which has proved itself being beyond the fondest hope during this period of nearly 24 hours now where it has been the primary system, both in the very descreet small type burns that we just saw over Hawaii and of course the large primary propulsion system burn that we saw last night and earlier today. It is truely a remarkable stable and in all the rates and the performance has been precisely as advertised. We have now the start of the tape of the state side pass, just barely into it. Here is the conversation.

HOU Hawaii, CAP COM, AFD

HAW AFD, Hawaii.

HOU Roger, in your post pass will you put the exact time of the unit two analog recorder for the burn?

HOU Gemini 10, Houston.

S/C Gemini 10.

HOU Roger, we've been looking at your gas consumption down here on D-5 and we've decided to discontinue further D-5, over.

S/C Yes, (garbled) Our problem seems to be getting better and we don't think looking (garbled) or whatever it is will get to us on the ELSS or the O2 high rate.

HOU Understand. Another question, what does your readings and your SEP attitude gas now?

S/C I can't give it to you right now, the sun is shining in such a manner that I cant't read the panel, stand by and I'll give it to you when I can.

HOU Roger, we confirm your information about the burn, it is slightly greater that 7.7. As we come up on Guaymas they'll call for our fuel cell purge and then following that will be spacecraft power down and there will be some block updates at CSQ and you have got a kind of rest period here.

S/C Very good.

HOU Roger, we are still wondering about this ECS configuration you are in right now. Is it' faceplates open? Number suit fan on and resert valve at 45?

S/C All three things are "GO".

HOU Roger and please keep us advised in the event you decide to change anything.

S/C O.K., we'll tell you Al.

HOU Roger.

TEX Guaymas go remote, California go local.

GYM Guaymas remote

CAL California local.

GYM Guaymas, Flight.

HOU Are you ready for the fuel cell purge?

GYM That's affirmative, Flight.

HOU O.K., let him know that you are ready.

GYM Roger. Gemini 10, Guaymas Cap Com.

S/C 10, Go.

GYM O.K., we are standing by for your fuel cell purge

GYM at this time.

S/C Roger.

END OF TAPE

TEX Guaymas go remote, California go local.

GYM Guaymas remote,

CAL California, local.

HOU Guaymas from Flight.

GYM Go ahead.

HOU Are you ready for the fuel cell purge?

GYM That's affirmative, Flight.

HOU O.K., let him know that you are ready.

GYM Roger. Gemini 10, Guaymas Cap Com.

S/C Guaymas, go.

GYM O.K., Gemini. We're standing by for the fuel cell purge this time.

S/C Roger.

(PAUSE)

HOU Guaymas, you say that you have seen the fuel cell purge?

GYM That's affirmative, Flight.

HOU All right.

GYM Looks good.

HOU Guaymas, let them know that we have a retro block update over the RKV this pass and a flight plan update over CSQ.

GYM RKV PLA update?

HOU And a flight plan and crew status over the CSQ.

GYM Gemini 10, Guaymas Cap Com.

S/C 10, go ahead.

GYM O.K., over RKV over this prime rev. you will have a PLA update and then following over CSQ you will have a flight plan update and a crew status report.

S/C 10, roger.

GYM You are looking real good.

S/C Yes, and we feel real good too, sorry about that this afternoon, but I didn't see any way out of it.

GYM Yes, we agree.

HOU Guaymas don't forget to send your Agena/Gemini summary.

GYM Roger. Do you want anything particular in the AMP?

HOU Just follow the normal things that we've been doing.

GYM Roger.

HOU Guaymas, procedures, don't forget your Agena summary.

GYM O.K., we've just sent those out procedure, we'll send them again.

HOU They haven't got them in the building.

GYM O.K., Guaymas has LOS.

HOU Roger, Guaymas, Guaymas, Flight.

GYM Go, flight.

HOU What was your ASC gas pressure and temperature?

GYM 633 PSI was the ...low pressure and stand by for the temperature. 46.8 degrees, Flight.

HOU Say again.

GYM 46.8 degrees.

HOU 46.8.

GYM Roger.

HOU and 633?

GYM Roger. This is Guaymas have you got those summaries yet?

HOU Say again.

GYM I was wondering if procedure has got those summaries?

HOU I don't know. Yes, he's got them now.

GYM O.K.

This is Gemini Control Houston 28 hours four minutes into the flight and that wraps up the conversation of the spacecraft that swings down over the ismus at Panama and starts out across South America. We are on the 17th revolution, we will begin the 18th revolution in a very few seconds as we cross the 80th parallel. We've been asked to provide a list of all the maneuvers, the times, the feet per second, the vehicle that performed these maneuvers, and the propose.

SPACECRAFT G.E.T.	DELTA-V	VEHICLE	PURPOSE
2:18:09	55.9	Spacecraft	Phasing
2:30:49	9.6	Spacecraft	Plane Change
3:47:34	48.4	Spacecraft	Circularization
4:34	35	Spacecraft	Terminal Phase Initiation
5:06:00	50	Spacecraft	Terminal Phase Final

The times on the Delta-V's, I gave on the last two are approximated because it is during that period when we..when the Gemini 10 spacecraft burned an excessive amount of fuel in performing their rendezvous maneuver. We have no better information and precisely how much fuel went exactly where.

7:38:34	420	Agena	Phasing

(this would have been the first burn with the primary propulsion system.)

20:20:12	334.6	Agena	Height Adjust
22:37:07	74.3	Agena	Circularization
27:45:36	7.7	Agena	Phase Adjust

At the present time, we still read approximately 375 pounds of propellent remaining on the spacecraft. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston 28 hours 29 minutes into the flight. Flight going very calmly and very quietly, the eye situation seems to continue to improve. We have the recorded conversation via the RKV. The tape is ready we'll play it for you now.

M/C RKV send us Agena main at acquisition, and LOS please.

RKV Roger.

RKV RKV TM solid Gemini and Agena.

M/C Roger RKV.

RKV Gemini 10, RKV.
We have an up-date for you when you're ready to copy.

S/C Standby. Ready to copy

RKV Roger. All the time on this up-date are based on a set maneuver, of an OAMS burn of 1 00 feet per secnnd, 2 0 minutes prior to retrofire, the retro pitch angle of 2 0 degrees and recommend that you use catch-up mode for the OAMS burn. Area 21-3, 33 32 52, 20 + 39, 26 + 18, weather is good. Area 22-3, 35 13 39, 20 + 34, 26 + 33, weather marginal. Area 23 Delta, 36 10 38, 20 ± 23 25 + 04, weather marginal. Area 24 02 37 48 15, 20 + 22, 25 + 13, weather good. Area 25-2, 39 25 05, 20 + 20,25 + 28, weather good. Area 26-2 41 03 25, 20 + 30, 25 + 50, weather good. Bank angles for all areas (garbled) 9 0. Sep maneuver required on all areas. Did you copy?

S/C Roger, we copied.

RKV We have nothing further on this pass, so I guess this will be our last wake pass with you so we wish you all a good night.

S/C Thank you. Happy dreams.

RKV We'll be watching you while you sleep.

M/C RKV, AC.

RKV Go.

M/C Another Gemini main please.

RKV Roger.

END OF TAPE

This is Gemini Control Houston, 28 hours 49 minutes into the flight. The CSQ will acquire at 28 hours 59 minutes, 10 minutes from now and we should have a flight plan report, a flight plan comparison relayed to them. The Flight Director here Glen Lunney is going over that information with the CSQ. Following that we expect the crew status report over Hawaii, and any additional flight plan up-dates that may have not been covered at CSQ. The crew is in eating period at the present time. The present plans are to knock off activites for the day at such time as 29 hours and 45 minutes to begin about an 9 hour sleep period. This is the present plan. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston 29 hours 12 minutes into the flight. We've just completed a very informative pass over the CSQ. The crew in the flight controller room at CSQ covered the major events of the day in an excellent summary. Among other things we've learned that the crew did not cover the S-12 micrometerite package. Located on the adapter of the spacecraft. No problem there, this will be recovered during the EVA exercise tomorrow. We also learned that certain items as per planned were jettisoned about 3 pounds worth in all, including certain bracket, camera mountings, and that sort of thing. Young reported he presently reads about 30 percent fuel remaining onboard. Here is the tape from the CSQ pass.

CSQ Agena acquistion.

S/C Acquistion Gemini.

CSQ Gemini 10 CSQ.

S/C Go ahead CSQ.

CSQ Roger. We got a little information for you. Okay the flight plan for tomorrow will be just about like it is layed out on your plot you have onboard. The exact times for the maneuvers will be up-dated. Give it to you in the morning.

S/C Their still tracking the 8 Agena and they plan to have all the right information.

CSQ About an hour to 2 hours after you get up in the morning, somewhere along in there they plan to run an ECS test, prior to you going to EVA to make sure that everything is like it should be.

CSQ Go Flight.

M/C Want to be sure that he understands the tests in connection with the problem we had today. We just want to do a verification of it.

CSQ Say again.

M/C I want to be sure that he understands the tests with the connection of the problem we had today.

CSQ Tell him that it is.

M/C Yes. Tell him that we want to do an ECS test to verify where we stand with respect to the kind of irritation problem we had today.

CSQ Roger understand.

CSQ 10 this is CSQ. This ECS test for tomorrow is to find out where we stand in respect with this problem of irritation today.

S/C Understand, Roger.

CSQ And also we'd like a little information on the weight, so we can keep up the ground computations. Like to know if you retrieved the S-12.

S/C Negative S-12 retrieval.

CSQ What about the cover on the command pilots window?

S/C Negative. Didn't have time to do it yet.

CSQ Okay. You got any estimates on the number of pounds that might have been jettisoned during the EVA?

S/C Yes, let's see. There was one waste bag, the S-13 bracket. The MSC plate, and the MSC

S/C telescoping rod, all together I'd guess about 3 pounds.

CSQ Roger.

CSQ Okay. We'd like an onboard propellant quantity read out please.

S/C Around 30 percent.

CSQ Roger.

CSQ Have you got anything you'd like to give us in the way of a flight plan report?

S/C I don't know I think we did everything we could during the day.

CSQ Roger, understand.

CSQ What kind of food and water report do you have for us?

S/C Our water count is 5 64 and we're eating the third meal of the day right now.

CSQ Roger.

M/C CSQ, Flight.

CSQ Go Flight.

M/C On S-12 if he has not locked the door, don't open it for the night.

CSQ] Do not open the collector door.

M/C Stand by.

S/C That was a good idea about D-5, we'll have a little more attitude control gas for the Agena I think we could have gone through another sequence without any trouble, if the photometer up here was working properly.

CSQ Roger, it sure was using up the gas.

S/C Yes. I know.
On EVA I think I mentioned most of the things as I went along except coming back in, and the hatch and all the related equipment involved in getting back in all worked very well.
The thrusters are very low and everything works very smoothly.

CSQ Very good.

M/C CSQ, Flight.

CSQ Go Flight.

M/C We're ready to lock the door on the S-12.

CSQ You're ready.

M/C And they want leave it open.
They said they got an up-date and they are ready to lock it.

CSQ Say again.

M/C ... says he's got an up-date and he's ready to lock the door.

CSQ Okay we'll tell him to lock the door.

CSQ 10, CSQ.

S/C Go ahead.

CSQ Okay you can lock the door on the S-12 now.

S/C Door on the S-12 is locked.

CSQ And I'm fixing to transmit your TS.

S/C Roger on TS. Like to have the S-12 door open when we get up this morning.

M/C CSQ, Flight.

CSQ Go Flight.

M/C The only other thing we have for them Gary is we have a timing to reset over Hawaii, and the Agena/so will need the encoder off, and that's all we have for the rest of the night.

CSQ Roger. We're showing the tank rate down to 720, we're going to have it boosted up to about 700 onboard.

M/C Go ahead.

CSQ 10, CSQ.

S/C 10 go ahead.

CSQ Okay we're showing your tank pressure to be down a little bit why don't you boost it up to about 700 onboard.

S/C Okay.

CSQ And we're going to have a reset timer reset over Hawaii on this pass, so we'll need your encoder off during Hawaii pass.

S/C All right.

CSQ 10, /CSQ we have 1 minute to LOS, standing by.

S/C How is your weather down there?

CSQ Real nice today.
Seas are calm.

S/C Say again.

CSQ Said the seas are real calm today.

S/C That's good.

END OF TAPE

This is Gemini Control Houston, 29 hours and 29 minutes into the flight of Gemini 10. Over Hawaii they had brief conversation between Ed Fendell and the crew , we thought we could detect the crew polishing off their evening meal. This probably will be the last conversation with the crew tonight, the flight plans shows them turning in for the evening at 29-40 elapsed time beginning a nine hour sleep period. Here is the conversation from Hawaii:

HOU Roger, Hawaii

Haw AGENA tm solid. Flight, Hawaii

HOU Go ahead

HAW We show SPC enable we are going to send SPC disable.

HOU Roger, go ahead

HAW 10, Hawaii

S/c 10, go ahead

HAW How are you doing ?

S/C Feel fine

HAW Getting all squared away to go to bed

S/C Rog, we got encoder off for your pleasure.

HAW OK, we are going to send a couple of commands and then work in we are going to send you a TX now and then get you squared away here

S/C OK, get any TX

HAW Ok, I got a couple of questions for MIke.

S/C Speak

HAW Did he happen to notice whether the boom for MSC-3 was extended when he was standing up outside.

S/c Negative, I did not notice

HAW Did you happen to notice whether the MSC-6 door was open ?

S/C Negative, I did'nt notice that either, I had just a couple of minutes of sunlight before I came back in and I was looking at the MSC 6, excuse me, MSC -8 equipment exclusively.

HAW Oh, OK. OK we're done commanding, you can turn your encoder back on. OK they have got a real good hack on the Gemini 8 orbit and they should'nt have any trouble getting you up there tomorrow.

S/C That sounds good. Where they going to drop us off ?

HAW Well, we are going to see about that tomorrow what time.

S/C OK

HAW Tomorrow's day should be pretty close to the nominal flight plan

S/C Yes, that is what we heard.

HAW Ok, flight he looks pretty well squared away , powered down and it looks like ready to go to bed.

HOU Hawaii, from Flight

HAW Flight, Hawaii

HOU We need an Agena LOS main and look at what you're reading on your ATS.

HAW OK

HOU And pump configuration B pumps

HAW I cant read your last part

HOU And pump confivuration

HAW And pump configuration B pumps and both loops. OK, flight on the ACS gas pressure its six eight two k psi a.

HOU Six eight Q, Rog. Temperature ?

HAW Six nineer decimal four.

HOU Rog, warm 'n up.

HAW Looks like he's got 35 pounds

HAW lo, Hawaii

HAW We'll be shutting you down now, you're looking real good all your systems are squared away and we will be running quiet here for the rest of the evening.

S/C Roger, thank you very much.

HIOU Hawaii from Flight

HAW Go ahead flight.

HOU To keep the currents where we want them suggest he put the TM system switch in the real time and ack gage and just leave it there for the evening .

HAW OK, 10 from Hawaii, you need not acknowledge would you put your TM control switch to the real time and ack gage position and leave it there while you sleep.

HAW Flight, Hawaii

HOU Go ahead Hawaii

HAW Make that 32 pounds of ACS gas remaining.

HOU Rog

END OF TAPE

This is Gemini Control at 30 hours 29 minutes and 37 seconds after liftoff. Gemini 9...Gemini 10 is midway through the 19th revolution, approximately over the Indian Ocean. During the pass, at the beginning of this revolution, over the tracking ship Rose Knot, Flight Director Glynn Lunney, at the suggestion of the spacecraft systems engineer, John Aaron, requested that the spacecraft communicator on the Rose Knot wake up the crew -- "Sorry about that", he said -- to turn on the primary A pump in the coolant system. It seems that the temperatures were a little below the normal scale in the coolant regulators, and then they were told to go back to sleep. Other than that, the spacecraft and the Agena were go on the ground at the Rose Knot. The orbital elements of Gemini 10 now stand at 210 nautical miles at apogee by 208 nautical miles perigee. At 30 hours 30 minutes and 45 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control, 32 hours, 29 minutes, 38 seconds after liftoff. Gemini 10 at the present time is over central Pacific and will be acquired by the Hawaii tracking station within in about five minutes. It it is two thirds of the way through the 20th revolution, earlier in this revolution they were given a GO over the tracking ship ROSE KNOT when they read out the onboard telemetry, the crew of course is still asleep and will be for the next six hours, also there was a silent pass over the Coastal Sentry tracking ship and they were given a GO from that station. The spacecraft communicator coastal sentry commented that the seas were very calm at the position where the coastal sentry is hoved to between Japan and the Phillippine Islands, this is in contrast to some of the earlier missions when the weather has been rather rough. Toward the end of the 19th revolution over the Hawaii pass, a tape dump of telemetry data was conducted. At 32 hours, 30 minutes and 54 seconds after liftoff, this is Geminin Control.

END OF TAPE

This is Gemini Control at 33 hours, 29 minutes and 38 seconds after liftoff. Gemini 10 presently is over the African continent just at the beginning of the 21st revolution. During the pass at the very start of this revolution over the tracking ship Rose Knot, a silent pass, both vehicles were judged go on the ground by the spacecraft communicator aboard the Rose Knot. Toward the end of the 20th revolution during a similar silent pass over the Hawaii tracking station, the spacecraft communicator, Ed Fendell, at the Hawaii station said that both pilots appeared to be resting well. Heart rates on the command pilot were running 65 to 70; whereas the pilot heart rate had dropped down to between 40 and 45. At 33 hours, 30 minutes, and 35 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control at 34 hours, 29 minutes and 37 seconds after liftoff. Gemini 10 is presently over the South Centeral Pacific on the..at the end of the 21 revolution. That pass just completed over the tracking ship Coastal Sentry, which was another so-called silient pass in which the crew was not contacted and telemetry readouts were made at the tracking ship. The spacecraft was "GO" as it went over the hill, as they say, from the Coastal Sentry. Here in Mission Control, we are pretty well settled down for the quiet hours and the sleep watch. We get into the backside of the orbit, where we have only four consecutive passes or so where the spacecraft will have the two ships, each revolution with no land stations. Consequently it is rather far apart between contacts with the spacecraft. The orbital elements of Gemini 10 still stand at apogee of 210 nautical miles, perigee of 208 nautical miles. At 34 hours, 30 minutes and 56 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control at 35 hours, 29 minutes and 38 seconds after liftoff. Gemini 10 at the present time is over Central China midway through the 22nd revolution, and within three minutes should be acquired by the tracking ship Coastal Sentry for another so-called silent pass in which the telemetry is analyzed on the ground, but the crew is still asleep and will remain asleep for approximately three and a half hours. Earlier in this revolution over the tracking ship Rose Knot hove to off the coast of South America, a telemetry data tape dump was performed and all systems looked good from the Rose Knot. At 35 hours, 30 minutes and 25 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control 36 hours 29 minutes and 38 seconds after liftoff Gemini 10 has just begun its 23rd revolution and is presently over the tracking ship Rose Knot off the coast of South America. During this pass and the previous pass over the coastal sentry tracking ship both crewmen appeared to be asleep and both the vehicles, that is the Gemini and Gemini 10-Agena were go on the ground. A summary of world news and ball scores is going out to the tracking stations over teletype and several editions is what is called the Orange Bugle, named after the Orange team of flight controllers during the sleep watch in Mission Control. Flight Controllers at the tracking stations sometimes feel rather isolated from whats happening at home and they are hungry for a little news. Some of the flight controllers here at Mission Control are listening to Tijuana Brass on one of the inactive communication loop between the passes over the tracking stations when they are not otherwise engaged. At 36 hours 30 minutes and 50 seconds after liftoff , this is Gemini Control.....

END OF TAPE

This is Gemini Control 37 hours 29 minutes and 38 seconds after lift-off. Gemini 10 at the present time is nearing the end of the 23 revolution and is north of New Zealand in the south central Pacific. The crew apparently is still asleep according to the ground readouts aboard the Coastal Sentry during the pass a few moments ago in this revolution. Things are rather quiet here in mission control, we have perhaps two station passes each revolution, and there's a lot of waiting between each pass. At 37 hours 30 minutes and 15 seconds after lift-off this is Gemini Control.

END OF TAPE

This is Gemini Control, 38 hours 29 minutes and 38 seconds after liftoff. Gemini 10 is presently over the Arabian Peninsula, 1/4th of the way through the 24th revolution. During the pass just a few minutes ago over the Canary Island tracking station the spacecraft communicator at Canary reported that both spacecraft were go on the ground. Meanwhile here in Mission Control a flight plan for the coming day has been generated by the orange team and I will go down through this flight plan it's quite lengthy. All times will be given in ground elapsed time after liftoff. Approximately a half hour from now at 39 hours elapsed time the crew of Gemini 10 will end its sleep period. For the next hour until 40 hours ground elapsed time will be an eat period scheduled. At 39 hours 40 minutes Mission Control here will give them the flight plan update and a fuel cell purge of both cells one and two, will be conducted. Following that over the Canary Island they will power up the platform and give the Canary Island spacecraft communicator a crew status report and they will receive /planned landing area updates for the next several /planned landing areas. Going on down at 41 hours 3 minutes and 49 seconds there is a plane change maneuver using the Agena secondary propulsion system. They will burn toward the north at 15.1 feet per second. At 41 hours 13 minutes a Mission Control Center here will give them a GO, NO GO for landing area 44-1. At 41 hours 35 minutes 51 seconds after liftoff there will be a phase adjust maneuver. The secondary propulsion system will be fired in retrograde for 4.1 feet per second. At 42 hours 21 minutes

and 53 seconds the height adjust maneuver using the Agena secondary propulsion system will be made at .9 feet per second posigrade. Immediately after maneuver they - this maneuver they will go to - they will power down the platform and perform a test of the environmental control system. This test is scheduled to be completed at 43 hours 25 minutes. Then they will begin the preliminary preparation for the umbilical extravehicular activity. From 45 hours 15 minutes to 46 hours there is scheduled an eat period. At 46 hours 12 minutes 27 seconds there is a co-elliptical maneuver using the Agena secondary propulsion system and it will be a 6 foot per second burn. Immediately after this co-elliptical maneuver a run of the S-26 Ion Wake Measurement experiment will be made. First th y will start the Agena recorder, then undock, separate to 5 feet and stabilize for 30 seconds while minimizing the firing of the Gemini Oams thrusters. Then they will maneuver downward 15 feet from the axis of the target docking adapter at approximately 2 feet per second maintaining a 5 foot separation. The holding separation distance maneuver upwards to the - as you were let's run that by again - holding separation distance of the maneuver upwards to TDA axis at 2 - .2 feet per second. Translate aft along the TDA axis at .2 feet per second to a 50 foot separation and at 20 feet separation they will turn the radar on. At 50 foot they will increase the separation to 2 feet per second. At 200 feet the Agena recorder will be commanded off it will maneuver small end forward to acquire the Gemini 8 Agena.

At 46 hours and 45 minutes they - for 15 minutes they will align the platform. After the - they will have a - over Carnarvon at 46 hours 58 minutes they will get an update for the dual rendezvous and also run a purge of both fuel cells. At 47 hours 24 minutes 3 seconds the terminal phase initiation for the dual rendezvous will be made. At 48 hours they will do the final umbilical extravehicular activity preparation, approximately at sunset. At 48 hours 36 minutes at sunrise, spacecraft sunrise, they will start the umbilical extravehicular activity. At 51 hours 38 minutes 51 seconds they will conduct the heighth adjust maneuver which apparently is 100 feet per second retrograde immediately followed by a run of the D-10 Ion Sensing Attitude Control experiment. At 51 hours 40 minutes through 52 hours 30 minutes another eat period is scheduled. At 52 hours over Carnarvon they will get a flight plan update, purge fuel cells, and get a cryogenic quantity readout. That is as far as the flight plan update runs just now. There will probably be another installment later on today. Meanwhile let's have a look at the weather here. Weather conditions are mainly satisfactory in the primary recovery zones for Gemini 10. Eastern Atlantic zones, partly cloudy skies, northeast winds 15 to 18 knots, seas 4 to 6 feet. Western Atlantic which is the primary landing zone, mostly cloudy with considerable shower activity in the northern portion, wind direction will vary with speeds generally 18 to 25 knots and wave heights 5 to 8 feet. Mid-Pacific landing zone, partly cloudy, easterly winds 12 to 15 knots, 4 to 5 foot waves. Western Pacific landing zone,

partly cloudy, few showers, variable winds near 10 knots and 4 foot waves. Meteorological features which will be overflown during the day include frontal cloud systems in the southern hemisphere, now in the winter season. Cloud formations organized along the inter-tropical convergence zone. At 38 hours 37 minutes and 38 seconds this is Gemini Control.

END OF TAPE

This is Gemini Control, 39 hours, seven minutes into the flight and the crew has awakened, ready for another day's work. Spacecraft 10 is out over the south Pacific over its 24th revolution and just a little bit east of Australia. There was a very brief conversation as the Gemini 10 skirted the CSQ, little more than a good morning. The Flight Controllers on the CSQ reported that both the spacecraft and the Agena looked very good from the ground. Gemini 10 is in an orbital pass that sweeps way down in the Southern Hemisphere at the present time. The next station to acquire will be Antigua at 39 hours, 39 minutes elapsed time. We'll play this tape from the CSQ for you now.

CSQ Gemini 10, CSQ Cap Com. Gemini 10, CSQ Cap Com.

S/C CSQ, this is Gemini 10.

CSQ Roger, good morning.

S/C Good morning.

CSQ We'd like you to place your adapter C-Band to continuous.

S/C Okay, that's done.

CSQ Roger, everything is looking real good here on the ground. The U. S. will have you here in about 45 minutes and they'll have the flight plan update for you when you get there.

S/C Okay, fine.

CSQ Flight, CSQ.

HOU Go ahead.

CSQ Okay, everything is looking real good here. Our TM is just now starting to break up. We had a pretty solid pass.

HOU Roger. You must have gotten a good buffer then.

CSQ Say again.

HOU You must have gotten a good telemetry buffer then.

CSQ Roger. We should have a real good summary.

HOU Okay. Okay, Gary. This is your last pass. We'll be talking to you tomorrow.

CSQ Roger, we'll be looking for you.

HOU Okay, after we get all your data and your post pass we'll send your release message.

CSQ Roger.

HOU Get a good night's sleep.

CSQ Okay, thank you.

HOU Okay.

END OF TAPE

This is Gemini Control at 39 hours 59 minutes into the flight. Gemini 10 is over Africa, just about to pass out of range of Canary Island station. The spacecraft communicator here in the Control Center, C. C. Williams, asked John Young at the start of the Antigua pass how their eyes felt. John replied everything was fine this morning. C. C. then began passing up the updated flight plan that was not completed before we lost acquisition at Antigua and the spacecraft communicator at Canary Island station is in the process of completing that now. Mike Collins reported over the Canary Island station that they were eating breakfast at that time and that both he and John Young were go. Gemini 10 docked to its Agena still, is in a 210 by 208 nautical mile orbit. The Agena 8 is in a 216.5 by 215.5 nautical mile orbit. We have the tapes now of the Antigua and Canary Island passes and we will play it for you.

HOU Gemini 10, Houston Cap Com.

Gemini 10, Houston Cap Com.

S/C 10, go.

HOU Roger, good morning John. How are your eyes this morning?

S/C Everything is fine this morning, C. C.

HOU Good, we would like for you to start fuel cell purge starting section 2, then section 1.

GTI Acquisition Grand Turk.

S/C Okay, C. C. Williams.

HOU Roger. John, on these burns we have got today, to save propellant during the Agena burns we would like for you to go to flight control mode 7 30 seconds prior to SPS ready, instead of 3 minutes prior to it as we have been.

S/C Roger. I agree with that.

HOU Okay, and we would also like to use flight control mode 1 for all gyro compassing and you will have to send command 460 after your stabilized on a new heading to put the horizon sensors back in low gain.

S/C Roger, use FC-17460 to get the horizon sensors located.

HOU Roger. I have got a flight plan for you, update if you are ready to copy.

S/C Okay, ready to copy.

HOU Roger. 3951 over Canaries, power up your platform. Give a crew status report and they will give you a PLA update. They would also like cryo quantity readout. They will load the velocity meter for the plane change maneuver. We would like for you to load module 3 gyro compass to TDA forward, spacecraft 01800. When the platform warms up, go to flight control mode 2 and cage to Agena. That is cage BEF. Then to all break and go to flight control mode 6. Then gyro compass Agena TDA north. That is spacecraft 0900 at 4045. Gemini 10, this is Houston Cap Com.

S/C 10, go ahead.

HOU Roger. Correct my last statement there. We don't want you to gyro compass in mode 6. We would like for you to gyro compass in mode 1.

S/C Okay.

HOU Roger and 410349 you have a plane change maneuver on SPS burn 15.1 feet per second north. Immediately after you complete that maneuver, gyro compass TDA aft, spacecraft 000. At 4113 we will give you a Go/no-go for 441. At 4120 go to flight control mode 2 and cage to Agena. Then return to flight control mode 6.

S/C You want me to go to SP 6 or SC 1?

HOU I am sorry SC 1. At 413551 phase adjust maneuver and SPS burn 4.1 feet per second retrograde. Immediately after this phase adjust gyro compass to TDA forward, spacecraft 01800. Do this in two steps, two 90 degree gyro compassing. And you will be in flight control mode 1. Then purge fuel cells sections 1 first, then 2. And perform the initial ECS test preparations which we will pass up to you later, John, on the ECS test we are going to run today.

S/C Okay.

HOU At 42:21:53, you have a height adjust maneuver, an SPS burn of 9/10ths feet per second posigrade.

HOU Immediately after this burn, go to flight control mode 1 and power down the platform. And at this time, we will run this ECS test. At 43:25 the ECS test should be complete and you can start your preliminary EVA preparation. At 45:00 power up platform. From 45:15 to 46:00, you can eat and install the 18mm lens on the movie camera, 1 frame per second. At 46:00 gyro compass to TDA forward, spacecraft 01800, and cage to Agena. That is cage BEF. At 46:12:27, we have got an N_{SR} burn, it will be an SPS burn of 6.0 feet per second. Now when you have completed this N_{SR} burn, we would like to run S-26 at a modified mode A as follows: Start the Agena recorder, that is command 041, undock, record the time, separate to 5 feet from the Agena and stablize for 30 seconds. Minimum thurster firing. Then maneuver down 15 that is 15 feet from the TDA axis at approximately 2/10ths feet per second maintaining 5 feet separation. Holding this 5 feet separation distance, maneuver upwards to the TDA axis at 2/10ths feet per second. The translate aft along the TDA axis at 2/10ths feet per second, to 50 feet, turn the radar on at 20 feet. When you reach 50 feet increase the separation rate from 2/10ths feet per second to 2 feet per second. When

HOU you reach 200 feet, that is two zero zero, turn the Agena recorder off, maneuver to SEF and pick up the 8 Agena. That is about all the time I have John. Have you got all that?

S/C C. C., you are fading out. I can't read you.

HOU Roger, where did you miss out on it and we will try to pick you up over Canaries.

S/C You are fading out C. C.

HOU Roger. Canaries will pick you up and give you the rest of this flight plan, John.

ANT Antigua LOS.

S/C Roger, gun counter is 639. We are eating our breakfast now. We are both go.

CYI Okay, we have some information for you to copy now. PLA update and your plane change update.

S/C Okay, stand by one.

CYI Okay, could you move your quantity read switch in the 02 position for us please?

S/C Roger, ready to copy.

CYI Okay, which one do you want first? The plane change or the PLA?

S/C Plane change, of course.

CYI Roger. Okay, purpose is plane change GETB is 41:04:26 delta T 17 seconds. That is the actual length of burn. Core 27 is 00148, thrusters SPS unit 2. Maneuvet TDA north. Did you copy that?

S/C Roger, we got it.

CYI Okay, I have got your PLA update here.

S/C Ready to copy.

CYI Okay, move your cryo quantity switch to H2 position for us, please.

S/C Okay, that is done. Ready to copy PLA.

CYI Okay, very good. 27-1 423032, 20 plus 17, 25 plus 21. Weather is good and you need a SEP maneuver.

END OF TAPE

CYI Area 28-1, 44 08 10, 20 + 27, 25 + 50, weather is marginal. Set maneuver required.

Area 29-1, 45 45 43, 20 + 36, 26 + 09, weather is marginal and a set maneuver is required.

Area 30-1, 47 23 43, 20 + 42, 26 + 19, weather is good. Set maneuver required.

Area 31-4, 50 18 13, 21 + 42, 27 + 24, weather is good. Set maneuver required.

Area 32-4, 51 56 17, 21 + 44, 27 + 37, weather is good. Set maneuver required.

Area 33-3, 53 13 13, 25 + 00, 30 + 01, weather is good. No set maneuver.

Area 34-3, 54 51 19, 23 + 30, 28 + 33, weather is good. No set maneuver.

Bank angle for all areas is roll left 90, roll right 90. The set maneuver is 100 foot per second, 20 minutes prior to retrofire. Retro pitch angle is 20 degrees. We recommend that the catch-up mode be used for your OAMS burn. Over.

CYI Roger we got those, thank you.

OK you can turn your cryo quantity switch off now.

Ok you can turn you encoder back on we got a good VM word in there.

CYI Encoders on, cryo quantity off.

Ok, where did you loose Houston Cap Com on your flight plan update. I can finish it off for them.

S/C You better start with S-26.

CYI Ok, S-26 that was at time 46:12:27. Start Agena recorder, that is command 041. Undock, record time, separate to 5 feet and stabilize for 30 seconds. Minimize thruster firing. Maneuver downward for 15 feet from TDA axis at approximately .2 feet per second, maintaining 5 foot separation. Holding set distance maneuver upwards to TDA axis at .2 feet per second. Translate aft along TDA axis at .2 feet per second to 50 feet separation. Radar on at 20 feet. At 50 feet increase separate to 2.0 feet per second. At 200 feet Agena recorder off. Maneuver SEF to acquire Agena 8. OK, at 46:45 align platform for 15 minutes. At 46:58, at Carnarvon, you will have an orbit rate compensation vector update, a dual rendezvous update, purge the fuel cells section two then section one. At 47 +24 + 03, dual rendezvous TPI. At 48:00 final umbilical EVA prep, sunset. At 48 + 36, sunrise. Start umbilical EVA. At 51:38:51, heighth adjustment maneuver, 100 feet per second retrograde immediately followed by D-10 Mode "A". Control spacecraft to zero, zero, zero. Attitude control platform SEF. At 51:40 to 52:30 eat period. At 52 hours at Carnarvon you will get a flight plan update, purge the fuel cells section one then two at cryo quantity readout. That completes the flight plan update.

CYI Did you copy.

S/C Roger, we copied.

HOU Canary Cap Com, Houston Flight.

CYI Go, Flight.

HOU OK, you got a good VM word. Did you get the Agena properly configured?

CYI That is affirmative.

HOU OK. Well done.

CYI Gemini 10, we'll see you the next time around.

KNO Kano is remote.

HOU Gemini 10, Houston Cap Com. Standing by.

END OF TAPE

This is Gemini Control, 40 hours, 29 minutes into the flight and we're just getting ready to acquire Gemini 10 at the Carnarvon station. We're standing by now waiting for the Carnarvon Cap Communicator to put in a call to the spacecraft. We're just about at the edge of the range of that station. This next burn scheduled now for 41 hours - here's the Carnarvon pass.

CRO I've got a nodal update for you.

S/C All right, go.

CRO 9 39 39, rev 25, 71.3 west, right Ascension, 05 hours, 06 minutes.

S/C Roger.

CRO Okay, do us a favor would you? Let Mike set up 460, I mean, 340 for us. We want to interrogate that velocity meter and get a readout.

S/C Understand set up 370?

CRO Negative, 340.

S/C Roger, 340. 340, may I proceed?

CRO Roger.

CRO Okay, 10. This is Carnarvon. We checked the velocity meter and all systems are go for your SPS burn.

S/C Roger.

CRO Okay, I have a little trouble shooting procedure for you on that 16 mm camera, if you want to listen to it.

S/C Yeh, go ahead.

CRO Okay, it says here, "General Directions for the trouble shooting of the camera." Set up the camera and try all

camera speeds. Change magazine and try all camera speeds again. It says it might be possible for the camera to work in 16 frames per second mode only.

S/C I've already tried that and it doesn't seem to do any good. Furthermore, it might help them to know that in the test position the camera should work only when the button is held down, but this one will now work when the button is released also and in test position.

CRO Okay, I copy that.

(PAUSE)

This is Gemini Control. We're still standing by awaiting more conversation. Gemini 10 is still within range of the Carnarvon Station.

(PAUSE)

This is Gemini Control. Still no additional conversation between Gemini 10 and Carnarvon. The spacecraft is on the verge of losing contact with that station but we are still within range so we will stand by until we have Loss of Signal at Carnarvon.

(PAUSE)

This is Gemini Control, 40 hours, 37 minutes into the flight. This plane change maneuver has been updated somewhat. Time now for the plane change is 41 hours, four minutes, 26 seconds elapsed. The duration of the burn will be 17 seconds. It will be a secondary propulsion system burn of the Agena. We're looking for 14.8 feet per second. Gemini 10 is out of range of Carnarvon now, still over Australia. We will not acquire another station until 41 hours,

15 minutes elapsed time when we come up in range of Grand Turk.

This is Gemini Control.

END OF TAPE

This is Gemini Control at 40 hours 59 minutes into the flight. Gemini 10 down over the middle of the South Pacific, far out of range of any of the tracking stations. This plane change maneuver will occur before we acquire the next tracking station, about 10 to 12 minutes before we acquire. We hope to get the crews evaulation of the burn at the time that we do acquire at Grand Turk. This will be a very small change. It will be changing the plane to the north but at a value of 14.8 feet per second. It will be a very - almost negligable effect on the ground track of the spacecraft. This is Gemini Control.

END OF TAPE

This is Gemini Control at 41 hours 28 minutes into the flight. We have a GO for the 44-1 planned landing area. We didn't get that passed up to the crew during the Grand Turk, Antigua pass but we will pass it up over the Canary Islands in a few minutes. There was considerable conversation at Grand Turk. The plane change burn went fine according to the crew. We updated the phase adjust burn, that is coming up at 41:35 minutes elapse time. We explained the environmental control system test that we are planning. Here is the tape of that pass now.

HOU Gemini 10, Houston Cap Com.

S/C Gemini 10, over.

HOU Roger, Gemini 10. Houston Cap Com requesting coder off for a TM dump.

S/C Going off.

HOU Roger, how was your last burn, John?

S/C Oh, it was ok.

HOU Ok. I've got a maneuver update for you, are you ready to copy?

S/C Roger, ready to copy.

HOU Roger. The purpose is phase adjust. GETB 41:35:50, Delta V 3.5 feet per second, delta T 5 seconds. address 25 90 03 5, thrusters SPS, TDA aft, retrograde maneuver.

S/C Roger.

HOU I've got this ECS test that we would like to run, if your ready to copy what we want to do on

HOU that John.

S/C Roger.

HOU OK. The preliminary preparations will take place after the phase adjust maneuver and the fuel cell purge. The preliminary preparations will be to close up both suits and perform a suit integrity check for both pilots. The ECS test will occur after the heighth adjust maneuver if there is one and after you've powered down the spacecraft. The configuration for the test will be both suit flow control valves full open. Recirc valve closed. Both face plates closed. Suit fan number 1. What we want you to do is decompress the cabin to 3.0 to 3.4 psi. Then just continue in this configuration for one hour and then repressurize the cabin. Repressurization should be around 43 plus 25 into the mission. If you get any eye irritation or odor during this test, initiate O_2 high rate. If the problem doesn't clear then within 15 minutes repressurize the cabin. That's all the test John. It's just to check to make sure that we've got no problem using just a single suit fan before we think about this EVA. OK.

S/C Roger.

HOU John, can you give me the residuals from your last burn if you have them?

S/C Roger. We're looking for them now.

HOU OK. While your looking we'd like for you to check each others eyes to see if you've got any redness or swelling. I'd like to know if you've got any relief from the eye drops if you used them.

S/C We haven't use.....as far as redness and swelling goes, there is a very very slight amount of swelling and negligable redness. We do still occasionally get a whiff of this stuff.

HOU Roger. We'd like for you to save any of the wipes that you used on your face. Any of those wet wipes and also the defogging wipes from - for the face plates of your suits there, and any chewing gum that you may use during the flight. We'd like for you to bring that back so we can check to make sure it is lithium hydroxide.

S/C Ok. The wet wipes that we originally used we've already throwed away during the first cabin depress. But, we'll save all the subsequent wet wipes. We are saving the towels we wiped our eyes with but we haven't used any chewing gum.

HOU OK. Real fine.
On this camera, Mike it looks like you've had a micro switch failure there. There is nothing we

can do about it.

S/C What micro switch are you talking about, C.C.?

HOU It's a micro switch in the camera Mike.

S/C Roger, understand. Thank you.

HOU What is your suit fan configuration at this time?

S/C Suit fan number 1.

HOU Roger.

HOU Gemini 10, Houston Cap Com. We've got a VM compare. Looks like a good load.

S/C Very good.

HOU Notice you've got your encoder back on.

HOU This is Houston Cap Com standing by for the residuals on your last burn if you find them.

S/C Roger C.C. We're.....

HOU Gemini 10 from Houston Cap Com. For your information the Astros beat the Phillies 8 to 2 in the Dome last night and Frank and Mia got married in Las Vegas.

S/C Well thats one triumph at least. Here are the residuals on that burn.

HOU We're ready to copy.

S/C 80 was 00 10 and 81 and 82 you can't put to much faith in because I didn't cage to the Agena but it was 00 00 5 and minus 00 00 3.

HOU Roger. What was 80 again?

S/C Three zeroes one zero. (000 01)

HOU Roger.

S/C Foot per second left over.

In other words we got it .....

The IVI's we had an extra foot. It went from aft to forward to plus one.

HOU Roger John.

HOU Gemini 10, Houston Cap Com. I'd like to confirm that you're TDA aft now.

S/C Roger. We're TDA aft now.

HOU Roger.

HOU Gemini 10 from Houston. We've got about one minute to LOS, standing by.

END OF TAPE

This is Gemini Mission Control at 41 hours 37 minutes into the flight. And we have a hurricane advisory from the Miami bureau station. Reports from ships and NASA research aircraft indicate that the remnants of former tropical storm Celia, which was showing indications yesterday of regeneration, intensified rapidly during the night and reached hurricane intensity this morning, at 11 AM Eastern Standard Time. The center of hurricane Celia was located at latitude 32.6 degrees north longitude 69 degrees west. This position is about 240 miles west of Bermuda. The hurricane is moving toward the northeast at about 23 miles per hour. Highest winds are 80 miles per hour in squalls southeast of the center. Gales extend out 75 miles in all directions, except 150 miles in the southeast quadrant. Lowest pressure is 99 milibars or 29.44 inches. Hurricane Celia will continue moving toward the northeast with some acceleration, but with no or only slight intensification. Hurricane Celia will not affect the coast line of the United States. Bermuda will experience showery weather and a light to moderate squalls during the next few hours and the next advisory will be issued from the Miami weather bureau at 5 PM Eastern Standard Time. The prime recovery area for this Gemini mission will not be affected by this hurricane. We - Gemini 10 is now within range of the Kano, Nigeria station, just passed out of range of the Canary Island Station. We did pass up the go for the 44-1 recovery area and received a go from the spacecraft. We have the tape of the Canary Island station and we will play that for you now and follow it with the Kano conversation.

END OF TAPE

S/C Okay, go.

CYI Roger.....

S/C It is GO.

CYI Roger,.....

HOU Canary, Houston Flight.

CYI Go, Flight.

HOU You seeing much structure activity on the Agena? Go ahead.

CYI Okay. You want them in flight control mode 6 about 30 seconds prior to the ....

HOU That's 7, 30 seconds prior to the burn.

CYI Oh, roger.

HOU Canary, from Houston Flight.

CYI Go, Flight.

HOU You may not see him go to 7.

CYI Say Again.

HOU You may not see him go to FC 7. He's going to go 30 seconds prior to the burn.

CYI We'll be watching.

HOU Okay, but I think the burn will occur over - about - maybe just about your LOS.

CYI About three minutes prior to our LOS.

HOU Canary, Houston Flight.

CYI Go, Flight.

HOU If you see the burn, send us an OBC Gemini at the end of the burn.

CYI Okay, we've got one coming at you now, and we'll get you one right after.

HOU Roger.

CYI Gemini 10, Canary Cap Com, you are GO for your SPS burn.

S/C Roger.

CYI Okay, we've got SPS ready, attitudesare holding good.

S/C Start of burn. End of burn.

CYI Send us an Agena main.

S/C Roger.

S/C Canary, this is 10. 80 is 3007, 80 is 4007, 81 is 4001, 82 is minus 3001.

CYI Roger, copy.

S/C I think it is still overshooting a little. That was 7/10ths over...and I guess we probably shut it down.

CYI Rog. Did you copy those residuals, Flight?

HOU Copy.

CYI We did not see a VM cutoff here on the ground.

HOU Okay.

CYI Okay, Flight. Canary....

CYI Gemini 10, Canary just about at LOS. We'll see you on the next pass.

S/C 10, Roger.

HOU Canary, Flight.

CYI Go, Flight.

HOU Could I have two main Gemini?

CYI Roger.

Kano go remote.

KNO Kano is remote.

HOU Gemini 10, Houston Cap Com standing by.

S/C Roger, we're in flight control mode 1 and we're gyro compassing due north to a TDA forward.

HOU Roger. You've got a fuel cell purge and then a power down.

S/C Right.

HOU Gemini 10, Houston Cap Com. Negative on that power down. That's not until 42:21:53.

S/C .....a height adjust.....

HOU We're looking at it right now. We'll try to get it to you before LOS.

HOU Gemini 10, Houston Cap Com.

S/C 10, go ahead.

HOU Roger. No height adjust maneuver required.

S/C Roger. Fuel cell purge in. Should I power down now then?

HOU Stand by. We're talking about it.

Gemini 10, Houston Cap Com.

S/C Go ahead.

HOU Roger. E Com would like for you to stay powered up for the time being. You can start your ECS test at this time, if you'd like.

S/C Oh, roger.

END OF TAPE

This is Gemini Control 42 hours 14 minutes into the flight and Gemini 10 is over the middle of Australia. There was very little conversation in this Carnarvon pass. The crew was instructed to power down the platform and they did start the environmental control system pass - test along toward the end of the pass. We also got a tape dump from telemetry over Carnarvon. The Cap Com there didn't engage with too much conversation because they were preparing for the ECS test. We have a tape of the Carnarvon pass. Let's play that for you now.

AFD Carnarvon Cap Com, AFD.

CRO Go ahead, AFD.

AFD Okay, on the Agena, we would like a VM interrogate and a tape dump.

CRO Roger.

AFD And Flight will be coming to you on the Gemini shortly.

CRO Carnarvon has telemetry solid on Gemini and Agena and all systems are go.

HOU Okay, Carnarvon. You can tell them to go ahead and power down the platform.

CRO Roger. Gemini 10, Carnarvon.

S/C 10, go.

CRO Roger, you can start powering down your platform.

S/C Roger, powering down.

CRO Okay, and we want to send a VM interrogate and also

CRO get an Agena tape dump. So if you will turn your encoder off?

S/C Encoder is off.

CRO Thank you.

HOU Carnarvon, Houston Flight.

CRO Go ahead, Flight, Carnarvon.

HOU Agena main.

CRO Roger, that.

We have gotten a VM interrogate and also looked at it and it is showing all ones. That doesn't look too good and it is verified by TM. I would like to ask the crew if they enabled the velocity for that last burn.

HOU Say again, Carnarvon.

CRO I say, I would like to ask the crew if they enabled the velocity meter for that last burn.

HOU Negative. We can determine that from Canary.

CRO Okay, we are showing the crew probably going through their integrity check.

HOU Say again, Carnarvon.

CRO I say, it looks like the crew is going through the suit integrity check.

HOU Copy.

CRO Can't you read me, Flight?

HOU Got you now, okay. Someone came in on top.

CRO How do you read me now?

HOU Loud and clear.

CRO Okay.

10, Carnarvon. We have got the tape dump, you can turn your recorder back on again.

S/C Okay, roger.

CRO All systems look go on the ground. We are standing by.

S/C Roger, we ready to start our ECS test now.

CRO Roger, that.

HOU Carnarvon, Houston Flight.

CRO Roger, that.

HOU Carnarvon, Houston Flight.

CRO Go ahead, Flight.

HOU You might ask the crew to keep an eye on their O_2 pressure during this test. Cryo 2 switch O_2. Watch their pressure in case they have to use high rates.

CRO Roger, that it? Pretty steady.

HOU Rog.

CRO 10, Carnarvon.

S/C 10, ready.

CRO Roger, in the event you have to go to a high rate, you might keep an eye on that O_2 tank pressure.

S/C Okay, will do.

CRO Okay, all systems are go on the ground and we are about to lose you.

S/C Roger, I hope not.

CRO We will see you next time.

Carnarvon has telemetry LOS, both vehicles are showing LOS.

END OF TAPE

This is Gemini Control at 42 hours 29 minutes into the flight. Gemini 10 is over the South Pacific just out of range of the Canton station. The next station to acquire Gemini 10 will be the Texas at 42 hours 48 minutes elapse time. Gemini 10 crew is now in the midst of the environmental control system test. This is - started this at Carnarvon a few minutes earlier then scheduled. It is due to last about an hour. It will be completed at 43 hours 25 minutes elapse time. At the completion of the ECS test they will start the preliminary EVA preparations. This is Gemini Control.

END OF TAPE

This is Gemini Control at 42 hours 31 minutes into the flight. At this time Gemini 10 is 246 nautical miles behind the Agena 8. Two hundred forty six nautical miles. The spacecraft behind the 8 Agena. This is Gemini Control.

END OF TAPE

This is Gemini Control 48 hours 59 minutes into the flight. Gemini 10 is within range of the Bermuda, Grand Turk and Antigua stations. We are in the midst of conversation with the crew now. They are taking pictures. They report they cannot see Hurricane Cecelia but Command Pilot John Young says he thinks he saw it yesterday. Let's start with the tape at the front of this pass and then we'll go through the rest of the pass.

LOS Grand Turk

HOU Gemini 10, Houston Cap Com.

HOU Gemini 10, Houston Cap Com.

S/C This is 10 go ahead.

HOU Roger John. How is your ECS test coming, you still in the suits?

S/C We're at 31 minutes into the test and everything is very nominal.

HOU Roger. You haven't noticed any smarting of your eyes or odors?

S/C No.

HOU Did you wipe your visors with that anti-fogging compound prior to closing up?

S/C No we didn't.

HOU OK.

HOU Gemini 10, Houston Cap Com. Would you turn your encoder off for an Agena tape dump?

S/C Roger. Encoder is off.

HOU Roger

HOU Gemini 10, Houston Cap Com.

S/C This is 10 go ahead.

HOU Roger John. We're looking at the possibility of combining a phasing maneuver with this separation. We'll give you further word on that later. I guess Mike has probably been looking forward to getting that elephant off of him, isn't he?

S/C He sure is.
Yes, it's like driving down the road with a truck and your looking out and like a railroad engineer driving down the road with a big freight train, all you can see is the freight train.

HOU Roger. I'd like to advise you that your friend Celia has redeveloped into a hurricane out in the Atlantic. If you're / separated you may have a chance to look at it on revs 28 and 29. The coordinates are 32.6 north, 70 west.

S/C Roger. I think I got a picture of it yesterday.

HOU Roger. They didn't know it was a hurricane yesterday.

S/C Looked like one to me. It looked like a bunch of big thunderstorms out there.

HOU Roger.

S/C Couldn't see that there was any central vortex development.

HOU You might keep an eye out for it on 28 and 29.

S/C Houston, Gemini 10. When we are coming up on an advantageous position to see Cecelia how about giving us a call?

HOU Roger Mike, we'll do.

S/C OK.

HOU Looks like you should be just about there right now.

S/C Yes that's what I was thinking. We don't see it.

HOU It should be a bit to the north of you yet.

S/C OK.

HOU Mike from Houston. Do you plan to retrieve S-12 and the window cover on your EVA?

S/C S-12 affirmative and the window cover negative. We plan to jettison the window cover so John will have good visibility for the rendezvous and just not attempt to bring it back.

HOU Good head Mike. That sounds like a fine plan.

HOU This is Houston with a minute and 30 seconds about to LOS, we're standing by.

S/C Ok, I'm taking some pictures out to the north about as far as this camera can see the north. I don't really see anything myself. Maybe this Hasselblad can get a little better angle then I can.

HOU Roger.

HOU Gemini 10, Houston Cap Com. You can put your encoder back on.

S/C Roger. Encoder is on.

HOU Roger. We're standing by.

HOU Gemini 10, Houston Cap Com. We've got about 3 more minutes to LOS. We'll be standing by.

S/C OK, C.C.

S/C What do you guys think about this smell we have up here?

HOU We think its lithium hydroxide Mike. This test we're running now is to see if using just one fan won't keep from picking any of it up and bringing it in the suit loop.

S/C I see.

HOU If this test works OK, we'll do the EVA using just suit fan one rather then one and two.

S/C Roger, understand. We can still smell it but it is very mild and we don't have any eye irritation to speak of.

HOU Roger understand.

S/C We got a good nights sleep last night. I imagine better then you guys down there.

HOU I'm glad to hear that.

LOS Grand Turk

Antigua LOS

END OF TAPE

This is Gemini Control, 43 hours, 14 minutes into the flight and Gemini 10 is within range of the Canary Island Station, just at the western part of Africa. There was very little conversation on this pass. The Canary Island Cap Com advised the crew that he had nothing for them and he was standing by. Here is that tape now.

AFD Canary Cap Com, AFD.

CYI AFD, Canary Cap Com.

AFD Roger. We have nothing special for you.

CYI Okay.....

S/C 10, Roger.

END OF TAPE

This is Gemini Control at 43 hours 29 minutes into the flight and Gemini 10 has just passed off the east coast of Africa. Over the Kano, Nigeria station, the - we remoted from there to Houston. Cap Com C. C. Williams updated the flight plans for the crew. We intend now to separate the spacecraft from the Agena at 44 hours 40 minutes elapsed time. This will be a 1.8 feet per second separation, using the forward firing thrusters. And after that time, we are considering a combined maneuver to adjust the coellipicity and the phase. We have the tape of the Kano pass and we will play it for you now.

CYI 10, Canaries. We have got you go on the ground about a minute until LOS.

S/C Roger.

HOU Kano, go remote.

CYI Canaries has LOS. Both systems. Both vehicles are go.

HOU Roger, Canary. Kano, go remote.

KNO Kano, remote.

HOU Gemini 10, Houston Cap Com.

S/C Go ahead.

HOU Roger, how is your ECS test coming, John?

S/C It is coming all right. We have got less than 4 minutes to go.

HOU Roger, if it continues okay, you will have a go for the EVA, but on the EVA, when you apply this anti-fogging compound to the visor, make sure that you wipe it good with a tissue to leave only a

HOU thin film.

S/C Roger.

HOU They suspect that this detergent may be reacting with the lithium hydroxide to cause the odor. So you just want to rub a real thin film on the visor.

S/C Roger. Do you still want the inside man to put that onthis visor. Over.

HOU No, not the inside man. On your deseparation maneuver, John, it looks like about 44 plus 40. We will use a 1.8 posigrade maneuver, using the forward firing thrusters. You will need to bring up your platform in cage to the Agena. And as far as S-26 goes on this separation maneuver, we would like to get the Agena recorder on, prior to undocking. Turn the radar on at 20 feet and try to keep in view of the Agena as long as you can. Or 20 minutes, whichever comes first. And then turn the Agena off before you go SEF and start looking for the 8 Agena.

S/C Roger. Do you want to do this in preference to the [illegible] we discussed earlier?

HOU Roger.

S/C Okay.

HOU And after this separation maneuver, John, we will give you an N_{CC} N_{SR} to really tweak it up. We will advise you more on this SEP maneuver later. But it looks like right now 1.8 at 44 plus 40.

S/C Roger.

HOU Gemini 10, this is Houston. This is all we have for you at this time, John. We have got about 2 minutes until LOS. So, we are standing by.

S/C Roger, and our cabin test is over with. We are repressurizing.

HOU Roger, understand, you cabin ECS tests is complete and you are repressurizing the cabin and everything is go from your end.

S/C Roger.

END OF TAPE

This is Gemini Control, 43 hours, 59 minutes into the flight and Gemini 10 is over the south Pacific, just east of Australia. At the Carnarvon pass just completed the Cap Com at Carnarvon advises the crew that both the Gemini spacecraft and the Agena 10 looked excellent. We still plan to separate the two vehicles at about 44 hours and 40 minutes in the vicinity of the United States. This time may change a small amount and we may update the crew on this time over the Canton station. The S-26 Ion Wake Experiment will be conducted immediately following the spacecraft separation from the Agena 10. This is Gemini Control. We have a tape of that Carnarvon pass. We'll play that for you now.

S/C Roger, Carnarvon.

CRO Gemini 10, Carnarvon.

S/C Go ahead.

CRO Roger, we've got TM. All systems are go here on the ground and we'll be standing by.

HOU Carnarvon from Flight. How are you doing?

CRO All systems are looking excellent.

HOU Roger. Does he have the platform up?

CRO Negative.

HOU Carnarvon, Flight.

CRO Go ahead.

HOU You might remind him to bring his platform up.

CRO 10, this is Carnarvon. Just a reminder. You have a platform power up shortly.

S/C Gemini 10. Roger, we'll remember it.

CRO One minute to LOS, standing by.

Carnarvon has telemetry LOS Agena and Gemini. All systems go at LOS.

HOU Roger, Carnarvon.

END OF TAPE

This is Gemini Control at 44 hours 14 minutes and Gemini 10 is over the Mid-Pacific, just about at the Equator. We've just passed out of range of the Canton Island station and during that pass we did update the crew on this separation maneuver. Time 44 hours 40 minutes 15 seconds and it will be a 1.5 feet per second burn instead of the 1.8 previously passed up to them. This will be a burn with the forward firing thrusters to separate Gemini 10 from its Agena. This is Gemini Control. We have the tape from the Canton Island pass. We'll play that for you now.

Canton go remote.

CTN Roger, Canton remote.

HOU Gemini 10, Houston Cap Com.

S/C Gemini 10, GO.

HOU Roger, I've got an update for you on the separation and phase adjust burn.

S/C OK go ahead with it.

HOU Roger. The purpose is separation and phase adjust. GETB 44 plus 40 plus 15, delta V 1.5 feet per second, burn time 03 seconds. Yaw - that's a spacecraft yaw is 180, pitch 0. Address 25 00 01 5, 26 and 27 are zeroes. Thrusters will be the forward firing thrusters, posigrade. You should use address 55, all nines, for selecting forward fire thruster logic. Over.

S/C Roger. We got that.

HOU Roger and on that separation, John, are you clear on

the S-26 maneuvers that I gave you over Kano instead of what we gave you in the flight plan this morning.

S/C You just want us to back out at 1.8 right?

HOU That's right. Rig your 18 mm lens in the 16 mm camera at one frame per second, turn the Agena recorder on prior to undocking that's message 041. Undock and then burn on time, turn the recorder on 20 feet out, maintain a radar lock as long as you can or 20 minutes whichever comes first. Then turn the recorder off. That's 030 and 021 prior to going SEF and after the 8 Agena.

Gemini 10 did you get that?

S/C Roger. We understand it.

HOU OK and that burn is 1.5 instead of 1.8. 1.5 burn.

S/C Roger. Understand.

HOU That's all I have for you right now. We'll be standing by we'll pick you up over the states. We've got about four minutes to LOS.

S/C Roger. I just showed the snake to Mike. Sure feels good to stretch your legs out.

HOU Gemini 10, how does it feel to stretch your legs out John.

S/C Boy I didn't know they put so much room in these cockpits. Feels wonderful.

HOU Roger.

CTN Canton has LOS.

END OF TAPE

This is Gemini Control at 44 hours 29 minutes into the flight and Gemini 10 is over the Gulf of Mexico, having just passed over the west coast of Mexico. This separation maneuver will come about the time we lose acquisition at Antigua. We hope to be within range at that time, but we are not sure. There was a brief bit of conversation as we acquired on this state-side pass. We passed up a couple of times for some tweak maneuvers to trim the orbit up a little bit. We have a tape of the - this pass. We will play that for you and then we will stand by for any further transmissions and bring those to you.

GYM Guaymas has acq aid contact.

HOU Guaymas go remote.

GYM Guaymas remote.

HOU Gemini 10, Houston Cap Com.

S/C Gemini 10, go.

HOU Roger. John, we don't have anything for you this pass over the states. You can get ready for your separation maneuver there. After separation, the next thing we will have for you is an N_{CC} maneuver, which will be about over Canton at 45: plus 54 and then an N_{SR} tweak at 46:09 over the states.

S/C Roger.

GYM Both birds looking good, Flight.

HOU Roger, Guaymas.

GYM Flight, Guaymas.

HOU Go ahead.

GYM Okay, we just lost our 1218.

HOU Roger.

GYM Houston Flight, Guaymas.

HOU Go ahead.

GYM We just lost TM-1

HOU What are you doing out there?

GYM We are having a jolly time.

HOU Gemini 10, Houston Cap Com.

S/C 10, go.

HOU Roger, if you are going to cage to the Agena, John I recommend you go to SC-2 to get out of that dead-band. You are about 4 degrees off now.

S/C Roger. That is where we are going right now.

HOU Roger.

(PAUSE)

This is Gemini Control. We are still standing by. There have been no further transmissions. The flight dynamics officer advises that at the time of the separation burn, the slant range between Gemini 10 and the 8 Agena will be 138 nautical miles, 138 nautical miles. We will continue to stand by and we will bring you any transmissions that we do get before we lose acquisition of the spacecraft. This is Gemini Control.

END OF TAPE

This is Gemini Control. Telemetry indicates that the OAMS are burning. Forward firing, and telemetry shows that he is now free of the Agena 10. That was reported as a three second burn, that separation burn.

(PAUSE)

This is Gemini Control, 44 hours, 42 minutes into the flight. We did not have any voice conversation with the crew during this separation maneuver, however, through telemetry we were able to confirm the OAMS firing, the separation and the fact that Mike Collins changed the flight control mode on the Agena after they were separated. We hopefully will have some voice contact at the Canary Islands within several minutes. This is Gemini Control.

END OF TAPE

This is Gemini Control 44 hours 46 minutes into the flight. We have reacquired Gemini 10 at the Canary Island station. They report that they are now about 400 feet from the Agena 10. We'll play the tape of the first part of this pass and then we'll standby for any further conversation we may have.

CYI Gemini 10 this is Canary Island

S/C Could you turn the L-band on the Agena we just turned it off by mistake. Over.

CYI Roger will do.

HOU Canary, Houston Flight.

Agena India please.

CYI Roger.

HOU Did you get his L-band on?

CYI That's affirmative.

HOU What did he say about the recorder?

CYI It is off.

HOU Off.

S/C Thank you

CYI Roger, we'll be standing by.

S/C We just undocked and we're about 400 feet out now.

CYI Roger, 400 feet.

HOU Canary from Flight.

CYI Go, Flight.

HOU We'd like that Agena recorder on for about 20 minutes or 30. Can you get it on?

CYI Roger.

HOU Go ahead Canary

CYI Our S-band went red just about AOS time.

HOU Understand. Your S-band is red.

CYI Roger.

This is Gemini Control 44 hours 51 minutes into the flight. Just about to pass out of range of the Canary's. We've already acquired at the Kano, Nigeria station. We'll continue to standby through the Kano pass and bring you any transmissions during that time. This is Gemini Control.

CYI Gemini 10, Canary Cap Com. We've got about a minute until LOS, we're standing by.

S/C Roger.

S/C We've lost the Agena in the sunset there.

CYI Canary has had LOS both vehicles. Both GO.

HOU Roger Canary.

Kano go remote.

KNO Kano is remote.

HOU Gemini 10, Houston Cap Com.

S/C Gemini 10, GO.

HOU Roger. How does it feel to be rid of that freight train you had in front of you?

S/C It was a mighty good train.

HOU It sure was John. You've - do you still have it in sight and radar lock-on.

S/C Still got radar lock on. We're about 1100 feet but we can't see it. The sun is setting right now.

HOU Roger. You're about 20 minutes from the time you got your recorder on so you can turn it off by sending 030 and then 021.

S/C Do you want us to do that now?

HOU You can wait a few more minutes.

HOU Gemini 10, Houston Cap Com. We'd like to know when you jettison your window cover.

S/C I think now would be a good time. Over.

HOU Roger.

S/C This is Gemini 10. I don't think actually this problem has much to do with the window covers. Over.

HOU Roger. We just wanted to know for a weight and balance purpose John.

S/C Roger.

END OF TAPE

S/C It is jettisoned and it looks the same looking out to us.

HOU Roger. How does it compared to yours, Mike?

S/C I don't know, I can just look through one of them.

S/C Right now I've been looking through both sides, looking through his at an angle.....Mine is smudged. It's smudged primarily on the inner surface of the outer pane. It's just a thin film.

HOU Roger.

S/C Do you want to go over those tweak alignments again one more time?

HOU Say again.

S/C Houston, Gemini 10, over.

HOU This is Houston. Go ahead, Gemini 10.

S/C Roger. Want to go over those two alignments, those tweak alignments, tweak burns?

HOU Roger. You've got an NCC at 45 plus 54 and a NSR tweak at 46:09.

S/C Thank you.

HOU And I think you can probably turn that recorder off, 030 and 021 now.

S/C Roger.Took off 1500 feet of film.

HOU Roger. Understand 1500 feet.

For your information, the time you separated from the Agena, your 8 Agena, was 138 miles away from you.

S/C Roger. What's our Delta H?

HOU It's seven miles.

S/C We're right on it.....

HOU We're going to try and sweeten everything up with these two tweak burns, John.

S/C That will be fine.

HOU We're about a minute from LOS. We'll be standing by.

S/C Roger. That sure was a steady....

HOU It sure was. Let's go find the other one now.

S/C Your race.

(PAUSE)

This is Gemini Control at 45 hours, three minutes into the flight. We're out of range of the Kano station now. That Delta H that you heard John Young inquire about is the difference in altitude between the Gemini 10 spacecraft and the 8 Agena, and as you heard C. C. Williams telling that difference is seven nautical miles which is what we've been aiming for. This is Gemini Control, 45 hours, three minutes into the flight.

END OF TAPE

This is Gemini Control 45 hours 14 minutes into the flight. We have just lost acquisition at Tananarive. Gemini 10 down over the Indian Ocean. This N_{CC} maneuver that you heard discussed at - occurred 45 hour 55 minutes 01 seconds before .2 feet per second, this is essentially to trim up the phasing to make the lighting conditions correct during the rendezvous. The N_{SR} tweak maneuver at 46 hours 9 minutes 28 seconds is currently scheduled to be a 9.8 feet per second burn to trim up the coellipticity of the orbit. We have a tape from the Tananarive pass just completed and we will play that for you now.

HOU Tananarive, go remote.

TAN Tananarive remote.

HOU Gemini 10, Houston Cap Com.

S/C 10, go.

HOU Roger, the data we got right now, John, it looks like we will hit TPI within 3 minutes of nominal. FIDO is still very optimistic about getting there. These tweaks should even sweeten it up better.

S/C Roger. Sounds great.

HOU And we will have an update for you on these tweaks over Carnarvon. Gemini 10, Houston Cap Com. We have nothing further for you at this time, we will be standing by.

S/C Roger.

HOU Carnarvon, Houston Flight.

Carnarvon, Houston Flight.

CRO Houston Flight, Carnarvon.

HOU On the special message we sent you for the code fix maneuver, VZ should be 27 rather than 26.

CRO Roger, I was about to query that.

HOU Okay, you got it.

Gemini 10, Houston Cap Com.

We are about a minute and a half from LOS standing by.

S/C Roger. We are having lunch. Won't you join us?

HOU I would love to.

Carnarvon, Houston Flight.

CRO Go ahead, Flight, Carnarvon.

HOU We would like get an Agena fix on...

CRO Say again.

HOU I would like to get an Agena tape dump over your side.

CRO Roger, that.

You are coming in very weak.

HOU How now?.

CRO Better.

HOU Okay.

CRO Now me.

HOU I got you loud and clear.

TAN Tananarive has LOS.

END OF TAPE

This is Gemini Control at 45 hours 29 minutes into the flight. Gemini 10 is over Australia in contact with the Carnarvon station. It is on its 28th revolution. We'll - we're still in contact with Carnarvon and we'll bring this pass to you from the start now.

CRO Carnarvon has telemetry solid, Gemini and Agena.

HOU Roger.

CRO All systems are GO.

HOU Roger Carnarvon.

CRO We faulted our computer.

CRO Gemini 10, Carnarvon

S/C This is 10, go ahead.

CRO Roger, all systems are go here on the ground. I have a couple of updates for you for your CC and NSR.

S/C Ready go ahead.

CRO OK, purpose is corrective combination, GETB 45:54:01, core 25-00 0 11, core 26-90 0 38, 27-00 0 14, maneuver is posigrade up and north. For your co-elliptic maneuver GETB 46:09:28, core 25-00 0 09, core 26-00 0 98, 27 zeroes, posigrade and down.

S/C Roger. 26 on the NSR was 9.8 down,over.

CRO That is affirmative.

HOU Carnarvon Cap Com, Houston Flight.

CRO Go ahead.

HOU How about the pitch and yaw?

CRO SOP say you don't do that but undock maneuver update.

HOU Give it to him. I think you're wrong.

CRO Roger.

CRO 10, Carnarvon. Do you want the pitch and yaw for that?

S/C That's all right.

CRO He doesn't want them Flight.

HOU Yes, I copied. I'm checking the SOP.

CRO Page 4-9.

HOU Roger.

HOU Carnarvon Cap Com, Houston Flight.

CRO Go ahead.

HOU You win. I'm wrong.

CRO Roger, Flight.

CRO Do we still want this L-band on the Agena?

HOU Say again?

CRO Do you still want the L-band on the Agena?

HOU Standby.

HOU We don't need it, Carnarvon.

CRO OK. 10, Carnarvon. Do you need the L-band for anything?

S/C Negative.

CRO OK, we'll turn it off.

S/C Roger.

CRO L-band commanded off.

CRO Flight, Carnarvon.

HOU Go.

CRO I can't hear you. Say again.

HOU Go ahead

CRO Roger. We're still showing NBO-1 as lost. Do you want us to have him try to press that EKG lead on there?

HOU Copy the NBO-1 is off.

CRO Roger it's lost. Do you think we might be able to get it back if we asked them to press on it - under his arm a little bit?

HOU Carnarvon, Houston Flight.

CRO Go ahead.

HOU Surgeon thinks he might have connected his umbilical electrical which would cause you to loose it.

CRO OK. Our computer is back operational. We're sending you some.

HOU Roger.

CRO We've received Agena tape dump and repositioned the tape recorder.

HOU Roger.

CRO Carnarvon has LOS, TM one and two all systems go at LOS.

HOU Roger Carnarvon.

This is Gemini Control. The reference to that item that was lost in there, that's the signal from the pilot's auxiliary EKG sensor. Since the pilot is in preliminary EVA preparation he very well could have hooked up his umbilical electrical connection to test it out and as you heard the Flight Director that

would cause the loss of this EKG signal. This is Gemini Control 45 hours 34 minutes into the flight.

END OF TAPE

This is Gemini Control, 45 hours, 44 minutes into the flight and Gemini 10 is over the Pacific within range of the Canton Island station. John Young reports that he and Mike Collins have the 8 Agena in sight. We've also determined that it will not be necessary to update these two tweak maneuvers that were given to them awhile ago. Those numbers are still good. We will start the tape on the start of this pass now and then we'll stand by for any further conversation during the pass.

Canton go remote.

CTN Roger, Canton remote.

HOU Gemini 10, Houston Cap Com.

S/C Roger. We have the 8 Agena in sight. We've been watching it for about five minutes.

HOU Roger. Good news! Those updates we gave you for your burns are good. We're satisfied with them. You should get there within 11 seconds of nominal TPI. Gemini 10, Houston Cap Com.

S/C Roger, go.

HOU You seeing it in sunshine, or earth shine or combination?

S/C It's hard to tell. It's one or the other.

HOU What's the sun angle, John?

S/C The sun is just barely north.

HOU Rog.

S/C The sun is about 40 degrees above the horizon and I think we're seeing it mostly in sunshine.

HOU Rog, Mike.

HOU 10, from Cap Com. Can you reference it to a star?

S/C .....It's changing its intensity over a very slow period so I think you have something of a small.....

HOU Roger, understand.

HOU Your range right now, Gemini 10, is 95 miles.

S/C Roger, 95.

S/C It does look like it's pointing toward us.....

(PAUSE)

HAW Hawaii has acq aid contact.

HAW Hawaii has telemetry solid on the Agena.

HOU Roger, Hawaii.

HAW And telemetry solid on the Gemini. Both vehicles are go.

HOU Roger.

HAW Gemini 10, Hawaii Cap Com.

S/C Okay, go.

HAW How are you doing this morning?

S/C Just fine.

HAW Okay, you're looking real good here. We'll stand by and watch your burn.

S/C Roger.

(PAUSE)

HAW We just lost our 1218 at Hawaii.

HOU Roger, Hawaii.

S/C Burn in, Flight.

END OF TAPE

HOU Burning, Flight.

HAW Go ahead with the burn.

HOU Say again

HAW He is finishing up with the burn.

HOU Roger.

HAW It is all done. He has taken out the residuals.

10, Hawaii.

S/C 10, go.

HAW Got your residuals?

S/C Roger, wait a second.

HAW Okay.

(PAUSE)

HAW Hawaii has LOS.

HOU Roger.

END OF TAPE

This is Gemini Control Houston 46 hour even into the flight. And Capsule Communicator C. C. Williams has just tagged up with 10 via California. Here is how the conversation is going.

GYM Guaymas has ac aid contact.

HOU Guaymas go remote.

GYM Guaymas remote.

HOU Gemini 10, Houston Cap Com.

S/C Roger, 10, go.

HOU It looks like a good maneuver, John. With any luck at all we will hit TPI within 4 seconds.

S/C Roger.

HOU That Agena you saw, was that the 8 Agena? or the 10 Agena?

S/C Is the 10 Agena ahead of us?

HOU That is affirmative.

About 3 miles.

S/C Well, that is what we are looking at then.

HOU John, I would like to go over some mission rules for your EVA. You have got a go for your EVA. At your convenience here on the state-side pass, do you want to talk about it now or wait until your next maneuver?

S/C I would like to wait until the next maneuver.

HOU Okay, fine. We are standing by, then.

HOU It runs all the time in tests, I understand, but you can turn it off by turning off your utility light power, and just control it from there. It will be 16 frames per second.

S/C Are you talking about the right hand camera which is broken.

HOU That is right, Mike.

S/C No, that is one of the characteristics of it, is that it does make noises continually in cast whether your finger is on the button or not, it makes the same whirring noises that it does in the other mode. However, it is not working in any mode. The little ratchet inside which turns the - which advances the film inside the magazine is not working.

HOU Okay, I got you. Are you going to use the left hand camera with the bug eye lens for your EVA?

S/C We plan on using the left hand camera, shooting out through the left hand hatch with the 18mm lens for EVA. Do you prefer buy eye EVA?

HOU We will talk about it and I will give you a call later.

S/C Okay.

(PAUSE)

This is Gemini Control Houston. We are about 3 minutes away from this next maneuver, a 9.8 foot per second delta V burn. Another adjustment and his fuel remaining after this burn

should be about 358 pounds remaining. We are standing by. (PAUSE)

S/C ....80 reads minus 110, 81 reads all zips and 82 stand by. Eight-two is minus ...and we burned that one - we burned ...and we burned this one right down the angle.

END OF TAPE

HOU Gemini 10, Houston.

S/C Go ahead.

HOU Roger, request that you go to prelaunch computer please.

S/C Prelaunch with computers.

HOU Roger. Prelaunch and we'll be sending you a load and you'll receive a DCS light.

S/C Houston, Gemini 10. On this camera bit, we're stowed to do it as we said. I shoot camera out the left hand window, if you'd like to change to that please let us know as soon as possible. We've got a lot of restowing to do.

HOU Roger. Our recommendation is this, for the left hand camera, use it in your EVA position with the bug eye 5 mm lens. The right hand camera would then be in the left hand mount for the 18 mm lens and periscope set at 16 feet per second. Correction - frames per second, test position. This is our recommendation only and we'll standby for your decision.

S/C This is 10. We realize one camera is completely inoperative.

HOU Roger, we realize that.

S/C The other question remains, which would you rather have, the bug eye shooting out the right hand open hatch or would you rather have movies of certain selected times shooting out the left. We thought

with the capability to change magazines it would probably better to shoot a couple of magazines out to the left.

HOU 10, Houston. We concur. Change that to read then, to use the workable left hand movie camera out the left hand window where you can change the magazines, etc.

S/C OK, fine.

HOU Gemini 10, Houston.

S/C 10, GO.

HOU Roger. We're almost LOS here but I've got some mission rules for you. Your fuel cutoff to stop the rendezvous - stop what you're doing at that point is 133 pounds or 7 percent on the gage. 133 pounds is 7 percent on the gage corrected. If you arrive at the rendezvous with greater than 170 pounds, which is an indicated 10 percent on gage, you are OK to go ahead with station keeping. 10 Houston did you copy those?

S/C Roger.

HOU Roger, 7 percent cutoff rendezvous, 10 percent for statinn keeping. Also I'd like to give you some recommendations for EVA. The conditions are first the electrical load should be a minimum of 40 amps. The primary coolant loop should use the A pump and then the secondary loop the B pump should be used. If this is impossible

alternate would be the primary B and the secondary A pumps. The suit fan to number one and the ELSS valve either medium or high flow. I've got some additional rules concerning the possibility of eye irritation for John. They are as follows, if eye irritation is experienced select O_2 high rate and just continue with EVA. Now if the ELSS is on medium or high during this time, this rule applies. However, if you must go to high and bypass, then you'll have to discontinue the EVA.

S/C Roger, understand.

HOU Roger. Also medium and bypass is OK. In other words either medium or high or medium and bypass is OK. However, high and bypass is a terminate.

S/C Roger understand.

HOU Roger and realize that those rules we just gave there apply only to the condition where John is experiencing eye irritation.

S/C Roger.

LOS Grand Turk.

END OF TAPE

This is Gemini Control Houston, we have wrapped up the state side pass and I suppose that everyone copied the special rules that will apply during the EVA exercise. A little earlier today, we got some readings and an elapsed time of 40 hours on the water intake of each man, we show that at an elapsed time of 40 hours a total of 9.7 pounds per man for the first 40 hours of the mission and the flight surgeon's console advises this is right on the planned value to that point. In the absence of any negative reports the surgeons assume the men have been consuming their planned 2600 calories per day. They estimated last night the sleep rates, the heart rates during the sleep period ran in the high 40's, low 50's -- just about average for -- in comparison to past flights. Had a few flights when the rates got down into the 30's but they were very rare. At 46 hours, 21 minutes into the flight, this is Gemini Control.Houston.

END OF TAPE

This is Gemini Control Houston, 46 hours 56 minutes. In the intervening periods since our last discussion, we've had a couple of decisions here. For one the one operative movie camera will remain inside the spacecraft during EVA it will be operated by Young looking out of the left window. It will not be mounted on the adapter section by Collins. The other camera is inoperative and so it will not be - no attempt will be made to use it. We also would like to update you on some burns based on data refinement several of the maneuvers will occur some three minutes earlier than planned. Our TPI now is scheduled for 47:25:59 and the terminal phase final 47:45:31. Flight Dynamics says that the orbits of the two objects - the differential heighth between the two is essentially seven miles, and he's showing about 215 on the Agena 8, 208 on Gemini 10. The EVA maneuver itself is to begin if the rendezvous works out according to plan, the EVA would begin in an elapsed time of 48 hours 35 minutes into the flight. It would be concluded at 49 hours 30 minutes. We have now some tape conversations that have backed up during the Press Conference and we'll play them for you now.

HOU Canary from Flight

CYI Go, Flight.

HOU Let them know that that means if you all break compensation.....

CYI Roger. He wants to let (garbled) compensate until then.

HOU Canary Islands, Flight.

CYI Go, Flight

HOU The Agena 8 at an elapse time of 46 hours 27 and a half minutes will be 55 miles in front, 6.8 degrees up, 27 and 1/2 minutes.

S/C Roger.

HOU Go ahead.

CYI Did you all rigidize the Agena? Over.

HOU Standby. Yes we did Canary.

CYI Roger, OK we just noticed the difference.

S/C Canary this is Gemini 10. We'd like to know the position of the 10 Agena when we're at TPI relative .....

CYI Roger standby

HOU Standby

HOU We're running it now, it's going to take a couple of minutes yet.

CYI Say again.

HOU We're running the Agena 10 position now it's going to take a couple of minutes.

CYI Roger.

HOU But we'll get it to them.

S/C This is 10, Roger thank you.

CYI Roger.

S/C 10, Roger

CYI Flight, Canary,we've had LOS both vehicles. Both are .....

HOU Gemini 10, Houston. We're standing by.

S/C 10, Roger.

ASC Ascension, LOS

KNO Kano is remote.

S/C Houston, this is Gemini 10. Over.

HOU Houston, Gemini 10. Go ahead.

S/C Did you get the update to the parameters, you left them out.

HOU We're working on those right now. We're trying to get some late tracking here and we'll give them to you as soon as we can.

S/C OK.

HOU Right now our feeling is that you'll probably be about three minutes early to TPI.

S/C Roger. OK.

HOU We'll pass this just as soon as we can get it. The Agena presently is in about a 215.7 by 216.4 orbit, so it looks good.

S/C Roger.

HOU Of course these left right, up down maneuvers that we pass up to you will be relative to you as you sit in the cockpit.

S/C Roger.

AFD Carnarvon Cap Com, AFD.

CRO AFD Carnarvon

AFD Roger Carnarvon. We'd like for you to get the cryo readout PCM count either before or during

fuel cell purge.

CRO Roger.

TAN Tananarive is remote.

HOU Gemini 10, Houston.

S/C Go ahead

HOU Roger. We're still working on your update quantities. Right now we have your delta H at 7 miles and it's so close that we cannot see any co-ellipticity at all.

S/C Roger.

HOU Gemini 10, Houston.

S/C Gemini 10, GO.

HOU Roger. We've got some range and elevations of the 8 Agena and the 10 Agena at TPI for you. For the 8 Agena it will be approximately 15.3 miles at an elevation of 27 degrees. The 10 Agena will be at 4.5 miles minus 19 degrees. This is all relative to your local horizontal.

S/C Roger. Understand the 10 Agena is 19 degrees below us.

HOU That is affirm.
Additionally at sunrise, you'll see the 8 Agena at a range of about 29.4 miles and the elevation should be 13.5 degrees.

S/C Roger, we understand.

HOU And finally we'll be giving you your information for the rendezvous over CRO.

TAN Tananarive has LOS.

This is Gemini Control Houston. We are now over CRO and we'll pick up that conversation.

CRO Go ahead.

HOU TETB 47 plus 27 plus 20, TET Agena sunrise 47 plus 04 plus 03, ET Agena sunrise 23 plus 17, forward 24.9, 1.1 up, 3.3 left, target azimuth 0, target elevation 32.9, range at 2 miles, ET since TPI 16 plus 16, range rate 47.8, ET at 1 mile, 18 plus 46, range rate 44.4. Delta H 7 miles, direction of the up and down and the left right components are relative to the crew in the cockpit.

CRO Copy that.

HOU It's on the way to you.

CRO Carnarvon has telemetry solid, Agena and Gemini. Systems are go.

CRO Gemini 10, Carnarvon.

S/C 10, GO.

CRO Roger would you place your quantity read switch to O_2 please.

S/C O_2

CRO Roger. We'd like a propellant quantity readout.

S/C Roger. It reads about 31 percent.

S/C We need the Agena (garbled) time.

CRO OK. I've got a backup update for you if your ready to copy.

S/C Go ahead.

CRO GETB 47 27 20, GE.....

END OF TAPE

CRO GET Agena sunrise 47 04 36. Okay will you place your quantity read to H2. Elapsed time for Agena sunrise the TPI 23 17, 24.9 forward, 1.1 up, 3.3 left. Target azmuth is zero, target elevation 32.9. Elapsed TPI range at two nautical miles 16 plus 16. Range rate 47.8. ET TPI range one nautical mile, 18 46, range rate 44.4, Delta H seven nautical miles and the direction of the left-right, up-down is relative to the crew in the cockpit.

S/C Roger, thank you.

CRO Roger. Have you started your purge yet?

S/C Negative

CRO Okay, let's do it. Okay? Now for your information, TPI will be about 1½ minutes earlier than nominal vice the three minutes sent up earlier.

S/C Roger.

HOU FLIGHT Carnarvon, Flight.

CRO Go ahead flight.

HOU FLIGHT The variation around the Delta H is plus or minus two tenths of a nautical mile. The variation around the 7.0 Delta H is around plus or minus...

CRO Ten, Carnarvon, a little bit more information, your variation around Delta H is seven nautical miles is plus or minus two tenths of a nautical mile.

S/C Roger.

END OF TAPE

This is Gemini Control Houston. C. C. Williams has just put in a call to 10 over Canton. We'll cut in there live.

(PAUSE)

This is Houston. It's going to be an extremely long pass. The Canton circle overlaps the Hawaii area of acquisition. Probably be in the order of 8 to 9 minutes and it will be during this pass that the terminal phase initiate on this final rendezvous maneuver will be attempted. That is to come - we're now showing 22 minutes, 25 seconds after 47 hours, 22 minutes, the TPI to take place at 47:27. At the completion of this maneuver the spacecraft should show onboard, if it goes according to plan, 334 pounds of propellant remaining. 25.1 foot per second burn.

HAW Hawaii has C-Band track.

HOU Roger, Hawaii.

HOU You're within a couple of minutes of that burn, ED.

HAW Say again, Flight.

HOU He's within a couple of minutes of that burn.

HAW I can't read you too well.

HOU I say, he's within about two and a half minutes now of this burn.

HAW That's affirmative.

HAW Agena TM solid at Hawaii.

HAW Gemini TM solid at Hawaii. Both vehicles are go.

HAW Gemini 10, Hawaii.

HOU Just give him a standing by.

HAW 10, we'll be standing by watching your burn.

HOU Hawaii, Flight. See if you can mark the burn time for us.

HAW Roger.

HAW Start of the burn, Flight.

HOU Roger.

HAW Quite a bit early.

HOU Yes, he's about 14 seconds.

HAW He's ceased burning. He's just ... out of his control.

HOU Roger.

HAW It looks like he's going to burn some more here.

HOU Does it look like residual burning, Ed?

HAW That's about it. He got a little on the down firing. Mostly pitch down, pitch up and yaw right and left.

HOU Hawaii, Houston Flight.

HAW Flight, Hawaii.

HOU We'd like to get your Delta T readout of the aft firing thrust burn.

HAW The aft firing thruster?

HOU During the main burn.

HAW 10, Hawaii.

S/C 10, go.

HAW Do you have some residuals for me?

S/C garble

HAW Okay, standing by. I have plenty of time.

HOU Never mind their residuals, Ed.

HAW Okay.

HOU Let's wait and see what he does.

HOU We need an OBC.

END OF TAPE

HOU Hawaii from Flight

HAW Flight Hawaii

HOU Did you send a Gemini main prior to the burn?

HAW That's negative. We were having intermittent telemetry.

HAW In fact he started the burn when we still had intermittent TM.

HAW Flight, Hawaii

HOU Go

HAW OAMS helium pressure, George Charlie 01 13 70 psi.

HOU Right.

HAW OAMS helium temperature, George Charlie 02 48.8 degrees.

HOU Roger.

HOU Hawaii from Flight. We'd like another OBC.

HAW Roger.

HOU Also Guaymas send us a couple of Gemini mains.

GYM Roger Flight.

S/C We're burning now.

HOU Say again.

HAW OK Flight he's doing a big burn here using his down firing thrusters. Getting a lot of OAMS right and left activity.

S/C Let's see our first correction was 4 up

This is Gemini Control Houston, we've lost contact from Hawaii but we should pick up via California momentarily. Our time now

47:34 so the spacecraft would be approximately 6 miles about make it 7 to 7 1/2 miles slant range from the Agena 8. The - at the moment of this terminal phase initiate the Agena 10 was 4.5 miles below and slightly ahead of the spacecraft. If the rendezvous continues in a nominal way, the Agena 10 would be 19.4 miles below and ahead of the rendezvous combination of Agena 8 and Gemini 10. Still no contact from California but it should come just any second.

This is Houston. Present plans for the Agena 10 call for a maneuver after splash, after the Gemini 10 splashes down tomorrow. The plan is to fire the Agena 10 which still has 3600 feet per second aboard her, fire her into a high orbit. An orbit with an apogee of approximately 750 nautical miles, a perigee of 90 miles, leave the Agena 10 at that orbit for several revs, there is no set number of revs at this time. Once all the elements of that orbit then the plan would be to fire the Agena one final time and circularize the Agena 10 orbit at 190 nautical miles and leave it there as a target of opporutnity for a later mission. All this to come after the splashdown of Gemini 10. Now we expect some communication, we'll cut back in.

GYM Guaymas remote

CAL California local

This is Houston we're still standing by. The crew obviously working and not talking, at least not talking to the ground. We're at 47:39, terminal phase final to come at 47:47.

END OF TAPE

Gemini Control Houston, nothing new to report from the Hawaii pass. We'll come back up when something else develops, meanwhile, we'll stand by and continue to monitor the line for any voice conversation.

GYM Houston Flight, Guaymas.

HOU FLIGHT Go ahead.

GYM We just lost our computer, we got your DOVC and two man's out.

HOU FLIGHT Roger.

GYM Guaymas to flight, he's pretty close to the second correction.

HOU FLIGHT Roger.

This is Gemini Control Houston, at this point the two vehicles should be approximately four miles apart, four miles slant range.

GYM We're getting a lot of forward firing now flight.

HOU FLIGHT Roger.

This is Gemini Control Houston, we've been following this movment we expect he's within one mile of the Agena 8 right now. The fuel consumption appears not to be unusually high and he should be entering the period where his final breaking maneuver start taking place. We'll go back and monitor.

END OF TAPE

This is Gemini Control Houston. It has been a little more than 20 minutes since transfer and as Glynn Lunney put it we should be right there about now. He has been carrying on a running conversation with our guidance navigation officer, Gary Coen, Coen watching telemetry and observing and calling about every blip of the thruster. Still no report, of course, from the crew. We will go back and monitor.

HOU Gemini 10, Houston.

S/C This is 10, go.

HOU See anything of the Agena 8 around?

S/C Yeah, we are about, I guess, 7 or 8 hundred feet out.

HOU Fantastic, John.

S/C Yes. I don't believe it myself.

HOU We do. What is your fuel quantity, John?

S/C Fuel quantity is over 20 percent, Al, a little over.

HOU Good show.

This is Gemini Control Houston. The first estimate on the fuel usage in this rendezvous looks to be something over 110 pounds. This is an unofficial estimate. It will be refined later. However, if it holds up, it would be far and away the most economical rendezvous transfer maneuver made. We will stand by monitor for any additional conversation.

This is Houston. Our guidance navigation control officer is reporting that he is really hitting it now. He is using quite a lot of fuel. To close this last - his last report was 7 or 8 hundred feet. He is watching quite a lot of thruster activity. Correcting some out of plane. And the flight director has advised our Capsule Communicator Al Bean not to bother them right now. We will wait until they get to Ascension before we raise them. We are due to leave the Antigua area momentarily. Ascension will come in at 48:03 and we are at 47:57. Let's monitor out the last minute or so of this live pass.

HOU Gemini 10, Houston. We indicate somewhere around 140 pounds.

S/C You are awfuly garbled. We are station keeping just about - stand by one.

HOU Roger, when you get a chance give us a feel for the Agena attitude and also your propellant quantity remaining.

S/C (Garbled)
Now we are station keeping. The docking light is on and the propellant quantity - John, can you read that out? 12 percent. 12 percent.

HOU Roger.

S/C Spot 15 percent. What was that information you wanted? I didn't copy?

HOU What is the attitude of the Agena and what is it doing?

S/C You are unreadable.

HOU What is the Agena attitude?

S/C Roger he is - engine down.

HOU Roger, is it pretty well stablized?

S/C Solid as a rock.

This is Gemini Control Houston. And that very comforting report, first by Collins, he reported the Agena is engine down and the Young followed with a report that it was as solid as a rock. This brings much comfort to the people in planning this EVA exercise. The one big unknown there was the rates that the Agena 8 be in, a tumbling or a kind of oscillating, might have changed our EVA plans. But apparently with this stability, we can proceed. It had been theorized before the mission that the dynamics of the Agena 8 were such that the crew would probably find it in an engine down position, much like an automatic pencil with the button end assuming the role of the engine, pointed to the earth all the way around. We will come back up when Ascension acquires some 3 minutes from now. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston. We should reacquire through Ascension momentarily. Our present estimate is that we would still need about 35 pounds of propellant. Now Alan Bean is tagging up with Gemini 10, let's cut in there.

HOU About 665.

S/C Our O_2 pressure at 740.....(garble)

HOU Roger. We're standing by for your propellant quantity reading.

S/C 15 - 15%. CQI 15.

HOU Roger, 15.

(PAUSE)

This is Gemini Control Houston. We expect no further communication with 10 during this pass across Ascension. He's not yet left the Ascension area but there is no indication that we'll have further com. Meanwhile, a large conference is in progress around the Flight Director's console and the attempt is to pin down the onboard quantity, be assured of any gauge in accuracies onboard or in our TM readouts. This is Gemini Control Houston at 48 hours, 12 minutes into the flight.

END OF TAPE

This is Gemini Control Houston. We expect an acquisition at Tananarive within about 20 seconds. I believe Al Bean our communicator will talk to 10 via Tananarive. Meanwhile the conversation on the onboard quantity continues. It involves the Gemini Program Manager, Chuck Mathews, the Flight Director, Glynn Lunney, Donald Slayton, Bill Schneider, the Mission Director, clustered around the Flight Directors desk. Also two GNC men, Gary Coen and Arnold Aldrich. We've got a call going into 10, let's listen.

S/C Go ahead

HOU Roger, we're taking a close look at your fuel quantity on the ground here. Could you give us another reading of your propellant quantity.

S/C (garbled)

HOU Roger. Understand you still are reading 15 percent.

S/C Affirm.

HOU How is the station keeping going and do you think you're using much fuel in performing that operation?

S/C (garbled) we're in platform mode.

HOU Roger say again your remark about S-10.

S/C I'm looking right at it.

HOU 10, Houston. Just continue with the EVA prep and we'll look at you again over Carnarvon. Over

S/C Roger.

HOU Carnarvon from Flight.

CRO Go ahead Flight, Carnarvon

HOU I'm going to want a number of Gemini mains from you.

CRO OK.

S/C Would you believe that the main (garbled) is off the status display panel?

HOU 10, Houston. Say again the information about the status display panel.

S/C Yes. For some reason the main light is off. However, (garbled) between those two tanks must be pretty low.

HOU Roger.

HOU Roger, did you say that light was on or off?

S/C Off of course.

HOU Roger.

This is Gemini Control Houston 48 hours 24 minutes. A bit of explanation needed on that last bit of conversation I think. Young stated in jest twice, repeated it for us and got some - got a pretty good laugh among the Flight Controllers. He said that the main red light on the Agena display panel was off. The signifigance of this is that if in a live Agena case if that light is ON the Agena is NO GO and it means to stand clear. Of course, John was just reemphasizing that the Agena 8 is dead, electrically, and called down the fact that the main red light

was off. We expect no additional com during this Tananarive pass although we're only in the middle of the pass. Perhaps we should monitor for another minute or two. We'll standby.

HOU Carnarvon from Flight

CRO Go ahead Flight.

HOU YOu were calling me.

CRO Roger. Just wanted to know how far you'd gotten on his checklist.

HOU On his what?

CRO On his pre EVA checklist.

HOU He's working his way right through it.

CRO Ok I haven't said (garbled)

HOU Negative

CRO OK.

CRO Flight, Carnarvon

HOU Go ahead

CRO Roger. I'd like to know the status of the TM and C-beacon switches in the spacecraft.

HOU The what?

CRO The TM switch and the C adapter.

HOU Real time and acq aid and continuous.

CRO Roger.

HOU Go ahead

HOU Gemini 10, Houston go ahead.

S/C Roger. What's the elapse time to sunrise. Over.

HOU Roger. Sunrise time will be 48:36.

S/C Roger.

HOU Roger. We've been looking at your fuel down here and it looks real good.

S/C Roger. It looks good to me too.

END OF TAPE

TAN Tananarieve has LOS.

This is Gemini Control Houston, 48 hours, 29 minutes and that wraps up the communication via Tananarieve. Next up Carnarvon at an elapsed time of 48 hours, 35 minutes. We will take a reading on the fuel gage and get a final status check before we start EVA according to present plans on reaching Carnarvon. It would probably take two to three minutes to get all the necessary readouts, Carnarvon should be a pretty good long pass in the order of six minutes and hopefully we can get the EVA underway. You heard John Young checking for the local sunrise. This EVA, of course time too will start as soon after sunrise as possible. This is Gemini Control Houston.

END OF TAPE.

This is Gemini Control Houston. We expect acquisition by Carnarvon in a very few seconds. And the general plan at this point is to look at the onboard systems, particularly the remaining fuel. We don't know exactly how far Gemini 10 is station keeping with the Agena 8. The word itself means on the order of something under 50 feet. In general parlance and it is probably much less than that. Because at one point John Young said he was looking right at the S-10 micrometeroid experiment on the Agena 8. Hopefully, Mike Collins will be able to recover that. Carnarvon has Gemini solid, has TM solid.

HOU When he gives you a PQI readout, ask him how he feels the station keeping is going?

CRO Say that last.

HOU When he gives you a PQI readout, ask him if he feels the station keeping is going cheaply or expensively.

CRO Roger.

You can hear Glynn Lunney relaying instructions to the Carnarvon flight controller. The estimate on propellant usage during EVA is presently shown at 35 pounds. That is the expenditure we expect.

HOU Carnarvon, send us another main.

CRO Roger, that. We are reading for zero volts on squib one and two.

HOU Better mention it to them.

CRO Roger. 10, Carnarvon

S/C 10, Carnarvon.

CRO Roger. We are showing - give us a reading on squib voltage.

S/C Roger, we are busy right now...what is the matter with that squib voltage?

CRO It looks like you turned it off. We are showing zero down here.

S/C Garbled

CRO Thank you very much.
We got it back.

HOU Carnarvon Com Flight.

CRO Go ahead.

HOU PQI readout.

CRO Roger, that. We would like to talk quantity when you have got a chance.

S/C Roger. It looks like 14 percent. I can't get over there to read it any lower.

CRO Roger. (PAUSE) We would like to know whether or not you think you are using excessive or reasonable amount of fuel for your station keeping.

S/C Roger, it is a reasonable amount, I think.

CRO Okay.

HOU There is a couple of more mains, Carnarvon.

CRO Roger. Okay, Flight, we are showing him depressing the cabin.

HOU Say again.

CRO We show him starting to depress the cabin.

HOU Roger.

The fuel usage that Young has been calling out the last report 14 percent, is estimated on the order of slightly more than a hundred and 30 pounds of onboard propellant. And this is very close to the guide line established. We have a lower limit that would conclude the activity, should at any time they reach the 65 pound remainder. This would be used to adjust to a lower perigee to set up for reentry, sometime tomorrow. Cabin is depressurizing. Carnarvon reports all systems are go on Agena and Gemini.

HOU Carnarvon Com Flight.

CRO Go ahead.

HOU Tell him to go ahead with the rest of the station keeping.

CRO Roger.

The flight director has directed that Carnarvon tell them to continue station keeping.

S/C I am glad you said that because Mike is going outside right now.

CRO Good luck, Mike. We are showing 797 on O_2 pressure.

HOU Okay.

CRO Do you want them to go manual? 792 pressure.

HOU Pump it up Carnarvon.

CRO 10, Carnarvon. Go manual on the OT heater, pump

CRO it up a little bit.

S/C Roger OT heater is on manual.

This is Houston. The hatch is opened. Collins is leaving the spacecraft. We estimate that the hatch opened at an elapsed time of 48:hours 42 minutes. We will go back and monitor for the first conversation outside.

CRO We are showing a right 2 delta P at 3.46 steady.

HOU Roger.

CRO Cryo pressure back to 801 and climbing.

HOU Computer - go ahead (CRO and HOU simultaneous) lower limit on GCO1 .900 --

CRO 320 ...

HOU Right.

CRO All systems go.

END OF TAPE

CRO Okay, we're at 811 on the O_2 pressure. Is that good enough or do you want him to keep it in manual for awhile?

HOU Say again, Carnarvon.

CRO We're showing 816 on O_2 pressure. Do you want to keep it in manual?

HOU Yeh, you can tell him to leave it in manual.

CRO Okay. We'll have him leave it in manual.

The first activities that Collins will engage in outside will be to activate a small button raising a handrail on the adapter. Then he will plug his umbilical line in - I'm sorry, his handheld maneuvering line in to a nitrogen source on the adapter. He will ensure he is getting good flow from the little handheld maneuvering unit very similar to the one Ed White used on his space walk. And once he's sure that that little unit is operating all right, he will move over to the Agena. The plan was for Young to take up a station about five feet away from the Agena and would attempt to recover the micrometeorite experiment. He will also retrieve a micrometeorite experiment off the adapter of his own spacecraft. He will not install a movie camera outside because of the two onboard. Only one is operating and they decided that Young will operate that out his window and give him, thereby, a chance to change magazines during the EVA period. We have lost signal now with Carnarvon. We will go back and rack up the entire tape and play it throughout the Carnarvon pass. Repeat play for you.

HOU Stand by, Carnarvon.

CRO Roger.

HOU Carnarvon, Flight.

CRO Go ahead.

HOU I want a PQI readout from him also.

CRO Roger.

CRO Carnarvon has telemetry solid Agena and Gemini.

HOU Roger.

CRO Systems are go.

HOU Roger. Get us a main.

CRO Coming your way.

HOU Carnarvon, Houston Flight.

CRO Go ahead.

HOU And when he gives you a PQI readout ask him how he feels the station keeping is going.

CRO Say again, Flight.

HOU When he gives you the PQI readouts ask him if he feels the station keeping is going cheaply or expensively.

CRO Roger.

HOU Carnarvon, send us another main.

CRO Roger. We're reading zero volts on squib 1 and 2.

HOU Better mention it to him.

CRO Roger. 10, Carnarvon.

S/C Go.

CRO Roger, we're showing, I guess, the reading of squib plus voltage...

S/C Roger. We're a little busy right now. We'll play with it a little bit later on.

CRO It looks like you turned it off....to zero down here.

S/C garble

CRO Thank you much.

HOU Carnarvon from Flight.

CRO Go ahead.

HOU PQI readout?

CRO Roger that.

CRO We'd like a propellant quantity when you get a chance.

S/C It looks like....(garble)

CRO Roger.

CRO We'd like to know if you think whether or not you're using excessive or reasonable amount of fuel for your station keeping.

S/C Roger. It's a reasonable amount, I think.

CRO Okay.

HOU Send us a couple of more mains, Carnarvon.

CRO Roger. Okay, Flight. We're showing him depressing the cabin.

HOU Say again.

CRO We show him starting to depress the cabin.

HOU Roger.

CRO O_2 tank pressure is still above minimum. All systems looking good. We show right suit Delta P rising very nicely along with left suit Delta P.

HOU Roger.

CRO Cabin going down very nicely also.

HOU Roger.

CRO .....on Agena and Gemini.

HOU Roger.

HOU Gemini bravo.

CRO Roger. Okay, we're showing about 801 on cryo tank pressure O_2.

HOU Carnarvon, Houston Flight.

CRO Go ahead.

HOU Tell him to go ahead with the rest of the station keeping.

CRO Roger. 10, Carnarvon. You have a go for the rest of the station keeping.

S/C Roger. How about the EVA? You want it?

HOU That's what we mean.

CRO That's what we mean exactly.

S/C I'm glad you said that because Mike's going outside right now.

CRO Good luck, Mike.

CRO We're showing 797 on O_2 pressure.

HOU Right.

CRO Do you want him to go manual? 792 pressure.

HOU Pump it up, Carnarvon.

CRO 10, Carnarvon. Go manual on the O_2 heater. Pump it up a little bit.

S/C Roger, the O_2 heater is on manual.

CRO We're showing a right suit Delta P of 3.46 steady.

HOU Roger.

CRO Cryo pressure back to 801 and climbing.

HOU Rog. How's the left suit pressure?

CRO 3.8 on the meters.

HOU Right.

CRO All systems go. Okay, we're at 811 on the O_2 pressure. Is that good enough or do you want him to keep it at manual for awhile?

HOU Say again, Carnarvon.

CRO We're showing 816 on O_2 pressure. Now do you want to keep it at manual?

HOU Yeh, you can tell him to keep it in manual.

CRO Okay, we'll have him leave it in manual.

HOU Hawaii from Flight.

HAW Flight, Hawaii.

HOU Coming at you, Ed.

HAW Let her go. What do you show on the top of the Dome?

CRO Carnarvon has LOS Agena and Gemini. All systems were go at LOS.

HOU Roger, Carnarvon.

This is Gemini Control Houston. We're 48 hours, 52 minutes into the flight. We estimate now that Mike Collins has been outside about ten minutes and this should carry him through his first

two sequences. They include the recovery of the micrometeorite package on the adapter of Gemini 10. He also should have checked out the flow of his little hand held maneuvering unit. The next period from roughly ten minutes to 30 minutes elapsed time in the EVA call for him to move over to the Agena, to recover that micrometeorite package and this should occur during the period of Hawaii acquisition. Hawaii will acquire at 49 hours and one minute elapsed time. That's about eight minutes from now. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, Hawaii acquired right on the second TM contact with the Gemini. No voice contact as yet. Two things are being watched very carefully during the EVA, of course any new eye irritation that cropped up in the EVA of yesterday and we have no indication of that yet. And we had none during the EVA prep exercise earlier this afternoon. The other thing is the fuel consumption -- we feel its close but adequate. And we're monitoring for any new conversation developing over Hawaii. We've had none as yet.

This is Gemini Control Houston. Our Flight Surgeon Dr. Berry advises that Mike Collins' heart rate presently is reading 110 beats per minute. He said as he left the spacecraft it was up about 130, it settled down immediately, presently showing 110.

This is Gemini Control Houston, now we've had established voice contact and the first report from John Young was that Mike went over there and picked up that S-10. He plucked it right off the Agena. Here's the conversation as it develops as we move across Hawaii.

S/C	....so we think we had better not fool with it anymore.
HAW	Okay.
HOU	We'll concur with that.
HAW	Flight, we're having very poor Gemini telemetry.
HOU FLIGHT	Roger.
HAW	What's your position on your heater.
S/C YOUNG	I just went back to auto.
HAW	Okay, you should be just about to the mid-point. You're okay, you should be good for almost the rest of the EVA.

HOU FLIGHT Hawaii from Flight.

HAW Go ahead.

HOU FLIGHT Tell them not to spend any more fuel trying to stay with the Agena.

HAW Okay.

Ten, you can disregard saving fuel any more staying with the Agena.

HOU FLIGHT Save the fuel, stay away from the Agena.

HAW Did you say stay with the Agena?

HOU FLIGHT No, disregard that, we don't want you to stay with the Agena. Just save fuel.

HAW Okay.

HOU FLIGHT Did you get any solid TM yet, Ed?

HAW It looks pretty good now flight. Locking up. We're sending you summaries.

HAW Cryo 2 is reading 10 10 psi.

HOU FLIGHT Roger. What's the OAMS source?

S/C YOUNG We're not saving much fuel in rate command with Mike out there bumping things.

HAW Flight, did you copy that?

HOU FLIGHT Say again.

HAW He's not saving much fuel in rate command with Mike bumping things, do you want to change modes?

HOU FLIGHT Tell him to save that fuel.

HAW Okay.

Use any mode you can to save as much fuel as possible.

S/C YOUNG Roger.

HAW The OAMS is reading 847 flight.

HOU FLIGHT Right.

S/C COLLINS Okay, Houston, this is Gemini 10. Everything outside is about like what we predicted only it takes more time body positioning seems to be the problem. Although the nitrogen line got connected without too much of a problem. When I translated over to the Agena I found that the lack of hand holds is a big impediment. I could hang on but I couldn't get around to the other side which was where I wanted to get around to. Finally I did get around to the other side and I did get the S-10 package and the nose bearing both off and John now has them, however, there's a piece of the shroud hanging -- or part of the nose of the Agena that came loose and I was afraid I'd get snarled up in that, and so was John, so he told me to come on back. So, the new S-10, which I was going to put on the Agena I didn't and I'm just now throwing it away. Also I lost my EVA Hasselblad inadvertently, I'm sorry to say. I'm getting ready now to do some gun evaluation.

HOU FLIGHT Hawaii from Flight.

HAW Go ahead Hawaii.

HOU FLIGHT Tell him to use his no more fuel.

HAW Roger. 10, Hawaii.

S/C YOUNG Ten, go ahead.

HAW Okay, we don't want you to use any more fuel. No more fuel. Over.

S/C Well then we'd better get back in.

HOU Get back in.

HAW Okay, get back in.

S/C YOUNG Come on back in the house.

S/C COLLINS Okay.

This is Gemini Control Houston, 49 hours, 10 minutes into the flight. I believe you heard the decision of the Flight Director relayed out to Gemini 10 to conclude the EVA, the reason being we were showing a rather high fuel consumption during the period between Carnarvon and Hawaii, a reading from Hawaii while it was of a fairly intermittent nature, the TM was, the best guess we have is something on the order of 90 pounds remaining. It has been decided that that's as low as we care to go on usable propellant on-board. No additional conversation now from the spaeecraft. We'll continue to monitor. We should have another minute or two in the Hawaii circle.

END OF TAPE

S/C OK Houston, Gemini 10. I've disconnected the nitrogen line and I'm standing up in the hatch here. John's not firing the thrusters anymore. We're just going to take a little rest and make sure we both know what we're doing before we press on with the ingress.

HAW Roger, this is Hawaii. Take your time, get all squared away and they'll pick you up over the states shortly.

CAL California is remoted.

HAW Hawaii has C-band LOS.

This is Gemini Control Houston 49 hours 12 minutes and we have - we're out of contact with the spacecraft via Hawaii. Recapping what Collins said, he said as he recovered the micrometeorite package off the Agena 8 he inadvertently dropped his hand-held camera, what he actually said was the Hasselblad. This is a hand-held still camera that he carried with him outside the spacecraft. Recall earlier that he had no EVA movie camera mounted. Presumeably Young got some good pictures of what went on outside. The fuel estimate for the total EVA had been set at 35 pounds. According to a rough telemetry estimates we used something on the order of 50 pounds between Carnarvon and Hawaii. The control task of station keeping apparently a little bit more then had been planned for. The principal event we missed during the EVA was simply that - there were two events primarily and they would have been the most fuel costly events. One was

for the pilot to translate out 30 to 50 feet and evaluate the tether. The second major event was for the pilot to be passive and let the command pilot translate the spacecraft over to him. That event plus some additional umbilical evaluation would have wraped up the EVA exercise and the crew apparently is on its way back in right now. California is remoted, let's stand by for any signal there.

GYM Guaymas is remote.

CAL California local.

HOU Gemini 10, Houston.

This is Gemini Control Houston, now with the spacecraft approaching West Texas, Al Bean has put in a call and let's see what the situation is onboard.

HOU Gemini 10, Houston.

This is Gemini Control Houston, the suspicion is here that the two are probably engaged in closing the hatch, which would probably account for them not returning Al Bean's call. I've also been handed a note from Chris Kraft. After conversing with our onboard fuel experts, says that the estimate now is something on the order of 110 pounds on board. That's 20 pounds better then what he thought. But this will be refined after the stateside pass when all the fine data is compared. Al Bean is about to put in another call, let's standby and see if we get an answer.

END OF TAPE

GYM Flight, Guaymas

HOU Go ahead

GYM Ok. Looks like he's knocked that yaw gyro off. He's still got pitch and roll but no yaw.

HOU OK.

GYM Looking good.

This is Gemini Control Houston 49 hours 22 minutes and within the last 30 seconds we got a report from Guaymas that the crew is repressurizing the cabin. Repressurzing the cabin which would probably make hatch closure some 3 minutes before that event, 3 to 5, I'll have to get a better number on that later. The cabin reading at last check was 4.7 pounds and still climbing. It will probably get up in the 5 pound range. This has to be the quietest EVA of all the EVA's we've gone through to date. Not a word said since we left Hawaii. The heart rate we're observing on Mike Collins shows settling down even from the 110 which was the last value we saw outside. There was a spurt of activity which could be expected with hatch closure and that is settling out now with the repressurization. Mike will have a fairly activity period of reriging himself for the remainder of the flight. According to the present plans we would reopen the hatch to jettison certain equipment at an elapse time of 50 hours and 35 minutes. That pretty well sums up the situation right now. This is Gemini Control Houston.

We're still going to stand by and monitor for the remainder of the U. S. pass.

This is Gemini Control Houston still no word from our two spacemen. We're setting up now fairly soon for about a one foot per second burn to separate from the Agena 8. Get comfortably away from it. The cabin repressurization is complete now and the cabin sealed off at 5.6 pounds per square inch. According to the best estimates the crew is probably busy assembling the gear that will be jettisoned during this next brief hatch opening, which is to occur 50 hours 30 minutes. One hour from now. That event will occur over just before the Hawaii pass and the hatch is to remain open on the order of 10 or 15 minutes. With the spacecraft now over the northeast coast at South America we still have time for voice contact, but we're not at all sure that we will have it.

HOU Gemini 10, Houston.

There goes our call and let's standby and monitor.

HOU Gemini 10, Houston.

HOU Gemini 10, Houston.

HOU Gemini 10, Houston.

END OF TAPE

S/C Houston, this is Gemini 10, over.

HOU Gemini 10, Houston, go ahead.

S/C Roger, you can't believe what we've got in the cockpit with .....but it turned the radio off.

HOU Roger that's what we expected. We also noticed you turned off your yaw rate gyro, and your C-band beacon circuit breaker.

S/C Well we can't even get to those things right now, we'll have to pick those up later.

HOU Roger. I don't know if this is possible or not now, but as soon as you get the opportunity you might check the 8 Agena and if it is possible put in a 1 foot per second retro-burn.

S/C I have no idea when you'll.....

HOU Roger. When you make that burn, write it down would you?

S/C Yes, Sir.

BAH LOS, Grand Turk.

HOU Gemini 10, Houston. How was the hatch closing?

S/C It was better than a piece of cake.

HOU Good. We'll be LOS in about 1 minute.

S/C Not much problem on it, I didn't have any trouble.

HOU Roger, we'll be LOS in about one minute.

S/C .....it's because there is about 30 foot of hose wrapped around me.

We may have difficulty getting him out.

HOU Roger.

This is Gemini Control Houston, 49 hours 36 minutes into the flight. And John Young just cleared up the big mystery attached to the long silence. He said they inadvertly had the radio turned off, and that certainly explained why he did not hear Al Bean's call. All the time of course we were reading the telemetry here on the ground and knew that the spacecraft was quite stable and could observe a little movement there as the crew adjusted and closed the hatch. Apparently the long umbilical coiled up in Mike Collins lap, is quite a burden, and the crew now is working to get that, the chest pack, we're not just sure of what else, whether Mike jettisoned the hand-held unit before he came back in or just what the status of it and several items is but these will be bound up in a ball and will be thrown over board a little less than an hour from now. Another contact coming up via the RKV, in about 2 minutes from now, this is Gemini Control Houston.

END OF TAPE

Gemini Control here 49 hours 39 minutes and the Rose Knot Victor has acquired here. Here is how that conversation is going.

RKV The Agena clock has reset and it is lagging about a half a second.

HOU Roger, RKV.

RKV Goss Charlie 01 0 first helium pressure is reading 847.

HOU Say again. 847. Right.

RKV Roger.

(PAUSE)

HOU Gemini 10, Houston.

S/C 10, go.

HOU Roger, we wondered if the ELSS performed satisfactorily and if it did we will give you a go to jettison it with the rest of the equipment.

S/C Roger. The ELSS works fine Al. I worked it on medium flow for a while and got slightly warm and went to high flow, but I felt it ...as far as pressure went and as far as all the ...and lights and what not, it worked perfectly. So I don't have any complaints at all. It seemed to work perfectly.

HOU Good, how are you coming as far as getting untangled from the umbilical?

S/C We are about half way in.

HOU Good.

S/C Say, this place makes the snake house at the zoo look like a Sunday School picnic.

HOU Roger.

END OF TAPE

HOU Gemini 10, Houston.

S/C Go.

HOU Roger. We're about one minute to LOS here. For your information we plan to have you reduce your altitude in two separate burns. The first depleting your fuel all except the VolksWagon tank and the second utilizing it. We'll be talking to you more about that later.

S/C Roger. We're still trying to stow this stuff up here, over.

HOU Roger. We're not in any hurry. Just wanted to keep you informed.

S/C We're reading ..... on TPI's.....

HOU Roger.

S/C When I get on there and pump the power lights out, we're reading about 9.

HOU Roger, understand when power lights removed you're reading about 9%.

S/C That's right.

ASC Ascension LOS.

Tananarive go remote.

TAN Tananarive remote. We have acquisition.

HOU Gemini 10, Houston. We're standing by.

S/C Okay, Houston. We're still cleaning up the mess here .....

HOU Roger.

S/C How about giving us a rundown on the next attitude report. We're .....

HOU Roger, wait one.

END OF TAPE

S/C Houston, 10

HOU 10, Houston. Go ahead

S/C Could you give us a brief run down on the (garbled) the burn you mentioned and when their scheduled (garbled)

HOU Roger we will.

HOU I'll call you back in about one minute.

S/C Roger.

HOU Houston 10 go ahead. We do not copy that.

S/C I said it sounds as if (garbled) instead of vice versa.

HOU Gemini 10, Houston.

HOU Gemini 10, Houston.

S/C Gemini 10, GO.

HOU Roger. It looks like your first burn will take place about 51:39, which is roughly an hour and a half from now. The second burn will take place at 53:11 but we'll be talking with you about these two burns later on. By splitting the heighth adjust into two separate burns, we hope to get a better handle on your final parameters. The open hatch time was scheduled at 50:30, which is about 30 minutes from now, If you're prepared to do it then.

HOU Gemini 10, Houston. Did you copy that last?

S/C Let's work one and then (garbled) let you know.

HOU	Roger, We'll be standing by.
S/C	O.K.
	(PAUSE)
HOU	Gemini 10, Houston, we're about a minute and a half from LOS.
S/C	Roger.

END OF TAPE

HOU We are going to make two maneuvers later on today. It is to adjust the orbit and we'll be putting them to bed after that.

CRO O.K.

HOU And the spacecraft and crew are very good.

CRO O.K.

HOU O.K., any questions?

CRO That's negative, Al.

HOU O.K., we'll see you later, Gary.

CRO O.K., thank you.

HOU Houston, Out.

HOU Carnarvon from Flight.

CRO Go ahead, Flight, Carnarvon.

HOU Ken, we need to get four Gemini mains from you this pass.

CRO O.K.CRO

CRO Carnarvon has ac aid contact Agena. Agena TM solid all systems go.

HOU Roger.

CRO Carnarvon has ac aid contact Gemini. Carnarvon has TM solid Gemini. All systems go.

HOU Roger,Carnarvon.

CRO 10, Carnarvon, standing by. Check your DCS circuit breaker. Thank you.

S/C Roger, will do.

CRO Flight, Carnarvon.

HOU Go.

CRO Do you want us to send SPC disable?

HOU Stand by. Just leave it in able.

CRO Copy. All systems "GO" both vehicles.

HOU Roger, Carnarvon.

END OF TAPE

CRO Agena LOS. All systems go.

HOU FLIGHT Would you send us an LOS main on Agena please, Carnarvon?

CRO Have you got it?

HOU FLIGHT Roger.

CRO Carnarvon has TM 1 LOS. All systems go on the Gemini.

HOU FLIGHT Roger Carnarvon.

END OF TAPE

This is Gemini Control 50 hours 28 minutes into the flight. Our best estimate now is the crew will perform at 51 hours 38 minutes, a fairly large burn which will take them down and leave them with approximately 12 pounds of propellant onboard, and then they'll perform a second burn, a very small order of burn at 53 hours 11 minutes into the flight. And the resulting orbit should be 158 by 216 nautical miles; 158 by 216 nautical miles after the two burns. We have some figures here from our electrical environmental control Communications Officer on the hatch closing and repressurizing time, the cabin was depressurized, at 48 hours 40 minutes into the flight. The hatch was open and Collins was reported leaving the spacecraft at 48 hours 42 minutes elapsed time. We estimate that the hatch closed at 49 hours and 20 minutes, approximation. We do know that the cabin was repressurized at 49 hours 22 minutes. The spacecraft is just skirting the edge of CSQ acquisition area, apparently we will have contact. Our next should come over Hawaii, and according to the flight plan, the crew will depressurize the spacecraft just west of Hawaii, we're due to acquire Hawaii at 50 hours 40 minutes, 10 minutes from now. Then a period of 15 minutes is allotted for them to jettison the equipment that they do not want to bring back in with them. The hatch has been closed over the Guaymas area. They will follow approximately a 35 to 40 minute EVA clean-up period, cleaning up the cockpit. They will then go through a platform alinement, and leading up to the period of the first burn at 51 hours 38 minutes. Following that first burn they are planning to do a D-10 experiment.

And that is the extend of our flight plan right now. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control, Houston. Fifty hours, 40 minutes into the flight and just as we started talking Hawaii reported they had a track on both vehicles, the Agena 8 and the Gemini 10. They are tracking the Agena 8 as they have in earlier passes with an S-band beacon announcing the signal off it. We have no voice communication yet via Hawaii with the crew. They're right on the flight plan. They will have depressurized the spacecraft by now and may have already have opened the hatch, we just don't know. This is Gemini Control, Houston. We've just tagged up with the crew and the characteristic of this crew throughout the flight. The first report from John Young was that they had already opened the hatch, jettisoned their equipment had closed the hatch back up and were repressurizing the cabin. Here's how the conversation is going over Hawaii.

HAW ....I haven't locked up solid yet. TM solid, Hawaii. Gemini 10, Hawaii, Cap Com.

S/C 10 go.

HAW Okay. How are you doing?

S/CC We're back up to cabin release pressure and we should quit open the reprints, Tom.

HAW Okay. Are you ready to start to go down for jettison?

S/C We've already jettisoned, Babe, we've opened the hatch, jettisoned everything and the cabin pressure is back up again.

HAW You're a little too swift for me. Your cabin's holding real fine.

S/C Rog.

HAW You look like you're pretty well squared away. You're

HAW showing about 900 on your cryo 2 which is real fine. Tubes look good and your cabin's good.

S/C Okay, thank you. You sound good.

HOU Hawaii.

HAW Go ahead.

Go ahead.

S/C He's too fast for us. Will that burn now be with the aft firing thrusters or the forward thrusters? Over.

HAW Aft. Aft firing thrusters.

Did you get that?

S/C Roger.

HAW We'll go bef now.

HAW Okay. I'm showing you. You've got your OAMS power control switch off haven't you?

S/C Yes Sir.

HAW Okay.

HOU Cap Com.

HAW Go flight.

HOU Ask him if he jettisoned everything according to schedule.

HAW Okay. Want to get the weight, huh?

HOU Rog.

HAW 10, Hawaii.

S/C 10, go.

HAW Okay. You've picked up the S-10 and did you jettison everything according to schedule or did you let something else go or did you keep something extra?

S/C No; the only thing we kept that wasn't on the list was

S/C the, was the EVA camera bracket which is down in the lower left food box.

HAW Okay.

S/C We have a fairing off with the S-10 too.

HAW Roger.

HAW Okay, that should give them a good hack on your weight.

S/C We have the Agena now. We're almost bef and it's about I estimate three thousand feet. In sunlight that's beautiful.

HAW Roger.

S/C If Houston wants to really close check on our reentry and weight they might give us a call later and check the individual items, the heavy ones if they are in that doubt.about.or

HAW Alright. Might just do that.
Close your/power control switch huh? circuit breaker or your

S/C Rog.

HAW Affirm.

Flight, did you copy all that.

HOU Yes, I understand he's turned bef and the Agena is behind him.

HAW That's what it sounds like.

Sounds like he's in real good spirits.

HOU Hawaii, from flight.

HAW Flight, Hawaii, Cap Com.

HOU Did you ask to comment on the stability of the 8 Agena prior...

HAW Flight, Hawaii.

HOU Go Hawaii.

HAW Did you get what he said there about the check list about items if you want to get a real good hack on the weight?

HOU Rog. We'll pick that up over here.

... Do you have data on these marks?

HOU Standby one. Say again Sam.

... Roger. Could you update us on these marks?

HOU We've got that here at the stateside.

HAW We'll get that for you over the states. They're making them up now.

S/C Roger. I was just wondering if we need a platform alignment before we get to the states?

HOU Tell them the burn is at about 51 plus 39.

S/C Okay. Do we need a platform alignment.

HOU Okay give you GEG time hack if you want it.

S/C Roger.

HOU Okay set up 5 0, 4 8, you got about 15 seconds.

S/C I'll never make it.

HOU Okay make it 5 0, 4 9.

HOU You want a platform alignment on that burn Flight?

M/C Stand by 1.

Hawaii to Flight.

HAW Go ahead.

M/C Would you ask him if the Agena is above them or below them, or about the same altitude.

HAW Roger, will do.

Is the Agena above you, below you, or about the same altitude?

S/C It's above us.

HAW Okay. Time hack in about 15 seconds.

4, 3, 2, 1, mark.

Did you get that time hack?

S/C No we missed it.

HAW Okay set up 50, 5 0, 00.

I'm having ~~tan~~ trouble on TM with Gemini, I've got good solid Cap Com.

TM Low limit on George Charlie 0 1.

---- Say again Flight.

---- That was .8, .8 4.

---- Okay I sent you a TX.

---- We got it.

END OF TAPE

HOU Hawaii, you were saying something to me?

HAW Flight, Hawaii.

HOU Go ahead.

HAW O.K., I was a little busy, I couldn't hear you,I was having trouble... My TM went off and I was trying to make sure that I got the dump off and that is why I didn't answer you. What were you saying?

HOU Yes,

HAW You forgot too?

TEX California go remote.

CAL Californis remote.

This is Gemini Control Houston, during much of the Hawaii pass, our Flight Director was in conversation with Flight Dynamics, Officer Jerry Bostick. Asking that he look very carefully at the distance and how we're setting up for these burns to insure that we will get safely under the Agena-8. Flight Dynamics feels with Young's report that the Agena-8 is slightly above them and that we will have no problem at all. Some consideration has been given to a slight out-of-plane burn which will insure adequate seperation, but apparently the passage seperation distance would be quite adequate. California has been remoted, but we have had no voice contact here, yet. There goes Al Bean putting in the first call. Let's listen.

HOU Gemini 10, Houston.

S/C Gemini 10, go.

HOU Roger, we have a maneuver for you. One foot per second out-of-plane at 51 plus 16, to seperate you from the Agena that is presently above you,over.

S/C Do what now, Flight?

HOU Roger, we are going to give you seperation, a lateral seperation from the Agena for the burn that is going to take place at 51:38:51 and we are suggesting a one foot per second lateral burn at 51 plus 16, over.

S/C Roger, 51 plus 16, for what?

HOU Gemini 10, Houston. That time would be 51:16:00 and would be one foot per second to the south and do you think that would give you then lateral separation from the Agena?

S/C This is 10, I think we already got some. I think that the possibility of hitting it at this point of time is so remote at to be negligible. Would you give us a time hack on GET?

HOU Roger, it's about 29 seconds until 50:53..correction 50:54:00, give you a mark there.

S/C O.K. (garbled)

HOU Ten seconds.

S/C Listen Al, you have to to remember that it will be...

HOU (Garbled)

S/C ...and I was trying to hit it.

HOU You will set up on elapsed time 54:30, I will give you a hack there.

S/C (garbled)

HOU Roger, 5 seconds, 3, 2, 1, Mark. That was time 54 plus 30.

S/C Thank you, sir.

HOU Roger, we have a burn for you if you are ready to copy.

S/C Ready to copy.

HOU Roger, it will be an orbit shaping maneuver, GET of 51:38:51, 100.0 feet per second, burn time one plus 57, yaw 180, pitch zero, 25 is 91000, thrusters is aft, maneuvers retrograde.

S/C Roger, do you want this lateral seperation....(garbled)

HOU That is affirmed. one foot per second to the south at time 51:16:00.

S/C Roger.

HOU On this orbit shaping maneuver, at 51:38:51, the logic is to completely deplete your main OAMS tank only in this burn. We have scheduled you for 100 feet per second, but expect the OAMS regulator pressure will drop below 250 PSI, when you indicate only 75 feet per second or so, burn and this is the cutoff point into the burn. That is we want to completely deplete the OAMS tank and then will accept the feet per second that you occur during this.

S/C Roger.

HOU Roger, the maximum for this would be 100 if you could get there, but what ever number it is when the regulator pressure drops to 250, is what we will accept and then we will be standing by for your readings on 80, 81 and 82.

S/C Roger

HOU And are you satisfied with the time hack?

S/C Yes sir.

HOU Roger, did you get your yaw Gyro back on?

S/C Right, tell (garbled)

HOU Roger, then I guess at this point you are aligning

HOU your platform?

S/C Roger, I called MO and asked if he had our acquisition yet. We are on the line with their carrier, but they're not shipping up data yet.

HOU Rog, thanks.

S/C I can't get to them.

HOU Rog, we will stand by.

S/C Roger.

TEX Guaymas go remote, California local.

GYM Guaymas is remote.

CAL California local.

HOU Guaymas, we wanted an AOS main.

GYM That's great, but it is over Hawaii, they didn't give me any TM.

HOU How about that.

END OF TAPE

HOU/1 Go TM.

HOU/2 Roger. We finally got to Guaymas and it turns out that the Gemini telemetry is not turned on. They do not have acquisition.

HOU/1 Thank you.

HOU/3 I see. So it's the spacecraft problem.

HOU/1 That's what they are telling us, I didn't know it.

HOU/3 Okay.

HOU/1 Go ahead TM.

HOU/2 Roger. Guaymas says the telemetry is not on is that true.

We're buying that, we finally went to Guaymas to get the answer.

HOU Gemini 10, Houston.

S/C 10, go.

HOU I've got a short flight plan up-date for you.

S/C Roger. Wait a second.

HOU Houston to TM assistance.

TM Go ahead GMC.

GMC You getting the GMTIM?

TM We've got Agena.

GMC Roger. Thank you.

TM We now have Gemini also.

S/C Ready to copy.

10 is ready to copy.

HOU Roger, 5 1, 4 5, 0 0, it will be a D-10, load a

HOU and in this D-10, no maneuvering and if the horizon scanner ignora light will not bother you during the sleep period we'd like to have you leave that on. A 5 1, 4 5, 0 0, to 5 2, 4 5, 00, be an eat period. 5 2, 0 0, 0 0, at CSQ, purge fuel cells, 1 then 2. At 5 2, 5 0, 0 0, at RKV, we'll have a PLA up-date crew status report

GT LOS Grand Turk.

HOU Right now the second of the two burns looks like it will take place somewhere around 5 3, 1 1, 0 6. So we'll be sending you powered down spacecraft after that time, but we'll have more information on that later.

S/C Can't read at all.

HOU Roger. Right now it looks like the second orbit shaping maneuver will take place at 5 3, 1 1, 0 6. We'll then be sending you some information on spacecraft power down. But we'll have more of that later.

S/C Okay. Your radio is load and clear one minute and then you're gone the next. I copied down to 52, 00, and then I picked up again at 53, 11, and lost everything else.

HOU Gemini 10, Houston. Because of the communications right now, we'll contact you over another station and pass this information up then.

S/C That's a good idea.

HOU Roger.

HOU Houston TM, Agena systems.

---- Go ahead.

HOU Did you get a real noisy data.

--- That's affirmative.

HOU Roger.

HOU Houston TM electrical.

---- Go ahead electrical.

HOU Could I get a read out on CAO 9, cryo quantity, O 2.

---- Electrical we've got a BCM 109.

HOU 109 counts.

---- Roger.

HOU Houston TM Agena systems.

---- Go ahead Agena systems.

HOU Are you getting noisy TM from the Cape.

---- That is affirmative.

HOU We got a solid drop out now systems, we're standing by.

---- Houston TM are you in Grand Turk now?

HOU Negative we're GBI.

Grand Turk.

We just switch Antigua.

HOU Okay.

GBI LOS GBI.

HOU Agena systems your data should be good now, we're on Antigua.

---- Roger.

LOS, Grand Turk

END OF TAPE

GEMINI Control Houston here, 51 hours 14 minutes into the flight. The RKV is locked up on Gemini 10, and we are less than a 1 minute away from a 1 foot per second burn to the south to insure lateral separation from the Agena 8 as we go into this larger burn, about 15 minutes from now. So far in the pass we've only had an exchange of call signs, knowledgement and the RKV Flight Controller assured John Young that he was going all the ways, and he would stand by to monitor his burn. Five seconds away from the burn.. now we should get some discussions of the results, we'll tune in there.

RKV Change low limit CB01 to 5.10.

--- Okay that's CB01 to what.

RKV 5.1, upper 5.6.
Change the lower limit on CC01, and CC02 to 0, upper limit .25.

Thus far no conversation, we do have some other loops coming in on that same ...conference, but no contact with the spacecraft. Here we go.

S/C 1.3 feet per second south

RKV Roger understand 1.3 feet per second south.

RKV Okay we'd like to have some information on the, your rendezvous with 8, how close do you think you can maneuver your spacecraft to the 8 Agena?

S/C Oh a couple of inches.

RKV A couple of inches, Roger understand.
Okay I have the rest of this flight plan up-date for you, when you are ready to copy.

S/C Okay, what.

RKV Okay, we'll start out at 5 2, 0 0, 0 0, at the CSQ. Burn fuel cells, 1 then 2. Cryo quantity read out. At 5 2, 5 0, 0 0, at the RKV. TOA up-date. Crew status report, at 5 3, 1 1, 0 0, second orbit shape. Do you copy?

S/C All you have to do is say flight plan up-date and the radio goes out, let's give it one more try.

RKV Okay, what is the last item you have?

S/C Let me read back to you what exactly I have and then you can fill me in. I've got 51, 45, 00.....no maneuvering, the horizon scanner ignora leave on all night, 51, 45, 52, 45, 52 hours even on the CSQ, purge one and two, cryo quantity read out, 55 00 00, PLA up-date, and 53 11 06 and orbit tweak maneuvers.

RKV Okay that PLA up-date over the RKV is at 5 2, 5 0, 0 0.

S/C Got you, 5 2, 5 0, 0 0,

RKV And your last item is 5 3, 11, 0 0, second orbit shape, and that is it.

S/C 5 3, 1 1, 0 0, orbit tweak. Thank you.

RKV Roger.

Still looking good here on the ground, standby.

RKV Flight, RKV.

M/C Go RKV.

RKV Okay he completed his burn and is 1.3 feet south.

M/C Copy.

RKV And he said he came within a couple of inches of Agena 8.

M/C Copy.

TM Okay we have sent command 6 to the Agena TM off.

M/C Roger.

This is Gemini Control 51 hours 24 minutes, that wraps up the communications for this pass. We heard Young say during the pass when asked how close he got close to the Agena 8 his reply was, "oh several inches".. This is as close or perhaps closer than even Gemini 6 got to Gemini 7. I think our best estimate there was 11 and 12 inches. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston 51 hours, 36 minutes into the flight. According to our acquisition schedule Tananarive should be within acquisition within some 20 seconds. No contact since our last communication over RKV. Very little activity here in the Control Center. Tananarive has been remoted. I think CC Williams is going to put in a call now.

HOU Gemini 10, Houston Cap Com. Standing by for your burn.

S/C Roger, you said we probably had some ..... so we switched over to UHF number two.

HOU Roger, I'm reading you loud and clear.

S/C We're reading you loud and clear too, CC.

HOU Rog.

S/C This is Gemini 10, do you read me now on UHF number one?

HOU Gemini 10, Houston Cap Com, I read you loud and clear on UHF one.

S/C Roger, we read you the same.

S/C Houston, this is Gemini 10.

HOU Go ahead, Gemini 10.

S/C Roger, we burned a 100 feet per second and we still got fuel.

HOU Roger, understand you burned 100 feet per second and you still got fuel?

S/C Roger, that is.....(garbled)...got zero.

HOU Gemini 10, say again, you are unreadable that time.

S/C ...the residules on that burn 80 was 4005, 3027, 82

S/C 3020, and we are trying to settle with this C.C. the propellant quanity now indicating our resource pressure is steady on 300 PSI, correction our regulated pressure.

HOU Roger.

S/C And our source pressure is about 70 PSI.

HOU Roger. Gemini 10, Houston.

S/C Gemini 10, go.

HOU Roger, we are going to take a look at you over the CSQ. We may not have to make another burn tonight, John and you can go to bed early. What are you going to do with all the room in the spacecraft?

S/C Well, I'll tell you, it seems like it is bigger than a too-room apartment now compared to what it was about an hour and a half ago.

HOU Rog.

S/C Add steaks to those cakes.

HOU We have got about one minute to LOS and standing by.

S/C Roger, say about the two other things that we didn't want to let go of like the hassel blad EVA camera when the lanyards went.

HOU Roger, understand.

S/C Another small item we lost was the flight plan out the window, so you might bear that in mind in the rest of your planning and keep us abreast of what is going on and we've got that abbreviated copy of the flight plan C.C., that I copied down in the back of my rendezvous book, but that is all.

HOU O.K, well we'll update you over CSQ.

S/C I'm sorry, we got all the other publications, we have got the ...book and assistance book with us.

END OF TAPE

This is Gemini Control Houston 51 hours 47 minutes and you can imagine how the statement that we lost our flight plan was received here. I think everybody got the best laugh out of the mission from that. There are no majors items, there are the fuel cell purge planned a little later this evening. The burns of course can be done by a simple time notation. The crew did have difficulty have EVA today with their elapsed time clock onboard. They also had trouble with clock yesterday following their EVA. Apparently the cause in both cases was the inadvertly dropping off of the circuit breaker, it's required several resets after Collins returned to the spacecraft on both occasions. The Flight Director based on the information John Young passed on to us on a 100 foot per second burn, he says now his OAMS tank is reading 0, that might be a pound or less than a pound remaining. The feeling is now that the,...we may not need a second burn, two had been planned this evening. This second burn is still under consideration, but the trend is now is just eliminate the need for it. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 52 hours even into the flight. The CSQ has just picked up the solid telemetry signal and should be talking with the crew in a very few seconds. We'll switch now and monior that.

S/C Go

CSQ Roger. You're looking real good here on the ground. We're ready for your fuel cell purge section 1 then 2 any time your ready.

S/C We are now purging the hydrogen and oxygen on section 1 and oxygen in section 2 is in progress.

CSQ Okay.
Are you purging at this time?

S/C That's right, we're purging now.

CSQ Okay fine, we don't see it on the ground.

AFD CSQ, AFD.

CSQ AFD, CSQ.

AFD We'd like you to interrogate the VM.....summary.

CSQ Say again.

AFD Interrogate the VM and then send the Charlie summary.

CSQ Say again, I can not copy.

AFD What we would like you to do is follow the ....interrogate the VM, and then send a continous Charlie, on the Agena.

CSQ Interrogate VM, then continous Charlie.

AFD That's right.

CSQ We have already done that.

CSQ TM, CSQ.

We just completed purge, let me know so we can get cryo read outs.

TM Roger. We will.

---- CSQ would you interrogate again please, send another Charlie.

CSQ Will do.

S/C Purge is completed.

CSQ Roger.

---- Computer TM, Agena command.

TM Go ahead Agena command.

AC Could you raise the upper limit on H057 please?

TM Roger.

AC To 28.8.

TM Roger.

AC Computer TM, Agena command.

TM Go ahead.

AC Could you lower the limit on H062 to 40 degrees please.

TM H062 to 40 degrees.

HOU CSQ, Houston Flight.

CSQ Houston, CSQ.

HOU Could you send us a couple more Gemini mains please.

CSQ Gemini mains, Roger.

S/C CSQ, Gemini 10.

CSQ Gemini 10, CSQ.

S/C That eye problem, or whatever that problem was is a lot better since EVA. It's not noticeable, our eyes have cleared up.

CSQ What problem is that?

S/C Those fumes we had....

CSQ Okay we understand thank you.

S/C We're still on suit band number 1 and intend to stay on it.

CSQ Okay.

How's your purge going?

S/C I guess you must not be reading me, I called you when I turned the cross over valve off, I completed it about 2 or 3 minutes ago.

CSQ Okay. I read your transmissions about that time, but it was a little garbled. Could you put quantity read to cryo 2?

S/C Cryo to quantity 2.

CSQ H2.....could you go back to O2 for a minute please.

S/C Reads about 40 percent and about 7 30 on pressure.

CSQ Roger.

Okay you can place it back to the off position.

---- LOS Gemini and Agena.

END OF TAPE

This is Gemini Control Houston, 52 hours, 18 minutes into the flight. Our last data on the remaining OAMS fuel aboard the spacecraft indicates we're..we have got about 20 pounds, give or take a few pounds either way the chart varies from station to station, a few pounds each way. About 20 pounds of usable propellant remaining these..oxidizer and fuel in the two auxiliary tanks, the main tanks, the supply in the main tanks has been depleted by the 100 foot per second burn a little while ago. This is more than enough to set up for the retrofire in the morning. The flight plan shows that we will power down a little bit early tonight. The crew is to go to bed at an elapsed time of 53 hours, a little less than an hour now. The crew is having their final meal of the day right now. They will be powering down the spacecraft as they reach the eastern Pacific area in about 15 minutes from now. A little later, over the Rose Knot Victor, they will get the final update of the evening on plan landing areas collaterial kind of information will be passed up also they will get a crew status report for the day over the Rose Knot Victor. Our present orbital parameters on the Gemini 10 are 215.9 nautical miles by 158 nautical miles, while we've been talking Hawaii has acquired and we'll play this conversation for you now.

HAW O.K., you can put the TM control switch to real time ac aid position.

S/C It is in it.

HAW O.K., why don't you leave it this way for the rest of the night and your adapter C-bands to the continuous position.

S/C O.K. and C-band to command.

HAW O.K. All right I have got some questions that I want to ask you, we will lead you through a check list on the jettision to see if we get everything you have got.

S/C O.K.

HAW O.K., I want to know if the jettisions are following that of the umbillical bag?

S/C The umbilical, yes, if it is the great big bag, yes.

HAW O.K, the HFMU...HHMU/

S/C It is gone.

HAW The ELSS? Strap?

S/C They are gone.

HAW The 18 to 24 stand up hoses?

S/C They are gone.

HAW Both Y connectors?

S/C They are gone.

HAW Suit hose interconnect?

S/C Yes, they are gone.

HAW The EVA visor?

S/C Gone.

HAW The EVA CB and light assemble.

S/C Yes, that's gone.

HAW The dry waste container.

S/C Yes, there are a couple of those.

HAW The velcros straps?

S/C Yes, that is gone.

HAW The glare shield?

S/C Gone.

HAW The ELSS?

S/C Gone.

HAW The 50 foot umbilical?

S/C Gone, thank God.

HAW And the N-1230?

S/C The S-1230 from the Gemini -8 Agena, we have with us is the S-1230 from our on spacecraft, we threw away.

S/C Correction, I'm sorry the S-12, we jettisioned, the S-10, from the old Agena we have with us.

HAW O.K., now what else did you throw away? Besides the flight plan?

S/C Oh, we threw away the S-13 bracket, but I think you have got those items before on the EVA, S-13 brackets the MSC color plate and extension rod.

HAW O.K., the MSC color plate and extension rod? And the Hasselblad is gone?

S/C Yes, we didn't exactly throw it away, but it is gone.

HAW Maybe it will take a picture of itself, any thing else?

S/C Yes, we had S-12 in the cockpit and when..we can't find it now, so we either stowed it in some magic place or else it has floated back out somewhere in the EVA sequence and we'll let you know if we find it, but if we don't find it or don't tell you, you had better sound out that it is gone also. The S-12 back in the cell.

HAW O.K., anything else.

S/C Negative, everything else is straight forward.

HAW O.K., thank you. Flight, Hawaii.

HOU Go ahead.

HAW O.K., this VM test is not working right, what we would like to do is to send VM disable and get a VM readout, then VM enable.

HOU Yes, Mel wants a Charlie after the interrogating before the enable.

S/C We are taking inventory now of how much film we have got left. When we gettit all added up we'll give you a rough hack on it for your S-5, S-6 noting planning.

HAW O.K.

HAW The jettision must have been a real ball.

S/C Yes, it was real good to get rid of all that junk. Our biggest problem was to how to put it so we could get rid of it, but the bag was as big as one body.

HAW Right.

S/C I decided not to use the stand up poses, so I was just on the spacecraft poses without any extension what I did was get my body positioned down in the bay and footwell prior to pressurizing the suits so that when I pressurized the suit, I was wedged in down there with enough head clearance so that it was a simple matter to get the hatch closed again. For the final burn.

HAW Oh, you had the hatch open three times in the past

HAW few days with no real problems, that is real good.

S/C That hasn't happened before?

S/C Yes, we would like to try for five before the water.

HAW We'll see what we can do here tomorrow morning.

HAW O.K. the words is to rest and no more thank you.

S/C Thank you,

HOU Hawaii, a couple of more of Gemini mains please.

HAW Roger. VM enables readouts are now working. We have got some Charlies on the way to you. Looks like you are pretty well squared away your Gyros two is in a good point and reads about 910 on the ground which is real fine.

HOU Hawaii, Flight.

HAW Go Flight.

HOU Can you estimate how many pounds were in the two dry waste bags?

HAW In the what?

HOU About how many pounds in those two dry waste bags that you threw away?

S/C There probably weren't too much weight in them((garbled) ...they were actually...fractions... packages, you know the packages that the food comes in.

HAW O.k.

HOU O.K. Roger.

S/C Packages that the first meals...multiplied by two and add the weight of the dry waste storage bag and that will give it to you.

HAW O.K. all right. S-band LOS, everything LOS except

HAW Agena telemetry.

END OF TAPE

This is Gemini Control Houston 52 hours, 29 minutes. Flight Director Glen Lunney has just directed our Capsule Communicator, Al Bean to call the crew again via California and review several other items with the crew. He also suggested that the..that Bean tell the crew that it has been a great day at ..and to congradulate them on their work. The telemetry readings on our OAMS system are still being watched here at the last reading we have an indication that we may be a little fuel poor as Lunney put it. Our last readout shows 7 pounds of fuel and 16 pounds of oxidizer. So, we are fuel poor oxidizer rich. We certainly have more than enough to line up for the take in the morning. Now we are in contact with the two now. Let's listen in.

HOU Gemini 10, Houston.

GYM Guaymas has Gemini TM solid.

HOU Gemini 10, Houston. Gemini 10, Houston.

TEX Guaymas go remote. California go local.

GYM Guaymas remote.

CAL California local.

HOU Gemini 10, Houston.

S/C This is 10, go ahead.

HOU Roger, got a couple of items for you here. Your orbit now is 216 by 158, looks real good for tomorrow. Looking at it on the ground here, looks like you may be fairly low on fuel even though you have got a full volkswagen oxidizer tank, so we expect you to keep a close watch on that one.

S/C We promise not to use any more of it.

HOU Roger. We would like you to put the antenna select

HOU to reentry for the night operations, when you get ready to go to bed.

S/C Roger.

HOU Right, in fact you can do that right now, if you would like to.

S/C Roger. Now.

HOU Roger, I've got a short flight plan update for you here, are you ready to copy?

S/C Go ahead.

HOU Roger it is 53:00:00 to 63:00:00 is sleep period. Now during this time, we would like for you to do D-10 mode G, and as we mentioned earlier if the scanner ignore light doesn't bother you while you sleep, we would like to have you leave the scanner on at night because it helps us corrlate some of the drifting flight data that they get. If it does you might try...

S/C ....a bet..say again the mode number G ...George.

HOU That's affirmative. Also we would like for you to leave the scanners on during this period so that we can corrolate some/~~the~~ of data better.

S/C O.K., I got that, corrlate some of the data better, I didn't hear you say anything else, say again.

HOU Roger, you copied corrlate some of the data better and the suggestion was to leave your scanners on during the night sleep period.

S/C O.K., I got that, I'd say something in between there excuse me..

HOU Roger, we are about one minute to LOS here we will pass you some more information over RKV, but we wanted to let you know that we are pretty doggone happy down here, it has been a great day today and we are just feel about as happy about it as you do I guess.

S/C Yes, we feel like it is going just great and we would like to keep it that way.

HOU Yes, I think it will be. We are all pretty happy about it , the way everything went.

S/C Well, we got a lot of film left for your planning purposes in M-5 S-6, we have got about six magazines of 16 mm color and two magazines of black and white and we have got about two and a half of mags of 70 mm mallon left.

HOU Roger, we copy, we will be thinking about that tonight. Since we are just about LOS, once again it was a great job today, it was fabulous.

S/C I tell you it was a tremendous thrill, it was really incredible, I can't believe part of it myself. I hope these pictures come out.

END OF TAPE

This is Gemini Control Houston 52 hours 51 minutes into the flight. The RKV should acquire momentarily. Al Bean has some additional items to take up with the crew. It's not clear where we'll remote through RKV or whether the RKV Cap will handle it but in either way there will be discussions. So we'll stand by and wait for the start of it.

---- If you ready I'll give you the headings on the columns as I relay them.

S/C I'm ready.

RKV Oh great, area 35-3,

S/C Standby 1.

RKV Roger.

S/C Okay, ready to copy.

RKV Okay, area 35-3, 5 6, 2 9, 4 4, 2 1, 4 7. 2 7, + 05, weather good. Area 3 6-3, 5 8, 0 5, 4 9, 2 1, + 1 2, 2 7 + 01, area 3 7 Delta. 5 8, 5 5 1 9, 3 0, + 1 2, 3 5 + 3 2, weather good. I believe I forgot to give you the weather in 36-3, the weather is marginal. Area 3 8-2, 6 0, 3 3, 5 6, 2 8 + 2 9, 3 3 + 0 6, weather marginal. Area 3 9-2, 6 2, 1 3, 0 1, 2 6, + 3 6, 2 8 + 4 7. Weather is good. Area 4 0-2, 6 3, 5 2, 4 8, 2 4 + 3 7, 2 9 + 2 4, weather good. Area 4 1-1, 6 5, 1 7, 4 7. 2 6 + 08, 3 1 + 0 1. weather good. Bank in both for all areas, roll left, 9 0. No set maneuvers required. Did you copy?

S/C Roger. Repeat 35-34 for us again, please.

RKV Area 35-3, at 5 6, 2 9, 4 4. 2 1 + 4 7, 2 7 + 05,

RKV weather good.

Did you copy.

S/C Roger, copied.

RKV Roger. Like to have your crew status report.

S/C Crew status is go.

RKV Roger.

S/C (garbled)

RKV Say again 10.

S/C 804 on the counter.

RKV That's 8 zero 4 on the counter.

S/C Program. CM2 missed once today. That's the only meal we missed so far.

RKV Roger.

RKV Okay I guess this will be our last wake pass with you, so you can power down your spacecraft and get ready for your sleep period. And we'll be watching you while you're sleeping and we'll see you back on the ranch.

S/C (garbled)

RKV Say again.

S/C Said just because he missed it don't think he's not going to make up for it.

RKV Okay.

S/C Do you want us to stayed powered up a while longer or should we power down, should we leave the platform on, would it help out to leave the

S/C platform on for TPM?

RKV You can power down if your preference as for as I know. Standby. I'll check.

You want them to leave the platform powered up?

M/C Negative. Power it down.

RKV Houston wants you to power down as far as they are concerned.

S/C Okay and we'll leave the scanner on primary.

HOU And leave the pump on primary a, secondary bravo.

RKV That's what they are in right now.

HOU Okay.

Leave your pump configuration in the present condition.

RKV Flight, RKV.

M/C Go ahead.

RKV Okay hotel, 049, S-band corresponder is reading 0 percent, PSS., which is equal to about minus 68 degrees. Do you want us to turn it on?

M/C Negative.

RKV Roger.

M/C RKV, Flight.

RKV Flight, RKV.

M/C When that transponder is down there is no actutation for the transducer.

RKV Roger.

This is Gemini Control Houston, at 53 hours and 1 minute into the flight, and that pretty well wraps up our communications for today. No further communication planned this evening. In the course of that last conversation you heard Mike Collins who identified himself as CM2, or crew member 2. He reported that he missed lunch today. John Young /reminded everybody immediately that Mike was making up for it this evening. They are apparently eating their evening meal during that pass. We close them to power down for the night, they are going to leave on the D-10 ion boom sensing experiment on over-night, no attitude required, in drifting flight throughout the night. We have allotted 10 hours for the rest period tonight. And our reports from the control center will now /revert to 1 report per hour at 50 minutes after the hour. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control, 53 hours, 29 minutes and 38 seconds after liftoff. Gemini 10 is at the present time over the Indian Ocean and will cross the lower part of the Asian continent across approximately Indo...of what used to be French Indo China, now Viet Nam. On its 33th revolution, the crew of Gemini 10 has settled down for ten hours of sleep and are due to be wakened at 63 hours ground elapsed time. The next station which will do ground read-outs of the onbeard spacecraft telemetry will be the tracking ship Coastal Sentry, at approximately six minutes from this time. At 53 hours, 30 minutes and 20 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control, 54 hours, 49 minutes and 38 seconds after liftoff. Gemini 10 at the present time is in its early part of its 34th revolution over the other part of the African continent. Toward the mid-point of the 33rd revolution over Hawaii, the spacecraft communicator at Hawaii commanded a tape dump from the Gemini 10 spacecraft and also commanded the Agena 10 status display panel to bright and turned on the L-band transponder aboard the Gemini and as you were, the Agena 10 spacecraft. Spacecraft Gemini 10 was "GO" on the ground at Hawaii. During the pass over the tracking ship Rose Knot, beginning in the 34th revolution, the Gemini spacecraft was go on the ground and it was affirmed with the crew apparently who is not asleep yet, that the horizon scanners were on, as requested earlier. The orbital elements of Gemini 10 now stand at 216.1 nautical miles, the apogee by 158.3 nautical miles perigee. We have a brief tape recording of the exchanged conversation between the spacecraft communicator on the RKV and the crew of Gemini 10, let's hear that tape now.

RKV RKV has ac aid contact, its ....is real ragged.

HOU Roger.

RKV RKV has TM solid Agena and meet them with "GO" .

HOU Roger.

RKV RKV TM solid Gemini, vehicle is "GO".

HOU Roger, Gemini TM.

RKV Command 12VRT. reset is sent.

HOU Right, command 12 is sent.

RKV Say again AFD

HOU I said roger.

RKV Charlie Delta-01, fuel cell just rolled out outlet temperature primary is reading 69.6.

HOU Roger, we copy.

S/C This is Gemini 10, over.

RKV Gemini 10, RKV, can I help you?

S/C Roger, what is our present position right now?

RKV Well you are somewhere over us at this time, stand by and we'll give you...

HOU He is about 40 degrees west,

RKV Say again.

HOU Longtitude is about 40 degrees west.

RKV Roger, your longtitude is about 40 degrees west and about 25 degrees south, [illegible] around

S/C Roger, could we get a flight plan update for our rev. chart.

RKV Roger, stand by.

S/C You have got us on this ....schedule and it is not our bed time yet.

RKV Gemini 10, you are breaking up. Can you read me please?

S/C Roger, just requested a flight plan up date...a trajectory update.

RKV Roger, I'll get one for you. Stand by. He would like to have a trajectory update please.

HOU What does he mean by trajectory update, his orbit is 158 by 216.

RKV O.K., well I think he is asking for is a node.

HOU O.K. Try one.

RKV Gemini 10, RKV, they are working on a nodle update your present orbit is 158 by 216.

S/C Roger.

RKV As soon as they give me the node, I'll have them to you.

S/C Roger.

HOU RKV, AFD.

RKV Go, AFD.

HOU O.K., the time is 54:59, rev 34, 53.7 degrees east four hours and four minutes right Ascension. Correction four hour and 48 minutes right Ascension.

RKV Say again, repeat the entire node.

HOU The time is 54:59, rev. 34, 53.7 degrees east four hours and 40 minutes right Ascension.

RKV Roger, understand. 10, RKV, I have your node.

S/C Roger, go ahead.

RKV It is 54:59 hours, rev. 34, 53.7 degrees east four hours and 48 minutes, that is four hours 4 8 minutes right Ascension.

S/C Roger, thank you very much.

HOU RKV, AFD.

RKV Go AFD.

HOU O.K., you might ask him if he is going to leave his scanners on tonight.

RKV Roger. 10, are you going to leave your scanners on this evening or off?

S/C We are leaving our scanners on.

RKV Roger. We show your scanners as being off here, Gemini. We've had LOS on the Gemini. He said h horizon scanners were on, we show them as being off.

HOU Yes, we copied that.

RKV We have LOS both vehicles.

HOU Right.

END OF TAPE

This is Gemini Control, 55 hours 29 minutes and 38 seconds after liftoff. Gemini 10 is within about two minutes from being acquired by the Hawaii tracking station and this will be a silient pass which there will be a tape dump telemetry data. Earlier in this 34th revolution, the spacecraft made another silient pass over the tracking ship Coastal Sentry. The spacecraft communicator commented that the spacecraft looked real good from his stand point, but that looks like the crew was still awake at that time. There was a certain amount of kidding from the Flight Controllers here in Mission Control about the, whether the Coastal Sentry were anchored about or near a bell-boy. There seems to be some sort of gong sound on the radio length from the ship. It was apparent last night also during the conversations with the Coastal Sentry. The spacecraft communicator reported that the Command Pilot's heart rate was running from 70 to 80, while the Pilot's rates were running from 60 to 70. At 55 hours, 30 minutes and 50 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control, 56 hours, 29 minutes and 38 seconds after liftoff. Gemini 10 at the present time is over centeral Africa and in the early part of the 35th revolution. At the beginning of this revolution, there was a silent pass over the tracking ship Rose Knot, where the spacecraft and the Agena 10 were go on the ground. Assistand Flight Director on the Orange team here in Mission Control asked the spacecraft communicator aboard the Rose Knot how things were going out there. The reply was," We're bobbing around a little bit, but not too much".. he also commented that the crew of Gemini 10 appeared to be asleep at this time. According to the biomedical telemetry readouts. At 56 hours, 30 minutes and 32 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control 57 hours, 29 minutes, and 38 seconds after liftoff. Gemini 10 is presently over the Pacific and will be acquired in 13 minutes by the tracking ship Rose Knot. Earlier in this revolution during the pass over the tracking ship Coastal Sentry the Mission Control people here commented that they could'nt hear the gong sound they had heard earlier, on this pass CSQ Communicator said he was hearing it now. He also mentioned the spacecrafft was looking good, the crew was probably asleep. The next three or four revolutions ll be covered only by the tracking ships, coastal sentry and Rose Knot. There will be no passes over land, command stations. At 57 hours, 30 minutes, 34 seconds after liftoff; this is Gemini Control.

END OF TAPE

This is Gemini Control at 58 hours, 29 minutes and 38 seconds after liftoff. Gemini 10 is presently over the tracking ship Coastal Sentry just south of Japan, and a few moments ago the spacecraft communicator said the spacecraft was looking good. Earlier in this revolution, the spacecraft communicator aboard the tracking ship Rose Knot gave the Gemini 10 and the Agena both a go. Weather is expected to be excellent in the prime recovery area in the western Atlantic for this afternoon's landing of Gemini 10. Mission Control Center's early morning edition of the -- news briefs called the Orange Bugle/Roundup has just been teletyped out to the tracking stations to keep the flight controllers out there abreast of what's going on in the rest of the world. At 58 hours, 30 minutes and 34 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control at 59 hours 29 minutes and 38 seconds after lift-off. Gemini 10 is over the south Atlantic, just about to leave the acquisition range of the tracking ship Rose Knot. The spacecraft according to the ground readouts of telemetry was go, at the Rose Knot. The next station to acquire will be the CSQ or Coastal Sentry off the coast of Japan, and probably 35 minutes from now. We're getting on the so-called back side of the orbits now where the station passes or few and far between. At 59 hours 30 minutes and 21 seconds after lift-off this is Gemini Control.

END OF TAPE

This is Gemini Control 60 hours 29 minutes and 38 seconds after lift-off. Gemini 10 is over the south central Pacific nearing the end of the 37th revolution. A few minutes ago, they passed over the tracking ship Coastal Sentry, where again as usual, is go on the ground. Flight plan up-date has been sent out to the remote sights from mission control here. It starts with the crew waking up at 62 hours 45 minutes elapsed time, that's about 2 hours and 15 minutes from now. This is over the Canary Island station, and there will be at that time a short flight plan up-date relayed to the crew, at 63 hours ground elapsed time, they will power up the platform and conduct a purge of the fuel cells. From 63 hours through 64 hours ground elapsed time there is scheduled an eat period. From 64 05 through 64 40, there's the first of several runs of the D-10, iron sensing attitude control, experiment. In this case it will be the yaw attitude mode. At 64 hours 10 minutes mission control center here in Houston will pass up to the crew a flight plan up-date. At 64 hours 22 minutes Canary Islands will pass up a plan landing area block up-date, and also will receive from the crew a status report of their food and water intake and so-forth. From 64 hours 46 minutes which will be sun rise, through 65 hours 23 minutes, they will conduct a run of the D-5 star occultation experiment. At 65 hours 25 minutes to 65 hours 55 minutes, another run of the D-10 ion sensing attitude control experiment will be run, this time in the yaw attitude mode. From 65 hours 55 minutes, to 66 hours 10 minutes they have another run of D-10, this time in the roll attitude mode, following that from 66 10 to 66 40 a

run of D-10 in the pitch attitude mode will be run. 66 40 to 67 25 ground elapsed time, there is scheduled a period of stowage of all loose equipment in the cockpit, preparation for reentry. At 67 hours 20 minutes ground elapsed time, Mission Control will pass up to the crew reentry up-dates for the planned landing area in 44-1, also at that time they will purge the fuel cells. From 67 hours 25 minutes to 68 hours 10 minutes there in scheduled an eat period. From the end of the eat period at 68 hours 10 minutes ground elapsed time to time of retro-fire, time is set aside for retro-fire preparation, in which the crew will go through their pre-retro check list make sure everything is properly stowed etc. At 68 hours 55 minutes Mission Control Center will again pass up to the crew the latest figures for reentry. At 60 hours 33 minutes 26 seconds after lift-off this is Gemini Control.

END OF TAPE

This is Gemini Control 61 hours 29 minutes and 38 seconds after lift-off. Gemini 10 is mid-way through the 38th revolution over the Central Asian Continent. They have had a silent pass over the Rose Knot tracking ship off the coast of South America. At that time the spacecraft communicator advised Mission Control here in Houston that the spacecraft was go on the ground. Earlier in the flight plan up-date it was reported that at 64 hours 46 minutes ground elapsed time there was to be a D-5 star occultation experiment conducted, and it was also said that this was sun rise... at time of 64 46 was sun rise. This has been amended, or corrected I should say, that should be sun set rather than sun rise. The crew has about another hour and 15 minutes to sleep, before they either wake up themselves or they are called on the radio from one of the ground stations. At 61 hours and 30 minutes and 43 seconds after lift-off this is Gemini Control.

END OF TAPE

This is Gemini Control at 62 hours 42 minutes into the flight. Gemini 10 has just started its 39th revolution a few minutes ago. It is now about midway across the Atlantic. The crew is still asleep, we'll put a call into them over the Canary station in about three or four minutes. A Flight Surgeon, Dr. Fred Kelley, reports that the crew's heart rate during this sleep period have been in the vicinity of 50 beats a minute. Pilot Mike Collins running down below 50 in the 40's most of the time. Command Pilot John Young just a little higher then that, slightly above 50. The 10 Agena is trailing the spacecraft by about 1200 miles. The 8 Agena trailing the spacecraft by about 1400 miles. We'll standby and we'll bring you the Canary pass as they awaken them. This is Gemini Control.

END OF TAPE

Here's the Canary Cap Com putting in a call to the spacecraft now.

The Canary Cap Com is putting in a call to the spacecraft now, let's stand by.

CYI Gemini 10, Canary Cap Com

S/C Canary, this is Gemini 10, how do you read. Over.

CYI Read you loud and clear. Good morning.

S/C Good morning.

CYI How are you all feeling this morning?

S/C Great.

CYI Real good. Could I have you move your quantity switch to the O_2 position for us please.

S/C Roger, O_2.

CYI Roger. I've got a small flight plan update for you when you're ready to copy, when you get your eyes open.

CYI Gemini 10, Canary Cap Com. Would you move your quantity switch to the H_2 position?
Thank you.

S/C Roger and ready to copy your update.

CYI OK. At 63 hours call up platform, purge fuel cells section two then section one. Load module 6 for D-5 orbit determination. Align the platform as soon as warmup is complete, then platform SEF. From 63:00 to 64:00 eat period. From 64:05 to 64:40 D-10 mode easy. That's all I'm going to give you. If they have some more they'll update you later on.

S/C Roger, thank you.

CYI You're looking real good down here on the ground.

S/C Roger, we're coming up over the African coastline right now. We can see your little islands up there.

CYI Roger.

CYI Canary has acquisition of the Agena.

HOU Roger Canary.

CYI It's looking good.

CYI Gemini 10,Canary.

S/C 10, go ahead.

CYI OK we'd like to have you move your cryoquantity switch to O_2 for about 10 seconds and then switch it off.

S/C Roger, it's O_2.

CYI Gemini 10, Canary Cap Com.

CYI Gemini 10, Canary Cap Com.

S/C 10, go ahead.

CYI OK we have about a minute to our LOS here, we'll be standing by.

S/C Roger.

CYI Gemini TM LOS.

END OF TAPE

This is Gemini Control, 63 hours, 24 minutes into the flight and Carnarvon has just acquired telemetry acquisition of Gemini 10. We'll stand by for some voice transmission during this pass.

CRO Intermittant TM at Carnarvon.

HOU Roger.

CRO Flight, Carnarvon. Do you want to position that TM switch to command?

HOU No, go ahead and leave it where it is.

CRO Roger.

CRO Gemini 10, Carnarvon. We have nothing for you. We're looking at your systems. All systems are go. We're standing by.

S/C Roger. We're in load module pitch, bringing up the platform.

CRO Roger.

CRO Carnarvon has telemetry LOS.

HOU Roger.

CRO Gemini and all systems were go.

HOU Roger.

This is Gemini Control. It was a very short pass at Carnarvon. The elevation angles very low and the spacecraft just skirted the ring of acquisition there. We intend to perform the D-10 experiment this morning between 64 hours and five minutes elapsed time and 64 hours, 40 minutes elapsed time. This is the Ion Sensing Attitude Control Experiment designed to investigate whether the spacecraft attitude in yaw and pitch can be determined by measuring

ion flow variations. These will be recorded by ion sensors on two booms which will be extended from the retrograde adapter. This sensor data will be compared to data obtained from the inertial guidance system and from the horizon scanner. Results of this comparison plus astronaut evaluation will form the basis for further development of simple lightweight orbital attitude determination system. The sponsor for this experiment is the Upper Atmospheric Physics Branch of the Air Force Cambridge Research Laboratory at Hanscomb Field, Massachusetts. The spacecraft will be out of range now of tracking for sometime. The next station due to acquire is Grand Turk at an elapsed time of 64 hours, eight minutes, 46 seconds. This is Gemini Control.

END OF TAPE

This is Gemini Control 63 hours 34 minutes into the flight. We are going to play the tape of that Carnarvon pass for you. After we got telemetry LOS and after we had started talking this last time there was some additional voice transmission between the Carnarvon Cap Com and the crew concerning another French nuclear test. So we will play this tape in its entirety for you. Here it is now.

CRO Carnarvon has TM-1 solid Gemini. All systems are go.

HOU Roger.

CRO Telemetry was on at acquisition. Intermittent TM at Carnarvon.

HOU Roger.

CRO Flight, Carnarvon. Do you want position that TM switch to command.

HOU No, go ahead and leave it where it is.

CRO Roger. Gemini 10, Carnarvon. We have nothing for you. We are looking at your systems. All systems are go. We are standing by.

S/C Roger. We are loading moduel 6 and bringing up the platform.

CRO Roger. Carnarvon has telemetry LOS.

HOU Roger.

CRO On Gemini and all systems were go.

HOU Roger.

CRO Flight, Carnarvon.

HOU Go.

CRO Those summaries may look pretty bad. Telemetry was quite intermittent throughout the pass, low elevation and all.

HOU Okay, did you contact the crew?

CRO That is affirmative. Did you hear?

HOU Negative. Look, I would like for you to call them and tell them to not look at the ground between Carnarvon and the States.

CRO Roger, that. 10, this is Carnarvon. We have been informed to pass on to you not to look at the ground between our LOS and the state-side pass. Do you copy, 10?

S/C Roger, we copy.

CRO Okay. Reacquire TM-1 Gemini. Carnarvon has ac aid contact the Agena.

HOU Roger.

CRO Telemetry solid Agena. All systems go.

HOU Roger.

CRO Did you get the comment about the crew loading module 6 and bringing up the platform?

HOU Affirm.

CRO Roger. LOS Gemini.

HOU Roger.

END OF TAPE

This is Gemini Control 64 hours 8 minutes into the flight. We're just about to acquire at Grand Turk. Here we go.

HOU] .....sleep in your spacious quarters.

S/C Great.

HOU Fine. I'd like to give you a brief rundown of what we plan to do today as far as using the remaining fuel we've got. We decided last night to burn everything we've got in our OAMS system. Use the VW tank when required and it appears that you'll probably be fuel critical with plenty of oxidizer. We plan to burn it all out if it's required and we will use the RCS for aligning for retrofire. Is - Does that meet with your approval?

S/C That's fine.

HOU OK. Are you ready to copy a continuation of today's flight plan?

S/C We're ready to copy.

HOU Roger. At 64:22 over Canary you'll get a PLA block update and we'd like a crew status report at that time. At 64:46 is sunset and from 64:46 to 65:23 we'd like to run D-5, Mode D. On this Mode D Mike, we'd like to track the stars with the photometer until it disappears. You can press START COMP when it's superimposed on the horizon but track it until it disappears completely. If you're too pressed for time, just drop the computer off the term process and

do a plane Mode A. Do you understand that?

S/C Yes we go you C.C.

HOU Roger. At 65:25 to 65:55, D-10 Mode E. At 65:55 to 66:10, D-10 Mode C, Charlie. AT 66:10 to 66:40, D-10 Mode D, Delta. At 66:40 to 67:25, we have a stowage period. You can load module 4, bring the spacecraft SEF, and platform mode. We'd like to leave D-10 Ion sensor switch on until your retro-check list. At 67:20, we'll give you a reentry update. We'd like a fule cell purge, one then two, a cryoquantity readout, and activate the H_2 tanks squib. At 67:25 to 68:10, eat period. At 68:10 until TR you can go through your retro preparation. At 68:55, we'll give you a reentry update and at 70:10:30, is your retrofire time. At least our best guess at this time for 44-1. Did you copy?

S/C Roger. I copied. You faded out for a couple of things. Going back to the first D-5, understand that takes place from 64:40 through that one night pass, is that affirmative?

HOU That's right. That's 64:46 Mike.

S/C Ok. and then after that D-5-D, I've got a blank spot between it and 65:55. What did you say in there?

HOU Roger. 65:25 to 65:55, D-10 Mode Easy.

S/C OK copied that and I got another blank spot just standby one.

HOU Go to prelaunch please.

S/C Load module four go SEF platform, leave the D-10 on to retrocheck list then what comes between that and the fuel cell purge?

HOU Roger. At 67:20 we'll give you a reentry update then purge the fuel cells.

S/C OK I got it all. Thank you.

HOU Roger. Will you go to prelaunch?

S/C We're in prelaunch.

HOU Roger. We're sending you an update, state vector and a TF.

S/C Update received.

HOU Roger.

HOU Weather looks good Mike for a 44-1 and we'd like to check on some of the items that you jettisoned for weight and balance on this retro. Is it S-12 or S-10 that you have missing?

S/C S-12 is missing. We still have not found it, so we better assume that it got out of the cockpit about the time I came back in.

HOU Roger. That's S-12. That's a pretty big one, hard to loose.

S/C You're not kidding.

HOU Did you jettison or loose any of your Hasselblad magazines after you lost the camera?

S/C Negative. There was one magazine on the camera, of course it went with it, but the other Hasselblad magazines I still have.

HOU Roger. Understand, you still have them. I've got a flight plan node update for you, if you're ready to copy that.

S/C OK.

HOU Roger. For rev 39, 63.0 west, right ascension is 04 hours 39 minutes.

S/C Got that thank you.

HOU Mike that is all we have at this time. We got about 2-1/2 minutes to LOS. We're standing by.

S/C OK. We're doing a D-10 right now.

HOU Roger.

S/C That D-10 is really something.....pitch and yaw pickup. I used it for this night platform align and it's pretty darn smart.

HOU Excellent. Glad to hear it.

S/C That's a great bank.

GTI LOS Grand Turk

END OF TAPE

This is Gemini Control. We're out of acquisition of Antigua now. The D-5 experiment that was passed up to be performed from sunset at 64:46, 64 hours, 46 minutes, to 65 hours, 23 minutes is the Star Occultation Navigation Experiment, which we are attempting to determine the feasibility in operational value of star occulting measurements in the development of an accurate, simple orbital navigation system. In this, the crew uses a photo-electrical occultation telescope, or a photometer, and will attempt to determine the orbit of an earth satellite by measuring the time six stars dip behind an established horizon. They locate a star about to be occulted, point the photometer at the star, then they track the star as it passes into the atmosphere and behind the edge of the earth. They will try to acquire at least six stars during this one night pass. The sponsor of this experiment is the Navigation and Guidance Division, /the Air Force Avionics Laboratory at Wright Patterson Air Force Base, Ohio. We might explain the modes on the D-10 that C. C. Williams was talking about. Mode E on D-10 is a yaw attitude. Mode C is a roll attitude, and Mode D is pitch attitude. We're due to acquire Gemini 10 at the Canary Islands right about now. We'll stand by for that pass.

S/C Confirm that with Houston and suggest to him that maybe sometime we can take some S-1 picture with the S-1 camera even though we won't have the star patterns in plane directions as briefed. At least we'll get something. We could do it simultaneously with the D-10, for instance.

HOU Sure, go ahead.

CYI Say again, Flight.

HOU I said, yes, go ahead, if they can.

CYI Rog. Houston concurs. Says go ahead if you can.

S/C Okay.

CYI Okay. I'd like to get a crew status report on y'all.

S/C Okay. Crew status is go. Stand by for the drink counter. Drink counter is 01022 and we're both just finishing up breakfast.

CYI Roger. Okay, we'd like you to make a note of ground elapsed time when you hit the VW tank.

S/C Okay. The regulator pressure is still up at 300, our source pressure is down about 60.

CYI Roger, copy. Okay, I have a PLA block update for you when you're ready to copy.

S/C Okay, fine.

S/C Go ahead when you get them read.

CYI All right. Area 42-1, GETRC is 66:55:05. RET 400 K is 24 plus 44. RETRB is 29 plus 34. Area 43-1, 68:33:25. 23 plus 12. 28 plus 07. Area 44-1, 70:11:12. 22 plus 01. 27 plus 17. Area 45-4, 73:03:02. 24 plus 11. 29 plus 10. Area 46-4, 74:41:09. 22 plus 46. 27 plus 58. Area 47-4, 76:18:54. 21 plus 43. 27 plus 09. Bank angle for all areas is roll left 90, roll right 90. Weather is good in all areas except

43-1. And no set maneuver is required. All these are based upon a 20 degree pitch angle. Over.

S/C Say again 42-1, and 47-4, please.

CYI Roger. 42-1 is 66:55:05. 24 plus 44. 29 plus 34. 47-4, is that the other one you wanted?

S/C Yes. I have 47-4, 76:18:54. That's it.

CYI Rog. 21 plus 43. 27 plus 09.

S/C Okay, fine.

CYI Okay, sending you a GX.

CYI 10, Canary.

S/C 10, go.

CYI Okay. You were saying your OAMS source pressure was indicating 60, is that correct?

S/C Yes, that's right.....just to multiply that by 10.

CYI That's okay. We'll need 687 on the ground here.

S/C Okay, 687.

HOU Canary, Houston Flight.

CYI Go, Flight.

HOU Have a look in your TM station at George Charlie 22 for PCM count.

CYI Roger.

CYI 10, Canary.

S/C 10, go.

CYI Okay, I'd like to have you put your C-adapter to the command position.

S/C C-adapter to command and cryo quantity to O_2.

CYI Okay. Would you put your C-reentry to continuous.

S/C C-reentry to continuous.

CYI And your data select to reentry.

S/C Data select to reentry.

CYI Roger, thank you.

S/C We've been putting our antennas off so you can straighten that now and position it.....

CYI Roger.

S/C .....is 157.

CYI 157, right.

END OF TAPE

HOU Canary, Houston Flight.

CYI Go., Flight.

HOU Standby a second.

CYI Roger.

CYI Canary, we'll be standing by. We've got about a minutes until LOS here.

HOU Roger. Thank you.

S/C Canary, Gemini 10.

CYI 10, Canary, GO.

S/C (GARBLED)

CYI Did not copy 10.

CYI We've had LOS Flight.

HOU Say again.

CYI We've had LOS on the Gemini. Agena looks real good.

This is Gemini Control 64 hours 31 minutes into the flight. We have loss of signal at Canary. The next station to acquire Gemini 10 will be Carnarvon at 64 hours 57 minutes 36 seconds. This is Gemini Control.

END OF TAPE

KNO Kano remote.

HOU Gemini 10, Houston Cap Com.

S/C Gemini 10, go.

HOU Roger, we are standing by. Did you have something you wanted to say?

S/C Negative, except the D-5 is working like a charm.

HOU Very good.

S/C ...spacecraft will...

HOU That is Houston. We have got about one minute until LOS at Kano. Standing by.

AFD Carnarvon Cap Com, AFD.

CRO AFD, Carnarvon. Go ahead.

AFD We have nothing further for you at this time.

CRO Thank you.

END OF TAPE

This is Gemini Control 64 hours 57 minutes into the flight. Gemini 10 in it's 40th revolution and just about to acquire at the Carnarvon station. We'll standby for that conversation.

CRO Carnarvon has Gemini TM solid, all systems are GO.

HOU Roger, Carnarvon.

CRO Gemini 10, Carnarvon standing by.

S/C Roger. We're right in the middle of D-5 Mode D. We just occulted Regulus and now Denebola.

CRO Roger.

CRO Carnarvon has C-band track.

This is Gemini Control, we're still standing by at Carnarvon. The crew is in the midst of the D-5 star occultation experiment at the present time. We'll continue to standby through this pass.

CRO Carnarvon has acq aid contact Agena.

HOU Roger.

CRO TM solid Agena, all systems are GO.

HOU Roger.

This is Gemini Control. Gemini 10 will be within range of Carnarvon for about another two minutes. We'll continue to standby. Apparently the crew is busy with the D-5 experiment.

CRO 10, this is Carnarvon. We have a minute before LOS, standing by.

S/C 10, Roger.

CRO Carnarvon has telemetry LOS Gemini, all systems GO.

HOU Roger.

This is Gemini Control 65 hours 8 minutes into the flight. Gemini 10 has passed out of range of Carnarvon now. The spacecraft will miss the Canton Island station on this pass. Texas station will be the next to acquire at 65 hours 42 minutes 41 seconds. This is Gemini Control.

END OF TAPE

This is Gemini Control at 65 hours 42 minutes into the flight. And the Texas tracking station should acquire Gemini 10 in about 30 seconds. According to the flight plan, the D-10 experiment should be underway at this time and it will be conducted throughout this pass through the Texas station and the - some of the stations down the West Indies, Grand Bahama. We will stand by to acquire the spacecraft momentarily.

HOU Gemini 10, Houston Cap Com.

S/C 10, go.

HOU Roger, Mike. How did the D-5 go? Were you able to do mode D or did you have to switch over to A?

S/C Roger, we did mode D, all residuals except for one where less than 2/10ths of a degree and not more than 15/100ths of a degree. The one was due to an error in procedure, which we can check back - trace back on.

HOU Roger, sounds real good. You are doing the D-10 mode E at this time, is that right?

S/C Roger. Do you want a mode E, or do you want a pitch steady? We have already done one mode E.

HOU Flight Plan calls for E, John. So why don't you go ahead.

S/C Okay.

HOU I would like to confirm at this time, whether or not you lost your flight plan book, or not. Can you do that.

S/C Yes, we still have a flight plan book.

HOU You do have it? I have got nothing else to pass up to you at this time. Weather still looks good in the recovery area and we will be standing by.

That is 80 PCM count. Thank you.

S/C Roger.

ANT LOS Antigua.

This is Gemini Control. We will continue to stand by here, bring you any further transmissions during this pass. The Flight Surgeon, Dr. Fred Kelly, reports that since awakening this morning, John Young's heart rate has been averaging 70. Mike Collins averaging in the low mid-60's. He says that each crewman has had about 15 pounds of water since the mission began and he is pleased with this. This is Gemini Control. We are standing by.

END OF TAPE

This is Gemini Control. Gemini 10 is still about two and a half minutes away from Loss of Signal at Antigua and we'll continue to stand by.

GTI LOS Grand Turk.

HOU Gemini 10, Houston Cap Com. One minute to LOS. Standing by.

S/C Oh, roger. We're on D-10 in Mode E. Looks real good.

HOU Roger, John.

S/C The deals are awful little at pitch. Just...another platform alignment. The platform gets off in these - this crazy orbit, and I'll try to align the platform again.

HOU Roger.

S/C But it still looks like except for a minor calibration problem, it really is something.

HOU Roger. Your rates look real good down here. It looks like you're doing a good job of flying it.

This is Gemini Control, 65 hours, 57 minutes into the flight. We're now out of range of Antigua but we expect to acquire at the Canary Island station at 65 hours, 58 minutes and 11 seconds and we'll continue to stand by for any transmissions through that station although we have advised the Canary Island Cap Com that we have nothing for him to pass up to the crew. We will stand by and then we will - there's overlapping coverage between the Canary

Islands and the Kano, Nigeria station. We would remote any conversation from Kano through the Mission Control Center here so we will stand by through the Canary Islands and Kano passes. This is Gemini Control.

END OF TAPE

CYI Canary has TM solid on the Agena, the Agena is GO.

HOU Roger.

This is Gemini Control at 66 hours and 5 minutes into the flight. We're continuing to standby during this Canary pass. We've just been advised by the Cap Com, Astronaut C. C. Williams, that he does not intend to have much of any conversation with the crew during the Kano pass either. He explained that both crewmen are pretty busy at this time with the D-10 experiment. Command Pilot John Young flying the spacecraft, Pilot Mike Collins photographing the flight direction indicator to get readings on the attitudes. This is Gemini Control.

CYI Gemini 10, Canary. About a minute to your LOS. We're standing by.

S/C 10, Roger.

CYI Canary has had TM LOS. C-band LOS on the Gemini spacecraft. All systems were GO at LOS.

HOU Roger Canary.

KNO Kano is remote.

HOU Go ahead

CYI Ok on the Agena, Is C and S band supposed to be off?

HOU They're supposed to be on.

CYI Supposed to be on. OK.

HOU Gemini 10, Houston Cap Com standing by.

S/C Roger. We're doing the pitch/ study on D-10.

HOU Roger.

S/C This pitch gear looks very good.

HOU Glad to hear it.

HOU Is Cecil B. deCollins taking pictures of the FPI?

S/C Roger. Mike got some inside black and white pictures. We also got some pictures of some objects floating around the cockpit that might be interesting. We don't find anything moving up,down, sideways, or any way for that matter.

HOU Roger.

S/C Same thing at EVA. Near as I could tell, I think its just a question of the dynamics of it. But nothing is static EVA (garbled) staging of it. It gives the illusion of going away from whatever you - you've grabbed a hold of.

HOU Right. Then Mr. Newton was right.

S/C Afraid so.

END OF TAPE

HOU Gemini 10, Houston Cap Com. We are about 1 minute from LOS. Standing by.

S/C 10, roger.

Houston, Gemini 10. We are loading module 4 now.

HOU Roger.

S/C It won't mess up this D-10, will it?

HOU Negative, it won't have anything to do with it.

S/C I didn't think so.

This is Gemini Control 66 hours 14 minutes into the flight. Gemini 10 out of range of the Kano station now. Next station to acquire will be Carnarvon. Gemini 10 passes north of the Tananarive station on this revolution. Carnarvon will acquire at 66 hours 33 minutes 40 seconds elapsed time. Here in the Control Center, we have activated the time to retrofire clock. We will update this time about 2 hours from now. But we expect the final retrofire time to be within 5 seconds of what the clock presently shows and at the present time we show we are 3 hours 55 minutes 9 seconds away from retrofire. This is Gemini Control.

END OF TAPE

This is Gemini Control at 66 hours, 33 minutes into the flight and Gemini 10 is in its 41st revolution and should be acquired by the Carnarvon in about 30 seconds. We'll stand by for any conversation that ensues during this pass.

CRO Carnarvon has acq aid contact Gemini.

Fl solid Gemini.

CRO Flight, Carnarvon.

HOU Go.

CRO What's our lower limit on O_2 tank pressure?

HOU Stand by one. 800 grounds is what we'd like to keep it, Carnarvon.

CRO Okay, we're showing 763. I'll have to boost it up a little.

HOU Carnarvon from Flight. Send us a second Gemini main, please.

CRO Roger there.

CRO 10, Carnarvon.

S/C 10, go.

CRO Okay. I want you to take a look at that O_2 tank pressure and pump it up a little bit till you get it up to 670.

S/C Roger.

CRO AF solid C-Band track.

HOU Roger.

S/C Carnarvon, 10. What time sunrise?

CRO Stand by. How about a sunrise time?

HOU We'll get you one.

HOU Carnarvon, Flight.

CRO Go ahead.

HOU 66 plus 54 plus 41.

CRO Okay. 10, Carnarvon. Sunrise time 66:54:41.

S/C Okay, roger.

CRO You can go back to auto on your heater. I was showing about 810 on the ground. You should have about 675.

S/C Roger.

CRO Carnarvon has acq aid contact Agena.

HOU Roger.

CRO Carnarvon has telemetry solid Agena. All systems go.

END OF TAPE

HOU Carnarvon Com Flight, LOS main Gemini.

CRO Roger. One minute until LOS standing by.

S/C Roger Carnarvon, Thank you.

CRO Carnarvon has LOS Gemini. All systems go at LOS.

HOU Roger Carnarvon.

This is Gemini Control 66 hours 44 minutes into the flight. And Gemini 10 is out of range of the Carnarvon station. Next station to acquire will be Canton Island in about - at 66 hours 56 minutes one second. This is Gemini Control.

END OF TAPE

This is Gemini Control at 66 hours, 56 minutes. We're coming into acquisition at Canton now. We'll stand by there.

S/C Okay, C. C. We still are showing 300 plus on our regulated pressure. Our source pressure is just a shade over .....I'll find out when I can... ....We finished up a little bit early on the.....

HOU Roger, Gemini 10. You are nearly unreadable. I'll pick you up over the States a little bit later. If you can read me, request you hold any comments you may have on D-5 and D-10 until we are over Florida.

S/C Gemini 10, Roger.

(PAUSE)

This is Gemini Control, 67 hours, two minutes into the flight. We've lost acquisition with Canton. The next station to acquire will be Guaymas, Mexico. At 67 hours, 14 minutes, 17 seconds, this is Gemini Control.

END OF TAPE

GEMINI 10 MISSION COMMENTARY, 7/21/66, 11:34 AM, TAPE 216 PAGE 1

This is Gemini Control at 67 hours 13 minutes into the flight. Gemini 10 is in its 41st revolution coming up on the Guaymas, Mexico station. We should acquire Guaymas within the next 30 seconds or so. We will stand by for conversation during this state-side pass.

GYM Guaymas has Gemini TM solid. All systems go, Flight.

HOU Roger, Guaymas.

GYM Houston Flight, Guaymas

HOU Go ahead.

GYM We are still showing 160 count for OGC 22.

HOU Roger, 160.

GYM 160. Gemini 10, Guaymas Cap Com. You are looking good on the ground. We are standing by.

S/C Okay, Guaymas. Thank you. We are restowing stuff.

GYM Roger.

S/C And fuel cell purge.is in progress, just about complete.

GYM Okay, let us know when it is completed, Gemini 10.

S/C Sure will, I will go to mode 3 for 10 seconds and ....

GYM Okay, real fine.

HOU Guaymas, Flight.

GYM Go ahead Flight.

HOU Be sure they understand we want them to wait on the hydrogen squib until they are over ETR.

GYM Roger Flight. Gemini 10, Guaymas.

S/C 10, go ahead.

GYM Okay, here is an advisory. They want you to wait until you get over the ETR before blowing the hydrogen tank squib. Do you copy, 10?

S/C Roger.

GYM Okay.

S/C Purge complete.

GYM Roger, 10.

Can we get your quantity read to H2, 10?

S/C Roger, we have it. Sorry about that. I was turned around backwards in the seat.

GYM Okay.

S/C I won't tell you what John is doing.

GYM Roger. We kind of guessed that.

Still looking real good, Flight.

HOU Roger, Guaymas.

GYM Guaymas has Agena TM solid, S-band track.

HOU Roger.

GYM Agena looks good.

END OF TAPE

HOU Gemini 10, Houston Cap Com.

S/C 10, go ahead.

HOU Roger. We'll have a partial reentry update for you over Carnarvon this next pass at about 68 plus 10. They'll give you your nominal IVI's and weather and so forth. And then on your next pass over the States at approximately 68 plus 55, we'll give you your reentry computer load TR and all that good stuff.

S/C Oh, roger.

HOU Gemini 10, Houston Cap Com. Request you go to H_2 on your cryo quantity and leave it there.

S/C Roger, H_2 and leave it there.

HCU Mike, I guess you're going to have to come down pretty soon. You're about to start eating your last meal.

S/C Mike: That's right.....there's only one left.
John: ....you should see him. He's eating my last meal too.

HOU Right.

HOU Gemini 10, Houston Cap Com.

S/C 10, go ahead.

HOU Roger. We're ready for that hydrogen tank squib. Would you move your hydrogen tank vacuum from safe to vent. And you have to arm the experiment bus before you do that.

S/C Yeh, we already did that, bus arm experiment, and we heard it bawl when we put it to bed.

HOU Roger.

HOU Gemini 10, Houston Cap Com. Stand by for a DCS light. We'll send you a load.

S/C 10, right. C. C.?

HOU Roger.

S/C My guess it might have dented something because the platform mode sort of jumped up and down when it....

HOU Roger, John, understand.

S/C I don't know what it could have been. We're reading now about 28% hydrogen quantity and about 560 on the cryo.

HOU Roger. Gemini 10, that last DCS load was an accelerometer update.

GBI LOS GBI.

(PAUSE)

HOU Gemini 10, Houston Cap Com. About one minute to LOS. Standing by.

S/C How's the weather in 24-1?

HOU Looks real good. We'll have a weather report for you over Carnarvon.

S/C Good show.....

ANT LOS Antigua.

This is Gemini Control, 67 hours, 32 minutes into the flight. Gemini 10 has just lost acquisition at Antigua station. Canary Island

tracking station will pick it up at 67 hours, 34 minutes, 56 seconds into the flight. We'll stand by there for any transmissions. This is Gemini Control.

END OF TAPE

HOU Canary from Flight.

CYI Go, Flight

HOU Normal pass for you. However, we would like you to ask them to turn the hydrogen quantity read switch to off and then back on and you take a look at it. It held very steady while there was noise on some other parameters. We want to check to see that its read.

CYI Ok you want it turned off and then back on.

HOU Yes and watch it as he does it.

CYI Roger will do.

CYI Canary has TM solid, C-band track Gemini.

HOU Roger Canary.

CYI Looking good.

CYI Gemini 10, Canary Cap Com.

S/C 10, go ahead.

CYI Ok. We'd like to have you move your quantity read switch to the off position for a moment and then put it back to H_2.

S/C Roger. Off and then back to H_2.

CYI Roger. We got that.

CYI We've got nothing else for you. We'll be standing by.

S/C Roger.

CYI Flight, Canary Cap Com.

HOU Go ahead.

CYI Ok. That H_2 quantity was reading 71 to 72 PCM counts, both before and after. He turned it off and then back on.

HOU OK.

CYI We'll keep an eye on it.

HOU OK. Sounds good.

HOU Canary from Flight.

CYI Go, Flight.

HOU From our old buddy here at Gemini main and an OVC.

CYI Roger.

CYI We just sent you a couple.

HOU Roger.

This is Gemini Control at 67 hours 41 minutes into the flight. Gemini 10 is moving into range of the Kano station. We'll continue to standby during this pass.

HOU Roger Canary, it's looking very good.

CYI Roger.

This is Gemini Control. The flight plan schedules the second meal of the day for the crew during this period. At 68 hours 15 minutes elapse time the reentry time will be updated. This is Gemini Control at 67 hours 43 minutes.

CYI Gemini 10, Canary Cap Com. About a minute until LOS, we'll be standing by.

S/C Roger.

CYI Flight, Canary Cap Com.

HOU Go ahead.

CYI	OK. We've had LOS on the Gemini. PCM counts on the hydrogen were 70 to 71 at LOS.
HOU	Fine.
KNO	Kano is remote.
HOU	Gemini 10, Houston Cap Com. Standing by.
S/C	10, Roger.
S/C	The (garbled)
HOU	Roger.

END OF TAPE

HOU Gemini 10, Houston Cap Com.

S/C 10, go ahead.

HOU Roger, can we have an OAMS reg pressure readout please?

S/C ..315.

HOU Roger.

HOU Canary, Houston Flight.

CYI Go Flight.

HOU Can you resend your last Gemini main summary to us?

CYI Roger.

HOU Gemini 10, Houston Cap Com. One minute from LOS. Standing by.

S/C (Garbled)

This is Gemini Control 67 hours 51 minutes into the flight. Gemini 10 out of range now of the Kano station. We will be coming up on Tananarive station at 67 hours 55 minutes 38 seconds. We will come back just prior to acquisition at Tananarive. This is Gemini Control.

END OF TAPE

This is Gemini Control Houston 67 hours 56 minutes into the flight. C. C. Williams is going to talk to the crew now that we're in contact via Tananarive. So we'll standby and monitor that conversation. There is no conversation right now but we expect some.

HOU Gemini 10, Houston Cap Com.

One minute to LOS. Standing by.

S/C Roger.

TAN Tananarive LOS.

This is Gemini Control Houston, a long quiet pass. 68 hours and 4 minutes. We'll be back with the spacecraft over Carnarvon about 6 minutes from now. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 66 hours, 10 minutes into the Flight. Carnarvon is locking up now on Gemini 10. Let's listen in there.

CRO Is that good enough or do you want them to cal?

HOU Let's calibrate.

CRO Okay. Gemini 10, Carnarvon.

S/C Go.

CRO Would you place your TM cal switch to number 2 position for about ten seconds?

S/C Roger.

HOU And give us a Gemini main while you're in calibrate. Carnarvon?

CRO Roger there. Okay, I have some reentry parameters and some weather for you when you're ready to copy.

S/C Stand by one.

CRO That main summary may not have gotten out in time.

S/C Okay, ready to copy.

CRO Okay, nominal IVI: aft 304, down 114. Bank angle initial deflection at 0204 up; at 55 degrees, 490 up; and at 90 degrees 84 down. Pitch gimbal at 400 K, 100. You have a light lightest horizon at retrofire and a lightest horizon at 400 K. The elapsed time to begin blackout, 24 plus 14. End blackout, 29 plus 09. Drogue, 30 plus 50. Main at 32 plus 24. [illegible] pitch angle is minus [illegible] degrees. Weather. [illegible], visibility [illegible] miles.

wind at 8. Wave height, two to three feet. Altimeter setting, 30.06. There are a few showers in the area. Recovery call sign is an aircraft, Air Boss 1. It's on station, and the ship Guadalcanal is on station. And that's all we've got for you at the present time.

S/C Roger.

S/C Well, see you next time around. We sure enjoyed working with you.

CRC Thank you very much. Enjoyed it down here also.

S/C You guys got us out of a tense situation into a pretty good one there toward the end.

CRC Okay, fine, thank you.

CRC Flight, Carnarvon.

HOU Okay, go.

CRC Okay, PCM counts during the cal was 194.

HOU All right.

CRC We've got about five minutes before LOS. We'll be standing by.

HOU Carnarvon from Flight.

CRC Go ahead.

HOU Gemini OBC, please?

CRC Roger, coming your way.

[illegible] you have a manual on your heater?

CRC Carnarvon has acq aid contact with the Agena. Solid TM Agena. All systems go.

HOU Roger.

CRO It looks like he went to manual on his O_2 heater, Flight.

HOU Rog. What's the pressure at?

CRO 821.

HOU Okay.

CRO Showing 850 on O_2 tank pressure.

HOU Right.

CRO Carnarvon has LOS Gemini. All systems go at LOS.

HOU Roger.

END OF TAPE

This is Gemini Control Houston 68 hours 31 minutes into the flight. We are set up to remote through Canton Island. C. C. Williams is talking with 10 in there.

HOU Retro update this pass over the states at ETR.

S/C Roger. I guess we better come in, we've run out of food.

HOU Roger John. How are you coming with your house cleaning?

S/C Oh, just fine. There's really not much to clean up anymore.

HOU I guess not.

S/C That's really the way to handle house keeping in the states.

HOU I've got nothing for you this pass over Canton. We'll be standing by. We've got about 8 minutes until LOS.

HOU Gemini 10, Houston Cap Com.
We're about one minute from LOS. Standing by. We'll pick you up over the states in about 10 minutes.

S/C 10, Roger.

END OF TAPE

This is Gemini Control Houston 68 hours 50 minutes into the flight. Guaymas is locked up on Gemini 10 and in the course of this pass across the states the crew will get a rather full time to retro fire update also their computer load will be updated. Guaymas is talking to 10, now let's tune in.

GYM They're still looking good flight.

HOU Roger.

GYM Ring A is reading a 296, Ring B 298, and source pressure at 2440 on both.

HOU 2440

GYM Roger.
Looks great.

GYM Still looking good Flight.

HOU Roger.

GYM Guaymas has Agena TM solid.
All systems look good.

HOU Gemini 10 Houston Cap Com.

S/C Gemini 10, GO.

HOU Roger would you switch your computer to pre-launch and we'll give you a load.

S/C Computer is in pre-launch.

HOU Roger. I have a retro update for you if you're ready to copy.

S/C Roger go ahead.

HOU Roger. GMTRC 20:30:51, GETRC 70:10:35, RET 400 K, 22:12, RETRB 27:40, bank left 55, bank right 55.

[illegible] it.

[illegible] your load up.

Load received.

Roger. [illegible] TF.

[illegible]

[illegible] Roger. [illegible] your MDIU values if you'd [illegible] to copy them.

S/C Go ahead.

[illegible] Roger. Address [illegible]3-4[illegible] 0 51, address 04-[illegible] address [illegible] 4[illegible], address 66-57 93 7, address [illegible]7-4[illegible] 1[illegible], address 08-40 45 9, address [illegible]-[illegible]4 [illegible]4 [illegible], address 10-02 65 6, address 11-25 [illegible]. Do you copy? Over.

[illegible] Roger we copied. ([illegible]arbled)

[illegible] back here on the [illegible] verified it.

Roger

[illegible] Antigua.

HOU Gemini 10, Houston Cap Com.

S/C This is 10, go ahead.

HOU Roger, we've read out these MDIU values on the ground and have confirmed them. How do they look up there?

S/C They look mighty pretty.

HOU Roger. I'd like at this time on your water management panel to confirm H_2O valve is normal, condensate valve is normal and the dump valve off.

S/C While John's doing that, C. C., I'll read out all the values and they read identically except for 67 which reads one digit off. I read 45188 instead of 45189. I think it's the noises.

HOU Roger. I agree with you, Mike.

S/C Roger, it's normal, normal, off.

HOU Roger, normal, normal, off. Over Tananarive if you can get to it, we'd like to move the condensate valve to the tank fill position, that's one position counterclockwise.

S/C What for, C. C.?

HOU Say again, John.

S/C Why do you want to do that?

HOU That's to isolate the suit heat exchanger, John, for a post-flight evaluation. If you can get to it fine. If not, don't worry about it.

S/C Okay, we'll do it.

HOU Gemini 10, Houston Cap Com.

S/C Go ahead.

HOU Roger. G & C confirms that address 67 is a good load. We're satisfied with it and it looks like you're all set.

S/C We are too.

GTI LOS Grand Turk.

HOU Gemini 10, Houston Cap Com. One minute from LOS, standing by.

S/C 10, roger.

This is Gemini Control Houston, 69 hours, nine minutes into the flight, and we're out of range of Bermuda. On this final rev if the crew follows the past precedent, we'll probably hear some Good Byes to the various stations as they pass over them for the last time. There will be one or two updates on their onboard clocks, their time to retrofire countdown clock, and the position - the times - of the various maneuvers will undoubtedly change a few seconds one way or the other. Canary is to acquire about three minutes from now. We'll be back then. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 69 hours 13 minutes into the flight. The Canary station is observing some maneuvering going on, a little yaw right a little yaw left as the crew is apparently getting set up to do their retrofire maneuver. Here is that conversation.

S/C Roger, thank you very much. I enjoyed talking to you. It has been a lot of fun.

CYI Roger, John.

S/C I want to thank everybody down there for all the hard work.

CYI Sure will. You all had a good spacecraft. Houston Flight, Canary Cap Com.

HOU Canary Houston Flight.

CYI Roger. We show that the spacecraft TR is lagging 125 miliseconds.

HOU 125 miliseconds, roger. Would you get an H2 read-out to the crew.

CYI Roger will do.

HOU Just get the positions to read.

CYI Roger. Gemini 10, Canary, would you switch your quantity read switch to H2 please? Okay,.. count on that H2 is 64 to 65.

HOU Say again, Canary.

CYI The ... count on George Charlie 22 is 6 - that is Charlie Alpha 09 is 64 - 65.

HOU Roger.

CYI Flight, Canary

HOU Go, Canary

CYI Okay, his rings are looking good, both opened at 2000.

HOU Say again.

CYI His RCS ring are both in 2000.

HOU 2000?

CYI 2460 on ring A and 2520 on ring B.

HOU That is fine. It is a little more than 2000.

CYI That was my goof. Houston Flight, Canary Cap' Com. LOS on the Gemini vehicle.

HOU (Garbled)

CYI ...going over the hill.

HOU Roger.

HOU Kano go remote.

KNO Kano remote.

HOU Gemini 10, Houston Cap Com standing by over Kano. We have about 6 and a half minutes to LOS.

S/C 10, roger. We are all set up here.

HOU Roger.

S/C Boy, I really hate to come back, it is really something up here.

HOU Take more groceries next time.

S/C Next time we will take more groceries. Good point.

END OF TAPE

HOU Gemini 10, Houston Cap Com. We're one minute from LOS. Standing by.

S/C Roger Houston.

END OF TAPE

This is Gemini Control Houston. John Young is talking via Tananarive and it's just possible the conversation may continue. Let's cut in there.

S/C I know there must have been a lot of work going on around that place. Lot of head scratching.

TAN (garbled) in tank fill position.

S/C Roger.

HOU Gemini 10 Houston Cap Com.

S/C 10, GO.

HOU Roger, verify/condensate valve in tank fill position.

S/C Roger, I reported that a couple of minutes ago. You probably didn't read it.

HOU Roger thank you.

HOU Gemini 10, Houston Cap Com. One minute to LOS. Standing by, we'll see you over Canton for a retrofire.

END OF TAPE

Gemini Control Houston here. 69 hours, 40 minutes. As we began to talk, Carnarvon acquired and began a conversation with John Young. The Carnarvon Flight Controller is updating the crew. He's going to give them a mark at 22 minutes to retrofire.

CRO 3 - 2 - 1 - Mark 22 minutes.

S/C And it's [illegible]. Outstanding.

CRO ....I'll give you a mark now at 69 hours and 49 minutes ground elapsed time. 5 - 4 - 3 - 2 - 1 - Mark [illegible].

S/C Right on it.

S/C Well, this is our last run. I certainly enjoyed working with you [illegible].

CRO It's been enjoyable working with you too and we'll see you back in Houston.

S/C We appreciate all the late hours you put in.

CRO Thank you.

HOU Cap Com from Flight.

CRO Go ahead.

HOU About halfway through the pass, ask him if he plans to go to reentry [illegible] right. We'd like him to do that.

CRO Okay. He's just about so, Flight.

HOU Rog.

CRO [illegible] of 125 milliseconds.

HOU [illegible]

[illegible] [illegible]

HOU You just dropped down a little bit then. You might have moved away from the mike.

CRO How's that? What was that you said, Flight?

HOU You're a little bit lower than you were before.

CRO Okay.

CRO Roger. What's the matter with it?

CRO Flight, Carnarvon. We're getting erratic TM. We've had a fade on telemetry.

HOU Roger, Carnarvon.

CRO We have Agena telemetry solid. All systems are go.

HOU Roger. Carnarvon would you send us a Gemini main and an OBC, please?

CRO We've had a fade out on telemetry.

HOU Okay, do the best you can.

CRO Roger.

END OF TAPE

This is Gemini Control Houston, 69 hours, 57 minutes into the flight and John Young and Mike Collins have tagged up with the last station prior to retrofire. A little later this afternoon about two and a half hours from now, we plan another major maneuver with the Agena 10 which presently trails Gemini 10 about 2400 miles. That will be the relative separation between the two at retrofire. At 4:41 CST we will light off the big engine on the Agena and drive Agena 10 up into a 750 nautical mile apogee. It then would also have a 207 nautical mile perigee. Later tonight at 11:32 Houston time a second burn will be made with the big engine. This will be to lower that apogee bringing it down to 207 by 190. And tomorrow morning at 3:20 Houston time we'll do another small burn with the 200 pound thrust second propulsion system on the Agena 10, the 31.9 foot per second burn, and this is to have the effect to circularize the Agena 10 in orbit at 190 nautical miles. Tracking will continue on the Agena for at least another two to three days and the vehicle is expected to remain at that altitude as a possible target of interest for later missions. This is Gemini Control Houston.

END OF TAPE

GEMINI 10 MISSION COMMENTARY, 7/21/66, 2:30 PM, TAPE 230 PAGE 1

This is Gemini Control Houston 70 hours 8 minutes into the flight. Young and Collins will retrofire this afternoon at an altitude of 202 nautical miles. This is some 42 miles higher than we have normally fired in the past Gemini flights. But entirely in keeping with the altitude records this crew has already set when they reached an apogee of 413 nautical miles. At the time of retrofire, the spacecraft will be moving at 25 600 feet per second approximately. They will have just passed apogee. They will be aligned in a 20 degree pitch down maneuver. And we are 30 seconds from retrofire. This will be a three-way retrofire countdown. They crew will countdown on-board as will the Capsule Communicator here in the Control Center, C. C. Williams and also Tom Golden, or retrofire officer, will also be joining in the count. They are counting 7 6 5 4 3 2 1 retrofire. Continuing to count up. Now Young is reporting retrofire sequence normal. He is assured from the ground that he looks good. He read out his attitudes and he apparently got four good retros. They fire sequentially, all four of them, imparting a total change of velocity of 320 feet per second, which is enough to cave in his orbit and bring him in. We are showing 1 minute and 25 seconds since retrofire. Hawaii should pick up the spacecraft in a very few minutes. Meanwhile we will rerack the retrofire voice communication and play that in its entirety. We are ready with that tape and let's play it now.

HOU TR minus 30 seconds - Mark. 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 - retrofire.

S/C That was a superfine automatic retrofire, 303 aft 5 right, 119 down.

HOU Roger, Gemini 10. Looks good.

S/C That was a good retro and yaw left.

HOU Roger, Gemini 10.

C. C. Williams is back in contact with 10. Let's tune in there.

HAW Hawaii has telemetry contact. Hawaii has C-band track, Gemini.

HOU Roger, Hawaii. Those IVI's look real good to us, Ed.

HAW Okay. Looks like he is pretty well squared away. Just lost C-band track in Hawaii. Back in again.

HOU Roger.

This is Gemini Control Houston. Dr. Berry is watching his heart and respiration scope here. He advises the heart rates are very casual, 80 beats per minute, 80 beats per minute. Ed Fendell in Hawaii is talking to the crew again. Let's switch back there.

HAW Normal

S/C Roger...

HAW Having intermittent telemetry.

HOU Roger.

HAW It is locking up now.

END OF TAPE

HAW Still looking real good down here.

S/C Roger.

This is Houston. The backup Command Pilot, Al Bean, advises that John Young does plan to get some movies out the window during his fiery reentry across the states. His path of flight will take him across the lower part of Texas. He'll skirt the Gulf Coast, cross the Florida Peninsula at approximately the Cape, and land at a point 460 nautical miles due east of the Cape. At least that is our aiming point. Let's go back to Hawaii now.

HOU Initial deflection 65 nautical miles up.

HAW Do you want me to tell them that?

HOU Affirm.

HAW 65 up.

HAW 10, Hawaii

S/C 10, go ahead.

HAW Based on your IVI's your initial deflection will be 65 up.

S/C Roger, thank you.

HOU Hawaii from Flight.

HAW Go ahead Flight.

HOU An OBC and a Gemini main we just got them.

HAW OK. Do you need them still?

Want some more?

HOU Yes, send us one more.

HAW Ok we'll send you an OBC every minute. We'll send

you another main and one at LOS.

HOU OK.

...W He looks real good. He's got a 5.2 cabin, his rate secondary O_2 is 5110, left is 5118 - correction 5180. RCS is holding good, main bus and the suits are good.

HOU We've been copying, sounds real good.

This is Gemini Control. Our present altitude is just under 160 miles. The altitude again at retrofire was 202 nautical ...les. Atlantic recovery advises that all helicopters are on ...ation and they are prepared to do their part of the - this ...ssion. We are 11 minutes 29 seconds since retrofire and ...re 24 minutes 32 seconds away from splash. We expect to ...reacquire at Guaymas in 2 to 3 minutes. We'll come back up ...

...OF TAPE

HAW Hawaii has Agena solid, the vehicle is GO.

HOU Roger.

CAL California remote.

HOU Gemini 10, Houston Cap Com.

This is Gemini Control Houston 70 hours 25 minutes and we are 15 minutes since retrofire. C. C. Williams our Capsule Communicator has put in a first call remoting through California. He has not yet got an answer. Recovery advises that all aircraft are reporting on station in the Atlantic area. The aiming point again, 26 degrees 43 minutes north latitude, 72 degrees west longitude. Now Williams will update the crew on their maneuvers during the let down phase. Let's listen.

S/C How is super retro Charlie is he busy?

HOU Say again I didn't read you.

S/C I say have you got super retro down there.

HOU That's affirmative. He is right here.

S/C Roger.

GYM Guaymas has Gemini TM solid.

HOU Got you Guaymas. Send us a couple of OBC's.

GYM Roger Flight.

GYM Looking real good Flight.

HOU Roger.

GYM Guaymas remote.

HOU Gemini 10, Houston Cap Com.

S/C This is 10, go ahead.

HOU Roger. RET to 400K is 22 plus 07.

S/C Roger.

This is Gemini Control Houston. The spacecraft is now beginning its pass across northern Mexico. It is almost directly over Guaymas. It will cross the Rio Grande River just south of Del Rio, Texas. It will be at that point that it reaches the 400,000 foot mark, which you just hear Williams update the crew on. Present altitude is about a little under 80 miles.

HOU Gemini 10, Houston Cap Com.

S/C 10, GO.

HOU Roger. Your RETRB 27:38, bank left 45, bank right 45.

S/C Hey you guys are getting pretty accurate. We figured it 27:36 and 48 degrees.

HOU That's what the charts are for.

This is Gemini Control Houston. The spacecraft is now crossing the Rio Grande and the Flight Director advises we are at the 400,000 foot mark. Our elapse time is 70 hours 33 minutes. The blackout period lasting some three minutes is to begin at 70 hours 34 minutes and 34 seconds. We are about one minute away from blackout.

END OF TAPE

The spacecraft now is almost directly over Galveston, Texas, at which point it will move on across the Gulf, just south of New Orleans. The blackout period itself will begin perhaps 100 miles southwest of New Orleans.

HOU Houston Cap Com. About 1 minute - about a half minute to blackout.

This is Houston. We are about a minute into the blackout period. Blackout due to end at 39:30 and we make that 4 minutes from now correction. Earlier we said it would be only a 3 minute blackout. It is more on the order of 5 minutes. The spacecraft is now - would be directly south perhaps a 100 miles south of Pensicola, Florida.

This is Houston. The spacecraft is now almost directly over the Cape. About two minutes until the blackout period. (PAUSE) This is Houston. We are now about - the Gemini 10 should be about 250 nautical miles off the coast of Florida. Her present altitude about 17 miles and less than a minute until end of blackout. (PAUSE) This is Houston, we are now showing an elapsed time of 70 hours 39 minutes 43 seconds about 15 seconds beyond the end of blackout period. C. C. Williams has just put in a call to 10. No reply yet. Williams calling again. There is John Young's contact. William says "How are you doing, John?". John says "Oh, we are doing okay". Maybe we can catch a little bit of this communication. Let's try to pick it up.

HOU Roger, off the peg, it looks good down here, John.

S/C ...and 218 (Garbled) Do you copy?

HOU No, say again, John.

S/C (Garbled)

HOU Roger.

This is Houston. The Flight Director and the Flight Dynamics Officer compared data from as far back as Australia and they are very satisfied with everything they have seen. Chris Kraft said just a minute ago we should be right on the money. The crew would now be under the 50 000 foot mark according to our calculations. They should have a drogue chute out although they have not confirmed this orally. At 10 600 feet, the main chute is to be deployed.

S/C ....going down.

HOU Roger, John. You are on television.

S/C (Garbled)

END OF TAPE

This is Houston from the deck of the Guadalcanal where we're getting estimates - the first rough estimates - of something like five miles away.

S/C Houston Flight, this is Gemini 10, do you read? Over.

GUAD Gemini 10, this is Guadalcanal Control. You're loud and clear.

S/C Oh, roger.

GUAD Gemini 10, Guadalcanal Control. We have you in sight.

S/C This is 10. How far away are we?

GUAD 10, this is Guadalcanal. Approximately 8.5 miles.

S/C Roger.

This is Houston. We had splashdown and it looked to us like 70 hours, 46 minutes and about 45 seconds. The distance estimate is between four and five miles. That's from the ship as well as from the aiming point. Approximately four to five miles. And the swimmer helo is now positioning over the spacecraft. The Controllers here exceedingly pleased with the accuracy of this landing. Of course, they were not as close as the Gemini 9 crew. Gemini 9 holds the all time record. They came down .4 nautical miles from the aiming point and today it looks like something in the order of about four miles which is extremely close compared to many of the past flights.

GUAD .....is making his approach to the capsule. The seas are fairly calm. The capsule appears to be floating upright and the chute is laying along side.

Swim 1 is approximately 50 yards short of the spacecraft. He says the spacecraft is floating normally. Swim 1 is approximately 50 feet short. Very nice approach. Right down on the water and just a few feet from the spacecraft. The two swimmers have the collar and the first swimmer is right along side the spacecraft. The swimmers are in the water and swimming to the spacecraft. The swimmers are moving the collar around the spacecraft. The swimmers are moving the collar up to the aft end of the spacecraft and getting set to attach it. The spacecraft is floating very steadily, a little roll, very little pitch. The chute is still in the vicinity of the spacecraft. The collar is being strung around the spacecraft at this time. Swim 1 has made a beautiful deposit of swimmers along side the spacecraft. Right on target. They have attached the collar at several points and are at the forward end of the spacecraft attaching it to the front. The dye marker has deployed around the spacecraft. The spacecraft is still floating nicely, riding very well. The swimmers have inflated the collar. The spacecraft continues to float very nicely.

S/C Just fine. How's everything out there?

S/C Don't sweat it. Just take your time. Be careful out there now.

GUAD The swimmers appear to have communicated with the

astronauts.

S/C Swim 1, this is Gemini 10. How do you read, over.

SWIM 2 Swim 2. Read you loud and clear. How's it go?

S/C Oh, just fine. Thank you.

SWIM 1 Swim 1 read you loud and clear.

S/C Hey boys, take your time. We're not in any hurry. There's no use to hurry out there.

GUAD The swimmers have established communication with the astronauts and all appears to be okay. The spacecraft continues to float very nicely. A little bobbing around. Swim 1 is maintaining a nice position just down wind of the spacecraft. The collar is completely inflated at this time. The swimmers are now inflating the raft at the aft end of the spacecraft.

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GUAD The raft is being taken around to the port side, The green dye is very evident and deployed very nicely. The main chute is zeroed along side the spacecraft. Now have climbed up on the collar and is descending the (garbled) collar.

AIR BOSS-1 Guadalcanal Air /Boss one is on sea, do you wish me to assume on sea commander. Over.

GUAD Air /Boss one, Guadalcanal. Negative. Over.

AIR BOSS-1 Roger.

GUAD OK.

S/C (garbled) pyro just go. I'd be careful back there if I were you.
Ok like I say, be careful there may be a lot of those pyros that didn't fire back there.

S/C We got all our secondary(garbled) their off in here though.

GUAD The swimmers are on top of the spacecraft and are signaling that the astronauts are OK. Everything is OK. The swimmer is working with the port hatch at this time. The spacecraft is continuing to float very nicely, very little rock, roll or pitch.

This is Gemini Control Houston. The cigars are out and they are being lighted in great profusion here. Almost a ritual now after these missions. The outstanding commentary

we've got from the scene out there today has been provided by Lieut. Comm. Bruce Fleming who is the Commander of Swim One ELO. He's been in communication with Young and it's the communications from the water have - are - have never been equal before. They are truely outstanding. We've heard Young chating with Fleming about the position of circuit breakers and so forth, and Fleming just passed the message that the astronauts have checked in by hard line phone with the swimmers and they/are signaling their condition of course is just OK. This couldn't be better and that was quiet obvious. This is Gemini Control Houston.

GUAD The hatch of the spacecraft is open for fresh air. There are no signs of the astronauts however, the port hatch is open. The spacecraft is continuing to ride very smoothly. It is floating upright. The port hatch of the spacecraft is still open. One astronaut is now standing up.Astronaut Young has just stood up in the port hatch and looks fine. The spacecraft is continuing to float very steadily. Astronaut Young is sitting in the torque hatch, he's standing up now. The three swimmers are standing on the flotation collar and to his left.

GUAD Air Boss two, Guadalcanal, do not (garbled)

GUAD The spacecraft is continuing to ride very smoothly. It is upright and three swimmers are descending around the port side of the spacecraft.

This is Houston, the last estimate was on the separation distance about three miles. About three miles off the carrier and I hope that everyone in the News Center at least are still monitoring this excellent communication from downrange. We're going to keep it up.

GUAD The swimmers are indicating thumbs up, the situation is all OK. Astronaut Young is standing - leaning on the port hatch looking as though he's taking the ride very smoothly right now. The three swimmers are standing around the port side of the spacecraft at this time and it's very evident the spacecraft is riding very smoothly. Very little roll.....

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GUAD .....the astronauts have climbed out of the spacecraft and are now in the raft, looking as though they are taking the smooth ride very nicely. The second swim team is in the water attempting to place a float on the parachute. The spacecraft and swimmers and astronauts are riding very smoothly. No roll, no pitch to speak of. The situation is very static. There is no problem here at this time. There appears to be no problems impending. There's a misquote here it appears the chute is still to the spacecraft. You might have to check that. The swimmers have the swing and are putting it around one of the astronauts. Swim 1 is holding a nice hover. One astronaut is going up at this time. He is approximately half way up. Going up very steadily. He has a flotation .....(static)... He is going up -- is about five feet below the aircraft and is now entering the cargo hatch of Swim 1. The first astronaut is aboard Swim 1. The swing is being lowered back to the raft. The swing is in the water next to the raft. Very nice hover and hoist by Swim 1, commanded by Lt. Cmdr. Bruce Fleming. The second astronaut how has the horse collar on and a flotation vest. Swim 1 is .....

This is Houston. We have one astronaut already in the helicopter. The second astronaut is now in the horse collar and will be hoisted momentarily. We have no identification in what order they descended into the helicopter.

GUAD The second astronaut is airborne, is about one third of the way up, going up nice and steadily, very little movement other than vertical. He is entering the cargo hatch at this time, very smooth hoist. Swimmers have signaled that the capsule is ready for hoisting aboard the Guadalcanal. Swim 1 has departed and is returning to the Guadalcanal.

This is Houston. We have a report from downrange that the R&R section -- the upper front nose of the spacecraft did sink before the swimmers could get to it. We try to recover this if possible. Today, we did not recover. It appeared though, however, they did recover the chute. This is Houston.

GUAD Swim 1 and Photo 1 are making their approach to the Guadalcanal at this time. A very close landing for the astronauts.

From the deck of the Guadalcanal we are advised the band onboard has struck up a tune -- "It's a Big Wide Wonderful World." The helo should be onboard within a minute or two.

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