Gemini 5 Mission Commentary Transcript

PART 1

This document was scanned and annotated by David Harland, with 'proof checking' feedback from Derek Henderson and Ken Glover.

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PRELIMINARY - 8 October 1999

Dateline, 19 August 1965
Command Pilot: Gordon Cooper
Pilot: Pete Conrad

[** DMH's note -- This is the first Gemini mission to employ a fuel cell system to generate electrical power. At the time, this was a new -- and untested in space -- technology. Without fuel cells, a Gemini spacecraft would be limited to about four days endurance. Perfecting the fuel cells represented an essential step towards sending Apollo to the moon.]

Our problem is centered around a liquid hydrogen sphere that contains the fuel for the fuel cell system in the Gemini 5 spacecraft. Throughout last evening and here this morning -- during the early phases of this countdown -- we have had difficulty attempting to fill this tank, this very vital tank, to complete the 8-day mission. We have had difficulty filling this tank to its capacity. Our attempt is actually to overfill the tank prior to liftoff -- we attempt to load it to 104 percent of its capacity. We deliberately overfill, because we will have boil-off of the liquid hydrogen, which is maintained at a temperature of -423 degrees F. In our efforts to correct this boil-off situation, we now have changed trailers at Launch Complex 19. These trailers contain the liquid hydrogen fuel. This is fed through the ground support equipment system to the sphere, which is located in the spacecraft. We have changed these trailers at the present time -- we are in the process of hooking up a new one... to get more volume into this system. We want the trailer that has a large volume of hydrogen, so that we can increase our pressure along the lines, and build up the amount of liquid hydrogen. This difficulty is still being looked at. We'll have a further report on it shortly.

The count it at 300 minutes and holding. As far as astronauts Gordon Cooper and Pete Conrad are concerned, the countdown called for them to be awakened at T-270 minutes in the count. It is our understanding -- at the present -- that both astronauts are still sleeping. Thirty minutes after we pick up the count, that is at T-270, the astronauts will be awakened to start their preparations for the Gemini 5 flight. This is Gemini Launch Control, at Cape Kennedy. We're holding at T-300 minutes.

This is Gemini Launch Control at the Cape. Our countdown on the Gemini 5 mission remains at T-300 minutes and holding. We're still 5 hours from the launch and the length of the hold has not been exactly determined at this time.

Our problem centers around attempting to bring fuel into a hydrogen sphere that powers the fuel cell system within the Gemini 5 spacecraft. At the present time, we're

attempting to switch a trailer in the ground support equipment that provides the hydrogen fuel. Once we have hooked up with a new trailer -- in order to get more volume -- we'll then begin again, to feed the liquid hydrogen into this hydrogen fuel sphere within the spacecraft. When we are ready, and we attempt to do this, we will attempt to over fill the sphere, that is, go four percent higher than the quantity we want. This reason for this is we have a condition called boil-off with any type of cryogenic fuel -- that is, a fuel that is maintained in liquid form at an extremely low temperature. We have severe heating problems under conditions like this where liquid hydrogen -- which is maintained at -423 degrees F, that's 420 degrees below zero -- obviously can be effected by heat. So we attempt to over fill this particular sphere, and any other systems where we do use liquid hydrogen within the spacecraft. We attempt to over fill it so that we will have a boil-off, resulting in, at launch time, having a complete 100 percent capacity. We over fill, it'll boil off a little bit, we'll maintain it in this manner, keeping a close eye on it through the terminal phases of the countdown, and so resulting in 100 percent capacity at liftoff. Well, obviously, we are going to watch this very closely.

We're aiming for an 8-day mission on the Gemini 5 flight. We want to insure that we are completely fueled at liftoff, to insure that both astronauts -- Gordon Cooper and Pete Conrad -- will have a full system with them when they go. We're currently at 300 minutes and holding.

We're expecting to get a report shortly on the status of the count, and when we expect to be able to resume.

Earlier last night, launch vehicle fueling began at 10:00 p.m.. It lasted until about 1:30 in the morning. We had detected, just prior to launch vehicle tanking, that we might have a particular problem with this boil-off situation in the fuel cell system. At that time however, we were not able to get into the spacecraft... because the two stages of the Titan-II launch vehicle were being fueled. We came back to look at our problem about 2 a.m., and it was determined to go into initial hold in the countdown at 3:00 a.m. We are still holding at the present time -- T-300 minutes and holding.

We've just received a report from the Astronauts Quarters [in the Manned Spacecraft Operations Building on Merritt Island] -- Gordon Cooper and Pete Conrad are still sound asleep at this time. Our intent is to awaken them 30 minutes after we pick up the count -- that is, at 270 minutes in the countdown. This is Gemini Launch Control at Cape Kennedy, holding at T-300 minutes.

This is Gemini Launch Control at Cape Kennedy. Our count remains at T-300 minutes and holding. We've just received a report from the blockhouse that the hold is expected to last an additional 30 minutes from this time. The hold -- the continuation of the hold -- was called at approximately 6:15 a.m. This is Gemini Launch Control at the Cape.

This is Gemini Launch Control at Cape Kennedy. We're still holding on the Gemini 5 mission at T-300 minutes. We were informed from the blockhouse some five minutes ago, that the hold is expected to last an additional 30 minutes, which -- on an estimate -- would give us a pick up time, if all goes well, of 6:45 a.m. EST.

Our problem has centered around -- as we reported earlier -- on providing some liquid hydrogen fuel to a tanking system in the fuel cell that is the power system in the Gemini 5 spacecraft. We've switched trailers in our automatic ground support equipment in order to get a trailer containing liquid hydrogen with a larger volume, to insure that we get a proper feed of the liquid hydrogen fuel into the fuel cell system. This is the liquid hydrogen which powers the fuel cell system, along with the liquid oxygen.

Our present time, we're still holding at T-300. Command Pilot Gordon Cooper and Pilot Pete Conrad are still sound asleep in the Astronauts' Quarters at the Kennedy Space Center on Merritt Island. This is Gemini Launch Control, at T-300 minutes and holding.

This is Gemini Launch Control at Cape Kennedy. Our count remains on the Gemini 5 mission at T-300 minutes and holding... We are still looking into our problem of loading liquid hydrogen into the fuel cell system aboard the Gemini 5 spacecraft. We've switched the trailers we referred to earlier, and we're now -- once again -- starting to load the liquid hydrogen into the fuel cell system.

Astronauts Gordon Cooper and Pete Conrad are still sound asleep -- according to our last report from the Crew Quarters.

Our problem this morning is namely concerned with attempting to load this fuel into the liquid hydrogen sphere aboard the spacecraft within the fuel cell system. We're attempting to load four percent above the capacity we want at liftoff, because at the low temperature of this particular fuel... you do get a boil-off.

Now, this is no connection to a problem that we possibly might have had the other day when you received reports from the McDonnell plant that there could be some type of heat transfer problem within the fuel cell system. This was rather thoroughly discussed, earlier in the mission. We still feel that we have no problem, along these lines, with the Gemini 5 spacecraft. This morning our problem is concerned with loading the fuel aboard. There is no heat transfer condition as such, we are attempting to over load the system and now that we have switched trailers we expect that we will be resuming the count in a short while and expect that we will be able to load the fuel aboard. This is Gemini Launch Control at the Cape. We're T-300 minutes and holding.

[** DMH's note -- I don't want to give too much away, but readers should note this reference to McDonnell's earlier suspicion that there could be some type of heat transfer problem within the fuel cell system!]

This is Gemini Launch Control at Cape Kennedy, still at T-300 minutes and holding. We've now started, again, to feed the liquid hydrogen into the hydrogen sphere in the fuel cell system. We have a report that we're up to 100 percent in the capacity of this particular sphere. We want to get up, as we reported earlier, to an over fill that's some four percent above the quantity we want to fly with. We're still starting to fuel now and we won't pick up the count until we reach this over-capacity in the fuel sphere, so that we'll be assured at launch time that we have our full liquid hydrogen capacity in the spacecraft.

Gordon Cooper and Pete Conrad, the pilots for the Gemini 5 flight, are still having a nice sleep over in the Manned Spacecraft Operations Building.

We've just received a report that the hold will be continued for an additional 30 minutes from this time. We are still loading the liquid hydrogen into the fuel cell system. We'll not pick up the count until we reach the over fill capacity of this particular system. Once this is ready to go, we will pick up the count. The additional 30 minutes that has been declared at this time is to insure that we are ready with the fuel cell system prior to picking up the final phases of the spacecraft count, starting at T-300.

The launch vehicle, meanwhile, on Pad 19, is standing by. They'll pick up their final count at 240 minutes. In addition to the fueling at the present time that is going on with the spacecraft, we are also completing some checks with the radar system that will be used in connection with the Radar Evaluation Pod during the Gemini 5 mission. This is Gemini Launch Control. We're holding at T-300 minutes.

[** DMH's note -- In saying that they'd "pick up their final count at 240 minutes", he was not referring to releasing the T-300 hold, he was referring to the terminal count which would start with the spacecraft, the launch vehicle, and the Air Force's Eastern Test Range, synchronised at the T-240 point]

This is Gemini Launch Control at the Cape. We are still at T-300 minutes and holding on the Gemini 5 mission. Astronauts Gordon Cooper and Pete Conrad still sleeping soundly. The launch crew is working rather feverously at the pad in an attempt to finally load the liquid hydrogen aboard the fuel cell system in the spacecraft. We are now up to about 100 percent in the liquid hydrogen, within this sphere. Now, in this small sphere, which contains some 22 pounds of hydrogen altogether, we have now practically reached the top of the sphere. There is pressure feeding in at the top, we call it ullage. This is the amount of space that is left, of course. It's under pressure, and the process to over-fill, to load in this 4 percent more, is a more difficult and time consuming operation this morning. We can't tell whether the problem is concerned with perhaps some pressure in the sphere, or whether it might be that some aspect of it not being properly chilled down. We know of no defects within the system at the present time. We are still looking at the system -- we're still attempting to over fill the tank, at the present time. This hold has been declared to last for some 20 to 25 minutes from now. As we get further reports from the blockhouse we'll pass them on to you. We're holding at T-300 minutes. This is Gemini Launch Control.

This is Gemini Launch Control at the Cape. We are T-300 minutes and holding. Our count remains on the Gemini 5 mission at T-300 and holding. We're still checking closely on the feeding of liquid hydrogen into the fuel cell system aboard the Gemini 5 spacecraft. We still have not attained the 104 percent capacity that we are seeking for this flights. That is, we over load the liquid hydrogen sphere containing the fuel for the fuel cell system, to insure that at liftoff we will have full capacity of liquid hydrogen fuel for the 8-day flight.

We are at T-300 minutes and holding. We have had a report that the astronauts might have gotten up. We don't have confirmation at this time. As soon as we do, we'll report it to you. We're at T-300 minutes and holding. This is Gemini Launch Control at the Cape.

This is Gemini Launch Control at the Cape. We're still at T-300 minutes and holding. We're still continuing to load liquid hydrogen aboard the fuel cell system. We now have a report from the blockhouse that we're up to 101.5 percent in the loading. As we reported earlier, we're attempting to load four percent above the capacity we want to fly with at the started of this 8-day mission. We're still continuing the slow tedious process of loading the liquid hydrogen. Our count remains at T-300 minutes and holding. This is Gemini Launch Control.

This is Gemini Launch Control at the Cape. We've been informed that the countdown of Gemini 5 Mission is expected to resume shortly. We have continued loading the liquid hydrogen into the fuel cell system. We've reached an over capacity of 101.5 percent, and the project officials, both here and Houston, have determined that this'll be acceptable, at the present time, for the flight. We've been placed on alert that the countdown will resume momentarily -- in approximately one minute now, the count will be resumed.

We are just about 20 seconds away from resuming the countdown at T-300. Our last report, a few moments ago, gave an indication that the prime pilots for the flight were still asleep, but it is expected that they will get up very shortly.

Now five seconds away. T-300 minutes and counting. T-300 minutes and counting on the Gemini 5 flight. This is Gemini Launch Control at the Cape.

This is Gemini Launch Control at the Cape. We're now at T-285 minutes and counting. In the Gemini 5 spacecraft at this time are backup pilots Neil Armstrong and Eliott See. At the present time, in the countdown, they are going to do a series of communication checks between the spacecraft and the blockhouse here at Cape Kennedy. All systems are looking good at the present time. This is Gemini Launch Control at T-285 minutes and 20 seconds and counting.

This is Gemini Launch Control at the Cape. We are now T-276 minutes and counting. At this point in the Gemini 5 countdown, we're proceeding normally. Backup Pilot's Neil Armstrong and Elliot See are in the spacecraft, and continuing a series of communication checks from the spacecraft at this time.

To elaborate a little further on the problem we encountered earlier this morning loading fuel into the Gemini 5 spacecraft's fuel cell... we had liquid hydrogen, a cryogenic fuel, a fuel at a very low temperature, as a matter of fact, 423 degrees below zero, being fed into this pumice-like fuel sphere. As we reached about 100 capacity, a normal heating situation which is encountered in any type of situation of loading hydrogen fuel occurrs, and we get what's called a boil-off, and some of the liquid hydrogen becomes a gas. Then if we try to over fill, we would face a situation of loading more liquid hydrogen into the system while hydrogen gas in the sphere was boiling off at the same time. This gave us a back pressure in the system. Once again -- this is a normal situation, which makes for a time consuming operation to over fill liquid hydrogen in this particular system.

All conditions are still looking 'Go' at this time. We understand astronauts Cooper and Conrad are now up. We'll have further information on this shortly. This is Gemini Launch Control at the Cape T-274 minutes and 50 seconds and counting.

This is Gemini Launch Control at the Cape. We are now T-266 minutes and counting. All is going well at the present time in the countdown for the Gemini 5 flight. We've had a report that five minutes ago -- at T-270 -- astronauts Gordon Cooper and Pete Conrad were awakened by Deke Slayton in the Manned Spacecraft Operations Building Crew Quarters on Merritt Island. At this point in the countdown -- coming up on T-265 and counting -- in the spacecraft Neil Armstrong and Elliot See, the backup pilots for this mission, continue a series of checkouts. They're coming up on a series of power checks of various systems in the spacecraft, reporting back to the Spacecraft Test Conductor [in the blockhouse] and to the Manned Spacecraft Center, Mission Control Center, in Houston, on the status of their power systems and voltages.

Weather conditions look generally the same as were reported yesterday for the world-wide tracking operation on Gemini 5. For the Cape area, we're looking for scattered cloud at about 2,000 feet, a temperature of 86 degrees F, winds from the south-southeast at ten miles per hour. Our latest report on Typhoon Lucy puts it some 400 miles south of Tokyo. It is in a secondary recovery area, but it's not expected to affect our launch. One destroyer has been moved out of the area, and returned to its Yakauska, Japan, base. However, we do not feel at the present time that there will be any affect on the launching this morning by either Typhoon Lucy or Typhoon Mary -- which has now swept off the south China coast, and is some 200 miles off Formosa. They are watching weather conditions throughout the world as we continue our countdown at the present time. We foresee no difficulties that would create a hold in our launch this morning. This is Gemini Launch Control. We are now coming up on T-264 minutes. Mark! T-264 minutes and counting.

This is Gemini launch control at the Cape. The count is T-256 minutes and counting... The prime pilots for the Gemini 5 mission -- Gordon Cooper and Pete Conrad -- have been awakened, and are now getting ready for their flight. They were awakened at 7:48 EST by Deke Slayton in the Crew Quarters at the Manned Spacecraft Operations Building, over on Merritt Island. Meanwhile, at Launch Comples 19, the backup pilots, Neil Armstrong and Elliot See, are still in the Gemini 5 spacecraft, continuing a series of checks. At this point, they're completing some power checks in the spacecraft. And we're preparing to meet the launch vehicle's countdown at T-240, at which point we will start a terminal count where spacecraft, launch vehicle, and the Air Force Eastern Test Range, all meet in a final joint countdown at T-240. All conditions are looking good at this time -- coming up on T-255 mark, T-255 minutes and counting. This is Gemini Launch Control at the Cape.

This is Gemini Launch Control at Cape Kennedy. We are now at T-246 minutes and counting. All situations -- all conditions, are looking good on the Gemini 5 mission at the present time. As far as the spacecraft is concerned, we are completing some power checks ... and preparing for a roll call, a status check, of all different conditions concerned with the spacecraft, prior to meeting the launch vehicle's countdown -- some five minutes from now. In the blockhouse, as far as the launch vehicle is concerned ... they're preparing for the spacecraft to meet them at T-240 minutes in the countdown. All conditions are looking good at this time. Backup pilots, Neil Armstrong and Elliott See, are still in the spacecraft continuing their checks. T-245 minutes and 10 seconds -- Mark! This is Gemini Launch Control at the Cape.

This is Gemini Launch Control, at T-240 minutes and counting. Our final countdown, the meeting of the spacecraft with the launch vehicle in the final count, has begun, starting at T-240 minutes. All systems are looking good at the present time on the launch pad.

Astronauts Neil Armstrong and Elliot See are still aboard the spacecraft, going through final checkouts prior to the arrival of the prime pilots -- Gordon Cooper and Pete Conrad. This is Gemini Launch Control. T-239 minutes and 22 seconds and counting.

This is Gemini Launch Control at the Cape. T-226 minutes and counting. The count on the Gemini 5 launch continues to run smoothly at this time.

At this point, astronauts Gordon Cooper and Pete Conrad, the pilots for this mission, should have finished up their physical examination in the Crew Quarters, and are probably sitting down for breakfast at this time -- or just about to, in a matter of a few minutes. We expect to have a complete report on their activities in the Crew Quarters, a little later in the count.

At this time at the launch pad, conditions are still going along very well. We're running through some checks with the destruct system aboard the Titan-II launch vehicle, from the blockhouse. This is one of a series of tests during the terminal phase of the countdown, to insure that the destruct system in the launch vehicle will be operable in flight. This destruct system, of course, is tied into the Malfunction Detection System within the launch vehicle, which would tie into an abort if, for any reason, the decision is made to terminate the flight at any time. This is Gemini Launch Control, at 224 minutes and 50 seconds and counting.

This is Gemini Launch Control at the Cape.We are now T-216 minutes and counting. The countdown on the Gemini 5 mission still going smoothly at this time. At this point, at Launch Complex 19, there's a series of compatibility checks of the launch vehicle's radio-

command guidance system, tying the radio-command guidance system into the spacecraft computer, a check between a computer in the spacecraft and the radio-command guidance system that will carry the Titan-II on its flight.

Astronauts Neil Armstrong and Elliot See, the backup pilots for this mission, are still in the spacecraft performing their checks, and they'll be ready, later in the count, to give a full report to the prime pilots, Gordon Cooper and Pete Conrad, when they are ready to board. This is Gemini Launch Control at the Cape. Now T-215 minutes, 5 seconds and counting.

This is Gemini Launch Control at the Cape. We have T-195 minutes and counting ... correction, that's 196. Our countdown is going smoothly at the present time. In the block house, we are still continuing our checks at the present time with the launch vehicle. We're installing the initiators in the destruct system in the Titan-II launch vehicle. As a result, all radio frequency in the area has been turned off while the initiators are installed. Later in the countdown, down to the last few minutes, these initiators are on, so in the event a destruct has to occur after lift-off, that is how it would be accomplished. Right now, the initiators are being put in and all radio frequency [transmitters are] off. Our checkouts still continue in the spacecraft, but at the present time we are minus our backup pilots, Neil Armstrong and Pete Conrad [this was a slip of the tongue, he meant Elliot See -- DMH]. They left the spacecraft about nine minutes ago. In a matter of 10 minutes... the prime pilots, Gordon Cooper and Pete Conrad are due to depart from the Crew Quarters. Later in the count, we will have the exact times for you, when they depart for Launch Complex 16, where they'll suit-up for the flight. This is Gemini Launch Control. All conditions are looking good on the Gemini 5 countdown at this time.

The prime pilots for the Gemini 5, astronauts Gordon Cooper and Pete Conrad, have departed the Crew Quarters on their way to Launch Complex 16 -- some eight minutes ago, at 9:12 a.m. EST. They're now on their was to the suit trailer at Launch Complex 16 which is adjacent to the Gemini Launch Complex [on Pad 19], where they will don their suits, go through their checkout and prepare for the final moments of the launch. They will be at the Crew Quarters until 108 minutes in the countdown when they -- correction, they will be at the trailer at Launch Complex 16 checking out their space suits, until about 108 minutes in the count. At that time, they will depart from the trailer and go to adjacent Launch Complex 19, to board the spacecraft for this flight. This is Gemini Launch Control. Our countdown continues to run smoothly. We are coming up on T-177 minutes. Mark! T-177 minutes and counting.

Two young tourists from Bever Falls, Pennsylvania, on their way to Miami, stopped on the beach last night in the area north of the Cape. This morning, they walked south on the beach to an area around Pad 19, where they were apprehended by security police. The pair were identified as Gary Ralph Young, age 22, and Nora Lee Mullenger, age 17. They are being held by security police for questioning at this time.

[** DMH's note -- What a way to enter the history books!]

This is Gemini Control, Houston. Good morning!

The delay on the flight this morning of a little over three hours has delayed the planned timing of ejection of our Rendezvous Evaluation Pod, we now expect the pod to be ejected during the second revolution, at one hour and 54 minutes into the flight -- this assumes an approximate 11:18 a.m. CST liftoff.

The spectrometer, one of three spectrometers which will be used during the flight, that will be used to track the pod and take certain other ground and space measurements, which is cooled by liquid neon gas supply planned to last about 12 hours into the flight, has been topped off. It was topped off about three hours ago, and we have at least a 12-hour lifetime on that particular experiment. The two other spectrometers, which will be used for various space measurements, earth measurements, do not require any special liquid cooling.

Some information on Gordon Cooper: Dr Berry [MCC's Flight Surgeon] has recalled that his heart rate, on his MA-9 liftoff, was 168 -- he expects about the same this morning on Gordo. At rest, Gordon Cooper normally runs a 65 to 70 heartbeat. Pete Conrad runs slightly above Cooper at rest -- his heart rate is 70 to 75, and Dr. Berry expects his rate at liftoff will be something up in the 170 range.

Around the world, the [tracking] network is quite green this morning, with one or two exceptions. Hawaii has had some trouble with their C-Band radar and telemetry equipment but they're estimating a complete fix within five minutes. Another station, a ship, the USS Wheeling, stationed just north of Midway Island in the Pacific, is unable to communicate by either voice or teletype. This station is not a critical one, and would not be a restraint to the launch. The other ships... The Coastal Sentry Quebec has been playing tag with some typhoons the last couple of days, but it is on the station just off the island of Formosa. The Rose Knot Victor, for this flight, is stationed about 750 miles off the Chilean coast, South America, and, as I indicated earlier, all the stations -- with the exception of Hawaii and the Wheeling -- are quite 'green' and ready to support the launch. We had one destroyer... for the far western Pacific area. It has been ordered back to its station in Japan because of the typhoon activity in the western Pacific. Airplanes which will support this flight, more than 20 at launch, have been deploying, starting about 3 hours ago. Their times of departure are staggered out. The first one left Patrick Air Force Base [immediately south of the Cape] at about 6:00 a.m. CST. That's pretty much the picture from the Mission Control Center, in Houston.

This is Gemini Launch Control at the Cape. Our countdown is continuing smoothly on the Gemini 5 Mistion. We now stand at 123 minutes 7 seconds, and counting. Astronauts Gordon Cooper and Pete Conrad, the prime pilots, are completing their suiting procedures in the suit trailer at Launch Complex 16, and are due to depart for Launch Complex 19 and the Gemini 5 spacecraft at approximately T-108 minutes. In the meantime, astronaut Neil Armstrong has returned to the spacecraft. He came back about 25 minutes ago, and he is continuing the series of tests in preparation for the crew ingress. At the present time, the blockhouse is monitoring the pressurization in the launch vehicle -- that was finished some thirty minutes ago.

This morning, in the Crew Quarters, astronauts Cooper and Conrad had breakfast with the following people. Joining them for breakfast were the Gemini 6 crew, astronauts Wally Schirra and Tom Stafford, Deke Slayton -- the Assistant Director of the Manned Spacecraft Center for Crew Operations -- and the physicians who gave them the physical examination this morning, Dr Gene Tubbs and Dr Howard Minners. The breakfast consisted of a menu of the following: orange juice, steaks , scrambled eggs, and coffee. Astronauts Cooper and Conrad are now finishing up their suit checks in the trailer, and they're are due to come out some... twelve minutes from now.

This is Gemini Launch Control. Our count is continuing to proceed smoothly -- now 121 minutes 31 seconds and counting.

This is Gemini Control, Houston. Within the last 15 minutes, the Red Team, the flight control team headed by Chris Kraft, sometimes called the "Go Team", has taken its places, at the consoles here in Houston. The Blue Team members, who have been on station here for the past seven hours, are briefing their counterparts, and moving out of the room. The Capsule Communicators around the world have completed what we call a voice-confidence test quite successfully. Earlier, we reported that the Hawaii station was having trouble with its C-Band radar and with one other item -- it was the telemetry system. Both trouble spots have been cleared up and Hawaii -- along with all the other stations around the world -- are completely 'green' at right now. And the Wheeling, the ship parked just north of Midway Island in the Pacific, now has voice capability. They are still without teletype, but again we emphasize this would not be a constraint to the launch. And, meanwhile, down at Pad 16, the astronauts have completed a suit purge, a check of their pressure suits, and they should be leaving that complex within a very few minutes. This is Gemini control, Houston, with 1 hour and 4 minutes to go before launch.

PAO	Admiral Thomas H Moore is Commander-in-Chief of Atlantic Fleet, and he is responsible for the ships which are deployed in the recovery area in the Atlantic. Admiral, could you tell us how many [ships] you have and where they are?
Moore	Well, we have ten ships now, of all types, led off by the Lake Champlain and five destroyers. And, of course, in addition, there are ships in the Pacific Ocean too.
PAO	Now, these Atlantic ships, the primary recovery area -- where are they located now?
Moore	They're disposed along a line between the Coast of Florida and the Coast of Africa.
PAO	Has the delay meant that you had to change any of these positions?
Moore	No, none whatsoever.
PAO	Will it mean possible changes later?
Moore	No, I think that if the shot goes as scheduled, then the ships will carry out their regular instructions to move in coordination with the order. For instance, the Lake Champlain, which is in the Bermuda --

This is Gemini Launch Control at the Cape. The countdown is still preceding normally. We have T-91 minutes and 41 seconds at the present time. Astronauts Gordon Cooper and Pete Conrad are now aboard the Gemini 5 spacecraft. They entered the spacecraft at 10:42 a.m. EST. Once the two pilots do get settled in the spacecraft, they will proceed through a series of intercom checks, these are communication checks, with the blockhouse and with Mission Control in Houston. This will be followed by some daily biomedical readouts -- primarily with the blood pressure system. This is Gemini Launch Control, at 91 minutes, 10 seconds and counting.

This is Gemini Launch Control at the Cape, now at T-75 minutes and 53 seconds and counting. Everything is still going smoothly at this time. Just at the time in the countdown -- at 11:01 a.m. -- astronaut Gordon Cooper's hatch was closed, reopened for a moment, and then reclosed. We're now sealing the hatches. Following this, we will prepare to break up the White Room area and prepare for lowering the erector on Launch Complex 19. Both astronauts are reporting their communications checks -- they sound good. As they

entered the spacecraft, there was a little kidding on the part of some of the technicians in the White Room. This is a usual practice that does occur -- it has occurred on both the GT-3 and the Gemini 4 flights previously. All conditions are still looking good at Launch Complex 19. Now 75 minutes and counting. This is Gemini Launch Control.

This is Gemini Launch Control at Cape Kennedy. The countdown is still proceeding satisfactorily. Now T-69 minutes and 35 seconds and counting. As reported earlier, both hatches on the Gemini 5 spacecraft have been closed, and astronauts Gordon Cooper, the Command Pilot, and Pete Conrad, the Pilot, are reporting to the blockhouse in a series of functions inside the spacecraft. They've been given some reports through astronaut Rusty Schweickart, who is the Capsule Communicator in the blockhouse. At the present time, the cabin has been purged of air, and is now on 100 percent oxygen. All systems still looking good at this time, coming up on T-69 minutes, mark, T-69 minutes and counting.

This is Gemini Launch Control at the Cape. The countdown is now T-59 minutes and counting. All phases still preceding satisfactorily at Launch Complex 19. At this time, the Gemini 5 pilots are running through a series of panel switch tests with Rusty Schweickart in the blockhouse, to insure that the various switches on the panels in the spacecraft are at the proper settings.

The Launch Vehicle Test Conductor, in the meantime, is monitoring a series of tests of the radio-command guidance system, that steers the launch vehicle in flight.

All systems are still looking good, now at T-58 minutes 20 seconds and counting. This is Gemini Launch Control at the Cape.

This is Gemini Launch Control at the Cape. Now at T-50 minutes and 22 seconds and counting. Our countdown still procedes to go satisfactorily. In the Gemini 5 spacecraft, at the present time, astronauts Cooper and Conrad are completing the panel switch reports to astronaut Rustry Schweickart in the blockhouse. As far as the launch vehicle is concerned, a series of tests with the Air Force Eastern Test Range for tracking purposes are now being conducted.

The Gemini 5 flight will be certified -- as far as any possible international flight records are concerned. Representing the National Aeronautics Association here at Cape Kennedy to certify the Gemini 5 flight is Mr W. B. Wents. Mr Wents is with the Rocketdyne Division of North American Aviation Inc. The National Aeronautics Association is affiliated to the Federation Aeronautique Internationale, which is the international organization that certifies world flight records. Also, certifying for the National Aeronautics Association in Houston today, for the liftoff, is Dr George Szego. Dr Szego is Director of Space Systems for the Institute of Defense Analysis. At Houston, for the touchdown after the flight, will be Mr J. R. Drake, who is Corporate Director of North American Aviation. All three gentlemen are representing the National Aeronautics Association in this particular capacity, to certify the Gemini 5 flight for any possible flight records.

This is Gemini Launch Control at the Cape, now at T-48 minutes and 39 seconds and counting.

This is Gemini Launch Control at the Cape. Coming upon T-39 minutes. Mark! T-39 minutes and counting. At both Control Centers and at the launch pad, there is a little bit of concern about a large black cloud in the Launch Complex 19 area at the present time. Our weathermen are taking a close look and we expect a further report on it shortly. The count is still going smoothly. Astronauts Cooper and Conrad are sounding very good, as they

continue to report from the spacecraft. They've just finished up an intercom check, and are preparing for erector lowering. This will come some 3 minutes and 20 seconds from now, if all continues smoothly.

Meanwhile, on the launch vehicle, we passed one of the highlights in the countdown where the pre-valves have been opened in the first stage booster. These are valves within the propulsion system that permit both the oxidizer and the fuel to flow a little closer to the thrust chamber. Once these pre-valves are opened, there is just one valve left that keeps the fuel and oxidizer from the thrust chamber itself. This is called a thrust chamber valve. The thrust chamber valve will be initiated at ignition. The pre-valve in the second stage of the Titan-II are not opened until some 35 seconds before launch.

We're keeping a close look on our black cloud and expect to have a report momentarily. This is Gemini Launch Control, T-37 minutes and 30 seconds and counting.

This is Gemini Launch Control at the Cape. The Gemini 5 mission is still counting... now T-31 minutes and 26 seconds. Astronauts Gordon Cooper and Pete Conrad are still sitting comfortably in the Gemini 5 spacecraft, reporting back on the activity within their vehicle. However, in the meantime, we have not yet started to move the erector. There is no problem with the erector itself, but we are still awaiting a determination on that pesky black cloud that we have in the area. We expect to have some more information very soon. In the meantime, the count continues... At T-30 minutes 54 seconds and counting, this is Gemini Launch Control at the Cape.

This is Gemini Launch Control at the Cape. We are now at T-25 minutes 44 seconds and counting. There has been a little rain out in Launch Complex 19 from a black cloud in the area, we're still keeping close watch, but the countdown is still continuing. An attempt has not been made yet to lower the erector on pad 19. Astronauts Cooper and Conrad are standing by. They're getting reports on the situation.

In the meantime, as far as the launch vehicle is concerned, if you remember the POGO situation we had with the Titan-II vehicle, we made a fix in the fuel system of the booster in order to insure that we would not get any oscillations on the flight. At the present time, the erector is coming down on Launch Complex 19. We're now at T-25 minutes and counting. To continue on the POGO situation, we had to make a manual fix of the stand pipe, located in the fuel system of the first stage. For a reason that's not available at the present time, this had to be done manually. It has been accomplished, and the stand pipe has been topped off. This is a small device added to the fuel system, to prevent any oscillation during the flight of the Titan-II. This is Gemini Launch Control, now at T-24 minutes and 24 seconds and counting.

This is Gemini Launch Control at the Cape. Our countdown continues. It is now T-19 minutes and 28 seconds and counting. The erector is about 95 percent lower, at this time.

To get back to our POGO problem this morning and explain it perhaps. A little further, back on the earlier history of the Titan-II launch vehicle, sloshing of the fuel system in the first stage created some oscillation, some actual shaking in the launch vehicle, that it was determined would constitute a problem on a manned flight. As a result, a fix was made in the first stage booster in which a stand pipe, an actual small pipe was inserted into the fuel system to bleed off part of the oxidizer in the system and thus prevent the sloshing. Now, this oxidizer, which is at an extremely low temperature, has to be topped off similar to the liquid hydrogen that we were topping off earlier this morning. In order to do this, nitrogen is fed into the system. We were unable to do this automatically as it should be done, and as a result, was manually fixed at the launch pad a

short while ago. We are in fine condition as far as the stand pipe, and the POGO problem is concerned, right now.

We are still counting, and the count is now coming up on T-18 minutes, and several seconds.

[** DMH's note -- In order to man-rate the Titan-II missile, stand pipes had been added to the propellant feed system to eliminiate the severe longitudinal oscillations, called 'Pogo', which resulted from uneven combustion. A nuclear warhead was not perturbed by such oscillations, but they could impair a crews ability to function. In this case -- as post-flight analysis was to reveal -- the oxidiser feed stand pipe was charged with only 10% of the stipulated volume of nitrogen, and the first stage suffered 13 seconds of severe POGO, ending just a few seconds before it shut down. The violent fore/aft oscillations gave Cooper and Conrad an unpleasant ride. The peak 0.38 g load had exceeded the 0.25 g specified maximum.]

This is Gemini Launch Control at the Cape. Our countdown continues. It is now T-14 minutes and 30 seconds and counting.

Coming up, is an important test at the launch pad. This will be a test of the spacecraft's primary propulsion system, called the Orbit and Attitude Maneuvering System. A series of tests with one and one-half second bursts from all of the thrusters in the spacecraft will be coming up shortly. As the spacecraft propulsion system is being tested, Pilot Pete Conrad in the spacecraft will be monitoring these functions. The tests will go as follows: with the thrusters, with one and one-half second bursts each, starting with a yaw left, a pitch down, a yaw right, a pitch up, and a yaw left. This covers all aspects of the thruster system and if it is successfully completed, we'll continue with the count. This is Gemini Launch Control, now T-13 minutes and 30 seconds and counting.

This is Gemini Launch Control at the Cape. We're now at T-10 minutes and 9 seconds. We plan to come up to a hold at T-10 minutes. T-10 minutes and holding on the Gemini 5 mission. T-10 and holding. We're about to check now -- ah, we understand that we have a telemetry problem with the spacecraft; we have no further information available on it at this moment. We hope to have it very shortly. In the meantime, astronauts Cooper and Conrad have been discussing the weather in the spacecraft with astronaut Rusty Schweickart in the blockhouse. Pete Conrad did confirm that he saw a couple of raindrops on his window but there is no concern. This is Gemini Launch Control. T-10 minutes and holding.

This is Gemini Launch Control at Cape Kennedy, still at T-10 minutes and holding on the Gemini 5 flight. We're checking into our problem with the telemetry system within the spacecraft. Our problem centers around commutators in the spacecraft telemetry system. A commutator switches from one channel of telemetry to another, automatically -- within the telemetry system. In the blockhouse... we are receiving some low level readings on these commutators. As a result, we determined to hold. We're now investigating to see what the problem is. The problem is not necessarily with the commutators themselves, but, because of the low level readings, it was determined to hold and investigate further. This is Gemini Launch Control at T-10 minutes and holding.

This is Gemini Launch Control at T-10 minutes and holding. The erector is now being raised back to the launch vehicle on Launch Complex 19. Our weatherman has told us that there's a good possibility of thunder showers, and in order not to take any chance with the mission, the erector is being raised.

The Astronauts Gordon Cooper and Pete Conrad are taking it very well. Pete Conrad, when he heard, requested permission from the Spacecraft Test Conductor to turn on the spacecraft windshield wipers -- in jest, of course.

This is Gemini Launch Control. We will have a further report momentarily. We're still holding at T-10 minutes.

This is Gemini Control, Houston. The erector has been put back up around the Titan-II and spacecraft, to serve as an umbrella because there is thundershower activity in the area. There is also some lightning farther south, down on the coast, and [the erector] serves as a better 'ground', rather than having the spacecraft and launch vehicle exposed.

The problems in the spacecraft: we encountered a telemetry dropout, or a loss of signal on one of the telemetry links, between T-20 minutes T-10 minutes. The secondary circuit, the secondary system in that particular circuit did work without dropout. We switched back to the primary circuit and it also worked uninterrupted, but the dropout has caused concern among the engineers in the blockhouse, and back here in Houston. We plan to look at this for at least another fifteen minutes, by which time we ought to be able to better advise you on the length of the hold, or whether we are going to 'go' today. The hold to date, has not caused any hardship on the mission -- quite the contrary -- the fuel and the oxidizer in the bird are warming up slower than usual, and the warming up effect has the overall effect of enhancing -- that is, we could actually loft into orbit slightly more weight, at this point in time, than we could have three or four hours earlier, if we launched then, so it's a margin of comfort in that area. This is Gemini Control in Houston, holding at T-10 minutes.

Gemini Launch Control at the Cape. Our countdown remains at T-10 minutes and holding. We're still checking out our telemetry problem. The astronauts in the spacecraft, Gordon Cooper and Pete Conrad, got a report, a short while ago, that we still do not have the answer. They express their sentiments by saying: "Let's hang on and let's try and go today." We're still keeping a close watch on the weather, and checking out our telemetry problem. This is Gemini Launch Control at the Cape. We're still holding at T-10 minutes.

This is Gemini Control, Houston... Mission Director [Everett] Christensen has just announced he's scrubbing the mission. Standby one.

This is Gemini Control, Houston. I can confirm that the mission has been scrubbed. We're now considering what the minimum recycling time will be. We can't quote you an estimate on the turnaround time. The mission was scrubbed due to electronic problems in the spacecraft -- primarily in that telemetry system. Within a very few minutes, we expect to have an estimate on how soon the spacecraft -- and the bird -- can be turned around, or recycled as we call it, to try for another launch. The pilots should be leaving the spacecraft within thirty minutes, I would say. Standby for further word.

... after the determination is made. In the meantime, the astronauts have requested permission to leave the spacecraft, and action is being taken at the present time to open up the hatches and take them out. It is expected that the astronauts will be coming out of the spacecraft in a short time. This is Gemini Launch Control.

This is Gemini Launch Control. The Gemini 5 pilots are still in the spacecraft at the present time. They're going through the whole sequence of powerdown checks within the spacecraft to make sure all switches are in the proper position now that we have

postponed the flight. Gordon Cooper spoke for himself and Pete Conrad, when he came up with the following quote concerning today's operation -- Gordon said: "Aw, gee, you promised a launch today, and not a wet mock." A 'wet mock' ... is a simulated flight demonstration that occurs several weeks prior to a launch where the astronauts spend a number of hours in the spacecraft, of course, get out and don't take off.

This is Gemini Launch Control, we're still awaiting word on a recycle -- we'll pass it on to you as soon as it is available.

This is Gemini Launch Control. Astronauts Gordon Cooper and Pete Conrad are now out of their spacecraft. They've come down the elevator and are on their way to the trailer, the suit-up trailer, at Launch Complex 16. We're still having a session to determine if we can discover what our problem was on this telemetry dropout, and as we get information we'll pass it on to you immediately.

END OF RECORD