Copy No. 49 of 400 Copies

[redacted]

POSTLAUNCH MEMORANDUM REPORT

FOR

MERCURY-ATLAS NO. 9 (MA-9)

PART III - MISSION TRANSCRIPTS

CLASSIFICATION CHANGED TO unclassified
BY AUTHORITY OF EO 12356
1 Aug 82
DATE 11 Aug 82

GROUP 4
Downgraded at 3-year intervals; declassified after 12 years

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Cape Canaveral, Florida

June 24, 1963

[redacted]

MA9 Post Launch Part III Missions Transcripts

POSTLAUNCH MEMORANDUM REPORT

FOR

MERCURY-ATLAS NO. 9 (MA-9)

EDITORS

Senior Editor	R. E. Day
Section 1.0	John J. Van Bockel Alan B. Shepard, Jr. William Harvey
Section 2.0	Helmut A. Keuhnel Jeremy B. Jones William Harvey Tommy W. Holloway
Section 3.0	David M. Goldenbaum Paul W. Backer John Sargent Clifford Mire Alan B. Shepard, Jr. Virgil I. Grissom

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Cape Canaveral, Florida

June 24, 1963

N O T I C E

NO. 1: LIFT-OFF TIME (2-INCH MOTION) FOR THE MA-9 FLIGHT WAS 8:04:13.106 A.M. E.S.T. RANGE ZERO TIME WAS ESTABLISHED AS 8:04:13 A.M. E.S.T. ALL TIMES REFERRED TO IN THIS REPORT ARE IN ELAPSED TIME IN HR:MIN:SEC FROM RANGE ZERO UNLESS OTHERWISE NOTED.

NO. 2: THE MA-9 POSTLAUNCH MEMORANDUM REPORT IS IN THREE PARTS, UNDER SEPARATE COVERS, AS FOLLOWS:

PART I - MISSION ANALYSIS - CONTAINS AN OVERALL ANALYSIS OF THE MISSION AND PRESENTS A MINIMUM OF DATA.

PART II - DATA - CONTAINS COMPLETE TIME HISTORIES OF SPACECRAFT DATA, WITHOUT ANALYSIS.

PART III - MISSION TRANSCRIPTS - CONTAINS ESSENTIALLY UNEDITED TRANSCRIPTS OF THE FLIGHT COMMUNICATIONS, THE PILOT'S POSTFLIGHT SELF-DEBRIEFING, AND THE FORMAL TECHNICAL DEBRIEFING CONDUCTED ONBOARD THE RECOVERY AIRCRAFT CARRIER.

NO. 3: A TRANSCRIPT OF THE SCIENTIFIC DEBRIEFING CONDUCTED AFTER THE FLIGHT AT CAPE CANAVERAL, FLORIDA, WILL BE DISTRIBUTED UNDER SEPARATE COVER.

TABLE OF CONTENTS

1.0 PILOT'S SELF DEBRIEFING

1.1 Introduction

The following is essentially a verbatim transcript of the MA-9 self debriefing conducted by the pilot upon the recovery aircraft carrier immediately after the medical examination and a period of rest. The debriefing consisted of the pilot recording on magnetic tape his impressions of the flight in chronological order from lift-off through recovery.

The value of this debriefing is enhanced by the following factors:

(1) It was conducted within a short period of time after completion of the flight and with only little intervening experience, thereby, permitting good recall on the part of the pilot.

(2) There were no persons in attendance while conducting this debriefing, thereby resulting in a minimum of interruption and a maximum of clarity.

(3) The transcription was only lightly edited so as to maintain the original meaning and implication of his comments.

However, since this debriefing was conducted immediately following the flight, many of the pilot's impressions of systems malfunctions and times when mission events occurred have since been superseded by later information from postflight data in failure analyses. Appropriate sections in Parts I and II of this report should be referred to for the most recent system performance data, which is considered to be the more valid in instances where a discrepancy between the Astronaut's comments contained herein and discussions in Parts I and II exist.

MA-9 ASTRONAUT SELF DEBRIEFING

1.2 General Discussion

I will run through this in a rather chronological sequence and then give some general comments -- everything in a rather condensed form -- and then I will follow the flight plan and go over everything in detail from start to finish.

First of all, for launch. Lift-off was smooth, but very definite, the acceleration was very pleasant. The booster had a very good feel to it and it felt like we were really "on the go", there. A number of seconds prior to BECO there was a considerable lateral oscillation which showed up on the spacecraft rate gyros, from peg to peg, of six degrees per second, side to side for a number of oscillations, probably six or seven oscillations of this type. This damped out just prior to BECO. BECO was very distinctive with a loud "glung" and then a sharp, crisp "thud" for staging. You could feel staging, perhaps, more than actually hear it.

After staging, sustainer was very smooth -- with no oscillations. First I waited on the tower -- the tower seemed later than I anticipated it being, and it really departed. It arced off almost straight ahead, but curved off in a circular path-off to the left. The sustainer was very smooth -- with no oscillations -- no lateral or longitudinal noticeable corrections. Everything seemed to go just exactly right.

SECO was exactly on time. It was very distinctive -- the same type of a "glung" as was apparent at BECO. The Cap Sep was not quite so noticeable in sound but was noticeable in the boot from the posigrades firing.

Turnaround was just like advertised, I went to aux damp, then to fly-by-wire low and turned around on the instruments. In this fashion, it was very much like the procedures trainer. The feel of the fly-by-wire (in the spacecraft) was the same as (that in) the trainer.

I did not pitch down, but went around almost entirely in yaw because we had calculated that the yaw rates would feed into pitch, and left yaw would give you a downward pitch rate so I was checking this to see if this, was indeed, the fact; and when I got my turnaround almost completed, I noted that I had very little pitch down rate at all so that I arrived turned around in almost zero pitch, rather than -34. When I first got turned around, my attention was attracted to the booster, which was not more than 200 yards away, and was very close. I could read the lettering on the sides. I could see various details of the sustainer, the tanks, and many little details. It was silver -- very bright silver in color, with a frosty white band around the center portion of it. It was sitting almost head-on to me, perhaps 15 to 20 degrees turned off. As I watched it over the period of the next number of minutes (I had it in sight for a total of approximately eight minutes) it was slowly turning, with the front end of it turning out in a counterclockwise rotation, so that the last I saw of it, it was turned at about 70 degrees to the azimuth that it was

on when I separated from it. It was wisping out of the rear section of the nozzle, it was still wisping a lot of fumes; and smoke trailing out from it. It was quite clear, quite distinctive, and as it began to drop slightly down, I was moving down to my 34 degree (-34 degree) pitch attitude. I kept it in sight the whole time and could note the Cape and Florida in the background with the booster against them. It made an ideal picture to view.

When I got on auto control, I pulled the 16 mm camera out of its bracket and snapped off a short burst of the booster, with the State of Florida in the background. (By this time the booster had moved some distance away.) It was moving slowly to the rear and dropping down, slightly, on a line from me.

I agree with Scott Carpenter that the perspective changes when you go into zero g. The cockpit did seem to be somewhat differently located from the perspective that you have of yourself in it while lying flat on your back on the pad. It appeared to me, that you move entirely up forward in the seat (closer toward the instrument panel) regardless of how tight your straps are cinched-in you tend to move on up in the seat. The ditty bag on the right (or "Pandora's box") does seem to be at a different angle to you than it is when lying on the pad. It is not improved any -- I consider this equipment locker, that we call "Pandora's box," completely unsatisfactory so far as flight access to gear. It is almost impossible to get items in and out of it in any kind of reasonable fashion.

The next section of orbital flight I will hit briefly now and then we'll go through it later in detail. I will say now that you really need the first orbit on automatic control to collect your senses, acclimatize yourself to this new situation, and to organize the flight's activities. I felt that I was not on top of the situation completely, as I would like to be, right after insertion, although I was thinking all the while of the items ahead to be done and of how to do them. I did not feel at home. I felt in a very strange environment and was not at my best, until perhaps halfway through the orbit. I had the flight's activities fairly well organized, had gotten a feel for the situation and by the end of the first orbit was feeling really ready to power down and go into drifting flight, and to manage the spacecraft in any manner of means.

I found that orienting the spacecraft after drifting flight was quite easy on the day side, and not too difficult on the night side. Although the night side takes more time (unless there is moonlight with broken clouds or land masses below) I found you could orient yourself by the stars. The stars are a little more difficult to recognize when you are viewing through your limited window and sometimes from varied types of angles and attitudes. However, you can slowly drift around until you find some star pattern that is very recognizable and that you know the location of, and move back then from it to an area to pick up your zero yaw. At this time, if you have moonlight, or you have any kind of broken masses below, either cloud or land masses, then you can pitch down to 20 to 30 degrees pitch down and can pick up zero yaw very readily by turning all the lights off in the spacecraft and letting your eyes grow accustomed to the dark so that you can see what you are doing on the outside.

Nighttime orientation, though, is something that cannot be rushed. It does take a little time to do this. I had to orient on the night side prior to the actual retrofire since I did not have the auto pilot or gyros and I found that it really was not difficult at all, but it took some little time.

The next area I will talk on is retrofire. The procedure from the ground to prepare me for retrofire was very good. (See remarks in pilot's flight report, part I) John counted me down in good shape and we were right on the button on time, and I held it fairly close in attitudes during the fire. I found that it was different than we have ever done any practice on, in using the outside references to hold attitudes, and using the rate indicators on the inside to hold rate. It is a little difficult in that the light from the outside is so bright that as you view the outside, when you shift your vision back to the inside, you cannot see the rate indicators, so you have to hold your hand up to partially shade your eyes, when viewing the rate indicators, and then shift back and forth. This is a little bit of a problem. Retros give a good, solid "thump" in the seat of your pants and I could very easily count each one as it fired. The retro jettison, which I did manually, was a very solid "clack" in the retropack. You could actually feel the pack depart.

Reentry and landing. I was initially intending to use fly-by-wire on reentry. I fired retros on manual proportional, and was intending to use fly-by-wire on reentry, but in between, while maneuvering on fly-by-wire to get setup for reentry, I could not get the fly-by-wire high thrusters to light off as they should. I pushed in the manual proportional handle and decided to just go dual authority. I found that I overshot some of the oscillations on reentry then, two different times, when the fly-by-wire high thrusters started to operate correctly, and I was getting 49 pounds thrust for some of the corrections. The early corrections on the oscillations, pure manual proportional would have handled very readily (very nicely in fact). The one pound thrusters would almost handle the initial ones. Later on, the oscillations got considerably harder, more force to them, and it took considerably more thrust to slow them and to correct them. I did not really have a feel, without the sequence lights, to tell when reentry would start, except for John Glenn's message on the time. However, prior to the time that he gave me, the spacecraft began to feel very sluggish in control and feel like it was starting to go to positive pitch -- to reentry attitude -- and prior to the time he gave me by more than a minute. So at this point I allowed it to ease on up to zero, zero, zero, and applied a negative roll rate, which gave a very odd visual sensation. It appeared to wallow all over when I started this roll rate and this is something you don't see in the trainer, of course.

The oscillations through max g (max g was approximately six and one-half g's on the accelerometer) were much less than the trainer and would have been more easily controlled, as I have stated before, on straight manual proportional. However, after about 95 thousand feet, the oscillations seemed to go into a completely different ratio, and got larger in amplitude and much faster in frequency. The oscillations were held to a reasonable degree (I was striving to keep them damped as low as possible,) until about 50,000 feet the oscillations got fairly large and fast and I was really having difficulty staying

with them. I was using 49 pounds of thrust, dual authority, in this area too. However, these oscillations were short in time, and in the spacecraft you could actually feel the oscillating "g" forces and they are not objectionable at all.

I had planned on deploying the drogue at 42,000 feet. I pushed the drogue button. The drogue immediately came out. It sounded like the whole front end fell out of the spacecraft. The drogue came out, deployed, and I realized I was in the clouds when it deployed, but I still could see it very easily. It immediately stabilized the spacecraft, and appeared very nice up there. The main chute came out barostatically at approximately 11,000 feet indicated, reefed normally, held its reef and then blossomed fully.

The g's from the chute opening were much less than I had expected. Rate of descent after chute opening was between 35 and 40 feet per second. The spacecraft was oscillating slowly under the chute. At around 4,000 feet indicated altitude, the rate of descent was down to 30 feet per second, but the oscillations still were present. Bag came down with the switch in automatic position, landing was solid, but not severe. On landing, considerable water splashed in, apparently through the snorkles, but was splashing all about the cockpit in small amounts from side to side. As I hit, the spacecraft went down to the left side, rolled around with my head down, and wound up with the right side of the spacecraft under the water. I could see that I was under water by the window. I could see the spacecraft then ease back up to the water line where it was lying flat in the water, and this was confirmed by the helos telling me it was lying flat.

The chute was slow in disconnecting, by outside visual comment, although the time did not seem long at all that it took to come up out of the water. I did hit the main and emergency disconnect fuse switches on the number 1, and the recovery switch was placed to "manual" -- immediately on impact, and it appeared to be a matter of a minute, perhaps, when the spacecraft began to right itself, came right on up in a nice upright position (he further commented in pilot's flight report, part I).

At this point I used the swizzle stick, from over on top of "Pandora's box," reached down and turned the manual-fill nitrogen handle, pulled it out, turned it to the "on" position and then brought the recovery aids switch to "automatic" to extend the whip antenna. By this time there were swimmers actually in the water around me. I might add, that immediately after main chute deploy I began to hear the helicopters contacting me on radio. They stated that there were two of them circling me at this time, and that the carrier was very nearby and that they were all set for my landing and would be right with me. This was extremely comforting.

The recovery section. As I say, the main chute deployed at approximately 11,000. I was contacted by the helos immediately after. The carrier was very near on landing, in fact 4.4 miles, I believe, was the exact distance, and I was asked how I preferred to be recovered. I elected, as I had planned all along, (with this kind of time involved) to be hoisted on board the

carrier. Everything proceeded very smoothly and I did not get out of the spacecraft until John Graham and his troops blew the hatch from the outside on the carrier and I was met by John and Dick Pollard. We took blood pressure inside and then I climbed out and took blood pressure outside.

Some comments on the physiological feeling while in flight. One, you must force yourself to eat and drink. When you have a fairly full flight plan the temptation is not to bother with eating and drinking, but to busy yourself with doing a good job on the items you have to do and to devote the time to doing them correctly, preparing to do them correctly, and you tend to compromise yourself in so doing. I deliberately made a point of forcing myself to drink water regularly. However, the food was so difficult to get to and to prepare to eat, that I did not eat anywhere near the quantity of food that I normally should have (that I normally would have), and that I had planned to. I'll hit on the food again later. (Another section) I found that one difficulty is that so far as sleep is concerned, when you are completely powered down and drifting, you are so relaxed -- and it's such a relaxed, calm, floating feeling, very, very refreshing -- and very delightful, you have difficulty, not sleeping. I found that I was cat-napping and dozing off frequently. Sleep seems to be very sound. I woke up one time from about an hour's nap that I had taken with no idea where I was and did not have any bearings at all about me (about where I was) and it took me several seconds to orient myself and realize where I was and what I was doing. I noticed this again, not quite to this great an extent, but several times from one other fairly long period of sleep and from shorter cat-naps that I took I noted this same thing, that you appear to sleep completely relaxed and very, very, soundly to the point where you have trouble regrouping yourself for a second or two; when you come out of it. Although this complete drift is very relaxing and thoroughly delightful, I never encountered any type of this so-called "break-off phenomena." I always had a very sound, strong, urge that I intended to come back in normal condition and to get back to the earth where I belong in day-to-day activities. Although this was very enjoyable and really a thing of delight in orbit; it still is a strange environment to a human being and you have every desire to get back to the earth in normal fashion.

Our cockpit area is not good for doing any great amounts of work or activities. It is very poorly arranged and we need slightly more, or far better, arrangements for conducting the various things. Some of the hydraulics experiments were quite difficult to do in the area.

The control of the suit circuit is definitely marginal and physiologically and psychologically was probably one of the worst areas that I had through the flight. I was sweating the suit circuit; probably more than any other one item throughout the entire flight. I worked more to keep it within limits. The suit is also very definitely moist and I think in the medical report they will show where I appeared to have been really soaked in water for some period of time upon recovery. The suit heat exchanger dome temperature, was a big problem the entire flight. No one setting, regardless of how

small the changes you made, would hold the suit dome temperature anywhere reasonably constant. It either was frozen up, at which point I would have to turn the suit water flow completely off for some period of time until it came back up, at which time it would go considerably higher (running considerably higher then) and the suit inlet temp would run also higher -- uncomfortably high. Then I would slowly work back down on it -- to the point where I was beginning to get a comfortable suit. Then, upon leaving it there, it would hold for a short while and suddenly would plunge on down, (even after having apparently stabilized) to the freezing mark and I would have to start all over. Even when I would remember the settings that I had used and go back to even slightly lesser settings than these, it would hold for a short while, but then plunge. It did not appear to be constant at all.

Opening and closing the visor, of course, as we have known before, has some effect on the suit temperature and added to the variations in it also. Partial pressure of oxygen in the cabin, slowly throughout the flight, edged on down (of course, I inherently do not trust the gauge) but it got down to about 3.5 psi in the cabin. I was worried by the various questions that were asked about this; that the (tracking) range might get concerned about this value. Partial pressure CO_2 in the suit started up on the next to the last orbit and gradually got on up. I suspected the gauge when I went to emergency rate flow and did not get any apparent decrease in this reading. However, the suit circuit did not feel real comfortable to breathe on. I feel that there was CO_2 in the suit circuit. I recognize the symptoms of breathing -- more rapid and deeper -- and this gauge indicated that we were up over five on the gauge setting just prior to retrofire. However, I had plenty of oxygen; I could go to emergency rate flow if I could take the lack of the fans and the greater heating involved.

The 250 VA main inverter failed on the twenty-first orbit. The switch-over warning light came on and I checked on the gauges. I found that it had not switched to the alternate inverter and when I went to the slug position of switching it to the alternate inverter, the alternate inverter would not start. The 250 VA inverter, when the failure light came on, was not giving a great increase on the ammeter, although it had had a couple of jumps in the ammeter shortly before this, which I noted, and at which time I checked the temperature of it. The temperature of it was running only about 115 degrees. At the time that it failed, the temperature still was about this range; however, the bus voltage was indicating about 140 volts. As stated, the alternate inverter would not start, so I was without ASCS AC power. The high thrusters on fly-by-wire would not light off properly prior to reentry and I elected to use manual proportional in reentry also. I reentered on dual authority, and as stated before, the fly-by-wire high thrusters then did begin to work properly. Probably, I should have fired them all well prior to retro and reentry to warm them up and double-check them at a slightly earlier time.

(An apparent) glitch from the warning light switch, where I had been switching to the "off" position on the night side to observe a photographic experiment; this glitch (apparently) turned on the 0.05g green light on the sequence panel. After various checks on it, it proved that it had dropped

out the ASCS and had gone through the logic down to the 0.5g, and I no longer had ASCS. I am wondering if perhaps this same glitch didn't damage the 250 VA inverter, although it didn't show anything at this time. (See Section 5.1 Part I, for a more detailed discussion.)

The valve on the McDonnell drinking container leaked so much water that I could not place water in any of the plastic food containers. However, these plastic food containers with the frozen dehydrated food are completely unsatisfactory for zero g use. Under one g use, water can be dropped into them, the top then shut, and water worked down into the food, kneading the food and the water together down below. However, under zero g, when the water is placed in there, there is no way then of getting the plastic container away from the nozzle to work the water down into the food. The water tends to come all over the place and to come out of the plastic top as you try closing it off. These bags are completely unsatisfactory to work with and just too much trouble and got so much water in the cockpit, all over myself, all over the instrument panel, that I only got enough water in it to eat approximately one-third of the food that was in there and finally just gave it up as a lost cause, and went to the snack-type foods instead.

The needle valve on the condensate pump took out the diaphragm fitting from the reserve tank later on in the flight and could not be transferred back and forth; this then prevented me from placing it in its condensate water in plastic bags. The pump also jammed -- would not work -- and could not pull water from the condensate tank. First, before this happened, the reserve tank appeared to fill up much sooner that it should have in the amount of condensate water that was placed into it, and was so hard to pump against that I was afraid I would rupture the tank if I pumped any harder. I finally stopped pumping, transferred over then to the four pound tank and proceeded to pump some water into that. At this time the pump finally appeared to jam, and then in switching back to the other tank trying to pump to it, was when the needle took out the fitting and put the whole system completely out of commission.

Comments in general. I think that speed is very apparent when overflying clear or broken cloud areas. I think you definitely have a feeling of really traveling along. If the cloud is a solid deck underneath you don't have any real references to motion, then you have a very slow, floating feeling. If you have some motion at an attitude where you can see references below you, and you have a broken deck or clear areas, you appear to be really moving along.

I could see individual houses and streets. I saw some trains and some trucks in some of the clear areas. I noted several cases of looking at the wind direction on the ground due to smoke coming out of smokestacks and out of the fireplaces of houses. I could particularly see a lot of houses and yards, fields and roads and streams and lakes in the Himalaya areas, in the high mountain areas. I could see a lot of snow on the ground in the upper portions of the mountains and a lot of the lakes frozen over even down in the lower sections -- a lot of the windblown, sandy, high plateau areas of the Himalayas.

On the night side, you can see each thruster firing (throwing off showers or sparks as it fires), and these sparks float off and become the fireflies. You can see them coming right out of the thrusters and floating on around to become the fireflies that you see on the first light or late light times. If you are controlling at night on the dark side with the cabin lights off, you can see each thruster fire. If they are out of sight of you, you can even see the glow from them and then you see the showers of the fireflies coming around the spacecraft.

I saw the ground light experiment very clearly. I saw the little horseshow-shaped town that the ground light was out from. I did not get a photometer reading on it, in fact, the photometer is completely unsatisfactory to use in flight. I think it is a miserable device. I "flubbed up," getting the reading on it, just because of the way that it's made, and finally gave up trying to use the photometer on any of these devices. I stuck it over to one side and forgot it.

I saw the flashing beacon experiment on the second night side after deployment -- on the first portion of the night side and on the last portion of the night side. Then towards the middle of the third night side -- after deployment (I did not expect to see it at all) I was slowly (semi-drifting type) -- slowly easing up onto my 180 degree yaw by star pattern and all of a sudden -- there it was flashing out there -- very faint and quite far away, but still distinctive.

The window discoloration, or smudging, occurs on launch and it appears to be two different areas that smudge. One is the streaked coating, like from powder burns, on the outside of the window, which appears to be, as I say, powder burns or smoke smudges (streaks). Then you can see a thickness of the glass between that and the real solid, smeary, greasy, coating which appears to be on the inside of the outside pane of glass. Under the proper light conditions, you actually can see the thickness of glass in between these two smudgings. I can't, for the life of me, figure out hou you can get this smudging on the inside of that outside pane of glass, but this solid, smeary, greasy coat is like you pick up off a road, a wet, oily road. It's oily looking, which you can see through with direct light, but when you get oblique light on it, the window is completely blotted out of the scene.

1.3 Flight Plan Event

The following portion of the debriefing is using (my) flight plan and just running right around the flight plan on the notes that I have made on it and of the items that I did, or didn't do, as we go along.

Launch, I have already pretty well described, I mentioned that after turnaround, and going to auto control mode, I took some pictures of the booster with the 16 mm camera. I then proceeded on with checking the manual proportional system, found that it was functional. The manual proportional system is just as we have it in the procedures trainer. I think the procedures trainer system is identical to what the manual proportional system is in the spacecraft. It is a variable control system which works very well. After

one becomes used to the slow lightoff and the slight lag, one can control fairly readily, even down to fairly good fine, accuracies with it, but it is not a real fine control for attitude like the one pound fly-by-wire lows. I checked my TS +5 second relay by going to gyros-free with pitch-torquing on, and it worked. Now the relay had latched in. I got TV on for the Canary Islands, gave a consumable readout over Zanzibar, put a short status report on the tape at 40 minutes, and went into the night side. I immediately saw the white colored haze layer (as described by Wally) a number of degrees above the earth in a several degree wide band. The stars would fade out, when behind this, (you could see the stars below it between the earth in a clear area). The stars would fade through this haze layer and then were clear above it.

I conducted the tests (received the emergency voice check and the end rest command check) over Muchea. I sent blood pressure, got S-band beacon to "ground command." One hour and ten minutes -- gave the long status report.

I gave the first oral temperature over Canton at 1 hour and 13 minutes and toward the sunrise of the first night side, I saw John Glenn's firefires. They did appear very greenish looking, like actual fireflies. They did appear very greenish looking, like actual fireflies. As you got on into more light they got whiter, brighter, and they appeared to emanate from the spacecraft and to go back along the flight path of the spacecraft. I noted that some of them could be seen for a number of seconds after they departed and for a considerable distance away back along the flight path.

On through to beginning of orbit two: caged the gyros, powered down ASCS bus and went into drift. As I stated before, this drift is a very free feeling, a good feeling -- to just be floating along up there and to know you have all the systems powered down and are conserving the consumables. I opened the Kenny Kleinknecht clamp and did not appear to see water flowing at this time. I left it open for awhile to see what I could see on it. (Everything down on the flight plan just as advertised on down to about 2 hours and 23 minutes.) I saw the moon and was quite surprised to see it here. I checked on my star chart and it was not supposed to be here at all, until I realized that I was looking to the east and that the moon was, in fact, on the star chart located correctly, and also correctly in the sky, and it was right where it should be.

(On down through this night side) at Canton, at 2 hours and 45 minutes, I had a communication with the Cap Com there. I noted that the Cap Com there did an excellent job, a very good Cap Com. (Three hours) powered up the ASCS bus, and at 3 hours and 4 minutes started aligning the spacecraft and uncage the gyros and go on auto control. I found that yaw was very easy to pick up. Aligning the spacecraft on the day side is a real snap. It is no effort at all to see yaw immediately, to detect very small angles of yaw, particularly when you have broken cloud decks or broken land masses -- things to align. Even solid masses of clouds will have some tops (cloud

build-ups) breaks in them -- it will give you very good indications. Even at night, I saw towns and cities underneath some of the cloud decks, or just towns and cities on the ground with lights, which give you excellent yaw indications. The gyros were uncaged on the visual attitudes, were brought to slave, spacecraft brought on auto mode, and no problems at all.

(Three hours and 23 minutes.) Went to fly-by-wire low, slowly pitch up to the -20 degree mark on the window, deployed the flashing beacon. There was a loud "cloomp" as the squib fired and it departed. It sounded like the doors rattled open, and away it went. Caged the gyros, powered down the ASCS AC bus.

(On the first night side after flashing light deployment.) Went just as advertised, except I never could see that little rascal. Never did see the light. I noted at the first daylight after this, many, many of the light particles emanating from the spacecraft as I viewed the first sunrise facing to the east.

At 4 hours and 25 minutes I gave the medics their first urine sample while in space. Everything just according to flight plan (on down through here). At 4 hours and 54 minutes I ate four brownies from one of the little snack boxes and drank five or six gulps of water (it's on the onboard tape).

I tried to observe the flashing beacon on the day side. I did not see it and went on through.

On the second night side after deploying the flashing beacon, shortly after going into the night side, I spotted the little rascal, flashing away, and counted the times of flash onto the onboard tape. They were slightly faster than one strobe per second, not much, but almost correct flash rate. It was quite apparent and appeared to be only eight to ten miles away. When I saw it, I deliberately moved on off then and waited until 5 hours and 40 minutes. I eased back on to the 180 degree yaw point and saw the light again, at which time it appeared to be around 12 to 14 miles away, and was still very visible. I remember seeing the light and commenting into the tape that I saw the light, and suddenly was awakened some ten minutes later, and realized I had dropped off to sleep on a little nap. I was awakened by a radio news -- type, broadcast over the HF in a foreign (foreign to me, anyway) language. There was considerable chatter over the radio at about 5 hours and 50 minutes from trying out the voice relay aircraft. (Which I suppose was a good thing to get tried out, although tried using it later with not too much success, I thought, on this voice relay.) It had a sequeal and a feedback in which made it rather difficult to hear anything over it. Proceeded on the flight plan just per plan.

On to the third night side (the third night side after deploying the flashing light) I had no anticipation of seeing it at all, but at 6 hours and 56 minutes there it was, blinking away, very, very faint and very, very far off. I would say it appeared to be, as related to star magnitudes, at somewhere around a fifth magnitude star. On the second night side that I saw it after deployment, it appeared to be about second magnitude star at first, and then down about a third magnitude star when I saw it that time.

This time, it was down to about a fifth magnitude or so, very, very faint, and appeared to be about 16 to 17 miles away.

On down through the flight plan, down to eight hours and twenty-one minutes, pitched down to observe the ground light (gyros free). I saw the ground light successfully, also saw the little horseshoe-shaped town. (Eight hours and fifty minutes) gave an oral temperature to CSQ (which they wanted in addition to the flight plan). Nine hours, I tried to deploy the balloon with no success. Nine hours and ten minutes, I tried again to deploy the balloon with no success. I went just according to procedure on the checklist and when I went to squib switch "arm" and balloon switch to "deploy," nothing happened. And so ended the balloon test.

On down through the flight plan, everything just according to flight plan. Eleven hours and 35 minutes, my capsule elapsed time on my clock was seven seconds fast. On down through 12 hours and 30 minutes, I was still just seven seconds fast. Thirteen hours, I closed the KK clamp. I was beginning to see water flow at this time and I pumped some water from the condensate tank. I pumped a fair amount of water from the condensate tank until the bag would not accept any more in the reserve tank and at this point, did not want to put any condensate water in my drinking tank. So I left whatever water was in it, and there appeared to be a fair amount of water in it, closed the KK clamp and left it closed.

Made a manual fly-by-wire low thruster check at 13 hours and 15 minutes, prior to rest, I turned the rate indicators to auto (off). I did have a hang-fire on the right yaw on the manual proportional. It really gave me a big yaw rate, which I got back, corrected, tried it again, and it cut off correctly.

Trotting on down the flight plan, 14 hours and 5 minutes, I gave the medics the second space urine sample in the number three bag. At 14 hours and 20 minutes (this was based back on a note that I had here at the urine sample) remembered noting that I was just observing that I was coming up on the second notation on the flight plan for closing the KK clamp pumping prior to rest, I dropped off to sleep and slept on 'til I woke up at 14 hours and 48 minutes. I had been very sound asleep, was completely unaware of where I was, struggled for several seconds to orient myself and decide where I was, I felt that I had really received some rest from that (sleep).

On down through, to 16 hours and 50 minutes I had just given a short status report onto the tape, and dropped off to sleep, and slept right on through 'til 17 hours and 50 minutes. I woke up with the dome temp light on (suit dome temp light on). I remembered making the short status report at 18 hours and 5 minutes. I dropped off to sleep immediately thereafter and woke up at 18:25. I remembered I was going to give a consumable readout onto the tape and just before I did this, I dropped off to sleep and did not wake up until 19 hours and 27 minutes.

At 19:31 I heard a newscast on the HF radio -- sounded like a newscast in Russian, or it sounded a lot like Russian (it might have been some other language) but it was quite a powerful station. At this time, of course, I had just passed over the Near East area (on down through the flight plan, as planned).

At 21 hours and 34 minutes on this night side I observed a line of lighted cities and smaller towns, apparently along the East Coast of Australia. These were the lights, by their location, of Sidney, Melbourne and Brisbane.

On down through the flight plan, at 22 hours and 20 minutes, capsule elapsed time was 15 seconds fast. At 23 hours and 10 minutes, third urine sample for the medics.

On down the flight plan just as listed. Powered up the ASCS bus at 23:30. At 23:40 aligned the spacecraft, uncaged the gyros. Cap Com in Mercury Control mentioned (at 23:41:20) that the scanner outputs and gyro outputs agreed perfectly on their readouts down there when I got to alignment. I feel again that it is very easy on the day side to align the spacecraft very accurately in yaw, pitch and roll.

Over Zanzibar, at 24 hours and 10 minutes, I had a (plus) 16 seconds on capsule elapsed time. At 24 hours and 15 minutes, went to fly-by-wire low, put the spacecraft on the setting sun, which was very difficult, incidentally. The sun is extremely bright, looking right into it, and it was very difficul to observe any kind of rate indications or any inside readings while observi the very bright fireball of the sun. Put the spacecraft on the sun, caged the gyros, brought 'em back to free, rolled to 34 degrees right, caged the gyros again, brought the gyros back, free, pitch torquing switch was on, and brought the spacecraft to auto mode.

I might add at this time, that at no time during the flight did I ever get a high thruster indication except when I was checking out to see if the amp cal had locked in on 0.05g. When I put it to auto and it swung over with the roll rate, I got high thruster activity.

But when I went to auto at this particular point, in the dim light phenomenon test) it locked right in and proceeded to work just like advertised, and I spent this whole night side counting to myself and taking photographs. There was considerable interference from the ground stations at Muchea and Canton, who were contacting me while I was trying to count to myself. This is one little obstacle that we had not completely foreseen and it made some little difficulty and interrupted the timing on some of the photographs.

The latter part of the night side, I put the gyros to "slave" and the scanners began to correct the spacecraft back around to the orbital plane. Meantime, I was busily snapping pictures. At the end of the night side, went to fly-by-wire, caged the gyros, powered down the ASCS bus, and at 24 hours and 58 minutes got a fuel quantity warning light at 61 per cent auto fuel

quantity indication. Correction. Just before this, I did not cage the gyros and power down at this point. I did get the fuel quantity warning light at 24 hours and 58 minutes, but I remained on auto control, snapped the first two pictures of the horizon definition quadrant photographs, went to gyros free, and on the gyros yawed 90 degrees right. I stopped the rate, took two pictures, caged, uncaged the gyros, went to 90 degrees right again, which put me directly into the sun, snapped two pictures. I then went to 180 degrees right (yaw) which put me to the 270 degree point, snapped two pictures, gave one pulse, negative yaw pulse, to start back around to get the gyros off the 180 degree stop (180 degree point) and let it drift on around for a few moments, caged the gyros and powered down.

Twenty-five hours and 20 minutes, the moon was beginning to set in the west. I was faced in the right direction. I used manual proportional to keep my attitudes nearly correct for these photographs and made three shots of the setting moon for M.I.T.

On the sixteenth orbit over Zanzibar (I had forgotten to mention) I made the greetings as requested by the State Department to the Addis Ababa convention.

On down to 26 hours -- blood pressure, 26 hours and four minutes, I drank some water. Twenty-six hours and 15 minutes -- I ate one fruitcake square (one compressed fruit square) and drank some water.

On down to the rest of the orbit, taking more IR Weather Photographs. GMT time check over Mercury Control at 26 hours and 45 minutes showed the CET to be ten seconds fast. I made more photographs. I was using full drifting flight and engaging the manual proportional handle to make some very slight attitude corrections when necessary to photograph, trying to hold the window down attitude and allowing yaw to ease around wherever it would.

One item here I might mention on the natural dynamics of the spacecraft, when rates were all zeroed, and spacecraft powered down, at no time did I ever observe any rate greater than one degree per second on any one axis. Generally, if it was as great as this, the other two axes were completely zeroed. These rates would switch from axis to axis and, more than likely, there would be only two axes that had any rate at all on them, and these would have between a quarter to half a degree per second, at the most. Frequently, through long periods of time, the spacecraft would have absolutely no rates at all and would be almost completely motionless. The one axis that appeared to have more predominant rate than any other was the roll axis, and the rate, almost invariably, was to the left or negative roll. More times than not, while drifting, there would be approximately a half a degree per second roll rate.

On down to the 28 hours and 30 minutes, I had two peanut butter type sandwiches and one fruitcake and water.

On down through, following the flight plan except through all this last portion, since I was unable to transfer any more water out of the condensate tank, I had left the clamp on the tin can hose closed and it remained off throughout all the latter half of the flight.

By this time, of course, I had checked the ASCS Amp Cal portion and found that it had dropped out, that I was on reentry mode (on the reentry portion) of the Amp Cal, and I did not have attitude gyros and that it would be necessary for us to make a manual visual orientation in either aux damp. or manual or fly-by-wire retrofire. Powered down the ASCS bus at 31:20, left the ASCS powered down. At about 32 hours and 50 minutes, (powered up again and) the auto changeover light for the alternate inverter came on (soon after that.) I had noticed two small fluctuations in the ammeter a little previous to this and had gone through an electrical check, everything appeared normal. The temperature on the 250 VA inverter was about 115, the temperature on the fans inverter (150 inverter) was about 125, and the alternate inverter was about 95. These are all on the onboard tape. At this point, when the light came on, I checked the inverters, and the 250 VA inverter was still reading about 115 on temperature, but was indicating 140 volts on the AC voltmeter (bus voltage), at which point I brought it to "off." At this time I selected the slug position and manual selection of the alternate inverter for theASCS and found that the alternate inverter would not start. I put the switch back to the "off" position on ASCS AC power and elected to make a purely manual, or fly-by-wire retrofire and reentry. My original plans were to use manual proportional for retrofire and switch to fly-by-wire for the reentry.

Thirty-two hours and five minutes, turned on the cabin fan and cabin coolant flow, cabin fan started fine, turned the cabin coolant up to the launch mark, and the temperature immediately began to cool down on the cabin from 95, getting on down to an order of 80 degrees. Slightly more, followed the flight plan on down, with the exception that I did not have ASCS to hold to get the horizon definition photographs, so I skipped the horizon definition photographs.

As I entered the night side (the last night side prior to retro) and knowing that I would have to orient within ten minutes, at the most, for a retrosequence at CSQ, I decided to pick up my retroattitude in the night side and stay fairly close to it, using stars and/or clouds to keep my yaw zeroed, which I did. I found the star pattern, followed it along, and as the moon came up behind, I could follow the cloud pattern along the ground to keep my yaw very well. I had a little problem right at first daylight, the clouding on the window, as the sunlight struck the window, cause it to be completely blank. I couldn't see anything for a matter of a minute or so, but I found that I still was very close as it got light enough to see the clouds on the light side, I was still lined up pretty well in retroattitude. I corrected the small error that I had in it, got exactly on retroattitude, could see it very well, could hold it very well with manual proportional, and came right on up to the time John Glenn counted down for retrofire.

In the meantime, on this orbit departing Zanzibar, I had every switch placed in by-pass and manual retrofire, slug position on retro manual fuse switch, slug position on retrosequence fuse switch, and was all set except for the squib. John counted down, and at five, counted squib on, which I did, four, three, two, one, zero, I punched the retrofire button at "zero" and the first one fired immediately. I held the rates down on the gnat rate gyros, maintained the rates very well. Did encounter a little difficulty in shifting vision out the window to the bright outside to determine attitudes. Found that attitudes were still fairly close on. As the second one fired, they started to shift a little, I brought them right on back on attitude, shifted back to the rates, found I had a little trouble watching the rate meters after coming from the bright outside, but held rates down low, and then number three fired. I still was fairly close right on the attitude, holding the rates down, and after I had felt all three fired, then armed the retrojettison switch and punched off the retropack. Retropack went with a solid "thump" and you could feel it depart. I held retroattitude for most of the period of time until the end of the ten minute period when I should get the 0.05g on a normal automatic reentry. Close to this period of time I began to ease on up on my pitch attitude, to where I was on up to only about minus 10 or 12 degrees pitch and could still see yaw, holding the yaw zeroed, roll zeroed, and holding my pitch just above the bottom part of the window.

About one minute prior to the time when I should initiate my roll rate, the capsule began to definitely feel like it wanted to reenter, it got sluggish on the controls, and began to try and pitch over with a positive pitch attitude, so I allowed it to start pitching on over, and started my three degree per second negative roll rate. I was rather surprised to see what a "wallow" the capsule (would) set-up with this roll rate. This, of course, is something you do not see in the procedures trainer (the visual attitude that this roll rate gives you) -- you have no sensation of this in the trainer. The capsule more or less "wallowed" or spiraled around and the pitch and yaw rates began to come on very slowly, they were very low order of magnitude. While maneuvering to hold the spacecraft onto retroattitude before starting reentry, I checked my fly-by-wire (I had gone to fly-by-wire for reentry) I found that my fly-by-wire high thrusters were not lighting off satisfactorily,* so pushed in my manual proportional handle, decided to use dual authority for the reentry in case the fly-by-wire thrusters did not work. Through the first time or two when called for, and then unexpectedly came in and fired and caused me to overshoot two different yaw and pitch oscillations, at which time I began to be a little more cautious on the amount of thrust called for and pinned them down fairly close.

On down through max g, I held the rates down relatively low. From about 95,000 feet, down to about 50, the rates got quite pronounced. It seemed almost to take on a different ratio entirely on amplitude and frequency and were much harder rates. In using dual authority with 49 pounds thrust, I still was not able to pin the rates as well as I would like to have. The

* See Section 5.1.1 for post flight analysis of this condition.

oscillations were not objectionable at all. The oscillations were fairly good size oscillations down around the 50,000 foot mark, dying on off a little bit (fortunately) just before I got down to drogue at 42,000 feet, which was the intended altitude. I reached over and punched off the drogue. It came out with a loud clatter and bang in the middle of the clouds. I could see the drogue in the middle of the clouds, and came on down. The chute came out on its own about 11,000 indicated. I think I have covered the rest of the recovery portion.

2.0 ASTRONAUT"S FORMAL TECHNICAL DEBRIEFING

2.0.1 Introduction

The Formal Technical Debriefing represents the astronaut's comments and answers to prepared questions. This debriefing was conducted onboard the recovery aircraft carrier during the 48-hour period following landing.

The debriefing was conducted with only the astronaut and the medical representative from the NASA Manned Spacecraft Center onboard the recovery ship in attendance. All questions and answers were recorded on magnetic tape and subsequently transcribed for this report.

The transcribed material has been lightly edited only to enhance the technical clarity and to delete repeated statements. The astronaut's original wording has not been changed except in rare instances and then in such a manner so as not to alter the intended meaning or implication.

2.1 MAIN PORTION

2.1.1 PRELAUNCH

2.1.1.1 Procedures

2.1.1.1.1 **Q.** Comment on prelaunch procedures from insertion through the countdown.

A. Starting right from the beginning, I thought the suiting-up, pre-flight, from time of waking up, were very well planned. It worked out very well. I did not feel rushed at any time. I thought the suiting went very smoothly. There were a number of people in the suit room, some at my request. I did not feel that this was any personal bother to me. I think we should, perhaps, refer to our suit people and see if this number of people were in their way during the suiting. This is one avenue we should check into, and this is not as a complaint. It worked out very well as far as I was concerned. I thought the insertion went very smoothly. We got inserted, the hatch on, pressure checked, and ready to pull the gantry, seven minutes ahead of schedule. The gantry came back this time, the second run, and the diesel worked fine. Loxing went very well, and we thought that everything was pretty well right on schedule. We launched three minutes late , due to the short hold that we had a few minutes before launch, but we made up part of this time. I thought, all in all, it was pretty ideal. The time involved in being in the spacecraft and getting launched actually did not seem real excessive. You're fairly busy through this time. Ideally, this time could still be cut down some, perhaps, to a 90 minute insertion, rather than as long as we have.

2.1.1.2 Spacecraft Performance

2.1.1.2.1 **Q.** Comment on ECS Systems performance during prelaunch.

A. ECS System performed very well during prelaunch. The freon flow rate was quite good. The suit inlet temperature varied a little bit. For some period of time it was running around 57 degrees and was a little bit cold. I was practically freezing for a while, however the temperature came up to about 61 degrees through the latter portion of the prelaunch period and was quite satisfactory. I was determined to be a little bit pre-cooled prior to launch anyway, so things worked out very well.

2.1.1.2.2 Q. Comment on the electrical system performance during prelaunch.

A. The electrical systems all worked very well. No discrepancies on this at all.

2.1.1.2.3 Q. Comment briefly on any astronaut or spacecraft difficulties encountered during prelaunch other than those previously mentioned or pertaining to communications.

A. I had no difficulties at all in this area.

2.1.1.3 Communications

2.1.1.3.1 Q. Comment on communications during prelaunch.

A. Communications went very well on prelaunch. STONEY had my volume at a very comfortable level and I was able to contact everybody very adequately.

2.1.1.4 Training

2.1.1.4.1 Q. Were you adequately trained in prelaunch procedures? What additional or more intensive training would you now recommend?

A. Yes, I felt very much at home in the prelaunch procedures. There was nothing that I felt ill-at-ease on at all. I don't feel that we need any more training at all in this area.

2.1.2 LAUNCH

2.1.2.1 Procedures

2.1.2.1.1 Q. Comment on the launch procedures from liftoff to turnaround.

A. I have described this fairly fully in my self-debriefing. I'll hit part of it just briefly again. I felt as if I was completely trained and completely at home and had a full grasp on the whole situation during launch. I thought the launch felt real good. Acceleration of the booster felt real good. There was one area that I had a little doubt on as to what was happening. A number of seconds prior to BECO, between one and a half minutes and two minutes, I got six or seven large lateral oscillations

which pegged the yaw rate needle from side to side. This smoothed out just prior to BECO. BECO was just as I had expected it to be. I could feel staging, a sharp, crisp "thud," as the booster engines dropped off. Sustainer burning was very smooth, no lateral or longitudinal oscillations at all. Everything went just as advertised. SECO was just as I had expected it to be. I did not get quite as much indication of Cap Sep as I had expected, but it was a substantial boot in the rear when the posigrades fired. The transition from acceleration to the weightless condition is a little different from what you encounter on the centrifuge. Turnaround was essentially as we had done in the procedures trainer. I thought the fly-by-wire low worked exactly like the procedures trainer. When I got turned around, I was distracted by the booster being so near. There it was, almost close enough to reach out and touch. I was a little slower in getting pitched down than I normally might have been because of looking at the booster for a moment.

2.1.2.1.2 Q. Describe in detail and comment on the turnaround maneuver: procedure from Cap Sep to ASCS Control.

A. I hit part of that in the last question. I did this in fly-by-wire low. The maneuver and controls worked very well. I arrived at zero degrees yaw attitude with about zero degrees pitch. This put the booster exactly in front of me. As I started pitching on down slowly to minus 34 degrees, the booster also dropped down slowly so that I had it in the center of the window the whole time.

2.1.2.2 Spacecraft Performance

2.1.2.2.1 Q. Comment on ECS performance during launch.

A. ECS performance during launch was perfectly satisfactory. The temperature of the suit and cabin dome went on up to about 70 degrees right after insertion into orbit.

2.1.2.2.2 Q. Comment on electrical system performance during launch.

A. The electrical systems performed very well during launch - perfect.

2.1.2.2.3 Q. Comment on the rate and attitude indicating system performance during launch.

A. No discrepancies. Very good.

2.1.2.2.4 Q. Did the abort light illuminate? If so, what action did you take?

A. Negative. The abort light did not illuminate.

2.1.2.2.6 Q. Describe your flight through max q, through BECO, through SECO.

A. Through max q, the vibration was very low. I didn't find that there was any problem at all focusing on the instruments. I did have a thick foam rubber head pad under my helmet, which I feel did considerably cut down the vibrations to the head over what the other fellows had experienced. I had no trouble at all. I was able to read the instruments very clearly. Just prior to BECO, I had the yaw rates mentioned previously which I was a little concerned with because I was afraid we were approaching ASIS limit. Everything performed very well. Sensations and everything through BECO were just about what I had expected. The same up through SECO. I thought that the sustainer portion of the flight was very smooth. Acceleration was just as we practiced on the centrifuge.

2.1.2.2.7 Q. Describe tower jettison. Did the Jett Tower light function properly?

A. It did. The tower was about 2 seconds later than I had anticipated it being. I was just reaching for the tower pulling, when the tower went. When it departed, I didn't even notice it fire. When it fired I first saw it out some hundred yards or so and it was moving away with a very rapid acceleration. It departed almost exactly straight ahead and then arced over slowly, forming a circular curlique pattern at a distance off to the left.

2.1.2.2.8 Q. Describe capsule separation. Did the Sep Capsule light function properly?

A. Yes, Cap Sep occurred closer to SECO than I thought it would, and I didn't really notice very much distinction between SECO and Cap Sep. I did note that you got a real powerful little boost from the posigrades, but there was not quite as much physical cue of Cap Sep as I had anticipated.

2.1 2.2.9 Q. Did Aux Damp operate properly?

A. Aux Damp worked perfectly.

2.1.2.2.10 Q. Did fly-by-wire low operate properly?

A. Yes, it was percect, the whole flight.

2.1.2.2.11 Q. Comment on any difficulties encountered during launch other than those previously mentioned or pertaining to communications.

A. No difficulties at all.

2.1.2.3 Communications

2.1.2.3.1 Q. Comment on communication throughout launch.

A. Communications were excellent during launch. I believe that I may have fouled up by not giving Cape Cap Com notification of BECO and Sep Cap. At the moment, I can't remember whether I got this message to him exactly right or not. I'll have to check with him on it. But the communications to me were good. I could read the Cape Cap Com very clearly and, apparently, he was reading me very clearly. Everything sounded good.

2.1.2.3.2 Q. Comment on the adequacy of information flow throughout launch.

A. Excellent.

2.1.2.4 Training

2.1.2.4.1 Q. Were you adequately trained in launch procedures? What additional or more intensive training would you now recommend?

A. None, I think it was ideal.

2.1.2.4.2 Q. Were you adequately trained in the turnaround maneuver?

A. Yes.

2.1.3 ORBIT

2.1.3.1 Procedures

2.1.3.1.1 Q. Comment on the planning of the in-flight activities. Was adequate time allowed for each task? Suggestions for improvements.

A. Yes, I think, over-all, the flight plan was very carefully thought out. Fortunately, the people planning the flight plan and myself had gotten together numerous times and gone over all the various procedures, and I think the procedures worked out extremely well. I think that the first orbit on ASCS is really necessary to give the pilot a chance to acclimatize himself. R gardless of the amount of training you've had, you cannot simulate the exact way you feel under zero g and the difference in attitudes from what you have been using in the procedures trainer and in the capsule on the pad. These changes, all thrown together, put you in quite a strange environment. You need that first orbit on auto control to collect your senses, organize yourself, lay the flight plan out before you, and be ready to go.

2.1.3.1.2 Q. Comment on the power up and power down procedures.

A. Perfect.

2.1.3.1.3 Q. Describe and comment on the gyros alignment and uncaging procedures.

A. Excellent. I found no problem at all visually aligning the spacecraft within very close tolerance in yaw, pitch, and roll and uncaging the gyros. This was confirmed from the ground at two different times, by reports that I was very close on scanner and gyros outputs when I uncaged the gyros.

2.1.3.1.4 Q. Describe and comment on your day yaw determination. Describe and comment on your night yaw determination.

A. Day yaw determination within ±1 degree is very easy. Night yaw determination depends entirely on what cues you have. The star chart was invaluable. I found that you could find your star patterns and follow them around on the night side. I feel that maybe slightly more training is necessary on the overall star field. We had done more than we had originally planned, and I found it was quite valuable. But still you are not able to realize how little of the overall star field can be seen from the small spacecraft window, only one small portion of the star field can be seen at any one time. And at times, it's difficult to recognize the star pattern when seeing only certain small portions of it. I found several real outstanding star fields, constellations

and groupings at all directions from my flight path which were distinctive enough that I could come out of drifting flight, find these, and know what way to turn, and roughly how much to turn to get on zero degrees yaw. If you have land masses or cloud masses under you at night, with a little bit of moonlight on them, you can pitch down into retroattitude or even slightly less and obtain yaw. You can get your yaw zeroed very well even on the night side. Night side orientation necessitates a little more time. In fact, a fair amount more time than day side.

2.1.3.1.5 Q. Describe and comment on the procedures used in controlling the radar beacons, the T/M, and the tape recorder.

A. I followed right on schedule, on these, using the radar beacons on continuous when required in the flight plan, and in one or two cases where requested from the ground. At other times the beacons were on ground command. The tape was on program the biggest part of the flight until we saw that we were way under our normal usage of tape. The tape was then run continuously for the rest of the flight leaving over 25 percent of the tape unused at the end of the flight.

2.1.3 1.6 Q. Comment on the first orbit checkout procedures.

A. I thought this was very adequate, as I have said previously, I think it was very well to put the first orbit on auto control and check out all the systems. I found that the fly-by-wire and manual proportional worked just as listed and that all of the systems were functioning properly. I couldn't have asked for a better first orbit.

2.1.3.1.7 Q. Comment on the procedures for the GO - NO GO decisions.

A. I didn't feel like we had any troubles that caused any concern to anybody at all. As far as I was concerned, it was "Go all the way" and I'm sure the ground felt the same way.

2.1.3 1.8 Q. Comment on the rest period procedures. Suggestions?

(Deferred to the medical debriefing)

2.1.3.1.9 Q. Comment on the non-experimental spacecraft equipment. Stowage? Was enough operations information provided? Too much?

A. First of all, I feel that the "ditty bag" (special equipment storage kit) is still unsatisfactory. I think it's absolutely unsatisfactory for a flight. I think

the design of this thing has to be changed so you can adequately get items in and out of it and see what you are doing. I found you could get things back in there and store them for retrofire. But to adequately use any of the equipment that's in the bag you must be able to see over the inner shelf of the box. I think this inner shelf needs to be taken off and a little better arrangement made so you can see what you're sliding in and out. The glove box (instrument panel stowage compartment) was excellent and very usable. You tend to start over using it and having it crammed full of things because it's so easy to get items in and out. The velcro on the front of the glove box was extremely useful for holding certain items including a pencil with velcro on it. I found that I used the loose pencil with velcro on it entirely and quit using the capsule pencil because it was so much trouble to get to. The desk, above the knees, was almost unusable except for stowage. I found it became a clutter locker. I almost stopped using it entirely for any items that I needed to get to and use except for some of the bite-size food cubes. Under zero g you float enough in the seat so that the desk cannot be put down and locked. You also float up enough so that it's quite a bit of effort to get the head bent down to use the desk at the angle that it's mounted. All in all, the little amount of difference in body position made it completely unusable. It is in the way of your legs throughout the whole flight and I would recommend eliminating it or changing it considerably. The velcro around the cockpit was still not adequate. If we had retained the flat area over where the condensate pump was added for storing things, I would say there would probably be enough velcro. The velcro on the inside of the hatch was excellent and there were objects hanging all over that entire area throughout the entire flight. It was very usuable. The small amount of velcro that was still available, in the area of the condensate pump, was used to a large extent for several items. The velcro on the knee of the flight suit was also used considerably. I felt that I needed more velcro in order to get more items out and stow them around the cockpit while in orbit so as to be able to get to them adequately.

The flight plan roller that I had was invaluable. I would not recommend that anybody try to make any kind of a lengthly space flight without having a flight plan on a roller strip or some continual type readout. You

would be completely lost trying to memorize everything or trying to follow little sketches. I thought it worked extremely well, and I made numerous notes on the blank spaces on the side as things occured, which I think are invaluable for referring back to.

2.1.3.2 Spacecraft Performance

2.1.3.1.2 Q. Describe and comment on the control system performance.

A. The control system performed just as advertised in all aspects. Everything worked perfectly until we began to have the trouble with an apparent "glitch" on the Amp Cal, late in the flight, at which time several other discrepancies also occured. Prior to this time, the control system worked perfectly.

I had one hang-fire on the manual proportional right yaw thruster. I think while checking the manual proportional on the third or fourth orbit, prior to powering up. I've described this in detail in my self-debriefing. I recovered from the hang-fire, then tired that thruster again and it worked perfectly. That was the only malfunction of any thrusters until late in the flight between retrofire and reentry. At this time, I could not get the fly-by-wire 24 pound thrusters to cut in properly and I elected to make a dual authority reentry. Fly-by-wire high did operate on reentry after it warmed up.

2.1.3.2.2 Q. Describe and comment on the control of the ECS and it's performance, did the CCV's (coolant control valve's) operate as predicted?

A. I feel this is one avenue that is not completely satisfactory in the spacecraft. Of all the things, the control of environmental control system gave me the most concern and the most continual work throughout the entire flight. We've had this same system for four years and there have been few improvements made in it. You do have a good indication of what is happening on the heat exchanger dome temperature gauges; however I found that no one setting of the CCV would give you a value that would hold the suit dome temp to within a reasonable limit. In order to keep adequate cooling to the suit, you had to get this temperature down to around 50 to 55 degrees. You could not make any one setting regardless of how small the changes, while going up or coming down, that would stabilize the temperatures for any period of time. It would stabilize for a few minutes and then suddenly you would find it sitting down on the bottom in the freezing zone. It would be frozen, and you would

take, maybe, 10 minutes to thaw it out. I'd have to turn the coolant valve completely off, let it sit there for this period of time, and finally the dome temp would come back up. Then, before I could get coolant flow from the valve, the dome temperature would go on up and the suit inlet temp would go up. Therefore keeping suit inlet temperature within a tolerable range was a continual battle. The cabin, of course, (powered down and with the coolant fan turned off) had very adequate temperature the whole flight. The cabin gave me no trouble at all. Coolant control valves actually turned out to use less than the recommended scribe marks on both cabin and suit, in order to keep the temperatures within the proper range. In fact the suit instead of running at about a setting of 3, was consistently at a setting of 1/2 to 1-1/2.

Q.* Do you want to say anything about the PCO_2 and the PO_2 problem?

A. The PCO_2 gage reading sat right on the bottom peg throughout the whole flight until the twentieth orbit. At this time, it began to edge up a tiny bit, and in the twenty-first orbit came on up more. On to the twenty-first orbit I went to emergency rate for two or three minutes to see if I could bring it down. I could not bring it down with emergency rate, which made me suspect the gauge very strongly. However, by my own indications I suspected there was CO_2 in the suit circuit. I noticed when I went on the suit circuit entirely, my breathing rate was slightly higher and I had a little deeper breathing. I think that there was definitely CO_2 in the suit circuit, however not an intolerable amount. The gauge got up to where it was reading slightly above 5 mm of mercury.

I was going to breathe the cabin air until after retrofire and then close my visor prior to reentry. However MCC insisted I close it earlier which I finally did. I had no problem at all with it. The partial pressure of oxygen in the cabin ran consistently around 4 psi almost the entire flight. It would drop down below 4 psi to about 3.8 psi. When I went on my suit circuit entirely for quite a long period of time, the partial pressure of oxygen in the cabin appeared to go back up to about 4 psi. The suit gradually leaked on down to the point where at the last of the flight it (O_2 partial pressure) was down to about 3.5, indicated.

* Question added during the debriefing.

Q. * What was the total pressure in the cabin at that time?

A. The cabin ran consistently right at 5 psi. However it dropped down for quite a period of time to about 4.8 psi. It ran that way for quite a long period of time and gradually back up to 5 and got up to 5.2 on the last several orbits. Actuall, it was running right within the tolerances bands of the cabin regulator valve.

2 1.3.2.3 Q. Comment on the electrical system performance.

A. The electrical system worked perfectly except for the apparent "glitch" from the warning light switch. This apparently threw an electrical "glitch" into the Amp Cal, cut out my ASCS portion, and put me into reentry mode.

2.1.3.2.4 Q. Comment on the performance of the rate and attitude indicator.

A. Rate and attitude indicator worked perfectly. There wasn't a single thing wrong with it.

2.1.3.2.5 Q. Comment on the satellite clock performance.

A. The satellite clock worked very well. Toward retrofire it was running about 21 to 22 seconds fast.

2.1.3.2.6 Q. Did any instruments malfunction during orbit?

A. Negative. Every instrument on board worked perfectly except the partial pressure gauges which we have always suspected. I don't know whether they were really correct or not.

2.1.3.2.7 Q. Did you receive any warning tones or lights? If so, what action did you take?

A. I did receive the 0.05g light. I turned the ASCS 0.05g switch fuse and the emergency 0.05g switch fuse to "off". I did receive warning light tones that were sent as command functions checks. I did receive the warning light for the dome temp many times during the flight. I finally turned the dome temp tone indicator off, taped the light and never put the tone back on.

2.1.3.2.8 Q. Comment on drifting flight.

* Question added during the debriefing.

A. Great.

2.1.3.2.9 Q. Comment on any other astronaut or spacecraft difficulties encountered in the orbital phase other than those previously mentioned or pertaining to communications.

A. I thought th plumbing we had on board was very difficult to use. I thought it took a lot of work to pump the urine. The urine system did work correctly, but it took a lot of time to pump each urine sample from the internal bag into the prescribed bag. The condensate pump failed however. This pump finally jammed and would not work. The first bag we put any condensate into did not hold enough condensate. And then the needle fitting on the condensate tank failed so that I couldn't even put the condensate into the plastic bag. So I thought all the jury-rigged plumbing we had on board was a pretty bastard rig. I think that in a space this small, and with as little room to work, that we're either going to have to get a better type system or have it more cleverly arranged. I think that there was too much work devoted to all the plumbing operations.

Q. * Comment on the water system.

A. The McDonnell water tank was adequate in location. It was very easy to reach, very easy to get the hose, and the positioning of it was ideal so far as getting to the hose to drink out of. The fitting on the end of it wasn't worth the powder to blow it up. The fitting leaked. You could put it in your mouth and suck on it, while pushing the Shrader valve in and drink very well. However in trying to use this to put water into the plastic food bag it leaked all over the cockpit, all over me, all over everything, and was entirely unsatiscactory. The water from the survaval kit had to be sucked out. I found that it was preferable to suck a little bit when you're taking the water out rather than pumping up the McDonnell tank to such a high pressure. You could regulate what you got a little better. The survival kit hose was very much out of the way all right. Raising it up a little bit would have helped to get the hose over the rim of the visor to drink from.

* Question added during the debriefing.

Q.* Would you suggest changing the helmet to better adapt to eating and drinking?

A. The helmet is very poor for eating and drinking. It is not bad for a little amount, but as you get where you have more and more eating and drinking to do, as you do in longer flights, the helmet gets to be quite worrisome in getting food and water in over the rim of the helmet. However, it can be done very adequately.

2.1-3.3 Communications

2.1.3.3.1 Q. Comment on the planned station pass procedures. Any suggestions for improvement?

A. I thought the entire range did an excellent job this time. I was very pleased to note that the stations went just according to the way we had asked and the way we had asked and the way we had all discussed it. There were very few exceptions of anybody asking for any more than just what I volunteered for. Almost all the stations, without exception, waited until they got T/M solid. Some didn't even bother to report this unless there was something that they were supposed to ask me. Some of them just said, "T/M solid from such and such a station." At that time, I would say, "Roger, my status is green," then, "go," and they would say "Roger, you look good down here," and that's about all the communications we would have, which was ideal. Sometimes, after long periods of not having any stations or of having been asleep for a long period, I felt that I wanted to say a word or two to some of them. They volunteered to talk when I asked for it but never overly talkative. I felt I wanted to convoy the information on one or two of the stations on very minor little things that I'll talk to each individual about. There are no real discrepancies at all.

2.1.3.3.2 Q. Describe and comment on the UHF performance. UHF-low. HF.

A. Very good, on all accounts. I noted on HF at CSQ, that the Cap Com was contacting me on a couple of different passes a long way away on HF and we were able to converse back and forth on HF with no problem at all. The range of HF was very good and CSQ was receiving me very well a number of minutes earlier than nominal station acquisition. In fact, on one pass we conversed all the way from several minutes early throughout the whold station pass and until several minutes late on HF. The UHF was very satisfactory. The communications were clear and readable and I had no trouble at all with the stations. The acquisition of signal times and loss of signal times were almost identical with what were listed. Both HF and UHF-low were excellent. On HF I had three different occasions where I heard broadcast stations on the HF frequency. These were all in the East and the Far East areas of the world and were all in a foreign language. They were quite strong stations. One of them had music on for a short period of time, which I enjoyed, and the other times they had some type

of a broadcast like a newscast.

2.1.3.3.3 Q. Comment on the emergency voice check, wake-up command check, the CW code check, and TV-T/M switchover.

A. Emergency voice check was loud and clear. I read them crystal clear and very adequately. The wake up command check worked perfectly, the tone went off loud and clear just as we had anticipated. CW code check apparently worked fine. I sent the CW message and was received fine by telemetry. TV-T/M switchover worked very well. I don't know at this point what the quality of it was. They said that they were receiving it.

2.1.3.3.4 Q. Comment on the rest period communications procedures.

A. Excellent. I found that all the stations were notified that I was going to sleep and I heard no more from them at all. None of them came up. They were all very quiet until I notified the station that I was awake and that I was back with them.

2.1.3.3.5 Q. Comment on the short status report; long status report; consumable reports.

A. The short status report went on the tape. It really wasn't too much bother. I found they were spaced along at a pretty nice interval. The long status report was no particular bother either. Consumable reports, I thought, went very well. They were spaced at far enough intervals that they weren't any problem.

2.1.3.3.6 Q. Comment on the communications with respect to the oral temperature, blood pressure, and other medical tasks.

A. I thought the whole Blood Pressure program was vastly improved over what we've had previously. I thought that everybody abided by the ground rules very well. I had no objections at all to the number of blood pressures that we took.

Q.* And with the Oral Temperatures, did you have any trouble with people contacting you while you were trying to take your temperature?

A. Yes, there were two different instances, where somebody asked me for something when I had this Oral Temperature gage in my mouth. We didn't have the procedures worked out quite right on that. They should have told me as, was agreed upon, that they had the oral temperature read-out before they started trying to talk to me. On one

* Questions added during debriefing.

of these occaions I didn't answer them back at all and finally they cam back and said, "Okay, we have your temperature now, you can talk."

2.1.3.4 Training

2.1.3.4.1 Q. Were you adequately trained for the orbital portion of the mission? What additional or more intensive training would you now recommend?

A. I thought I was very well trained and very well prepared for the orbital portion of the mission. I think it's impossible to memorize the flight plan, as I stated previously. I think you have to have a detailed flight plan along. I think that the checklists that we had for the experiments were invaluable. I think that when you have the number of experiments that we had it;s impossible to remember all the little details of each and every one of them. By using the combination of the flight plan and the abbreviated checklists for the experiments, I was able to check when I had an experiment coming up ahead of time. I'd drag out the checklists, run over exactly what I was going to do and refresh myself on it. I felt that I was very well prepared to do just as prescribed for each and every one. I think it worked out very well.

2.1.3.4.2 Q. Were the systems briefings adequate? Timely? Suggestions.

A. Yes, I thought the Systems briefings were very well done. I thought we went into the right amount of detail on them and I felt that I had a real grasp of all the systems.

2.1.3.4.3 Q. Were you adequately trained for the overall flight plan?

A. This has been covered in the previous question.

2.1.3.4.4 Q. Were you adequately trained for the experiments?

A. Yes, I believe I was in good shape on the experiments. I think I was well aware of what the purpose of each and every one of them was and of what they were trying to get out of them. As such, I could do a little better job on them. I don't think I needed any more information or training on the ex- riments.

2.1.3.4.5 Q. Were you adequately trained for the normal spacecraft procedures? Emergency procedures?

A. Throughout all the earlier portions of the mission I had decided that we spent too much time in the Procedures Trainer on emergency procedures and needed to devote a little more of that time to normal procedures. However, towards the end of the flight, as various things began to happen and I had to use all the emergency procedures, I began to change my opinion slightly and decided that maybe we didn't spend quite too much time on emergency procedures. However, I think that we do spend a little too much time in the Procedures Trainer on emergency procedures for launch and maybe not enough in the normal procedures for a normal type launch. I think the emergency procedures that we trained in were pretty good. I can't think of any changes that I would want to make to them. I don't believe that we need any more of them.

2.1.3.5 Experiments

2.1.3.5.1 General

2.1.3.5.1.1 Q. Comment, in general, on the overall effects of the experiments on the operational aspects of the mission.

A. I thought that we had worked the experiments in very logically leaving intervals of time in between the experiments. There was one period of time that I noticed there was a little bit of a clutter on the experiments. I thought, in general, the experiments were arranged very well throughout the flight. I think that the little memory joggers that we put on the flight plan, in the little squares, showing the cameras, which film to be used and filters, etc., were invaluable, because it takes a little time to get all these various cameras out and the proper magazines on them. With these placed upstream of what you needed them, it made it very good indeed.

2.1.3.5.12 Q. Were your experiments adequately planned and integrated with the mission?

A. Yes, I thought they were very much so. There was one little minor item where we had a very slight conflict of things, but it worked out fine. The conflict that I had in mind was not the fault of any of us who had made up the flight plan it was the little greetings thing, which was thrown in at a very late date by the State Department. It came in at a time when I was just getting ready to start the Dim Lights Phenomenon experiment, which was a rather complicated little procedure to get everything all squared away and going. Oh, yes, and that reminds me, another thing. On the dim light experiment we had two stations, Muchea and Canton, who

had questions to ask of me, and had a conversation going on while I was taking photos. I was sitting in there and counting, "Seventy-five, seventy-six, seventy-seven." "Yes, Muchea." "Seventy-nine, eighty, eighty-one, eighty-two." Yes, you're right." Eighty-three, eighty-four, eighty-five." I was completely blacked out in the cockpit with the dim light camera (the University of Minnesota Zodiacal Light Camera) in the window counting off the times of these exposures. These were quite a complicated sequence of pictures which were very will portrayed on the little check list on the camera itself. Without that, I never would have gotten the sequences, I could not have remembered them.

2.1.3.5.2 Aeromedical Studies

2.1.3.5.2.1 Q. Comment on the aeromedical studies.

A. I don't think we had anything objectionable at all. There wasn't really anything that we did other than just see how I performed as an integrated part of the manned machine and what my physical condition was. I thought my physical condition throughout the whole flight was excellent.

2.1.3.5.2.2 Q. Comment on the food provided.

A. You can just say, on this, that: "The food is not satisfactory." We'll amplify on that in the Aero-med debriefing.

2.1.3.5.3 Flashing Beacon Experiment

21.13.5.3.1 Q. Describe, in detail, and comment on the Flashing Beacon experiment.

A. It worked just as advertised. However, I never saw that little rascal on the first night side. I looked and looked for it and never did see it, and decided I probably never would see it. I was sure it departed and I was questioned on the ground if I knew that it had ejected. There was a very definite sound, "bump" and "clanging" and you could feel something happened down there, so I was sure that the little ball had departed. Then on the second night side, right after dark, I picked it up, saw it and watched it for a few moments. Then I deliberately yawed away from it for a period of time. Then later on toward the end of the night side I came back and yawed back around in the area where it should

be and there it was loud and clear. I saw it twice on that second night side after deployment. I estimated, the first time I saw it on the second night side, it was about eight to ten miles away and of a second magnitude star in brightness. It dropped down to about a third or fourth magnitude star in brightness towards the last part of that night side and I estimate that it was around 11 to 13 miles in range. I really didn't anticipate seeing it again. I didn't note it at all at the first part of the third night side, so had given up ever seeing it again. When I was almost through the third night side I was just drifting along in yaw very slowly and there it was. I saw it flashing and could pick it out very clearly although it was very faint. I estimate it was around 17 to 18 miles away and a very low order of magnitude (5th or 6th magnitude) in brightness. I only could discern it because I could detect the flashing. The flashing rate seemed to syay the same throughout the time that I saw it (about one flash a second).

2.1.3.5.4 Cabin Environmental Temperature Study

2.1.3.5.4.1 Q. Describe and comment on the cabin enviromental temperature study. Compare operation with pre-flight predicted operation.

A. I thought the temperature was slightly cooler in the cabin, than anticipated. Powered down, with the coolant and fan off, the cabin ran round 90 degrees, and never varied from this. Powered up, with the ASCS on, cabin coolant "off", and fan "off", it ran around 96 degrees and that's the hottest it ever got. Powered up, with all the coolant and fan on, the cabin ran about 85 degrees, which was cooler than I anticipated.

2.1.3.5.4.2 Q. Was enough time provided for precooling prior to reentry? Any problems.

A. No problems. I thought it worked very well.

2.1.3.5.5 Ground Light Experiment

2.1.3.5.5.1 Q. Describe, in detail, and comment on the ground light experiment.

A. Well, I saw the light. I also saw a little town. Primarily, I saw the light because of the horseshoe shape of the little town the light was located out from. I pulled the photometer out, extincted the light, and

found the photometer turns both ways. I had turned it the wrong way and extincted it by the solid part of the filter wedge on the photometer. I think this photometer should be thrown out or started over, or forget the thing. It's completely unusuable in a close area. And trying to use it in the dark is just ridiculous. As I say, I saw the light. I saw lots of lights, which were equally as bright, or brighter. I saw many, many cities towns and small lights of different types. In Perth, for instance, I could pick out various torches burning, and things of this type. I did not think that the experimental light was any brighter than lots of other lights that I saw on the ground. I think the pattern of the lights is a lot more distinctive than the lights themselves. The pattern of the town, for instance the little horseshoe pattern of the town was much more distinctive, to me than the light itself.

Q.* Do you think, then, that it would be more value to see how far apart two lights had to be on the ground before you could discern them as two lights rather than one?

A. Well, not very far apart because I found that you could actually detect individual buildings in these little villages and cities, which surprised me. I didn't think you could do this. You could detect roads. I saw some trucks on a road, individual trucks. I saw a train and things of this type which I figured from 100 to 150 miles you would not be able to detect, but found you very clearly could.

2.1.3.5.6 Tethered Balloon Experiment

2.1.3.5.6.1 Q. Describe, in detail, and comment on the tethered balloon experiment.

A. It didn't work. I might add on this, I went right down the list that is right, according to the list on the exact procedures to use and I got no action whatsoever when I hit the deploy switch. I went back through, turned everything off, went completely back through the thing, and redid the entire procedure. First of all, I thought maybe it deployed and I just couldn't hear it. So I very carefully held attitude and pitched down very, very slowly and peeked out to see if it was out there. I changed my attitude very slowly and very carefully, looked all around, and couldn't find it. I finally

* Questions added during the debriefing.

decided it just wasn't there, I went back and re-established attitude, redid the whole procedure and nothing happened again. I very carefully checked again on the attitudes and I decided it hadn't actuated.

2.1.3.5.7 Day Star Observation

2.1.3.5.7.1 Q. Describe and comment on observations of stars during known daylight periods.

A. On several daylight periods, where the sun was not shining in the window, and I'd come out of the dark with the cockpit lights off, and was dark adapted, I did see numerous stars on the day side. If they were first or second magnitude stars, you'd be able to see them even if you weren't dark adapted. When you're really dark adapted and you come out on the daylight side facing the dark sky, you can see quite a fair pattern of stars. Then, on one other occasion, I put the window cover over the window and got myself dark adapted on the day side. I then waited until I could see that the sunlight was not shining directly on the window, cracked the window shade, and could see stars.

2.1.3.5.9 Dim Light Phenomena Photographs

2.1.3.5.9.1 Q. Describe in detail and comment on the procedures used for obtaining the Dim Light Phenomena photographs.

A. It worked. I thought the auto pilot did a remarkable job. There was one little problem at the beginning of it, and that was that we were going to line up on the sun. People had said that the sun is not overly bright from space. But I'm here to tell you, I think it's real bright when you look right into it. I found that I had charts in my hand and everything up trying to dim out the glow from the sun in order to see my instrument panel at all, so I could see what I was doing. Finally, I got lined up on the sun in yaw. I didn't have to yaw off the orbital path very much to get onto the sun. After I caged and uncaged the gyros, I found that I had drifted off very slightly by three or four degrees, and I reoriented back onto the sun and caged and uncaged the the gyros again. This time, the sun was just sinking down. Then I went to gyros free, set in my 34 degree right roll, and found I had yawed off very slightly while doing the roll. The roll fed into yaw. I made my yaw correction and then got my roll at zero yaw and on my proper pitch. I was holding right on the

faint light left on the horizon, then caged the gyros, then went to free and auto pilot. The auto pilot didn't fire high thrusters. It took over and started following right along what appeared to be the plane of the ecliptic. I saw a couple of stars at different times on the ecliptic that I recognized. I was so busy operating the camera and counting that it was quite a busy night side. Then, when I put the gyros to slave I was skeptical whether they would, in fact, slave around without getting some high thrusters. However, the scanners slaved the spacecraft very slowly right back into the orbital track. I'm still a little concerned if we got the right data. It still seems to me like we were pointing down too much. The procedure went just as advertised, and everything happened just as it should.

2.1.3.5.10 Horizon Definition Quadrant Photographs

2.1.3.5.10.1 Q. Describe in detail, and comment on the taking of the Horizon Definition Quadrant Photographs.

A. The procedure that we worked out towards the last, of doing it on the gyros, worked very well. I would have had a difficult time determining the 90 degree points by estimation without the gyros. I went to gyros free, yawed right around to my 90 degree point, and "plunked" the pitch and roll right on the horizon. Took my two photographs there, caged and uncaged the gyros, and went around directly 90 more degrees on the attitude gyros and, by golly, there was the sun. I was right smack into the sun, just like we had thought it might work out. I took the two pictures there. Then I yawed on around 90 more degrees and took the two pictures there. Then I started to yaw back and caged the gyros. They caged properly and I powered down.

2.1.3.5.11 Infrared Weather Photographs

2.1.3.5.11.1 Q. Describe and comment on the procedures and equipment used to take the Infrared Weather Photographs.

A. No comment. It worked perfectly satisfactory.

2.1.3.5.12 Moon-Earth Limb Photographs

2.1.3.5.12.1 Q. Describe in detail and comment on the procedures used to take the Moon-Earth Limb Photographs.

A. I took the Moon-Earth Limb photograph just immediately after the quadrant photos. I used manual proportional instead of fly-by-wire. I saw the Moon setting and just kept the capsule drifting around the vicinity of the Moon, so that when it began to set I could snap pictures of it. I got three pictures of the moon setting.

2.1.3.5.13 HF Antenna Test

2.1.3.5.13.1 Q. Describe in detail and comment on the procedure used to perform this test.

A. I started out with the dipole parallel to the plane of the Earth, and gave a call at the proper capsule elapsed time. I then rolled over 90 degrees left and aligned my zero yaw line on the window with the Earth's horizon. I then made another call, and then shut it down.

2.1.3.5.13.2 Q. Did the horizon provide an adequate attitude reference?

A. Yes.

2.1.3.5.14 Horizon Definition Photographs

2.1.3.5.14.1 Q. Describe in detail and comment on the procedures used to obtain the Horizon Definition Photographs.

A. I did not do the Horizon Definition Photographs because I did not have any auto pilot lieft at this time. We were busy analyzing what the problem was.

2.1.3.5.15 TV Camera Operation

2.1.3.5.15.1 Q. Describe and comment on the operation of the TV System.

A. The TV System appeared to work satisfactory at first. Then I don't know what happened, whether it gave up completely, or just how they fixed it toward the end. They didn't appear to be getting much at the end.

2.1.3.5.15.2 Q. Describe what the TV System was used for during the flight.

A. I used it for pictures with it in the bracket and out the window. It took a great, tremendous physical conditioning process to get the camera out of the bracket and get the other lens on it prior to photographing out the window. I got one period of pictures out the window over Florida that was exceptionally good. In one, it was ideal weather, ideal view, and everything, however, they weren't getting anything at all.

2.1.4 RETROSEQUENCE AND RETROFIRE

2.1.4.1 Procedures

2.1.4.1.1 Q. Describe and comment on the procedures you used to prepare for retrosequence and retrofire.

A. I've gone through that in detail. I just might add here that I prepared to do manual function of the fire retro button and fire the retros manually on manual proportional control, using the Earth as a reference.

2.1.4.1.2 Q. Describe and comment on the procedures you used through the retrosequence and retrofire maneuvers.

A, Procedures used were to count down to retrofire. I punched the retrofire button on "Zero". They fired properly. I held my rates zeroed on my rate indicators, which were operating. Since I didn't have any attitude indicators, I used Earth reference as an attitude indication. This was a little problem, since the lighting was quite different inside and outside, and shifting back and forth was a little difficult. I found that you couldn't see the rate indicators when you came in from the outside, and had trouble being blinded by the outside when you shifted back to it.

2.1.4.2 Spacecraft Performance

2.1.4.2.1 Q. What control mode was selected for retrofire? Back-up?

A. I selected manual proportional for retrofire. I had fly-by-wire as back-up.

2.1.4.2.2 Q. Comment on the performance of the selected control mode.

A. Excellent.

2.1.4.2.3 Q. Describe the spacecraft distrubances during retrofire.

A. The number one retro gave very little offset moment. The second and third ones, both seemed to have a little more offset moment than the first, but not really too much. All in all, I think the retros were aligned pretty well and the moments were not too bad.

2.1.4.2.4 Q. Comment on your use of instruments and/or window during retrofire.

A. I commented on that previously. Shifting from the rate indicators out to the window gives one a little bit of a problem due to the lighting change.

2.1.4.2.5 Q. Comment on the performance of the automatic sequencing through retro jett.

A. The automatic sequence was inoperative, so I jettisoned manually.

2.1.4.2.6 Q. Was the 16 millimeter camera used during retrofire? Comment.

A. Negative. I tried previously to get it up there, and I found that the bracket was a little bit in the way. I decided that, due to how busy I was going to be, I'd put it back into the instrument panel bracket and I forgot about it.

2.1.4.2.7 Q. Comment on any difficulties encountered during retro, other than those previously mentioned or pertaining to communications.

A. I think I've mentioned them already.

2.1.4.3 Communications

2.1.4.3.1 Q. Comment on the ground support of retrosequence and retrofire events.

A. Excellent. CSQ Cap Com did a very good job of giving the time and getting me ready for the retrofire. Of course, I had no trouble determining each rocket firing. CSQ Cap Com confirmed this from the ground and also confirmed that it looked like I was right on time on the firing of the retros. They confirmed retro jettison since I had gone anead and jettisoned manually and then they gave me the time when I could expect 0.05g, if we'd had a normal sequence.

Q,* Do you think that you could have gotten along without these communication.

A. Yes. If I'd just had the time that I should fire the retros. In fact, we were a little bit later establishing contact than I anticipated prior to retrofire. I determined that, if something were out on the communications or we were jammed on the communications net, I had the time

* Question added during the debriefing.

exactly when I was supposed to fire the retros and it was figured out with my clock errors taken into account. I was determined that when that time came up I was going to punch the button.

2.1.4.4 Training

2.1.4.4.1 Q. Were you adequately trained in the retrosequence and the retrofire procedures? What additional or more intensive training would you now recommend?

A. I think I was very well trained for it. I don't think I would recommend any change. I thought, maybe, I had not had enough training of the attomatic sequence, but as it turned out, I didn't need any training for the automatic sequence. I had plenty of training on fly-by-wire and manuel retrofire, which I was rather thankful of having.

2.1.4.4.2 Q. If you controlled the spacecraft during retrofire, were you adequately trained in the control task?

A. I think so.

2.1.4.4.3 Q. Were the simulations of retrofire accurate? If not, describe.

A. Yes. I think everything worked out on countdown, everything just as we had planned. I had one minor little comment on the countdown and I don't mean this as a criticism, but when CSQ Cap Com was counting down, he apparently had meant that he was counting down to the 30-second-to-go time. As I started getting the count, (nine, eight, seven, six) the big question ran through my mind, just instantly, was if I was supporsed to fire retros when he got to "zero". It kind of worried me later when I thought about that. I might have fired 30 seconds early. It might be better if he'd said, "thirty-three, thirty-two, thirty-one, thirty," or something on this order, so that you don't start getting your final count. Your mind's rather keyed up to this "ten, nine, eight, seven, six," and when you get to "zero", you are going to fire. However, we had planned it this way. The Cap Com and I had discussed it and planned that he was to give me a countdown to the thirty second point for retrosequence, but since we didn't have retrosequence, I guess in my mind I had sor of discarded all that. He was doing just as we really had planned. We want to be careful of giving countdown so there isn't any doubt at all.

2.1.5 REENTRY

2.1.5.1 Procedures

2.1.5.1.1 Q. Describe and comment on the procedures you used during the pitch-up to reentry.

A. Since I had no gyros, and I was on manual control, I held zero-zero and around minus 20 degrees pitch between retrofire and reentry. I went to fly-by-wire and I found the fly-by-wire high thrusters were not cutting in properly. So I remained on fly-by-wire and pushed in my manual proportional handle in order to have the manual proportional thrusters available, which I knew were working. At about one minute prior to calculated 0.05g, the start of reentry, the spacecraft seemed to get very sluggish on control. It seemed to be just wanting to nose up, heat-shield down, and start in. So I allowed the pitch to increase positively and come right on up to zero-zero-zero, at which time I lost sight of the ground. At this time, I put in a negative roll rate of 3 degrees per second. I might add that we have had no training which shows you what you see at this time, because it's quite a sight when you start pitching up and you get this roll rate going. The spacecraft just wallows around, and you're not used to seeing this. This really looks different.

Q.* Would you suggest that a trainer with active visual displays for reentry be added to the training program?

A. Oh, I don't know. There are a lot of visual references that you have, in actuality, that you don't have in the trainer at this point. I don't know how much trouble it will be to devise them, or whether they'd be worth while or not. I think that your visual cues are very important, though.

2.1.5.2 Spacecraft Performance

2.1.5.2.1 Q. What control mode was selected for reentry?

A. As I said, I selected fly-by-wire, but since I didn't get the high thrusters to cut in quite right, I went to dual authority. After about the third or fourth pulse, where I began to have to feed a little bit of real thrust into it, which was fairly well on down the line, all of a sudden the fly-by-wire high thrusters came in loud and clear. They began to fire, and I was over-controlling with 49 pounds of thrust. I suspect that I probably should have warmed up my fly-by-wire highs earlier, as we had planned on doing.

* Questions added during the debriefing.

Q* Did you then shut off the manual proportional?

A. No. At this point the oscillations were getting worse, so I just was careful as to how much stick I was putting in to stay out of the fly-by-wire highs. I was getting my one pound fly-by-wire, plus my manual proportional. This seemed very adequate until after about the Max g. Along about Max g, the rates seemed to change considerably and I needed all 49 pounds of thrust. After the rates built up, I found that the 49 pounds of thrust really came in handy. I could seem to really stop these rates, or come near stopping them.

2.1.5.2.2 Q. Comment on the performance of the selected control mode.

A. No additional comments.

2.1.5.2.3 Q. Describe the spacecraft oscillations during reentry.

A. The oscillations were very small early in the reentry and I was keeping them damped down pretty well in the early portion. As we got on into the Max g, I found that I was having a little trouble. I had my arm rest cut completely out, so that I could operate the hand controller pressurized. I found that the Max g was forcing my arm down away from the hand controller, and I didn't get it pinned hard enough against the side. So my arm was sliding down into the trough and I wasn't able to control quite as well as I wanted to through the Max g area. Then, right after the Max g area, all of a sudden the amplitudes seemed to increase rather rapidly. The period got much shorter and I was using all 49 pounds of thrust. It seemed like every time I "bloop" the oscillations and catch them right they would slow down all right. An oscillating g force was noticeable, but not real objectionably. I could tell that I was oscillating about two axes. Not oscillating so much as just sort of spiraling. I was able to tell very well when the altimeter came off the peg and called it out to the HAW Cap Com when he asked me what the altitude was. He hadn't read me, and I called it out again. I was conversing with HAW Cap Com loud and clear all the way down. in Fact, I got a little irritated. He was trying to call out my checklist to me from drogue down. I had them right before me, and I'd already gone over them and had finished most everything. It worked out fine.

Q* You said that your arm slid out of the trough or slid back into the trough.. Would you make any suggestions at the present time as to a fix on this situation?

* Questions added during the debriefing.

A. Well, the reason that I had my trough cut out is that, when your suit pressurizes, you can't get on the hand controller if you don't have it done this way. If you build it so you can control it pressurized, it's not ideal for unpressurized; under g.

Q.* Would you go this way again?

A. Yes. I'd go this way again. Under launch, I didn't have any trouble at all holding my hand right on the hand controller, no problems at all. I think on reentry, I just couldn't get it braced out in time and it just tended to slide in.

2.1.5.2.4 Q. Comment on the ECS performance during reentry.

A. I guess it worked. I was fairly warm when I got through the reentry, but not uncomfortably so. I realized when I got on the water that I was feeling just warm, but not real overly heated.

2.1.5.2.5 Q. Comment on the performance of the sequential system during reentry.

A. The sequential system was not functioning during pre-reentry. It was latched into the 0.05g portion of the Amp Cal. I punched the drogue chute off, as had been previously planned, at 42 thousand feet. The main chute came out slightly earlier than I'd anticipated. I was waiting to pull it at 10 thousand feet. It came out at about 11 thousand feet.

2.1.5.2.6 Q. Comment on the performance of the electrical system during reentry.

A. Fine.

2.1.5.2.7 Q. Was the 16 millimeter camera used during reentry? Comment.

A. Negative.

2.1.5.2.8 Q. Comment on any problems using the blood pressure system during reentry.

A. It wasn't used.

2.1.5.2.9 Q. Comment on any difficulties encountered during reentry, other than those previously mentioned or pertaining to communications.

* Questions added during the debriefing.

A. None.

2.1.5.3 Communications

2.1.5.3.1 Q. Comment on communications during reentry.

A. Fine. At around 100 thousand feet, I began to receive Hawaii loud and clear.

2.1.5.4 Training

2.1.5.4.1 Q. Were you adequately trained in reentry procedures? What additional or more intensive training would you now recommend?

A. None.

2.1.5.4.2 Q. If you controlled the spacecraft during reentry, were you adequately trained in the control task?

A. Yes.

2.1.5.4.3 Q. Were the trainer simulations of reentry accurate? If not, describe.

A. No, they were overly severe. The trainer simulators were overly severe for all the first portions of reentry, up through about the Max g point. From there on, as I stated previously, it appeared to me as if the spacecraft actually shifted ratios. The damping factor got considerably different than it was through the early portion of reentry. I thought that it was much greater than we've had on the trainer.

2.1.5.4.4 Q. Comment on the centrifuge simulations of reentry.

A. I think the centrifuge simulations of reentry are quite good although they don't put in the lateral oscillations that you get when these oscillations get fairly short and quick. But I don't know if this is worthwhile putting in. I think that, overall, the centrifuge simulations were quite good.

Q.* Did the lateral oscillations interfere with your performance?

A. No, I don't think so. Just a little different in feeling than the centrifuge, but it wasn't real bothersome.

* Questions added during the debriefing.

2.1.6 DESCENT AND LANDING

2.1.6.1 Procedures

2.1.6.1.1 Q. Describe and comment on the procedures you used during descent and landing.

A. I used my checklist, which was right on the front of the desk. I had a checklist for after drogue, a checklist for after main chute, and a checklist for after landing. I followed these right down the row.

2.1.6.2 Spacecraft Performance

2.1.6.2.1 Q. Comment on the ECS performance during descent and landing.

A. I wasn't paying much attention to the ECS section. So far as I know, it worked fine. I did pull the snorkle at 17 thousand feet.

2.1.6.2.2 Q. Comment on drogue deployment and the spacecraft motions before, during, and after drogue deployment.

A. The spacecraft was oscillating fairly well just prior to drogue. The drogue came out with a great clatter and roar when I just barely touched the botton at 42 thousand feet. I was in the clouds at the time. The drogue came out with a clatter and roar, the spacecraft was still oscillating slowly below the drogue. The drogue really stabilized the spacecraft. I could see the drogue, even in the clouds.

2.1.6.2.3 Q. Comment on snorkle operations.

A. Just as it should. When I pulled it, it went.

2.1.6.2.4 Q. Comment on chute deployment. If it was necessary to use the reserve chute, what was the failure indication?

A. The main chute worked perfectly, it came out automatically, reefed and unreefed, and worked perfectly normal.

2.1.6.2.5 Q. Comment on landing bag deployment.

A. Landing bag deployed. I moved the switch to the automatic position, and the landing bag came out right after the main chute came out.

2.1.6.2.6 Q. Comment on landing.

A. Landing was a good solid landing. I was oscillating below

the chute. The helicopters commented that I had fair oscillation. I could see the oscillations in the chute filling and collapsing slightly from side to side as I was watching it. I could tell that I was swinging when I hit. The spacecraft went under, left side down, and sort of rolled around to where the window was laying under the water. It got up and I got the functions done to disconnect the chutes and kick out the reserve chute. The spacecraft still lay over, then rolled to its right side, and then on the right forward side, so that I was sitting up. At that time, I got the swizzle stick and reached down to open the manual nitrogen fill valve. As the spacecraft straightened up very nicely, I reached over and put the rescue aid switch to auto which deployed the HF antenna. Then I turned the squib switch off.

2.1.6.2.7 Q. Did the Rescue Telelight illuminate upon landing?

A. I don't believe it did.

2.1.6.2.8 Q. Comment on Rescue sequencing.

A. Everything seemed to work fine. Even the flashing light was working.

2.1.6.2.9 Q. Did the spacecraft ship water or leak? Describe.

A. Apparently water came in through the snorkles, because there were several little bunches of water splashing around. My visor was covered with salt water. It splashed into my face and I had salt water in my eyes. I even had to wipe them out. I noticed small amounts of water splashing from side to side as the spacecraft rolled from one side around to the other. I heard no big rushing or gurgling of water, so I wasn't concered at all. I had always thought, previously, that it would be a real bad sensation when the spacecraft rolled around on the water. I thought, from what everybody said, that you would really have a big desire to get out of the spacecraft when it is on the water. But I found that I had no desire at all to get out of the spacecraft. I was perfectly happy to sit right there and wait Of course, it was definitely an encouraging feeling to know that the helicopters and swimmers were right there and the ship was not very far away.

2.1.6.2.10 Q. Describe the spacecraft's motions after landing.

A. I've already described them.

2.1.6.2.11 Q. Comment on any other difficulties encountered during descent and landing, other than those previously mentioned or pertaining to communications.

A. None.

2.1.6.3 Communications

2.1.6.3.1 Q. Comment on communications from blackout until landing.

A. After I had LOS at CSQ, I had about 3 minutes to go to 0.05g. I said so long to the Cap Com, and that I would see him in a few days. I didn't hear anything then until Hawaii came in at slightly over 100 thousand feet. He called me and said, "Can you read?", and I said, "Roger." He said, "What are you doing?", and I said, "I'm busy with reentry." He said, "What altitude are you at?", and I said, "I don't know, my altimeter's still pegged." He said, "Understand, your altimeter has not come off the peg", and I said, "Negative, it is now. It's coming off the peg now." He didn't read me on that communication. He said, "What did you say?" and I said, "I have about 95 thousand feet, now." Apparently he didn't read me again and then I called out, "I'm at 85 thousand feet, now." Everything is fine." Then I called out when I had a drogue. I don't know whether he received me or not. The helicopters and I were talking back and forth very well after the main chute, and I was also talking to the carrier.

2.1.6.3.2 Q. Did you receive the impact and recovery information you required?

A. I didn't receive any. When the HAW Cap Com called me, he gave me some comment about the recovery area. I was really pretty busy with the reentry about that period of time and it didn't come through real clear, but there was some comment on recovery. I felt that I wasn't going to be too far away from the nominal recovery area because I belt certain that I had gotten the retros on time and that I was fairly close on attitudes. So regardless of what I did on reentry, I couldn't be far off. The dispersion was cut down considerably with the roll rate which I had gotten in.

2.1.6.3.3 Q. Did you contact recovery units during descent?

A. Yes, both the helicopters and the ship.

2.1.6.4 Training

2.1.6.4.1 Q. Were you adequately trained in descent and landing procedures? What additional or more intensive training would you now recommend?

A. Training was adequate and I wouldn't recommend any more.

2.1.7 RECOVERY

2.1.7.1 Procedures

2.1.7.1.1 Q. Describe the procedures you used from landing until recovery.

A. The procedures were just like we have in our checklists. I got everything undone except my communications lead and inlet hose. In fact, I went ahead and took the inlet hose off, and then stuck it back in to get cooling. I didn't egress. I I stayed in the spacecraft until they got me on board the carrier, then came out in a leisurely fashion.

2.1.7.2 Spacecraft Performance

2.1.7.2.1 Q. Comment on ECS performance from landing until egress or recovery.

A. It did very well. I had very cool air coming in through the snorkles, and the fan was blowing it invvery well. No problem at all.

2.1.7.2.2 Q. Comment on the life raft, if used.

A. It wasn't used.

2.1.7.2.3 Q. Comment on other survival equipment, if used.

A. Not used.

2.1.7.2.4 Q. Comment on operation of spacecraft flashing light.

A. The flashing light was working. I intended to turn the light off immediately after impact. This I did not do, which probably is a good thing. As the carrier came up alongside me, the MSC recovery representative mentioned that the recovery light was flashing loud and clear. I turned it off at this time.

2.1.7.2.5 Q. Comment on deployment of the fluorescein sea marker (dye).

A. It deployed very well. The recovery helicopters said they saw it and it really marked the spacecraft.

2.1.7.2.6 Q. Comment on any difficulties encountered during the period from landing until recovery other than those previously mentioned or pertaining to communications.

A. None.

2.1.7.3 Communications

2.1.7.3.1 Q. Comment on spacecraft communications from landing to egress.

A. It was fine. Although the MSC recovery representative on the No. 3 elevator was down so far in volume that I almost couldn't read him. I read Begonia (USS Kearsarge) loud and clear.

2.1.7.3.2 Q. Comment on post egress communications with your portable radio, if used.

A. It wasn't used.

2.1.7.3.3 Q. Were you aware of your recovery situation from landing until recovery?

A. Yes.

2.1.7.4 Training

2.1.7.4.1 Q. Were you adequately trained in egress procedures? What additional or more intensive training would you now recommend?

A. None.

2.1.7.4.2 Q. Were you adequately trained in the use of survival equipment?

A. Yes, even though none was used.

2.1.8 SEQUENCE REVIEW

2.1.8.1 Q. In review, note the color of illumination of each sequence, or event light, and note whether the function on the sequence panel occurred automatically or was manually initiated, where applicable.

Q. Umbilical door.

A. It worked correctly.

Q. Color of illumination?

A. Green.

Q. Did the function sequence automatically?

A. Yes

Q. Jett tower?

A. Jett tower was green.

Q. Sep Capsule?

A. Green.

Q. Retrosequence?

A. We lost all that function in the Amp Cal.

Q. Retroattitude?

A. Retroattitude never functioned. We lost everything prior to 0.05g.

Q. Fire retro?

A. Fire retro did not work.

Q. Jett retro?

A. Jett retro did not work.

Q. Main?

A. Green.

Q. Landing bag?

A.. Green. And recovery - I can't remember for the life of me whether it was green or not. I guess it was, but I don't remember. Main and landing bag were both automatically deployed.

Q.* Were any of the other sequence functions manual?

A. Snorkle was manual.

2.1.9 CONCLUDING STATEMENTS

2.1.9.1 Q. Are there any concluding comments?

A. I think the spacecraft worked very well, all in all. There were a few minor difficulties and failures toward the end. It performed very well, except for the ECS system. I suppose it's a satisfactory system, but it works the pilot too much to maintain a livable condition over a long haul.

* Questions added during the debriefing.

2.2 SUPPLEMENTAL PORTION

2.2.1 Pre Launch

2.2.2 Launch

2.2.2.1 Spacecraft Procedures

2.2.2.1.3 Q. Comment on Jett Tower procedures.

A. Automatic.

2.2.2.2 Spacecraft Performance

2.2.2.2.16 Q. Comment on the effect of the escape rocket exhaust on the spacecraft window. Give a detailed account of relative visibility through each area of the window.

A. I don't feel that the escape rocket exhaust fogged the window so bad. You could see the streak, powder marks, and flecks from the rocket exhaust. I didn't see any red RTV (sealent compound) marks. There were all kinds of grayish-black marks, like powder burns, and streaks on the outside of the window. Then the big smear, which really diffused the light and looked almost like frost when the sun hits the window at an oblique angle, was on the inside surface of the outside glass. Just awhile ago, we were looking at the window which was broken when the hatch was blown off on the carrier. I looked inside and the inside of the outside pane has that greasy smear which is like a road film on a windshield. This I feel obstructed the visibility the worst. I don't have any idea where it comes from, but I'm convinced that it is this film that's forming on the window and cutting down visibility. It is on the inside of the outside pane, because you can see the thickness of glass between it and the streaks on the outside.

Q.* Were they any areas of the window that were more clear than other areas?

A. No. It was all fogged over pretty evenly.

2.2.2.2.17 Q. Comment on the launch vibrations. If possible, give comparisons with aircraft, test facilities, etc.

A. Liftoff was smoother than I had thought it would be. I

* Question added during the debriefing.

didn't feel any real vibration or rumble on liftoff. It was all smooth. Max g had less vibration than I thought it would.

2.2.2.3 Communications

2.2.2.4 Training

2.2.2.4.3 Q. Was there a proper balance of training between normal and emergency launch conditions?

A. I think we want slightly heavy to emergency conditions on launch in the Procedures Trainer. I think we could practice less emergency procedures and maybe more normal launches.

2.2.2.4.4 Q. Compare the flight turnaround maneuver with those practiced on the Procedures Trainer. Was it performed strictly on instruments? Did it "feel" the same?

A. It was purely on instruments, and it felt just exactly like the trainer. There were distracting outside visual influences, such as observing the booster. The booster was so close on the turnaround that it tended to distract me a little right before completing the turnaround. I might add here that I think that the Cape Procedures Trainer as set up right now flies, instrument-wise, just exactly like the spacecraft does in fly-by-wire low, and on manual proportional.

2.2.3 Orbit

2.2.3.1 Procedures

2.2.3.2 Spacecraft Performance

2.2.3.2.10 Q. Comment on the internal spacecraft arrangement and lighting. Any suggestions for improvements.

A. Well, I've always thought the lighting that we have in the spacecraft is unforgivable. My private airplane has far better lighting and it probably cost one/one thousandth of the amount. I think the lights that we have in there do the job, but it's too bad that, at the level of technology that we're at in the space business, that we settle for the inferior lighting that we have. I've found that it's very difficult to operate the lights. We added to this difficulty by all the plumbing we had over by the left light. I found that I used left light only considerably more than I did both lights on. On the day side, however, I found that I needed both lights on bright if I was doing anything outside and inside. I feel that little floodlights, like you have in light aircraft, are even better yet. Individual

back lighting of panel instruments would be ideal for lighting your instruments up bright enough to see. This is a real problem on some of your prime instruments where you are flying outside visual references and inside instruments simultaneously.

2.2.3.3 Communications

2.2.3.3.7 Q. Comment on the reception of the critical information for the flashing beacon experiment.

A. No comment. It was satisfactory.

Q. The ground lighting experiment.

A. Well, I pitched down just when it was on the flight plan, and there it was. The flight plan information was adequate.

Q. Tethered balloon?

A. I attempted to deploy it right on the time that we had established. It did not deploy.

Q. Dim light phenomena?

A. They relayed to me, communications-wise, the attitude that I was to roll, based on the time of day. This appeared to work out fine. We'll see what kind of data the people get from their film.

2.2.3.4 Training

2.2.3.4.7 Q. What areas of training, if any, were overemphasized either by yourself or by other persons? Underemphasized?

A. Negative.

2.2.3.4.8 Q. Do you feel that you had ample time to prepare yourself for the flight?

A. Yes.

2.2.3.4.9 Q. Comment on the relative value or problems of pre-flight activities (such as capsule hangar and pad tests, systems briefings, experiments, centrifuge, planatarium, egress and recovery, aircraft flying, Procedures Trainer, flight planning, onboard equipment).

A. Well, the worst difficulty, I found, was people making changes

in the spacecraft at a very late date. Regardless of what anybody says, we had a freeze date that we had all agreed on and we were going to hold to it. This was abused time and time again. It was not abided by and there were several things that were slipped into the spacecraft right down to the last few days prior to launch. The flight crew was not always immediately aware of these items. I know that there are reasons for this and maybe extenuating circumstances. But I still feel that it's unforgivable if we're trying to get a real operational type launch concept where we can launch people on longer flights, gain more data from the flights, and have better reliability. We've got to have a cut-off so that the crews can learn their procedures, and can practice them. Also so the equipment the flight crew is going to use is on board the spacecraft. I hadn't had any opportunity, really, to use this equipment in the spacecraft adequately prior to the flight, although we had slipped down to the Procedures Trainer and tried to use the equipment as well as possible. We do not have that condensate system at all in the trainer. It did not go in the spacecraft until a very late date. We've made changes on the condensate fittings and where the condensate water was going to go. We slipped in the tin can (wick water separator) with all its clamps on the spacecraft just two or three days prior to launch. I think, all in all, that it is not fair to the crew to have to learn the procedure and everything that you have to establish, just a day or so prior to launch. Especially when everything else is all planned and trained for. I think that this is something that people are either going to have to come to or, if there's going to be some changes made, they're going to have to accept the blame for having a slippage in the flight.

Q.* As far as capsule hangar or pad tests, systems briefings, experiments and so forth, are there any items that you felt took more time than was necessary or are there some that you would like to spend more time at?

A. No, I thought they all had about the proper proportions. I think they worked out very well. I thought the systems briefings were just right. Having a longer system briefing some time prior to the flight, and then a couple of weeks prior to the flight having a little refresher worked very well.

Q.* Egress and recovery?

A. I think on the egress portion, that everybody was perfectly

* Question added during the debriefing.

convinced that I was going to have to come out the tower, and that I should have more training, although I had participated in numerous training exercises without the tower. And I feel this is a real down-the-road type procedure.

Q.* Comment as to what you feel your ability to get out through the tower would have been.

A. I don't think I ever would have made it out of the tower. It takes a fair amount of strength and stamina to get out of that tower to begin with and you're getting more and more overheated as you go up there. I distinctly had a dizzy feeling when I first got out of the spacecraft. I think, just as I have thought all along, that egressing out of the tower is not the thing to do. You either stay in there and cut your suit off and cool off, or if you've got to get out for any real emergency, just figure on the spacecraft being lost, blow the hatch, and get out.

2.2.3.4.10 Q. Were any of the following activities fatiguing, "choresome", or boring after an extended period of flight?

(a) Experiments

A. No, the experiments were very welcome, in fact. They were interesting and gave you something to do.

Q. (b) Control mode switching

A. No, it was very satisfactory.

Q. (c) Communications

A. Excellent. If you went great long periods without anything to do or anyone to report to, you might perhaps get a little bored. We could have even less communications and still be in fine shape. All in all, the way we planned it and the way the range is set up worked very well.

2.2.3.4.11 Q. Comment on the training value and accuracy of simulation of the flashing beacon experiment at the Morehead Planetarium, and atmospheric tests via the T-33 aircraft.

A. I thought these were very good. I thought the flashing beacon was very similar to what I saw in both of those. I thought those were both quite similar, and I think that the flight appeared to be very similar, also.

* Question added during the debriefing.

2.2.3.4.12 Q. Did the absence of good out-the-window displays significantly affect the in-flight performance or cause any problems?

A. Yes. I think that your visual cues out the window are very, very strong cues. I'm not recommending that we, for this Mercury program for instance, think of going into big modifications for out-the-window type displays. But I feel that visual representation of things, as much as is financially feasible, is highly important. Just as I have related this one motion on reentry, I've done it time and time again on the Procedures Trainer where all you do is watch the instruments. So when you actually see what's happening out the window, it's a great big surprise to you.

2.2.3.4.13 Q. Did you receive enough familiarization and manipulation of onboard scientific and operational equipment prior to flight?

A. Oh, I thought that as far as the cameras and the camera equipment were concerned - were fine. I think the photometer is kind of a ridiculous device. I knew how to use it, but it turns in both directions, and when you turn it in one direction, it extincts all right because it just puts the solid wedge over the aperture, which it did. It's difficult to use in the spacecraft and it takes up a lot of room. I'm not sure just what kind of value they get out of it anyway. There seems to be a lot of doubt in the various scientific communities if they can really relate anything they get out of it. I might add that there was not adequate time to prepare on how to use some of this plumbing that we had on board at a late date. As a matter of fact, we did have numerous failures of it. I feel that it was completely unsatisfactory.

2.2.3.4.14 Q. Were there any major problems, as far as flight preparedness is concerned, due to any late final shift to systems equipment or operating procedures?

A. I've already covered that.

2.2.3.4.15 Q. Were there any simulations or training problems on the Procedures Trainer that had negative training value?

A. No, but only because we did not start in with our procedures training until we had our systems pretty well finalized and the Procedures Trainer brought up to the configuration that we had in Capsule 20. If we had started procedures training before we had firmed up the Capsule 20 configuration, I think we would have received considerable negative training.

2.2.3.4.16 Q. Do you have any comments of the value, as well as the role, of the backup astronaut?

A. Well, I think the backup astronaut is a very valuable asset. I think that, with the various testing schedule that we have

in the hangar and on the pad, the prime astronaut would never be able to handle this by himself. I think the backup is the only other man who knows the systems, overall, as well as the prime. I think he's the man that the prime really relies on to help him to do all the various checkouts and tests, and has complete confidence in him. At the same time, of course, he's preparing himself to really know the systems for the following flight. I think that the backup has a very valuable role to play, particularly during pre-launch activities on the pad. It's also very comforting to know that the backup has been the last one in the cockpit on launch day, and gotten the cockpit all squared away and ready for you. You have every assurance that it's really ready to go.

2.2.3.4.17 Q. Were you provided with all necessary information during the preflight period?

A. I'm not sure what is meant by that question.

2.2.3.4.18 Q. Comment as to the realism and value of the yaw demonstration device set up in the Saturn hangar.

A. Very good. Excellent. I think that yaw is really even easier to pick up over the Earth than it is on the yaw demonstrator. But I think that they yaw demonstrator is a very excellent device.

2.2.3.5 Experiments

2.2.3.5.2 Aeromedical Studies (Deferred to the aeromedical questionnaire).

2.2.3.5.3 Flashing Beacon Experiment

2.2.3.5.3.2 Q. Were there any problems obtaining the desired deployment attitude? Comment on the attitude reference.

A. Negative. I think it was very easy.

2.2.3.5.3.3 Q. Were there any problems in acquiring your light for night sightings? For day? Difference? Compare the appearance of the flashing light with a sky background and with an Earth background.

A. I never did see it on the day side and I didn't see it on the first night side. The real problem on the night side is when hou're pointed around, the small end of the spacecraft toward the east. In order to acquire your 180° yaw point by star patterns, you have to move 50 minutes ahead on your star charts to see what kind of star pattern you're going to have. That's all you have to refer to on the night side which is not the easiest thing in the world to do. I

did find my star patterns all right and I feel that I was on 180° yaw on that first night side, but I just couldn't see the light. I don't know whether I could have been off somewhat, or whether the light was not flashing. But, right at the beginning of the second night side, I saw what appeared to be the flashing light coming from below. I could see the Earth, then a band of stars that are clear, and then this thick haze layer which rings the Earth all above. The stars are dim through the haze layer, then the stars are bright again above that. As I looked down, against the clear Earth, I saw this solid light, which appeared to be slowly coming up in pitch with respect to me. My first thought, since it was around on the other side of the Earth was that somebody was launching something. I watched it and it was a steady light. I thought, "I wonder if that could be the little strobe light, with the strobes not flashing." I watched it and I thought, "Boy, that's sort of the same general pattern that it should have right about this period of time. It should be down below me, and it should be slowly coming up and gaining altitude in relation to me." As it came on up slightly, I watched it for just a minute. I took my eyes off of it and when I looked back it was strobing. You could see it very easily, both sky and Earth background. You could see a little better with the Earth as a background because there're not any stars down there but it is distinctive even among the stars because it does have this strobing action.

2.2.3.5.3.5 Q. Would precise tracking of the flashing beacon present any problems?

A. Well, I don't think so. If the question is talking about the precise tracking down to plus or minus a half a degree or so, you will, perhaps, need a little more precise control system than we have now with variable proportional thrust in the very low orders of magnitude. But if you are talking about just keeping it lined up somewhere on a spacecraft window it would not be a problem.

2.2.3.5.3.6 Q. Did operations in the space environment introduce any new factors making sightings more or less difficult than anticipated? Explain.

A. I don't know, except from my position in the couch, I found that it was a little more difficult to view out the window than I had thought it would be. I kept having trouble getting my helmet back into the couch to get the proper attitude. It was not my hold-down straps because I had the new cinch-down straps that you can pull down after pressurized. I had these fairly loose.

2.2.3.5.3.7 Q. The same energy could be used to produce a flash twice as bright one-half as often or a flash one-half as bright and twice as often? Would one of these be an improvement? Explain.

A. Well, I think the flashing rate could be cut down. I think the brightness of it is very necessary. I would suggest fewer flashes but brighter.

2.2.3.5.3.8 Q. When was the last time the flashing beacon was seen?

A. The last side of the third night side after deployment.

2.2.3.5.5 Ground Light Experiment

2.2.3.5.5.2 Q. Comment on the operation of the photometer and the standard light.

A. There just isn't time, over any passage of a ground object, to take any photometer reading or any other kind of reading. All you can do is observe the thing. You're passing so rapidly over any object on the ground that to try to get any kind of a reading of it is ridiculous.

2.2.3.5.6 Tethered Balloon Experiment

A. No comments.

2.2.3.5.7 Day Star Observations

2.2.3.5.7.2 Q. Were they any differences in the apparent brightness of the stars between day and night periods?

A. Well, when you're pointed away from the sun so that the sun is not impinging on the spacecraft window, either obliquely or directly, the sky is very dark. The sky is very, very dark, but is not as dark as it is on the night side. You cannot see as low an order of magnitude of stars on the day side as you can on the night side. Even when you're dark adapted, as I was a time or two, for viewing on the day side. There's enough diffused light so that the sky is not as dark as it is on the day side.

2.2.3.5.7.3 Q. Could the sunrise be detected by any means other than the sunlight entering the spacecraft window?

A. Yes, prior to sunrise, you begin to get this bright blue band about a 180 degree quadrant around the earth. You can see this band start out very narrow and then start widening. The horizon is a blue, bright blue, band. It

looks almost like the Zodiacal light at first when you see it. It gets brighter and brighter and then just all of a sudden "Boom" the sun just comes right up. The sun is rather spread out as it starts up. So, you get this narrow blue, bright band prior to the real sunlight beginning to come through. The sky is still very dark, and you don't get any indication at all from the sky.

2.2.3.5.8 Window Attenuation Evaluation

2.2.3.5.8.1 Q. Was it possible to obtain consistent photometer readings?

A. The window attenuation evaluation I never did because I could not get the little calibrated light out of the desk. I struggled and swore at it, ripped and gouged and finally just said, "to heck with it," and left it right where it was. It was sitting down there between two little pieces of structure with the velcro fastening it on two sides, and I couldn't get it out.

2.2.3.5.8.2 Q. Were there any window problems, such as reflections or coatings, that hindered the various day or night sightings or photography experiments?

A. I think that the smudge on the window that we've always known has been there for the last several flights was definitely hindering. When the sun catches an oblique angle on the window, it completely blanks the window out. If you have direct sunlight on it, it's not bad at all, but where the sunlight hits it obliquely, it looks just like the window has frost all over it. It looks like a canopy that's all frosted over.

2.2.3.5.8.3 Q. Were there any observations of light flashes on the window which could have been caused by micrometeoroid impact?

A. No.

2.2.3.5.9 Dim Light Phenomenon Photographs

2.2.3.5.9.2 Q. Describe and comment on the operation of the ASCS during this maneuver. Was the operation as predicted?

A. Yes.

2.2.3.5.9.3 Q. Comment on the Robot camera.

A. It was easy to use. It worked perfectly well.

2.2.3.5.9.4 Q. Comment on the ability of the Mercury man-spacecraft system to obtain accurate time-exposure photographs.

A. Well, it was made knows to the University of Minnesota people that the spacecraft is going to be moving through, rather than orienting on, a fixed space object when taking timed photographs. They're going to get streaks on the film and they were willing to go with the experiment. It was added at a very late date with knowledge of what the system would and wouldn't do.

2.2.3.5.9.5 Q. Were either the Zodical light or the air glow ever visible to you? If so, describe.

A. I saw some air glow, and I saw the Zodiacal light. I also saw the haze layers that were described by Wally Schirra. I saw the Milky Way very loud and clear. The Magellanic clouds were loud and clear. Everything just as I had heard of. The Zodiacal light was just like what I had thought it'd be. After the setting sun and before the rising sun, you definitely get this glow for a considerable area along the ecliptic. You cannot always see it but I saw it several times. The Zodiacal light is another glow you get prior to sunrise other than the blue band as the sun comes around. It is a glow coming up along the ecliptic, rather faint light. You can see it quite clearly.

2.2.3.5.9.6 Q. Were long periods of holding the camera tiresome? Explain.

A. No. It doesn't have any weight under zero G.

2.2.3.5.11 Infrared Weather Photographs

2.2.3.5.11.2 Q. Are clouds visible at night with dark adapted eye under no-moon conditions? Under partial moon conditions?

A. Yes. If you're real dark adapted, you can see clouds under no-moon conditions. Under partial moon conditions you can really see clouds. In fact, I even saw a lot of cities and towns down under cloud layers, that were shining up through the clouds. Some of these towns that I passed over in two different areas made real good yaw reference. One was over the Laos area, where I was all set up to acquire retroattitude when I first came out into the daylight.

2.2.3.5.11.3 Q. Give general impressions of haze or dust layers. Note any apparent changes in horizon sharpness.

A. Well, I saw both the white haze layer and I saw this real high brown haze layer. The high brown haze layer I saw off the South American coast while facing east. It was to the east and out to the northeast. And it was very high above the Earth and above me. The white haze layer was probably 3 to 4 degrees above the Earth and was about 5 to 8 degrees thick. It ran all the way around the Earth as far as you could see. It was there almost all the time at night. The horizon was always sharp. You had this haze layer, which was very deceiving, at times. As you came back onto it, you could see the haze layer and you could see a layer of clear stars and then the Earth. The horizon was always clear.

2.2.3.5.11.4 Q. Locate inter-tropical convengence zone and note any vortices associated with the zone.

A. There were a lot of real distinctive cyclonic actions going on and I took pictures of several of them. There were great bands of these real cyclonic swirls which are quite interesting.

2.2.3.5.11.5 Q. Did the stars appear to change in color or brightness just prior to occulation by the Earth?

A. Well, they very definitely did when they went through this haze layer. You'd see them clearly and then you'd see them dim out. Some of lesser magnitude would go completely out of sight and then you'd see them again when they'd come out of the haze layer before going down behind the Earth.

2.2.3.5.11.6 Q. Estimate the maximum number of thunderstorms seen in the field of view during the day. During the night.

A. I saw a lot of them both day and night. On the day side, it just depended on the angle you look and where they were. The maximum that I ever saw at any one time was five or six. At night, I could see all kinds of lighting flashes and the funny thing of it is I'd get static on my radio every time one of these lightings flashed. When it would flash, I'd immediately get static on the radio. Not real loud or bothersome, but I could hear it.

2.2.3.5.14 Horizon Definition Photographs

2.2.3.5.14.2 Q. Were there any departures from the intended program of this experiment that were not noted during the flight?

A. I did not do the ASCS portion of one whole path to the rear horizon since I didn't have on ASCS at this point.

2.2.3.5.14.3 Q. Comment on the use of the Hasselblad camera.

A. Excellent. No problem at all.

2.2.3.5.15 TV Camera Operations

2.2.3.5.15.3 Q. What were the advantages in having the TV system onboard the spacecraft? Disadvantages?

A. I could see no real advantages to the pilot in having it onboard. If the thing had worked correctly, it would have been nice to have been able to shoot out the window at some of these fantastic views you see around Florida and around CSQ to show the ground what you're seeing. That would have been the biggest advantage of it. I gather, based on what limited information I have now, that we got one or two successful pictures of this type, but the camera is hard to use where it was located. It's very difficult to get out of the bracket. You have to plan ahead quite a ways to start getting it out of the bracket and there's no place you can put it if you want to use anything else while it is out. You could fly the spacecraft with the TV camera out. I flew it on manual proportional or fly-by-wire several times to establish a very slight change in attitude while I was using the camera. No problem there, but you can't use another camera, for instance, while you're using the TV camera. There's nowhere to put the big, bulky rascal, and you've got to take that 6 inch lens off prior to storing it back in the bracket. Which is a mess. You have to take it off, put it somewhere, then get the 1 inch lens, put it back on the camera, then stow the camera, and then stow the 6 inch lens.

2.2.3.5.15.4 Q. Was the TV camera easily handled and maneuvered? Were the attachments easily handled? Explain.

A. The attachments were easy enough to handle, but the TV camera was difficult to use where it was located and really quite burdensome. The cable on the camera, incidentally, worked out well. The way the cable was rigged, it was well out of the way of the control stick. But you kept knocking the control stick all over the place everytime you reached over to get the TV camera or to put it back in place. So I always powered everything down before I ever moved the TV camera.

2.2.3.5.15.5 Q. Describe and comment on the air-ground coordination required for the operation of the TV system.

A. It didn't seem to be difficult at all. However, I didn't seem to get any information as to whether they were really getting anything down on the ground or not, which I suspect they weren't half of the time. Numberous times they told me they weren't.

2.2.3.5.16 Miscellaneous

2.2.3.5.16.1 Q. Comment on your subjective feeling of motion in relationship to control mode: i.e., ASCS and free drift.

A. Well, the operating bands of the auto control appeared to be wider than I thought they would have been. You're just sort of "slopping" along between these bands on all three axes. It does not hold a real precise attitude. I knew it didn't by the figures, but it didn't dawn on me how much these attitudes would show up visually. You get used to it and it was no problem, but it was very definitely off in all three axes. You varied within an 11-$\frac{1}{2}$ degree band in yaw. Sometimes it varied right out to the full extent of the band. I never got any thruster activity other than low thrusters. I never got into any high thrusters at all. In free drift, you generally have a lot more motion than you do in ASCS. When I was in free drift, I deliberately put about 2 to 3 degrees per second rate in on yaw, one time, and on roll another time, and then turned the control system off. I was already powered down and just "let her rip." I felt nothing at all. If I could have shut off my visual cues, I'd never know that I had any motion or any rate at all. While I was doing this, I took the Hasselblad camera out one time and sat it in front of me to see if it would go anywhere. It didn't. I was powered down with no fan power at this time and there was no air current inside the spacecraft. Objects that I had sat out there would sit right there. They did not sit there when you have the fans on.

Q.* When you were in ASCS, could you feel the thrusters fire?

A. No, not the low thrusters. You can't hear them or feel them at all. On the night side, where I was controlling on fly-by-wire low or on manual proportional, using just the low portion of the thrust, I could actually see each and every thruster fire. I could see the flame and sparks flying out of the thrusters.

2.2.3.5.16.2 Q. What were your impressions of your vehicle attitude upon waking?

A. I found that you could "care less" what attitude it's in. There never was any doubt in my mind, right from the very start, that any time I wanted to, I could roll, pitch, or yaw until I found the Earth. Then I could "plunk" her right down to find yaw and "Boom", I was oriented. I found that you could see yaw at the 90 degree yaw point. The Earth is streaming past you bigger than "heck" and it's just no effort at all to yaw right on around and line up.

2.2.4 RETROSEQUENCE AND RETROFIRE

2.2.4.1 Procedures

2.2.4.1.3 Q. Were the check lists for retrosequence and retrofire adequate? Suggestions for improvement?

A. Yes, they were fine, although we had to modify them slightly, due to all the various itmes that occurred previously.

2.2.5 REENTRY

2.2.5.1 Procedures

2.2.5.1.3 Q. Comment on the reentry checklists provided. Suggestions for improvement?

A. Fine. No suggestions.

2.2.6 DESCENT AND LANDING

2.2.6.1 Procedures

2.2.6.1.2 Q. Comment on the checklists provided for descent and landing. Suggestions for improvement?

A. None. Just right.

*Questions added during the debriefing.

2.2.7 RECOVERY

2.2.7.4 Training

2.2.7.4.3 Q. Were the egress and recovery procedures clearly understood and defined between yourself and recovery forces?

A. Yes.

Q.* Do you have any concluding remarks.

A. No, I don't believe I have any concluding statement, other that the fact that, I think that the training that we've had has been very adequate. I felt that I was very well prepared for the whole flight. I felt that in one or two areas as I've mentioned in here, perhaps, we've had to go through a little too much training. Again, it's not fair to the pilot making the flight to make a lot of late procedural or hardware changes. If we're going to have to hold this down to a real minimum. In fairness, on this tin can bit, since that's one of the things I'm talking about, I think that system is going to work. I honestly do. I was very furious and dead set against the system, but I honestly believe that it's going to make a real livable suit circuit. Possibly be one of the things that will make it a more satisfactory suit circuit. There's no doubt about it, it really separates the water.

* Questions added during the debriefing.

3.0 COMMUNICATIONS

3.1 INTRODUCTION

The following is a transcript of the MA-9 flight communications derived from both the spacecraft onboard recordings and the Mercury network station recordings to form a single text. This is, therefore, a complete transcript of the air-to-ground and ground-to-air communications during station passages, and inflight comments made by the pilot while between stations. A few non-flight-related transmissions and an occasional repetitive word or partial sentence were removed by the astronauts and the editors where clarity could be improved. Instances of this type are noted by an asterisk at the start of the transmission that was altered. Where a whole transmission has been deleted due to lack of confirmation or non-flight-relationship, the asterisk will appear where the transmission was removed. The text is otherwise verbatim.

The format used for presentation is as follows: the first column, at the left, contains the capsule elapsed time (c.e.t.) from liftoff in hours, minutes, and seconds, at which each communication was initiated. The second column identifies the communicator, and the third column contains the text of the communication. The station in communication with the astronaut is designated at the initiation of communications. Where no station contact is made through a complete orbital pass the text is headed with the orbital pass number only. In addition, each page contains, below the page number, the station or stations and orbital pass number transcription contained on that page.

The c.e.t. was reduced from the recording of the spacecraft clock commutated time segments on both the onboard tape and the network station tapes. These c.e.t. times are accurate to ± 0.8 seconds. Timing of a few communications was not obtained due to either weak, noisy signals on the network tapes, or to short sampling of onboard commutated time segments caused by commutator sampling interruptions when the pilot was recording while in the VOX-record, programmed mode and paused longer than 1/2 second. When timing was not obtained for either of these reasons, the first column will contain the notation "Unreadable" for that communication.

The communicators listed in column two are identified as follows:

P - Pilot

CC - Spacecraft communicator at the range station.

SY - Systems monitor at the range station.

F - Flight director at Mercury Control Center.

R1 - Primary recovery Helicopter pilot.

R2 - Backup recovery Helicopter pilot.

Stony - Launch complex 14 blockhouse communicator.

At various times throughout the flight, the pilot or network station communicator would indicate a precise time, event, or action by the use of a significant work, such as "MARK", or "NOW". The transcript editors also selected a few significant words or events for timing. The timing of these words or events was accomplished by the same process as was used to determine the c.e.t. times for column one, and is indicated by the time enclosed in parentheses followed by the superscript T.

Within the text, a series of dots is used to designate communications, or portions of communications which could not be deciphered. A single dash indicates a pause during a communication. Information contained within unmarked parentheses indicates editorial insertions for clarity as an aid to the non-systems-oriented reader.

3.2 TRANSCRIPT

CAPE CANAVERAL

	Stony	10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0.
00 00 01	CC	Lift off.
00 00 02	P	Roger. I have a lift-off and the clock is operating.
00 00 05	CC	Roger, clock.
00 00 07	P	Sigma Seven, Faith Seven on the way.
00 00 14	P	Standing by to start the backup clock.
00 00 16	CC	Roger.
00 00 18	CC	3, 2, 1, MARK. (00 00 20)^{T}
00 00 23	P	Roger. And the backup clock is running.
00 00 25	CC	Roger. You look good here, Gordo.
00 00 27	P	Roger. Feels good buddy.
00 00 29	CC	Good Sport.
00 00 31	P	Thirty seconds, and fuel is go. Oxygen is go. Cabin pressure on the top peg. Altimeter is working.
00 00 38	CC	Roger. You're looking beautiful.
00 00 48	P	What an afterburner.
00 00 51	CC	That's a beauty. And your clock's are in sync.
00 01 01	P	One minute, and fuel is go. Oxygen is go. Cabin pressure 10 psi on schedule. All systems go.
00 01 09	CC	Roger. We have a good go here, and pitch 50 (degrees).
00 01 29	CC	Still looks go.

CNV-1

00 01 30	P	Roger. 1 minute 30 seconds. Fuel is go. Oxygen is go. Cabin pressure is 6 psi.
00 01 37	CC	Roger. Pitch 32 (degrees), looks good.
00 01 41	P	Roger. The sun is coming in the window now.
00 01 46	CC	Roger. Standing by for your BECO.
00 01 50	P	Roger.
00 01 58	P	Running pretty smooth now.
00 01 59	CC	Good show.
00 02 02	P	Two minutes. Standing by on BECO.
00 02 03	CC	Roger. Time out good.
00 02 14	P	Roger. Have BECO.
00 02 15	CC	Roger. Your BECO. - Confirm staging.
		*(Undetermined transmission omitted.)
00 02 22	P	And you can feel the staging - waiting on tower.
00 02 27	CC	Very good on BECO time. SECO should be nominal.
00 02 29	P	Roger.
00 02 38	P	And there goes the tower. Does she take off!
00 02 41	CC	Roger. Confirm your tower.
00 02 43	P	Roger. Retrojettison switch to off.
00 02 45	CC	Retrojettison switch off.
00 02 55	P	*Okay. Fuel is go. Oxygen is go. Cabin pressure sealed at 5.6 (psi) and holding.
00 03 03	CC	Roger. Sealed on 5.6 (psi) and holding. Very good. Pitch -4 (degrees).
00 03 10	P	Roger. I agree on pitch.
00 03 12	CC	You look real pretty here.
00 03 14	P	She felt real pretty.
		*(Non-flight-related transmission omitted.)

00 03 24	P	All electrical is go. Pressure is go. Oxygen is go. Sigma, Faith Seven is all go.
00 03 34	CC	We have a full go here for you, Gordo.
00 03 36	P	Roger.
00 03 38	CC	This is Sigma Seven down here, buddy.
00 03 40	P	That's what I said. Sigma, Faith Seven is go.
00 03 44	CC	Roger, Faith Seven.
00 04 00	P	Four minutes, and fuel is still go. Oxygen go. Pressure holding. All systems look good.
00 04 08	CC	Roger. Your pitch indication is -4 (degrees), we concur.
00 04 11	P	Roger.
00 04 13	CC	Trajectory looks real good, Gordo. I'll give you a mark on 0.8 (V/Vr).
00 04 17	P	Roger.
00 04 32	P	Four plus 30 (seconds). All systems still go.
00 04 35	CC	Roger. We're still go here. Coming up on 0.8 (V/Vr). Standby.
00 04 38	P	Roger.
00 04 40	CC	We have 0.8 V/Vr.
00 04 42	P	Good deal.
00 04 48	CC	You have a real sweet trajectory, Gordo.
00 04 50	P	Excellent.
00 04 58	CC	Go.
00 04 59	P	Roger.
00 05 04	P	Roger. I have SECO, Sep Cap. - Going to Aux Damp.

CNV-1

00 05 09	CC	Right in there, baby.
00 05 12	P	Have Sep Cap Green. SECO. I'm on Aux Damp. - Going fly-by-wire.
00 05 24	P	Everything is green here.
00 05 30	CC	Seven, we're right smack dab in the middle of the plot.
00 05 34	P	Say again.
00 05 35	CC	Smack dab in the middle of the go plot. Beautiful.
00 05 45	CC	Seven. Your turnaround looks beautiful.
00 05 47	P	Roger. She's yawing around very nicely. What a view. Boy, oh boy!
00 05 59	P	And there's the booster.
00 06 03	CC	Real pretty.
00 06 04	P	Boy, oh boy, is it ever close, too.
00 06 08	CC	Fun, isn't it?
00 06 10	P	Yeah.
00 06 18	P	Fly-by-wire is working just like advertised.
00 06 21	CC	*We have good indications on systems here. You did a real good job of it.
00 06 44	P	Booster is still smoking. It looks silver, Wally.
00 06 48	CC	Good.
00 07 06	CC	Hello. Cape Cap Com.
00 07 17	CC	Faith Seven, Cape Cap Com. Seven, Cape Cap Com.
00 07 19	P	I'm in retroattitude or in orbit attitude.
00 07 23	CC	Faith Seven, Cape Cap Com. How do you read?
00 07 25	P	Roger, Cape Cap Com. Faith Seven reading you loud and clear.

00 07 29	CC	Roger. You're on Bermuda relay, and you're coming in real sweet and everything looks perfect here.
00 07 33	P	Roger. Looks mighty good here. Booster is really in sight.
00 07 37	CC	Very good. What color is she?
00 07 39	P	*Silver. Silvery as can be with a white frosty band right around the middle.
00 07 45	CC	Roger. Understand.
00 07 53	CC	Faith Seven, this is Cape. Your 1-Alpha (contingency recovery area retrosequence) time is nominal.
00 07 57	P	Roger. Thank you.
00 08 05	P	Yaw shows up very well.
00 08 07	CC	Roger. Are you ready to copy (recovery area) 2-1 (retrosequence) time?
00 08 10	P	Negative. Standby and let me get on auto here.
00 08 35	P	Going to auto control.
00 08 37	CC	Roger. How is she hitting in auto?
00 08 39	P	Roger. No quiver at all on the rates. I'm in auto. She seems to be holding so far.
00 08 45	CC	Very good. Let me know when you're ready for 2-1.
00 08 48	P	Roger.
00 08 51	CC	Pretty nice equipment, isn't it?
00 08 54	P	Very nice.
00 09 00	CC	Faith Seven, Cape. We had a cabin (heat exchanger) dome (temperature) of 65 (degrees) at Bermuda.
00 09 08	P	Roger. I have a cabin dome of 65 (degrees) and a suit dome of about 64 (degrees).

CNV-CYI-1

00 09 13	CC	Roger.
00 09 15	P	I'm increasing flow very slightly.
00 09 17	CC	Roger. You're increasing flow slightly.
00 09 23	CC	I'll give you your 2-1 (recovery area retrosequence) time, and you can write it later. It's 01 + 27 + 52. Over.
00 09 31	P	Roger. 01 27 52.
00 09 34	CC	Roger. And (contingency recovery area) 1-Alpha (retrosequence time) is nominal. Have a good ride, boy.
00 09 38	P	Thank you, buddy.
00 10 26	P	Roger. My T_s + 314.5 lights have gone out. Squib switch to off.
		(A dome temperature warning tone occurs at 00 11 00)T
00 12 43	P	And the booster is still following me along at 12 minutes 45 seconds. It's coming down into the bottom of the window. ASCS is working nicely. It is diverging (drifting) off, to the 11 degrees - .
00 13 06	P	*Seems to be correcting properly. I have both suit and cabin dome temps on bottom peg. I'm going back to my initial setting.

*(Non-flight-related transmission omitted.)

CANARY ISLANDS

00 14 53	CC	Faith Seven. Faith Seven, this is Canary Cap Com. We have T/M solid. We would like a temperature readout, our segment is very low. That's dome temperature, Faith Seven, suit dome.
00 15 07	P	Roger, Canary Cap Com. Faith Seven reading you loud and clear. What temperatures would you like? Over.

00 15 14	CC	I would like a readout of suit (heat exchanger) dome temperature. Over.
00 15 19	P	Roger. My suit dome temp warning light is on. I have gone back to my initial suit setting. My cabin dome was on, and I have gone back to my initial setting on it. Cabin dome temperature is nominal. About 52 degrees. Suit dome is still setting down rather low. I think it is coming back up though. Over.
00 15 45	CC	*Roger. Understand. I have a message from the Cape. (Contingency recovery) Area 1-Bravo (retrosequence time) is nominal. Your apogee is 144.6 (nautical miles). You will have no problems with nighttime. Also the Cape would like a blood pressure at this time. They missed it at Bermuda. Over.
00 16 08	P	Roger. Sending you blood pressure now.
00 18 31	P	Canary Cap Com.
00 18 35	CC	This is Canary Cap Com. Have you started your T_S + 5 second check? Over.
00 18 39	P	I'm getting ready to start it right now.
00 18 43	CC	Roger.
00 19 47	CC	This is Canary Cap Com. Would you confirm your 16 millimeter camera is off? Over.
00 19 56	P	Roger. 16 millimeter camera is off.
00 19 58	CC	Roger.
00 21 12	CC	This is Canary Cap Com. Could you give us another readout on suit dome temp. We have lost T/M on that segment. Over.
00 21 20	P	Roger. Suit dome temp is slowly coming up here. It's still reading about 40 (degrees), but it's easing back up now.
00 21 31	CC	Roger.
00 21 35	CC	We are having T/M LOS. Could you give us a reading on cabin dome. It's going back down at LOS here.

CYI-KNO-1

00 21 44	P	Roger. At 50 (degrees), cabin dome.
00 21 53	CC	Faith Seven, this is Canary Cap Com. Do you read? Over.
00 21 58	P	Roger, Canary, Faith Seven. Still reading you.
00 22 11	CC	Faith Seven, this is Canary Cap Com. Do you read? Over.

KANO

00 22 16	CC	Faith Seven, this is Kano Cap Com. We have T/M solid. We request the suit dome temperature reading. We have no reading on the ground. Over.
00 22 28	P	Roger, Kano Cap Com. I have about 42 degrees. The suit dome temp is easing back up now. Over.
00 22 36	CC	Roger. You are 42 degrees.
00 22 39	P	That is affirm.
00 22 44	CC	Kano, Roger.
00 22 49	CC	Faith Seven, this is Kano Cap Com. We have an indication that your TV is still on. Will you confirm? Over.
00 22 58	P	TV is off now.
00 23 01	CC	Kano, Roger.
00 23 09	P	Thank you.
00 23 13	CC	We request a cabin dome temperature reading. Over.
00 23 21	P	Roger. Cabin dome temp is bouncing around a little. It now reads 42 (degrees). I've decreased my setting here slightly on it.
00 23 35	CC	Kano, Roger. We're reading 40 (degrees) on the ground.

00 26 46	CC	Faith Seven. Give us another cabin dome temperature, please.
00 26 50	P	Roger. Cabin dome temperature is 54 degrees.
00 26 57	CC	Please give us suit dome.
00 26 58	P	Roger. Suit dome is 40 (degrees). I have decreased my setting a little more to ease it on up. Over.
00 27 07	CC	*Thank you. What is your present setting?
00 27 10	P	Roger. I am down below my nominal setting now.
00 27 13	CC	Roger.
00 27 43	CC	Faith Seven. We had a roll scanner ignore. Are you orienting the capsule at all. Over.
00 27 49	P	Negative.
00 27 51	CC	Roger.

ZANZIBAR

00 30 47	CC	Faith Seven, Faith Seven, this is Zanzibar Cap Com. How do you read?
00 30 54	P	Roger, Zanzibar. Reading you loud and clear. Faith Seven here.
00 30 57	CC	Faith Seven. Our telemetry on the ground looks like you have a very good capsule at this time. We would like to confirm the suit dome temperature, however.
00 31 07	P	Roger. The suit dome temperature is still down low. I'm easing up on it.
00 31 12	CC	We're reading approximately 40 degrees on the ground.
00 31 15	P	Roger. I'm indicating about 42 (degrees) here and I have decreased my setting. It should be coming up momentarily.

ZZB-1

00 31 27	CC	Could you give me auto fuel, manual fuel, and oxygen reaadings?
00 31 32	P	Roger. Auto is still 101 (percent). Manual is 102 (percent). Oxygen is 196 (percent) on primary and 100 (percent) on secondary.
00 31 44	CC	Roger.
00 32 20	CC	Faith Seven, Zanzibar Cap Com.
00 32 24	P	Go ahead, Zanzibar.
00 32 25	CC	*We just had a report from the Cape. Based on Smithsonian 2, you have approximately 20 over 25 orbits. This gives you approximately 3 times as much on more conservative estimates.
00 32 45	P	Roger. I understand I have at least 25 then. Is that affirm?
00 32 51	CC	Faith Seven. Zanzibar Cap Com.
00 32 55	P	Go ahead, Zanzibar. Faith Seven.
00 32 58	CC	Have you confirmed your T_s + 5 check, and that the TV is off?
00 33 03	P	That is affirm. TV is off. I have confirmed my T_s + 5 second check.
00 33 10	CC	Roger.
00 33 26	CC	Faith Seven, Zanzibar Cap Com.
00 33 28	P	Go ahead Zanzibar, Faith Seven.
00 33 31	CC	We've had a slight rise on both cabin and suit dome temperature.
00 33 39	P	Roger. I have a cabin (heat exchanger) dome (temperature) up to 60 (degrees). Suit (heat exchanger) dome is still about 42 (degrees). Over.
00 33 45	CC	Cabin dome 60 (degrees). Suit dome temp 42 (degrees).

00 33 48	P	That's affirm.
00 33 51	CC	Roger. You received (contigency recovery area) that 1-B (retrosequence time) was nominal. Is that correct?
00 33 52	P	Roger. Understand it is nominal.
00 33 56	CC	Okay, do you have anything else for this time for us?
00 34 02	P	Negative. Not this trip, I don't believe.
00 34 05	CC	Please repeat.
00 34 07	P	Negative. Not this time.
00 34 09	CC	Roger. We'll leave you alone then.
00 34 11	P	Roger. Thank you.
00 36 46	CC	Zanzibar Cap Com. Do you read?
00 36 48	P	Roger.
00 36 50	CC	Negative. We had a small problem on T/M on the ground. What is your ASCS bus reading?
00 36 59	P	ASCS bus reading 121 (volts).
00 37 02	CC	We confirm. We had a small T/M problem.
00 37 05	P	Roger.
00 37 06	CC	Zanzibar, out.
00 37 30	CC	Faith Seven, Zanzibar Cap Com. How about giving me a suit and dome right now. It'll be LOS time.
00 37 36	P	Roger. Suit dome is about 45 degrees. Cabin dome is about 61 degrees.
00 37 43	CC	Roger. Thank you very much. See you next time.
00 37 46	P	Roger. Will do.
00 38 35	P	Okay. I finally have my dome temps - fairly good

ZZB-1

	P (cont'd)	handle on them. I have about 62 (degrees) on the cabin dome. I have approximately 45 (degrees) on the suit dome. These temperatures have taken a setting of 2.0 (comfort control valve setting) on the suit and about 3.8 (comfort control valve setting) on the cabin. I have checked my control systems out. Manual proportional is operational. It is very sloppy compared to fly-by-wire low. - The sun is very hot coming in the window. I have the sun directly in the window. I have from fairly midway through the launch. Lost it at the top of the trajectory. And then picked it up again when I yawed back around to orbit attitude.
00 39 50	P	My cabin pressure has slowly dropped to the advertised value of 5.2 (psia) and appears to be holding. My suit dome has dropped down again now to about 42 (degrees) and seems to be oscillating about this point area. Body temperature is good, not quite as cool as I would prefer, but good. My suit inlet temperature indicates 60 degrees however, so the sun is probably the biggest factor heating me up. I have drunk some water.
00 40 56	P	Time for my short status report. My N_2 low pressures, auto is 475 (psi), manual is about 480 (psi). B-nut temperatures. Retro temp 60 degrees. Pitch down 85 (degrees), pitch up 84 (degrees). Yaw left 78 (degrees), yaw right 89 (degrees). Roll counterclockwise 90 (degrees), roll clockwise 90 (degrees).
00 41 57	P	Peroxide reserve tank temperature 68 (degrees). Peroxide manual tank temp 69 (degrees). Peroxide auto fuel tank temp - is 72 (degrees).
00 42 30	P	Isolated bus voltage is 28 (volts).
00 43 22	P	*First night side and I have a bright blue band. A thick diffused band of blue color. A bright blue band. The sun is spread out very widely. It's setting now. And there it goes. A very bright blue band all the way around the earth.

00 44 03	P	Captured another washer. That's my second one.
00 45 16	P	*I believe I have the dome temps somewhat under control now. - My face plate is open. - Cabin air is indicating 100 degrees. - Suit inlet temp is 60 degrees. - Dome temperature has stabilized pretty well. - There is a very pronounced band - a bright blue band around the earth. ASCS is holding attitude very well on this night side.
		*(Non-flight-related transmission omitted.)
00 47 14	P	Taking my pilot light out, NOW (00 47 15)[T] - very good.
00 47 43	P	Turning my warning lights to off - to dim.
00 47 58	P	And I have the haze layer, that Wally was talking about. I can see the stars down in it. But it is - up and around the earth - to a number of degrees. It is several degrees thick, perhaps 12 to 15 degrees thick. I can see the stars above it, I can see the stars down in it.
00 48 35	P	*I have seen several lightning flashes on the earth, now. I see them on the earth, now.
00 49 19	P	*Water squeezers are working.
00 49 53	P	Closing my face plate.
00 50 05	P	And there is Orion, Betelguese. What a beautiful night tonight.

MUCHEA

00 51 02	CC	Faith Seven, Faith Seven, Muchea Cap Com. Over.
00 51 06	P	Roger, Muchea Cap Com, Faith Seven.
00 51 10	CC	Roger. Reading you loud and clear.
00 51 11	P	Roger. Likewise here. How are things down there?
00 51 12	CC	Very fine, very fine.

MUC-1

00 51 16	P	Roger.
00 51 21	P	You appear to be having a little lightning and thunderstorms down there.
00 51 26	CC	Looks clear from here.
00 51 29	P	Roger. Back out to the west of you there are some.
00 51 33	CC	Aeromed is standing by for your blood pressure.
00 51 41	P	Roger. Blood pressure coming now.
00 52 01	CC	Faith Seven. How does your cabin dome and suit dome temp look now.
00 52 17	P	Roger. I was waiting until the blood pressure got finished there.
00 52 25	CC	How does your suit and cabin (heat exchanger) dome (temperature) look now?
00 52 26	P	*Roger. My cabin dome and suit dome have been fluctuating somewhat.
00 52 36	CC	Standby for emergency voice check.
00 52 38	P	Roger.
00 52 45	CC	This is Muchea Cap Com, transmitting on emergency voice for a short count. 1, 2, 3, 4, 5, 5, 4, 3, 2, 1. Do you copy?
00 52 58	P	Roger, Muchea Cap Com. Reading you loud and clear on emergency voice.
00 53 02	CC	Roger.
00 53 07	P	Roger. On these dome temps, I have decreased my setting again. And my cabin dome is running about 48 degrees. My suit dome is back on the bottom, 40 degrees now. I've decreased it, it should be coming back up momentarily.
00 53 25	CC	Roger. Standby for an astro alarm check.

00 53 31	P	Roger.
00 53 34	CC	Command is on the way. (Command tone occurs at 00 53 35)^{T}
00 53 36	P	Roger. I have retro reset light and the tone.
00 53 40	CC	Roger.
00 53 56	CC	Faith Seven, would you give me a reading on your cabin temperature please.
00 54 00	P	Roger. Cabin temperature is running 100 degrees.
00 54 04	CC	Roger.
00 54 12	CC	Faith Seven. Perth has their lights on tonight, you might look for them and see if they're visible.
00 54 19	P	Roger.
00 54 21	CC	They should be just slightly off to the right of your flight path.
00 54 27	P	Roger. I'll watch for them.
00 54 28	CC	Roger.
00 55 03	P	Roger. I have the lights of Perth in sight. Loud and clear.
00 55 08	CC	Roger, Faith Seven. People here will be glad to hear that.
00 55 11	P	Roger. Looks good.
00 55 23	P	Looks like the refinery down to the south is burning again too.
00 55 27	CC	*That's affirmative.
00 55 29	P	Roger. I can see that separately.
00 55 32	CC	Cape Flight would like to know how your ASCS is working now after selecting gyro slave.
00 55 37	P	Roger. ASCS appears to be operating as advertised. Over.

00 55 42	CC	Roger.
00 55 52	CC	This is Muchea Cap Com. We have about 1 minute to LOS.
00 55 56	P	Roger.
00 56 47	CC	Faith Seven, Muchea Cap Com. Could you give us your (comfort) control valve setting?
00 56 57	P	Roger. I'll give you my heat exchanger dome temps here.
00 57 00	CC	Roger.
00 57 03	P	Roger. I'm reading 52 degrees on cabin dome, and I'm reading 40 degrees on suit. I have decreased suit again, slightly. And it should be coming up again.
00 57 15	CC	Roger.
00 58 45	P	*This haze layer. I'm describing as light in color. It's a white haze, does not appear to have any color at all to it.
01 04 08	P	I now have the suit coolant valve set to 1.5, cabin valve set to launch mark, about 3.6, and cabin (dome temperature) reads 50 degrees and suit (dome temperature) is coming up slowly, now reads about 45 degrees. Suit inlet temp is about 58 degrees.
01 05 18	P	There is considerable cloud cover over the earth now. This haze layer is still up above that. I can see a dark hazy sky above the earth, and then this haze layer appears to be sitting - several degrees, it's hard to estimate the number of degrees above the earth. The stars are in the background. The stars are above this haze layer, and they're quite clear, of course, above it.
01 06 07	P	Long status report. B-nut temperature. Pitch down is 90 (degrees), pitch up is 85 (degrees). Yaw left is 82 (degrees), yaw right is 95 (degrees). Roll counterclockwise is 92 (degrees),

	P (cont'd)	roll clockwise is 92 (degrees). Cabin outlet 40 degrees. 250 inverter 110 degrees, 150 inverter 112 degrees. - Standby inverter 90 (degrees). - Cabin temperature 102 degrees. Suit temp 58 degrees. Heat exchanger dome temps, cabin is now 50 (degrees). Suit is now 46 (degrees).
01 08 04	P	I'm reading 18 amps on current. Main bus reads 24 (volts), isolated (bus) 28 (volts), number one battery 24 (volts), number two battery 24 (volts), number three battery 24 (volts), standby (battery) one 25 (volts), standby (battery) two 25 (volts), isolated (battery) 28 (volts).
01 08 36	P	I'm now opening my face plate, - to take an oral temp.

CANTON

01 10 02	CC	Faith Seven, this is Canton Cap Com. Over.
01 10 14	CC	Faith Seven, we have a valid body temp.
01 10 18	P	Roger, I'll talk to you then. Ha, ha! Faith Seven here, reading you loud and clear.
01 10 24	CC	Roger. Would you give me a readout on your cabin heat exchanger dome temp, please.
01 10 31	P	*Roger, standby one second. Roger. Cabin heat exchanger dome temperature is 50 degrees, suit heat exchanger dome temp is 45 degrees. The suit inlet temperature is 58 degrees and cabin outlet temperature is about 40 degrees.
01 11 03	CC	Understand 43.
01 11 05	P	40.
01 11 07	CC	40.
01 11 35	CC	Seven, Canton.
01 11 37	P	Go ahead Canton, Faith Seven.
01 11 41	CC	(Recovery) area 2-1 retrosequence time 14 32 03. Over.

CTN-1

01 11 49	P	14 32 03. Roger.
01 11 52	CC	Affirmative.
01 11 54	P	Roger.
01 12 25	CC	Seven, Canton. Your c.e.t. (capsule elapsed) time on the 2-1 retrosequence time is 01 27 50. Over.
01 12 39	P	Roger. 01 27 50. That's on 2-1. Is that affirm?
01 12 45	CC	Affirmative.
01 12 47	P	Roger.
01 13 02	CC	*Seven, Canton. All readouts are in the green.
01 13 06	P	Roger, they all look green here, thank you.
01 18 01	P	*I have transferred the urine from the internal suit bag to the number one bag at this time.
01 19 27	P	Alpha and Beta Centauri.
		*(Non-flight-related transmission omitted.)
01 20 52	P	Sweet little baby.
01 21 15	P	*At this time I now have 1 hour and 21 minutes and I am observing John's fireflies drifting away from me. I can observe them, appear to be departing from the spacecraft and drifting out to the rear. I then can see some of them a considerable distance out to the rear.
01 22 02	P	The sun is coming up behind me, I'm beginning to get the glow on the clouds.
01 22 22	P	*The fireflies appear to be white, very whitish, almost a green, like real fireflies.
01 23 01	P	The clouds on the earth below are changing color, are getting quite light.
01 23 54	P	*I am now on the day side, the sun is not yet quite up and I am observing stars. The earth

	P (cont'd)	is light below me, the sun is still behind me, the sky looks dark above me, and I can see stars very distinctly.
01 24 41	P	I am decreasing cabin dome (comfort control valve setting) now to about 3.4.

GUAYMAS

01 27 13	CC	Faith Seven, Guaymas Cap Com.
01 27 16	P	Roger, Guaymas Cap Com, Faith Seven here.
01 27 19	CC	Hey, Gordo, give me your heat exchanger outlet temperatures please.
01 27 24	P	Roger. I've got 50 (degrees) on the cabin and 50 (degrees) on the suit.
01 27 31	CC	Roger. Are you comfortable?
01 27 34	P	Roger. Just slightly warmer than absolutely ideal, but well within a very comfortable range. My suit inlet temperature is 58 degrees. Over.
01 27 43	CC	Very good. Everything looks good down here. We give you a go for seven more.
01 27 48	CC	We are giving you a go for seven orbits.
01 27 51	P	Roger, for 30 how many?
01 27 55	CC	As many as you want.
01 27 56	P	Ha, ha! Roger.
01 27 58	CC	And Gemini sends you their regards.
01 28 03	P	Roger. Thank you.
01 28 08	CC	Will you give me a short report?
01 28 12	P	Roger. It's great.
01 28 19	CC	That's good enough.

01 28 22	P	It's pretty hard to describe, but it really is. I've seen the haze layer that Wally talked about, and I've seen John's fireflies, saw the lights of Perth, and it's been quite a full night. Quite impressive. Everything appears very nominal on board here.
01 28 40	CC	How was the sunrise?
01 28 42	P	Quite impressive.
01 28 49	P	Everything seems very nominal on board here.
01 28 53	CC	Excellent.
01 29 11	P	How's the fishing?

CAPE CANAVERAL

01 33 50	CC	Faith Seven, Cape Cap Com.
01 33 52	P	Roger, Cape Cap Com. Faith Seven here.
01 33 55	CC	Roger. You look real good. I'm going to send you a T/M command.
01 33 59	P	Roger.
01 34 05	CC	I will wait for your TV camera.
01 34 08	P	Roger.
01 34 14	CC	Gordo, could you give me a readout on your H_2O_2 pressures, please?
01 34 20	P	Pressure?
01 34 22	CC	Pressure.
01 34 23	P	I have 475 (psi) auto and I have ~~490~~ (psi) in manual.
01 34 29	CC	Roger. You're getting kind of chinsy on this fuel up there.
01 34 32	P	Roger. FQI (fuel quantity indicator), I'm indicating 101 (percent) on auto and 102 (percent) on manual.
01 34 41	CC	You son-of-a-gun, I haven't got anything to talk about.
01 34 42	P	Ha, Ha, Ha!
01 34 46	CC	How's your H_2O separator lights working?
01 34 51	P	Fine. They're just beating their little hearts out every 10 minutes.
01 35 00	Stony	Faith Seven, this is Stony. Maybe, maybe the FQI is stuck. Why don't you try the hammer?

CNV-2

01 35 07	P	Ha, Ha! I'll save that for later. I'm thinking of using the hammer on the dome temp, however. On the dome temp light.
01 35 20	CC	We're starting to pick a picture up now. You look pretty casual.
01 35 27	P	Oh, I am.
01 35 41	CC	Do you want to do your KK experiment over us please?
01 35 45	P	Roger. Opening the KK clamp.
01 35 52	CC	Roger.
01 36 42	P	Roger. I'm getting ready to power down.
01 36 46	CC	Roger. I would like to have you open up your TV about one stop.
01 36 51	P	Roger - Is that any better? - It's already wide open.
01 37 08	CC	Roger. I still see that fly on your nose.
01 37 13	P	Ha, Ha, Ha!
01 37 17	CC	Okay, Gordo. I guess you can shut your power down.
01 37 19	P	Roger. Going to fly-by-wire low. On fly-by-wire low.
01 37 22	CC	Roger.
01 37 30	P	Going to fly-by-wire low. Going to gyros caged - and they caged just as advertised. And ASCS a-c bus off.
01 37 50	CC	Roger. Checking volts down, and amps down.
01 37 54	P	Roger.
01 38 28	P	*Apparently the heat exchanger dome temps have stabilized pretty well now.

01 38 36	CC	Roger. It takes quite a while to get a grasp on it.
01 38 38	P	Roger.
01 38 43	CC	Before LOS, don't forget your TV camera. We're still reading you very well now.
01 38 50	P	Roger.
01 39 01	CC	The other item to check is your tape recorder on program.
01 39 05	P	Roger. Tape recorder going to program.
01 39 08	CC	You are program.
01 39 10	P	Are you still receiving the TV picture?
01 39 13	CC	That's affirm.
01 39 19	P	Roger. I'll hold. Turning it off for a moment.
01 39 21	CC	Okay.
01 39 30	P	Mode select switches to off.
01 39 33	CC	Roger. Mode off.
01 39 35	P	Manual fuel is off.
01 39 38	CC	Manual off.
01 39 44	CC	Frank (Samonski) says you can stop holding your breath any time, and use some oxygen if you'd like.
01 39 49	P	Okay. - You set such a good example, I've got to equal you here.
01 40 01	CC	Yeah, you son-of-a-gun. I'm still higher and faster but I have an idea you're gonna go farther.
01 40 09	P	Al, what is my apogee height.
01 40 15	CC	It's about 146 nautical.

CNV-2

01 40 19	P	Roger.
01 40 20	CC	You can kill your TV, Gordo.
01 40 22	P	Roger. TV off.
01 40 24	CC	Roger. - And put your C-band to ground command.
01 40 31	P	Roger. C-band's on ground command. S-band's on ground command.
01 40 37	CC	Roger.
01 40 40	P	Recorder on program, I'm leaving telemetry on continous.
01 40 50	CC	All of our monitors down here are overjoyed. Everything looks beautiful.
01 40 54	P	Very good Looks mighty good up here, too.
01 41 02	CC	There's LOS on your T/M. Bermuda may have picked up, but I don't think they'll discover anything we haven't.
01 41 09	P	Roger.
01 41 43	CC	Faith Seven. This is Sigma Seven. Do you read?
01 41 46	P	Roger. Sigma Seven, Faith Seven reading you loud and clear.
01 41 49	CC	Roger. We have no messages for you. We'll let you have some quiet time. Have a good ball.
01 41 54	P	Roger. Thank you.
01 42 03	P	Might tell Bob Graham I've found a couple of those items that we were discussing. I can see the smudge layer on the window that Wally was discussing. It looks just like road grease splashed on a car. It also has spreckledy, streakedy dots on it, smudged in with it. The smudge, the added smudges run length of the window. Closing my visor now at 01 44 38.

CANARY ISLANDS

01 48 26	CC	Faith Seven, this is Canary Cap Com. We have T/M solid, all systems look green. Over.
01 48 35	P	Roger, Canary Cap Com. I'm turning TV on here for you.
01 48 41	CC	Roger.
01 48 45	P	All systems are green here.
01 48 48	CC	Roger. Your (contingency recovery area) 2-Bravo (retrosequence) time is nominal.
01 48 52	P	Roger. Nominal, thank you.
01 50 19	CC	Faith Seven, this is Canary Cap Com. We're having T/M LOS. Turn off your TV. Over.
01 50 26	P	TV control to off.
01 50 28	CC	Roger.
01 50 38	P	Drifting now, I was upside down in roll attitude. Just passed over Canaries. Everything appears nominal.
01 51 09	P	I'm now receiving a Z and R Cal apparently from program.
01 52 22	P	*Coming in over the coast of Africa. It's very clear here, no clouds, no haze. I'm drifting through an ideal location here. I'll try and snap off the 16 millimeter. Just took a 16 millimeter, blurb coming over the Atlas Mountains in Africa. Coming over the coast. It's very dry, very clear over Africa. I'm drifting window down, ideal attitude. I'm now increasing my suit flow by just a hair. I'm opening my visor now. Cabin still appears drier than the suit. Apparently suit is running a little moist, although it doesn't feel it at all.

	P (cont'd)	Had six or seven large sips of water from the drinking water container. I have put a little liquid into this little experimental ball and find that the liquid adheres to the surface just near as good as it should. Try a little bit more later. on here.

KANO

01 55 02	CC	Kano, has solid T/M.
01 55 09	P	Roger, Kano, Faith Seven. Everything's nominal here.
01 55 14	CC	Faith Seven, this is Kano Cap Com. Everything looks nominal on the ground. Have a good trip.
01 55 19	P	Roger. Thank you very much.
02 00 36	P	*At two hours recording light is on, so I'll slip something on the tape. All systems appear nominal. My . . . cabin dome temp is 48 degrees, suit dome temp is about 56 degrees. Oxygen is still on the top peg on both systems. So is the fuel. Cabin temp 98 (degrees) . ... 2 hours and 3 minutes, . . . 2 hours and 4 minutes. MARK (Unreadable)T. Rate indicators are on, I am drifting at this point, I have left roll rate of about half a degree/sec. I have a pitch down rate of about one quarter of a degree/sec and a right yaw rate of about one half of a degree, and relatively constant. They're all considerably different than nominal. I don't feel that it's worth going into all the settings. I think the cabin dome temp is the important thing.

ZANZIBAR

02 05 20	CC	Faith Seven, Zanzibar Cap Com.

02 05 23	P	Roger, Zanzibar. Faith Seven reading you loud and clear.
02 05 26	CC	Reading you loud and clear, also. I have your(contingency recovery area) 2-B (retrosequence) time. It is nominal. Do you need it?
02 05 34	P	Negative, I have it. Understand nominal.
02 05 37	CC	That is affirmative. Would you give me a readout of your cabin heat exchanger dome temperature?
02 05 45	P	Roger. It is sitting on 40 (degrees). It has just gone down here, it's bobbing around, and I am decreasing my flow to it.
02 05 54	CC	Roger.
02 06 02	CC	Can you give me fuel and oxygen readouts, please?
02 06 06	P	Roger. I am still indicating 101 percent on auto, 102 percent on manual. I'm reading 196 percent on primary oxygen, and 100 percent on secondary. Over.
02 06 22	CC	Roger.
02 06 28	CC	How do you feel about this heat situation?
02 06 34	P	What, the heat exchanger?
02 06 35	CC	No, how is your comfort?
02 06 38	P	Roger. My comfort is good.
02 06 43	CC	Your comfort is good.
02 06 44	P	That's affirmative.
02 06 54	P	My cabin heat exchanger (dome temperature) is easing back up now to about 42 (degrees). Slowly coming back up.
02 07 00	CC	Roger.

ZZB-2

02 07 02	P	I have about 42 (degrees) and it's coming back up slowly now.
02 07 05	CC	Roger.
02 07 07	P	. . . dome temp.
02 07 08	CC	T/M confirms all your systems go. Your clock is in sync.
02 07 14	P	Roger.
02 07 23	CC	T/M indicates you are getting a rise in your cabin (heat exchanger) dome temperature, also.
02 07 29	P	Roger.
02 09 12	CC	Faith Seven, Zanzibar Cap Com.
02 09 14	P	Roger, Zanzibar. Go ahead.
02 09 16	CC	We've had another increase in cabin heat exchanger dome temperature. It's now 48 degrees on the ground.
02 09 23	P	Roger. I agree.
02 09 25	CC	Roger.
02 09 32	CC	What is your dome setting - the handle setting at the present time?
02 09 42	P	Nominal. I don't feel that it's worth going into all the settings. I think the dome, the cabin (heat exchanger) dome temps are the important things.
02 09 49	CC	Roger. You're getting weak and fading. I'll sign off and see you later.
02 09 53	P	Roger.
02 14 12	P	The time is 02 14 15. People wonder if it's hard to sleep up here, I just drifted off for about 3 or 4 minutes on a quick little nap. Sleep here just like you do anywhere else. Status report. Nitrogen low pressure,

P (cont'd) auto source 494, manual 490. FQI (fuel quantity indicator) 101 (percent) on auto, 102 (percent) on manual. [illegible] temps [illegible] down 95 (degrees), pitch [illegible] left 82, yaw right 98 (degrees), roll counterclockwise 95 (degrees), [illegible] clockwise 95 (degrees). Reserve tank 75 (degrees), manual tank 70 (degrees), auto tank 78 (degrees). (Isolated) bus voltage 28-1/2.

02 21 41 P I am now drifting on the night side. I have the moon in sight, I'm upside down, I'm observing lightning flashes from considerable size thunder storms that are below me. These create static in the radio every time the lightning flashes down there.

MUCHEA

02 24 13 CC Faith Seven, Muchea Cap Com. Over.

02 24 18 P Roger, Muchea Cap Com. Faith Seven.

02 24 21 CC Roger. Reading you loud and clear. Aeromed requests that you give him a mark when you begin your exercise and a mark when you stop your exercise. Over.

02 24 30 P Roger. Will do.

02 24 34 CC I have (recovery) area 3-1 retrosequence time. 02 58 05. Do you copy?

02 24 46 P 02 58 05. Is that affirm?

02 24 48 CC That's affirmative.

02 24 55 P Roger. I'll be sending a blood pressure in just one second.

02 24 58 CC Roger.

02 25 43 CC Faith Seven. Systems reports that your suit (heat exchanger) dome temp is decreasing rather rapidly. Would you check that, please?

MUC-2

02 25 51	P	*Roger. I'll just decrease the flow on both cabin and suit here.
02 25 57	CC	Roger. We confirm here.
02 26 08	P	Roger. I'm getting the exerciser now.
02 26 28	P	Starting the exercise.
02 26 55	P	Ending the exercise now.
02 26 57	CC	Roger.
02 27 01	P	Sending blood pressure now.
02 27 03	CC	Roger.
02 27 14	CC	We're reading your cabin heat (exchanger) dome temp at 44 (degrees) now.
02 27 19	P	Roger. I concur. 44 (degrees) on cabin and about 47 (degrees) on suit.
02 27 24	CC	Roger. We concur here.
02 27 44	P	How does your Med like those blood pressures?
02 27 50	CC	Standby. - They report they look very normal.
02 28 01	P	Roger.
02 28 25	CC	Could you give me a cabin air temp reading?
02 28 28	P	Roger. Cabin air temp is 98 degrees.
02 28 31	CC	Roger. 98.
02 28 33	P	Roger.
02 29 24	CC	Do you have the Perth lights in sight?
02 29 30	P	One moment, let me get my cabin lights down.
02 29 42	P	Negative, I'm upside down. I can't see them.
02 29 45	CC	Roger.
02 30 18	CC	We have approximately 1 minute to LOS.

02 30 22	P	Roger.
02 30 25	P	Tell Warren not to get lost out in the Outback.
02 30 29	CC	We almost got lost last Sunday.
02 30 31	P	Ha, Ha!
02 30 33	?	Astro, most of the boys have joined tennis clubs here.
02 30 36	P	Roger. This is more fun than tennis.
02 34 35	P	Long status report. ..... temperature. - Let's see, first, retro 60 (degrees). Pitch down 95 (degrees), pitch up 82 (degrees). Yaw left 80 (degrees), yaw right 95 (degrees). Roll counterclockwise 92 (degrees), roll clockwise 92 (degrees). 250 inverter 102 (degrees), 150 inverter 118 (degrees), standby inverter 98 (degrees). Cabin temperature 98 (degrees). Suit inlet temperature 60 (degrees). Heat exchanger dome temperatures, cabin 50 (degrees), suit 48 (degrees). Just then decreased flow and is coming back up. Main d-c bus 24 volts, isolated (bus) 28 (volts), current 8 amps. It is 02 36 40, Milky Way is quite distinct. - Now looking at the False Cross. Upside down drifting flight at the moment.
02 39 38	P	*And I have the constellation of Sagittarius in sight. Nunki right there. There's the moon directly in the top of my window.

CANTON

02 43 39	CC	Faith Seven, Canton Cap Com. All systems look green on the ground. We're standing by.
02 43 45	P	Roger, Canton. All systems look green here, thank you.
02 47 39	CC	Faith Seven, Canton.

CIN-HAW-2

02 47 41	P	. . . Canton, Faith Seven.
02 47 47	CC	Seven, (contingency recovery area) 3-Alpha (retrosequence time) is nominal.
02 47 50	P	Roger, (contingency recovery area) 3-Alpha (retrosequence time is) nominal, thank you.
02 48 33	P	The time is 02 48 35 NOW (02 48 36)T. Regulated pressure source on fuel, 475 (psi) auto, 490 (psi) on manual. Fuel, FQ: 101 percent on auto, 102 percent on manual. Cabin dome temp 50 (degrees), suit dome temp 50 (degrees), cabin temp 95 (degrees), suit inlet temp 60 (degrees), cabin pressure holding at 5 psi. - Main bus 24-1/2 (volts). I'm using 8 amps current.
02 49 53	P	Sunrise - and the sun is in behind me, moving to the rear of me. With Saturn along by it. - And I'm getting John's fireflies again, coming off the spacecraft. And you could almost align yaw by the fireflies. They drift away to the rear of the spacecraft along to the rearward of the flight path.
02 50 32	P	Sunrise is coming in.
02 51 38	P	There's a coating of frost on the next to outside layer of window, - which I believe seems to be burning off as the sun hits the window.

HAWAII

02 51 44	CC	Faith Seven, Faith Seven, Hawaii Cap Com. How do you read?
02 51 48	P	Roger, Hawaii Cap Com. Reading you loud and clear.
02 51 52	CC	Roger. Everything looks good on the ground. Your suit (heat exchanger) dome (temperature) is 54 degrees. Aloha from Hawaii.

02 52 00	P	Roger. Aloha to you, too. Everything appears to be normal here.
02 52 04	CC	Roger. We're standing by.
02 52 07	P	Roger. Thank you.
02 53 37	P	And after having entered the day side, I've drifted around where I'm looking towards the black sky. I have seen a star again, and I've been observing the fireflies drifting away.
02 58 01	P	I'm in bright daylight now, at 2 hours 58 minutes - I'm upside down, I still have, oh, about 1/2 degree per second roll rate, - very, very, very light, almost 1/2 degree yaw, and pitch is oscillating between 1/4 and 1/2 (degrees), close to the rate of roll.

CALIFORNIA

02 59 55	CC	Faith Seven, Faith Seven, this is California Cap Com.
03 00 00	P	. . .
03 00 01	CC	Faith Seven, Faith Seven. All systems here are green. You look real good here on the ground. Over.
03 00 21	P	. . .
03 00 48	CC	Faith Seven, Faith Seven. This is California, gotcha here, and you look real good all over on the board. The medics give you a clean bill of health. They would like to know if you just feel comfortable. Over.
03 01 01	P	Roger. I do feel comfortable, very comfortable. In fact, I had a little nap.
03 01 06	CC	Roger. We have a little news here from an old friend of yours, like Major Dick Shankle. Would you like to say hello?

CAL-2

03 01 14	P	Hello, Dick.
03 01 18	CC	I'll pass that on, Gordo.
03 01 20	P	Roger.
03 01 56	CC	Faith Seven, we see you have powered up your ASCS, and also, I believe you are scheduled for tape recorder continuous.
03 02 06	P	Roger.
03 02 22	P	Roger. Tape recorder is on continuous.
03 02 25	CC	Roger. Your clocks look real good here, in sync. No problems that we see.
03 02 27	P	I'm on fly-by-wire low.
03 02 30	CC	We see.
03 02 31	P	Roger.
03 02 32	CC	California standing by.
03 02 34	P	Roger. I'm aligning the spacecraft, very slowly, to go to auto. Coming in over the coastline now, it's very clear, looks like very good weather down there with clouds standing off shore.
03 02 54	CC	Ha, Ha! Roger.
03 02 55	P	I see the islands off shore.
03 03 44	CC	Attitudes look really good on the ground. You must have her aligned real good.
03 03 48	P	Roger.
03 04 00	CC	Oh, wait a minute. Your gyros are still caged, aren't they?
03 04 03	P	That's affirm.
03 04 11	SY	Cabin heat exchanger outlet temperature.

03 04 13	CC	Systems requests a cabin outlet heat exchanger temperature.
03 04 19	P	Roger, cabin heat exchanger outlet is about 48 degrees. I've decreased the flow very slightly a few minutes ago and it should be easing on up.
03 04 25	CC	Roger. 48 (degrees) and you've decreased the setting.
03 05 54	P	Okay. I'm just about in attitude here, getting ready to uncage the gyros.
03 07 19	P	I am on auto orbit.

CAPE CANAVERAL

03 07 32	CC	Faith Seven, Cape Cap Com.
03 07 35	P	Roger, Cape Cap Com, Faith Seven.
03 07 38	CC	Roger. Read you loud and a little garbled.
03 07 42	P	Roger.
03 07 44	CC	Like to send you a T/M command, Gordo.
03 07 46	P	Roger. Go ahead.
03 07 54	CC	I have about 3 requests from you, cabin temperature?
03 07 59	P	Roger. Cabin temp is 92 degrees.
03 08 03	CC	Read 92.
03 08 05	P	Roger.
03 08 07	CC	Have you had any results on your KK clamp release?
03 08 11	P	Negative. I could not see any flow at all on it, so I clamped it off as planned.
03 08 18	CC	Roger, would you give us a readout of your cabin dome?
03 08 21	P	Roger. Cabin dome (temperature) is about 46 (degrees). I have increased the flow slightly on it. Suit is 50 (degrees).
03 08 30	CC	Roger.
03 08 33	P	I mean I have decreased the flow on cabin.
03 08 41	CC	I'd like to give you a time back, if you will.
03 08 43	P	Roger.
03 08 45	CC	Give you an elapsed time first at 50 seconds,

	CC (Con't)	that will be 3 hours, 8 minutes, 50. 2, 1, MARK. (03 08 52)T
03 08 53	P	Roger. I'm one second fast.
03 09 02	CC	Roger, 1 second fast.
03 09 03	P	I am on auto orbit.
03 09 06	CC	Roger. Getting into attitude. Your attitude looks good here.
03 09 14	P	*Roger. I've got my gyros aligned very easily and went on auto, and the auto appears to be a little bit slow to move it into the smaller gates but it's working very nicely.
03 09 30	CC	Good.
03 09 34	P	TV camera coming on now.
03 09 39	CC	I'll give you a G.M.t. back in a few seconds.
03 09 42	P	Roger.
03 09 43	CC	16 hours and 14 minutes. 2, 1, MARK. (03 09 48)T
03 09 54	P	Roger. What was that, 14 minutes?
03 09 56	CC	That's 16 hours, 14 minutes, 00 seconds.
03 09 59	P	Roger. On my standby clock I am about 10 seconds slow on that.
03 10 11	CC	Is this your G.m.t. clock?
03 10 15	P	Roger. Both of them - no on the wrist watches - both of my wrist watches are together, however, they are a little slow. I have 14 30 NOW. (03 10 31)T
03 10 34	CC	Say again Faith Seven.
03 10 35	P	Never mind I'll catch you later.

CNV-3

03 10 38	CC	Okay.
03 11 01	CC	Faith Seven, Cap Com.
03 11 04	P	Go ahead Cap Com, Faith Seven.
03 11 05	CC	I have (Recovery area) 3-2 (retrosequence) time if you're ready to copy.
03 11 09	P	All right, just a moment.
03 11 27	P	Go.
03 11 32	CC	Faith Seven this is Cape Cap Com. We have had four R and Z Cals. Request you turn your R and Z Cal switch off.
03 11 39	P	Roger.
03 11 49	P	Go ahead on the 3-2 (recovery area retro-sequence) time.
03 11 59	P	Cape Cap Com. Faith Seven ready to copy 3-2 time.
03 12 29	CC	Faith Seven, Cape Cap Com.
03 12 33	P	Roger Cape, go ahead.
03 12 34	CC	Did you copy my 3-2, I did not read you.
03 12 37	P	Negative, I didn't copy it.
03 12 39	CC	Roger. It's 04 hours + 08 minutes + 10 seconds.
03 12 46	P	Roger. 04 08 10.
03 12 50	CC	That's correct.
03 13 15	CC	Faith Seven. Your scanners and attitudes agree very nicely. Over.
03 13 27	CC	Faith Seven, Cape Cap Com, you can turn T7 off.

03 13 32	P	Roger. I already have it off.
03 13 43	CC	Faith Seven, Cape Cap Com.
03 13 47	P	Go ahead Cape, Faith Seven.
03 13 49	CC	Are your tower sep lights and cap sep lights out?
03 13 52	P	Affirm.
03 13 54	CC	Roger.
03 13 56	P	They went out at 314.5.
03 14 00	CC	Roger. They should have been. We just had a T/M, and we wondered why.
03 14 02	P	Roger.
03 14 03	CC	No problem on these at all.
03 25 06	P	*I am on fly-by wire, have armed the squib, pitching up very, very slowly, and will deploy the flashing light at the -20 degree point. - Flashing light is deployed. I'm marking the tape. Deploy light off. Squib is off. - Gyros are caged, free to caged - Roger - and ASCS a-c bus off. NOW. (03 26 28)^{T} Stick is now cold.
03 27 01	CC	. . . Cape Cap Com. Do you read? Over. . . . - Do you read? Over. -
Unreadable	CC	Faith Seven . . . on relay. Do you read? Over.
Unreadable	CC	Faith Seven . . . do you read?
03 28 15	P	*ASCS inverter 110 (degrees), when I powered it down. - Sitting at 90 degrees yaw right now, it is easy to determine that the angle is very large, so far as telling to a high degree of accuracy, in a short time, but I am yawing around to observe the flashing light on the night side - is very easy to

	P (con'd)	determine that, it is about 90 degrees yaw, now. I'm getting directly away from the sun now, observing the night side coming on. With the window head on, I can see the demarcation line between the sun and the light side and the dark side. Light blue above the earth, and a band of blue above the earth that fades in the dark side. Observing fireflys, taking off now. And there's a very, very distinct demarcation now.
03 37 17	P	At this point I have no way of knowing what my yaw is. Left cabin light only, with the red filter . . .
03 51 29	P	*I still have not observed the flashing light. I have Sagittarius right in the middle of the window. It is directly on my 80 degree yaw . . .

MUCHEA

03 58 33	CC	Faith Seven, Muchea Cap Com.
03 58 37	P	Go ahead, Muchea, Faith Seven.
03 58 39	CC	Roger. Will you confirm that your squib switch is off?
03 58 49	P	Affirm. Squib switch is off.
03 58 52	CC	Roger. (Contingency recovery) Area 4-A retrosequence time is nominal.
03 59 00	P	Roger. Thank you.
03 59 05	CC	Aeromeds are standing by for your blood pressure.
03 59 08	P	Roger. Sending it now.
03 59 13	CC	Roger.

03 59 16	CC	Did the beacon deploy?
03 59 20	P	Affirmative. I'm still trying to find it out here in the dark.
03 59 25	CC	You haven't seen the light. Is this true?
03 59 28	P	Negative. I still haven't found it. - Still looking, though.
03 59 37	CC	Roger.
04 00 34	P	Everything is nominal on this trip Michea. I don't believe anything went wrong at all.
04 00 38	CC	Roger. Understand. - T/M reports you green here.
04 00 46	P	Roger.
04 00 49	CC	Aeromed the same.
04 00 52	P	Roger. Thank you.
04 01 17	CC	Faith Seven. How do you know that the beacon has deployed?
04 01 22	P	I felt it deploy.
04 01 24	CC	Roger.
04 01 27	P	I don't know which deployed the fastest, me or it.
04 01 28	CC	Ha, Ha, Ha! Roger.
04 01 51	P	I am directly on my 180 (degree) yaw, and with the moon in the upper left hand corner of the window.
04 02 00	CC	Say again Faith Seven.
04 02 02	P	. . . 180 degrees, and still haven't seen it.
04 02 05	CC	Would you say again your attitudes.

MUC-HAW-3

04 02 07	P	Roger. I'm zero roll, about -34 degree pitch, and yaw at 180 degrees. Small end forward.
04 02 17	CC	Roger, and you still haven't found the light?
04 02 20	P	Negative, still haven't found it.
04 04 08	CC	Faith Seven, Muchea Cap Com. We're approaching LOS. You found the light yet?
04 04 14	P	Negative. Not yet.
04 05 49	P	I am now yawed 180 degrees, 0 (degrees) roll, I have a very slight roll attitude into the right. The moon is in the upper left hand corner of the window - the - directly on my 180 degree path I'm not able to see the flashing light. I am observing the haze layer again that Wally described. - At this time I am still looking for the light. I'm observing lightning flashes on the ground, down on earth that is. Considerable cloud cover. - Venus and Jupiter in the left hand part of the window.
04 15 00	P	I should still be right on track, on the 180 degree yaw. Still no flashing light. - And I'm beginning to get the brilliant blue of sun rising in the East. Bright blue band, underneath all this haze layer. I can see the haze layer. And the bright band of light demarcation coming underneath it. Quite distinctive. - There's a faint greenish tint to it where there are clouds apparently.

HAWAII

Unreadable	CC	Faith Seven, Faith Seven, this is Hawaii.
04 16 39	P	Roger, Hawaii. Faith Seven reading you

	P (con'd)	loud and clear. Roger. Understand.
Unreadable	CC	Roger. Is your C-Band beacon in a continuous position?
Unreadable	P	Negative. I have it on ground command. I'll bring it to continuous, now.
Unreadable	CC	Roger. On my mark will you switch your TV control switch to T/M, and readout your fuel and O_2 quantities?
Unreadable	P	Roger. Will do.
04 17 28	P	Roger. I am just small end forward. 180 degree yaw, approaching sunrise. Over.
Unreadable	CC (CNV)	Faith, Faith Seven, this is Cape Cap Com on Hawaii transfer for check. How do you read me, over.
Unreadable	P	Roger. Reading you loud and clear, Cape Cap Com.
Unreadable	CC (CNC)	Roger, Gordo. Pretty long talk-line here.
Unreadable	P	Your're right.
Unreadable	CC	Stanby for my mark. MARK 04 23 35. Switch your TV control switch to T/M.
Unreadable	P	. . . now going over TV transmitter.
Unreadable	CC	Roger.
Unreadable	P	Roger. These small particles drift away from you, small end forward. In this light they appear brilliant white, without green at all in them. They appear to move on out, and around back toward the flight path.
Unreadable	CC	We're standing by for your readout of fuel and O_2.

HAW-CAL-3

Unreadable	P	Roger. My auto fuel I have 96 percent, on manual I have 102 percent. On oxygen I have 90 percent on primary, and 100 percent on secondary.
Unreadable	CC	Roger. We understand. We also have a message from the Cape, It's possible that you only felt the squib blow and not the beacon deploy. Is there any way that you might check this?
04 24 31	P	Not from in here, I don't think.
04 24 34	CC	Roger, you haven't seen the Beacon at this time.
04 24 37	P	Negative. I still haven't seen the Beacon.
04 24 40	CC	Check.
04 24 46	P	There was considerable noise, though, as if something were departing.
04 24 50	CC	Say again, Seven.
04 24 52	P	*There was considerable noise, which sounded like those doors blowing open so I assume the Beacon has departed.
04 24 58	CC	Roger. Understand.
04 24 06	CC	T/M looks real good on the ground.
04 25 08	P	Roger.

CALIFORNIA

04 33 15	CC	Faith Seven, this is California Cap Com. Over.
04 33 18	P	Roger, California. Faith Seven.
04 33 21	CC	Roger, Faith Seven. Systems and Medics are go here.

04 33 26	P	Roger. My data (flight plan) put my telemack to normal (switch position) . . .
04 33 35	CC	Roger. Just, just standby a second until systems finish marking the meters.
04 33 45	P	. . .
Unreadable	CC	All right, at my mark then would you switch. I'll start a countdown then. - 9, 8, 7, 6, 5, 4, 3, 2, 1, MARK.
Unreadable	P	Roger. . . .
Unreadable	CC	Okay. You confirm TV control switch to off?
Unreadable	P	Roger. TV control is off.
04 34 33	CC	We had a slight decrease in the two links on d-c current. Would you give us a readout?
04 34 41	P	Roger. D-c current, the main bus is 24 (volts), isolated (bus) 28-1/2 (volts).
04 34 50	CC	Roger.
04 35 32	CC	California standing by.
04 35 35	P	Roger.
Unreadable	P	. . . can see all up and down the California coast, here . . . very clear.
04 36 29	CC	Roger.
04 36 43	CC	I seem to have a little discrepancy between c.e.t. and g.e.t. Your're two seconds fast according to my clock.
04 36 59	P	. . . I'll give you a mark . . . 4 37.
Unreadable	CC	Roger.
Unreadable	P	2, 1, MARK (Unreadable)^{T}

04 37 04	CC	Right. The ground shows that your readout there is confirmed with ground. However, it is two seconds fast from our g.e.t.
Unreadable	P	Roger.

CAPE CANAVERAL

04 40 04	CC	Faith Seven, Cape Cap Com.
04 40 08	P	Roger, Cape Cap Com. Faith Seven.
04 40 24	P	Roger, Cape Cap Com. Faith Seven here.
04 40 27	CC	Faith Seven. Cape Cap Com. Would you turn on your TV immediately?
04 40 32	P	Roger. Will do.
04 40 38	P	Faith Seven passing just about over Houston now.
04 40 45	CC	And would you program R and Z Cal to auto.
04 40 53	P	Roger. TV coming on now. R and Z Cal programmer coming to auto.
04 41 01	CC	Understand TV on, R and Z Cal to auto.
04 41 13	CC	Seven, from Cape. Could you give us your best coolant valve settings, please.
04 41 22	P	Roger. Standby one minute.
04 41 42	P	Roger. I'm below the nominal on the suit, I'm using about the 1-3/4 on suit.
04 41 54	CC	That's 1-3/4 on suit.
04 41 55	P	Roger, and using about 3.0 on the cabin.
04 42 01	CC	Understand 3.2 on the cabin.
04 42 06	CC	Give you (recovery area) 4-1 retro time. 05 43 41.

04 42 14	P	Roger, 43 41.
04 42 16	CC	Roger.
04 42 22	CC	Have you consumed any water, up to this point?
04 42 26	P	Roger. - I'm also giving the doctors their first space sample. For the Electro-Chancellor System, that is.
04 42 43	CC	Roger. We understand. We may send up another one, we understand you're full.
04 42 49	P	Roger, who are you sending up with it?
04 42 59	CC	Seven, Cap Com. We'd like a cabin temp, cabin heat exchange outlet temp, and 3 H_2O_2 tank temps.
04 43 14	P	Roger. Cabin outlet is 42 degrees.
04 43 22	CC	Roger.
04 43 24	P	Peroxide auto tank is 80 degrees. Manual tank is 70 degrees. Reserve tank is 75 degrees. What else do you want?
04 43 40	CC	Like to know about the cabin air.
04 43 44	P	Roger. Cabin air temp is 90 degrees.
04 43 48	CC	Understand, 90 degrees.
04 43 52	CC	Gordo, this is Wally. Did you have anything to eat?
04 43 54	P	Negative, not yet. - I'm planning to shortly, here, though.
04 44 02	CC	Roger. For your information, systems' last computations on fuel at Hawaii give 88 (percent) auto, 98 (percent) manual, which is somewhat better than you're indicating on board.

CNV-4

04 44 17	P	Roger. On board I'm indicating 96 and 102.
04 44 38	P	Oh boy, what a beautiful shot of Florida.
04 44 44	CC	Roger. Looks good from here once in awhile too.
04 44 46	P	*Roger. The whole state is clear. I can see just about all of it. Its been a beautiful view coming over Florida.
04 44 55	P	. . . looks very good.
04 45 01	CC	Roger.
04 45 05	P	. . .
04 45 12	CC	Roger, Faith Seven.
04 45 34	CC	Faith Seven, this is Cape Cap Com. We are very impressed with the work you're doing.
04 45 42	P	Thank you.
04 45 47	CC	We lay a pat on the back from Walt Williams.
04 45 52	P	Thank you.
05 05 03	P	Now on 180 (degrees) yaw - I got here on manual proportional control. I'm at, last daylight, going into dark. Have been looking for the flashing Beacon. 05 05 18 NOW, (05 05 17)^{T} 28, I'm sorry, not 18. - This light in sight, it is below me. It is quite a brownish, reddish brown and considerable altitude above the ground. Every time I fire a pitch down thruster, I get a shower of these little fireflies. The light is flashing now. It is the light. It's quite bright, quite discernable . . . 1, 2, 3, 4, 5, 6, 7, rate. It appears to be about, it appears to be about 10 to 12 miles away. I'm keeping it directly in the window. About the order of a second magnitude star, NOW. (05 11 34)^{T} - Light is still in sight, directly in the center of the window. In the background I can

	P (con'd)	make out a lot of - cumulcus activitie faced of course to the easterly direction, at 180 degrees yaw.
05 13 40	P	*The Milky Way is quite distinct. I can see, it out the window. The Milky Way is quite distinctive. It's right in the center of the window. Quite noticeable. 05 16 35 NOW. (05 16 35)^{T} Light is still in sight. Moved off from it and then moved back using it for visual, to see if I could pick it up. I am able to pick it up. . . . thunderstorms all in under it at the moment. It is quite distinctive. 05 18 05 NOW. (05 18 05)^{T} Status report. Retro temperature 62 (degrees). Pitch down is 82 (degrees), pitch up is 72 (degrees). Yaw left 75 (degrees), yaw right 90 (degrees). Roll counterclockwise 92 (degrees), clockwise 90 (degrees). Main inverter temp 98 (degrees), fans inverter temp 120 (degrees), standby inverter 98 (degrees). The squeezers are working again as advertised. Okay, the cabin and suit temperature. The cabin air is 90 (degrees), suit inlet temp is 61 (degrees). Heat exchange dome temperatures, cabin 56 (degrees), suit 56 (degrees). D-c bus 24 (volts), isolated bus 28 (volts), and reading 7 amps, current.
05 34 58	P	*5 hours and 34 minutes, now it's 35 minutes MARK. (05 35 10)^{T} - Am drifting now. Do have the light in sight at the moment, apparently right on track. I see Antares on up ahead of me, which indicates that I am on the 180 degree drift point. See Corona Australis and, saw Sagittarius with Nunki apparently. - 5 hours 39 minutes 30 seconds, MARK. (05 39 31)^{T}
05 39 36	P	Have the little flashing light, still in sight, out ahead of me. About the order of a first magnitude star, now. It's not very discernable . . . due to the flashes. However, it can be picked up. It appears like it's at around 13, 13 to 14 miles.

HAWAII

05 41 38	?	(Unintelligible foreign, garbled transmission recorded here.)
05 51 15	P	. . . there.
05 51 44	CC	Hello, this is Hawaii transmitting on air to ground relay. Do you read?
05 58 35	CC	Faith Seven, Faith Seven, Hawaii Cap Com. Over.
05 58 52	P	Roger, Hawaii Cap Com. Faith Seven, here. Over.
05 58 56	CC	Roger, Faith Seven. May we have an oral temperature, at this time and also a readout of fuel and O_2 quantities.
05 59 03	P	Roger. . . .
05 59 06	CC	Roger. It looks good down here. Reading 100 (degrees).
05 59 11	P	Roger.
05 59 19	CC	Standing by for a fuel and O_2 quantity.
05 59 24	P	Roger. Auto fuel 94 percent, manual fuel 102 percent. Oxygen primary about 89 percent, secondary 100 percent.
05 59 43	CC	Roger. Are you, are you in drifting flight?
05 59 47	P	That's affirm. I'm in drifting flight.
05 59 50	CC	Roger. Retrosequence time for (contingency) recovery) area 5-A is nominal.
05 59 55	P	Roger. 5-A is nominal. Thank you.
06 00 17	CC	Seven. Cape has just advised you have enough time for 92 orbits.
06 00 27	CC	Hawaii standing by.

06 00 30	P	Roger.
06 00 50	CC	Seven, this is Hawaii. Have you seen the beacon yet?
06 00 54	P	Affirm. I was with the little rascal all night, last night.
06 00 58	CC	Roger. Very good.
06 01 01	P	I tracked it the first part of the night, and then went into drifting flight and then picked it up the last part of the night again. Over.
06 01 07	CC	Very good.

CALIFORNIA

06 05 55	CC	Faith Seven, this is California Cap Com.
06 05 59	P	Roger, California Cap Com. Faith Seven here.
06 06 02	CC	Roger. Systems and Aeromedics give you a go here, and I'd like to check position on your C-Band switch.
06 06 24	P	Roger. C-Band is on continuous. Over.
06 06 28	CC	Read you. That's continuous?
06 06 29	P	That's affirmative.
06 06 39	CC	Would you please change your S, C-Band beacon switch to ground command.
06 06 43	P	Roger. Going to ground command.
06 06 48	CC	On your schedule, for a B.P. (blood pressure) over this station.
06 06 52	P	Roger. You ready?
06 06 55	CC	We are. Roger.

06 08 31	CC	Aeromeds said they received the B.P. and would you turn it off.
06 08 35	P	Roger will do.
06 08 37	CC	Would you give me a reading on your cabin PO_2 pressure?
06 08 42	P	Roger. Partial pressure of oxygen is about 4.4 (psi).
06 08 46	CC	Roger. Thank you.
06 09 35	CC	Five Baker, Five Charlie, and five . . . (Contingency recovery area retrosequence times) are nominal.
06 09 40	P	Roger, thank you.
06 10 14	CC	. . .
06 10 19	P	Roger.
06 10 26	P	Roger. Go ahead
06 10 30	CC	- +17 + 09.
06 10 35	P	Roger. 07 17 09.
06 10 38	CC	Affirm.

CAPE CANAVERAL

06 14 40	CC	Faith Seven, Cape Cap Com. Do you read, over.
06 14 45	P	Roger, Cape Cap Com. Faith Seven, here.
06 14 53	CC	Faith Seven, Cape Cap Com. Over.
06 14 56	P	Roger, Cape Cap Com. Faith Seven, here.
06 15 01	CC	Faith Seven, Cape Cap Com. Over.
06 15 05	P	Roger, Cape Cap Com. Faith Seven reading you loud and clear.

06 15 09	CC	Faith Seven, Cape Cap Com. Over.
06 15 17	P	Roger, Cape. Faith Seven is reading you loud and clear. How me? Over.
06 15 21	CC	Roger, Gordo. Read you same. Assume you have TV on. Are you looking out the window?
06 15 25	P	Affirmative.
06 15 28	CC	Can just see horizon line, sort of interesting.
06 15 38	CC	Gordo, how did the manual control check work out?
06 15 45	P	Worked out fine.
06 15 46	CC	Very good. You're looking beautiful on fuel.
06 15 49	P	Roger.
06 15 50	CC	Environment tells us that you are using about 4 percent oxygen per hour, indicated. Over.
06 15 59	P	Roger. It looks that way here.
06 16 04	CC	Well this is a computation that will show later on. This is as much as you're using. This is 4 percent of your 200 percent.
06 16 10	P	Roger.
06 16 12	CC	We'd like to have a brief rundown on the acquisition of the beacon if you acquired. And an idea of about what distance away, you would guess that it was.
06 16 22	P	Roger. When last I saw it, in the last orbit, looked like it was about 12 to 13 miles away. I first thought that it looked like it was about 8 or 10 miles away. And at the last it was getting.

	P (con'd)	fairly dim, about the order of a 4th or 5th magnitude star.
06 16 43	CC	Roger.
06 16 46	P	When I first . . . looked like a magnitude star.
06 16 51	P	There's Florida, should . . .
06 16 54	CC	Roger. We're getting a pretty good picture on this, this time.
06 16 56	P	Roger.
06 16 58	CC	I'd say your f stop is ideal.
06 17 09	CC	Gordo, how did you initially acquire the beacon? Did it just come in your field of view?
06 17 14	P	Roger . . .
06 17 21	CC	Roger, understand.
06 17 23	P	There it was.
06 17 27	CC	That was during the night side of this last orbit. Is that correct?
06 17 37	CC	Faith Seven, Cape Cap Com.
06 17 40	P	Go ahead Cape.
06 17 41	CC	You acquired it during the night side of this past orbit. Was that correct?
06 17 44	P	It's affirmative. Just at night.
06 17 47	CC	You can see it only at night.
06 17 49	P	I acquired it just as it got dark, right.
06 17 52	CC	Very good.
06 17 53	P	It was just getting dark when I acquired it. It was shining, there was still sunlight

	P (con'd)	and I could see it shining before I could see it flash, so apparently it had some light reflected off of it.
06 18 04	CC	Roger. Understand.
06 18 30	P	Roger. Turning off (TV) camera now.
06 18 39	P	Go ahead Cape.
06 18 43	P	Go ahead Cape, Faith Seven.
06 18 52	P	Roger, Cape. Faith Seven reading you loud and clear.
06 25 40	P	At 6 hours and 22 minutes I turned off the cabin coolant and the cabin fan. Now I'm preparing to eat a little bite. The sandwiches that I am looking at here are pretty crumbly, lot of crumbs floating all over in the bag that they're in. I may not open them.
06 32 23	P	*I just had 2 pieces of Brownie and nut, small cakes and just now eating bacon. Will drink some water following this.
06 35 15	P	I have just drunk 6 or 7 large sips of water from the McDonnell drinky drink.
06 54 31	P	*And it's 6 hours, 54 minutes, 37 seconds NOW. (06 54 38)T I have the flashing light in sight again. Extremely weak, very, very weak. Actually, just barely discernable. I would estimate it to be somewhere in order of 18 to 20 miles away. The moon is out, and the water is very, very bright, below. It's quite a lovely moonlight night.
07 03 39	P	Right on the flight plan, there's our old friend Delphinus. I am drinking water at 07 08 00, very fine. Took 7 or 8 large swallows from the McDonnell tank.
Unreadable	CC	. . .

CNV-5

07 18 09	P	*I was just called by CSQ and informed that Cape desired to leave C-Band beacon off.
Unreadable	CC	. . .
Unreadable	P	Short report. Nitrogen low pressure auto. 475 (psi) manual 4 . . . B-nut. Pitch down is 80 (degrees), pitch up 70 (degrees). Yaw left is 72 (degrees), yaw right is 75 (degrees). Roll counterclockwise is 78 (degrees), roll clockwise is 75 (degrees). And auto tank temp 79 (degrees), manual tank 71 (degrees), reserve tank 75 (degrees). - Isolated bus voltage 28.

HAWAII

Unreadable	CC	Hello Faith Seven. Faith Seven, Hawaii Cap Com. Do you read?
Unreadable	P	Roger, Hawaii Cap Com. Loud and clear.
07 31 50	CC	Roger. Faith Seven, this is Hawaii Cap Com. For your information, - all your experiments should be on time, you have two tenths cloud coverage for the light experiment. Your electrical power usage has been below expected. (contingency recovery) Area 6-A (retrosequence time) is nominal. Standby to copy (recovery area) 6-1 (retrosequence) time, 08 50 17. Did you copy?
07 32 08	P	08 50 17, for 6-1.
07 32 13	CC	Roger, and 6-Bravo is also nominal. Will you turn your beacons to ground command at this time and give me a readout on your fuel and oxygen quantities, also your peroxide reducer (regulated) pressure, auto and manual. Over.
07 32 34	P	Roger. Say again on the beacon. What do you want on them?
07 32 39	CC	Roger. Will you put your beacons to ground command at this time?
07 32 43	P	Roger. Beacons are on ground command. Peroxide regulated pressure 475 (psi) on auto, 490 (psi) on manual, . . . O_2 percent on manual, oxygen is 191 percent on primary, and 100 (percent on secondary).
07 33 12	CC	Roger, give me your fuel again please, Gordo.
07 33 15	P	Fuel is auto 90 (percent), manual 102 (percent).
07 33 24	CC	Roger. We've copied all. Did you turn your T/M on for CSQ? Over.
07 33 39	P	. . .

HAW-5

07 33 42	CC	Say again, Gordo.
07 33 44	P	Negative, I did not turn my T/M on for CSQ.
07 33 48	CC	Roger. They did report getting a short burst. Will you please leave T/M off for all periods, greater than 30 minutes, no contact with ground stations.
07 33 52	P	Roger.
07 34 15	CC	Faith Seven, Hawaii Cap Com. Do you read?
07 34 17	P	Roger, Hawaii.
07 34 19	CC	Roger. I have (recovery area) 7-1 and 8-1 (retrosequence) times. Do you read?
07 34 23	P	Roger. Go.
07 34 25	CC	7-1 is 10 23 33. 8-1 time is 11 56 24. Did you copy?
07 34 37	P	Roger. 7-1 is 10 23 33, 8-1 is 11 56 and what was the second?
07 34 46	CC	24.
07 34 48	P	24, Roger.
07 34 49	CC	Roger. You're looking fine on the ground, Gordo.
07 34 53	P	Roger. Thank you. I saw the flashing beacon again last night.
07 34 58	CC	Roger. I understand you saw it throughout?
07 35 00	P	I saw the flashing beacon again last night.
07 35 04	CC	Roger. Understand.
07 40 22	P	*In auto orbit. I'm pumping the condensate tank out. And will open the KK clamp. Two strokes, both syringes full. - third full syringe full. Four syringes full. Five syringes full.

CALIFORNIA

07 40 52	CC	Faith Seven, this is California Cap Com.
07 40 55	P	Roger California. Faith Seven here.
07 40 58	CC	Roger. Faith Seven. Schedule for B.P., exercise, and a B.P.'s. (Blood pressures).
07 41 03	P	Okay, you ready?
07 41 04	CC	Roger.
07 41 06	P	Understand.
07 41 09	CC	Same exercise as Muchea is requested by the Medics.
07 41 13	P	Roger.
07 41 59	P	Here comes the exercise.
07 42 12	P	Starting exercise now.

GUAYMAS

07 42 28	CC	Faith Seven, Guaymas Cap Com.
07 42 29	P	Roger Guaymas.
07 42 32	CC	Roger Gordo. Have a little information to pass on to you.
07 42 36	P	Roger. Let me get my exerciser stored back in here.
07 42 39	CC	Roger. You through?
07 42 40	P	Blood pressure coming now, CAL.
07 42 53	P	Roger. I'm through with this.
07 42 56	CC	Roger. We would like to remind you to - pump out your condensate and turn on your water wick at about 8 hours.

07 43 04	P	Roger.
07 43 06	CC	And would you give us oral temperature over CSQ. Start taking your temperature at about, elapsed time of at about 08 45.
07 43 18	P	Roger. Over CSQ. Is that affirm?
07 43 20	CC	Roger. We want to get one over CSQ.
07 43 25	P	Roger.
07 43 26	CC	And the Cape would like to remind you to keep your T/M turned off when you're out of contact with stations. They're trying to - keep a close track of the power you've used.
07 43 35	P	Roger.
07 43 39	CC	And you can turn off your blood pressure now.
07 43 51	CC	Did you read that, Gordo?
07 43 53	P	Roger.
07 43 58	P	You said turn off the blood pressure. Right?
07 44 00	CC	Roger. And you can power up your ASCS bus anytime.
07 44 03	P	Roger. Standby.
07 44 14	P	Roger. Powered up. 120 volts.
07 44 19	CC	Roger, we can - you're okay down here.
07 44 26	P	Okay.
07 45 51	CC	Gordo, have you cut anything off? We get, just got a drop in current.
07 45 57	P	Negative.
07 45 58	CC	Roger.
07 46 03	P	I have ASCS a-c bus powered up. It draws more current when it starts, I suppose.
07 46 09	CC	Roger, I guess that's it.

PASS 6

07 59 04	P	*Scanners are not working very rapidly. Spacecraft is yawed to the left very, very, except in yaw is, all right I mean. Correction, is rolled to the left about 10 degrees and the gyros read okay. Here comes some correction in now. They're beginning to correct. And this syringe full is about full. There is a lot of air in it, this is the last one I'll take out.
08 00 47	P	I'll add it on to all the others, I believe that's 5-1/2. Took 10 large swallows of water. And I am now opening the Kenney Kleinknecht clamp.
08 16 09	P	*Peroxide reserve tank is 72 degrees. Peroxide manual tank 70 degrees, peroxide auto is 78 degrees. Cabin outlet is 66 (degrees). 250 inverter is 105 (degrees), 150 inverter is 120 (degrees), standby inverter is 95 (degrees). Oxygen, 90 and 100 (percent). Fuel, 86 and 102 (percent) . . . Here I have the light in sight, in the top portion of my window. Extinctometer reading I got was - not any good there, blocking out by the top part of the window. . . . I did observe the ground light, it's quite bright.
08 23 25	P	Very recognizable in the little town, a little horseshoe shaped town was quite distinctive, it was right beside it.
Unreadable	P	*Now in auto reentry. Gyros going to slave. I got there in fly-by-wire low, to 0, 0, 0 (degrees), selected auto reentry and have now, put the gyros to slave.
08 26 15	P	*Manual pitch plane precession was a little too great, as the gyros are torquing a little bit of negative pitch in here now, to correct for the pitch torquing . . . overage. The damn desk is unusable, it's too far down on the lap. And it will not lock down. My legs are in the way at zero g. Can not bring it down to lock down.

08 35 35	P	*There seems to be some difficulty with the number two urine collection bag. It's very difficult to pump more than the 1-1/2 syringe fulls that I got into it. And I hear a hissing back behind me, so I suspect there is too much pressure on it, and I am going to cease on this one.
08 44 29	P	Auto reentry. I see when each one of the thrusters fires, the little fireflies come out of the thrusters and drift away to the rear. Some of them impinging on the spacecraft but depart later. - The auto reentry (ASCS reentry attitude mode) portion of the auto mode is holding within plus or minus, within a 11-1/2 degree band. That is, it appears to be slightly more sloppy than ASCS, orbit. However, this may not be true, ASCS orbit is not very fine control either. But it is controlling it, fairly well.

COASTAL SENTRY QUEBEC

08 52 13	P	. . .
08 52 16	CC	Roger. We're not getting T/M very good here, do you have T/M on? Over.
08 52 21	P	Roger.
08 52 22	CC	Roger. He has T/M on.
08 52 26	CC	Do you have TV on, Gordo? Over.
08 52 28	P	Negative.
08 52 30	CC	Roger.
08 52 31	P	TV coming on now.
08 52 33	CC	Roger.
08 52 37	CC	Are you ready to copy retro times? Over.
08 52 39	P	Roger. Go.

08 52 41	CC	Roger. (Contingency recovery area) 7-A (retrosequence time) is 09 + 11 + 42 and 7-B is 09 + 40 + 19. Over.
08 52 56	P	Roger. . . .
08 53 06	CC	This is CSQ. I didn't get your read-back on that. Over.
08 53 30	CC	Faith Seven, CSQ. Cape wants a cabin air temp readout, please. Over.
08 54 00	CC	This is CSQ, Faith Seven. We're reading you very weak, barely readable. Repeat cabin air temp please. Over.
09 00 20	P	Now I am getting ready to release the balloon. I have tape on continuous, I'm on fly-by-wire low, going to 3 zeros. - Camera is in place in the mount, and really is in the way of the yaw indicators. And I am on 3 zeros, squib switch to arm, 16 millimeter camera on, going to extend, hold for 5 seconds, 1, 2, 3, 4, 5, off.
09 01 26	P	Squib off. Pitching slowly down, very, very slowly, going down - very slowly. I did not hear the balloon deploy. Perhaps you cannot hear it deploy, I don't know. - Easing down ever so slowly. - And I don't see the balloon anywhere yet. - And I'm doing a rather sloppy job of flying now, trying to look for the balloon

HAWAII

09 04 21	CC	Hello Faith, Faith Seven. Hawaii Cap Com. Do you read?
09 04 23	P	Roger. Faith Seven here.
09 04 26	CC	Roger. Gordo, reading you 3 by 3. We need a fuel, and oxygen and cabin air temperature readouts please.

09 04 34	P	Roger. Cabin air 90 (degrees). Fuel is 86 percent (auto), 102 percent (manual). Oxygen is 190 and 100 (percent).
09 04 46	CC	Roger, copied. Are you ready to begin your balloon experiment at this time? Over.
09 04 52	P	I have already tried to deploy the balloon at 9 hours. The balloon did not deploy.
09 05 01	CC	Roger. Understand you tried to deploy the balloon at 9 hours elapsed, and it did not deploy. Is that correct?
09 05 08	P	This is affirm.
09 05 11	CC	Roger. Have you had any food and water yet?
09 05 14	P	Roger. I have had food and water.
09 05 16	CC	Roger. Would you care to comment on the ground light experiment?
09 05 20	P	Roger. I saw the ground light experiment.
09 05 24	P	*Would you ask Cape if they would like me to try deploying this balloon again? Over.
09 05 30	CC	Roger. They are monitoring you, you will get an answer from them shortly. What's your control mode, your gyro switch position, and your status?
09 05 40	P	Roger. My status is go, my control mode is fly-by-wire low, gyros are on slave.
09 05 51	CC	And your gyro switch position please?
09 05 54	P	Gyro switch position is slave. Over.
09 06 01	CC	Roger.
09 06 05	CC	*Faith Seven, Hawaii Cap Com. Cape advises that you try to deploy the balloon again, and would yougive us a mark when you throw the switch. Over.

09 06 08	P	Roger.
09 06 17	P	Roger.
09 06 27	P	Roger, 16 mm camera is on.
09 06 33	CC	Roger, Gordo. Is your squib switch on?
09 06 35	P	Not yet. It will be before I try again, though.
09 06 38	CC	Roger. Just give us a countdown.
09 06 41	P	Roger. Squib is coming on NOW. (09 06 44)^{T}
09 06 45	CC	*Roger. Understand squib switch is on now.
09 06 56	P	5, 4, 3, 2, 1 (09 07 05)^{T} - No joy.
09 07 06	CC	Roger. Understand the balloon still does not deploy.
09 07 13	P	Squib switch is off.
09 07 16	CC	Roger. Understand squib switch is off. Hawaii standing by.
09 07 57	CC	Faith Seven. Hawaii Cap Com.
09 07 58	P	Go ahead, Hawaii.
09 07 59	CC	Roger. What's your status with respect to cabin temp and suit temp? Do you feel hot?
09 08 06	P	Roger. Cabin temp is 90 (degrees), suit temp is 61 (degrees).
09 08 11	CC	Okay. And you feel okay, not too hot?
09 08 12	P	Roger. Feel fine.
09 08 15	CC	Sounds fine, you look fine. Have a good flight.
09 08 17	P	Roger, thank you.
09 10 04	P	*The balloon did not deploy, felt no shock, hear nothing on it. I will go continuous this portion where the balloon normally would have

	P (cont'd)	been used, in auto reentry. I will go around in auto orbit mode. Perhaps I can snap a few pictures for the ground people.
09 11 18	P	*. . . Bingo - I shifted into auto, orbit mode. I got no thrusters on the shift. - And scanners seem to be holding it relatively close.
09 18 40	P	*What do you know? The Kenney Kleinknecht experiment is putting water in the exhaust tube. So maybe it is working here.
09 21 31	P	Short status report. . . . air outlet 68 degrees. 250 inverter 120 (degrees), 150 inverter 128 (degrees), standby inverter 102 (degrees). Reserve peroxide tank 71 (degrees), manual peroxide tank 69 (degrees), auto peroxide tank 78 (degrees). (Retropack) is 61 (degrees). Pitch down 52 (degrees), pitch up 55 (degrees). Yaw left 68 (degrees), yaw right 68 (degrees). Roll counterclockwise 85 (degrees), roll clockwise 82 (degrees). Regulated low nitrogen pressure 475 (psi) auto, 490 (psi) manual. Isolated bus 28 volts.
09 27 08	P	. . . going to pump the rest of that urine into the number 2 tank. First . . . sample. I believe it is pumping correctly. The thing about this pumping under zero g is not good, tends to stand in the pipes, and you have to actually forceably force it through.
09 40 20	P	Radiation experiment on at 09 39.
09 50 25	P	Radiation experiment coming off, NOW (09 50 29)^{T}.

ZANZIBAR

10 00 09	P	- O_2 primary is 79 percent.
10 00 18	CC	Reconfirm that please?
10 00 19	P	Roger. Just a hair short of 80 percent. Over.
10 00 24	CC	O_2 primary?

10 00 27	P	O_2 primary. That's coming in at 180 percent. Over.
10 00 33	CC	Affirmative.
10 00 35	P	It's that Frank Samonski gage. And the secondary is 100 percent.
10 00 41	CC	Affirmative.
10 00 47	CC	Faith Seven this is Zanzibar Cap Com. At this time, you are go for 17 (passes). You are go for 17.
10 01 00	P	Roger. Thank you, Zanzibar.
10 01 04	CC	MCC advises that they do not want you to jettison your balloon. They are working on an alternate method for releasing the balloon.
10 01 17	P	Roger. Understand. I will not jettison.
10 01 20	CC	Roger.
10 01 29	CC	Faith Seven. Zanzibar Cap Com.
10 01 30	P	Go ahead.
10 01 31	CC	I have new (retrosequence) times for (recovery area) 7-1. Are you ready to copy?
10 01 35	P	Roger. Go.
10 01 37	CC	Your G.m.t. or C. -, do you want G.m or C.?
10 01 42	P	C.e.t.
10 01 47	CC	C.e.t. is 10 23 37 C.e.t. Do you read?
10 02 01	P	Roger. 10 23 37. Understand.
10 02 05	CC	That takes into account the 5 seconds error in your clock.
10 02 09	P	Roger. Thank you.
10 02 16	CC	Faith Seven, Zanzibar Cap Com. Check your cabin (heat exchanger) dome temperature.

CONFIDENTIAL

10 02 23	P	Roger. Cabin dome temperature is 70 degrees.
10 02 28	CC	We confirm on the ground.
10 02 29	P	Roger.
10 02 39	CC	Can you give us a PO_2 cabin?
10 02 42	P	Roger. PO_2 cabin is about 4.4 psi.
10 02 51	CC	4.4?
10 02 54	P	Roger.
10 03 31	CC	Faith Seven, Zanzibar Cap Com.
10 03 34	P	Roger. Go.
10 03 37	CC	Everything looks good here.
10 03 39	P	Roger. Thank you very much. Everything looks good here.
10 03 42	CC	Okay, Zanzibar out.
10 03 44	P	Roger.
10 04 07	P	*Putting my visor back now. I've had to keep increasing the suit flow, from a (comfort control valve) setting of 1.5 that I have right now to a setting of about 2.7. Dome is about 58 degrees. Inlet temp is 58 degrees. - This increase in the suit water flow is probably required by the cabin going on up. The heat load in the cabin is gradually going on up, using powered up, and having a cabin fan and cabin coolant turned off.
10 18 23	P	At a (comfort control valve) setting of 3 on the heat exchanger.

COASTAL SENTRY QUEBEC

10 24 57	CC	Hello Faith Seven, CSQ Cap Com. Over.
10 25 01	P	Roger, John. Faith Seven here.
10 25 03	CC	Faith Seven, CSQ. Cape advises you could go ahead and power down here, over our site if you like. Over.
10 25 11	P	Roger. Will do. You have any kind of a reproduction device down there?
10 25 16	CC	No, we're not, Gordo. We're not getting a dog-gone thing on that, don't know what's wrong with it. You are transmitting, is that affirm?
10 25 23	P	Roger.
10 25 25	CC	Nope. We're not getting any TV at the moment.
10 25 28	P	Okay. . . .
10 25 39	CC	Negative. The boys here tell me we're not getting any carrier on it at the moment.
10 25 47	P	Roger.
10 25 59	CC	This is CSQ Cap Com, Gordo. You're going ahead and powering down, is that affirmative?
10 26 07	P	That is affirm. I'm going to fly-by-wire now . . .
10 26 10	CC	Roger.
10 26 21	P	Roger. Auto is off.
10 26 24	CC	Roger. Auto off.
10 26 32	P	Gyros are caged.
10 26 34	CC	Roger. Gyros caged.
10 26 40	P	ASCS a-c bus off.
10 26 43	CC	Roger.

10 26 54	P	The highest my 250 inverter got up to was 130 degrees.
10 26 59	CC	Roger. Understand 250 only got up to 130, is that affirm?
10 27 03	P	Roger.
10 27 30	CC	Roger. We're dropping you.
10 27 40	CC	Gordo, the Surgeon wants to know if you're sweating any at the moment. Over.
10 27 46	P	Very lightly, not very much.
10 27 49	CC	Roger.
Unreadable	P	*. . . At roughly 10 hours and 27 minutes, brought auto ASCS control to select. Lights are off. Caged the gyros. Have ASCS a-c bus. At the time the 250 inverter was reading 130 degrees the highest it had been. The cabin was 96 degrees, the highest it has been. The cabin already is coming down, it's 91 degrees, already.

HAWAII

10 37 27	CC	Hello Faith Seven, Hawaii Cap Com. Do you read?
10 37 45	CC	Faith Seven, Hawaii Cap Com. How do you read?
10 37 52	P	. . .
10 37 55	CC	Roger, Faith Seven. Reading you 3 by 4. Will you turn your tape recorder to program at this time.
10 38 05	P	Roger. It is on program. Over.
10 38 08	CC	Roger. R and Z Cal to auto.
10 38 12	P	R and Z Cal is in auto.

10 38 13	CC	And C-Band beacon to ground command now.
10 38 17	P	C-Band to ground command now.
10 38 19	CC	Roger. We're standing by for a blood pressure and a fuel and oxygen readout.
10 38 24	P	Roger. Fuel 81 (percent) auto, 101 (percent) manual. Oxygen is 175 percent primary, 100 percent secondary. Cabin temp 90 degrees. Here comes blood pressure.
10 38 44	CC	Roger. Understand blood pressure is on the air. Say again cabin temp.
10 38 48	P	Cabin temp is 90 degrees.
10 38 51	CC	Roger. Read 90.
10 39 12	CC	Faith Seven, Hawaii Cap Com. Turn your C-band beacon on at this time. Over.
10 39 18	P	Roger. Coming on now.
Unreadable	CC	Roger, your (contingency recovery area) 8-Alpha and 8-Bravo (retrosequence) times are nominal.
10 39 25	P	Roger. 8-Alpha and Bravo are nominal.
10 39 30	CC	T/M is commanded. Standby.
Unreadable	CC	Roger, Faith Seven, Hawaii Cap Com. Commanding T/M on at this time.
10 39 56	P	I have it on continuous. You want it on ground command?
10 39 59	CC	Negative, that's fine.
10 40 05	P	Okay.
10 40 18	CC	Faith Seven, Hawaii Cap Com. Turn your T/M to ground command.
10 40 23	P	Roger. Going to ground command now.
10 40 29	P	On ground command.

10 40 35	CC	Roger.
10 41 03	?	. . . Cooper, can you come in on emergency frequency. Come up on 11176. Hickam out.
10 41 35	CC	Faith Seven, Hawaii Cap Com. Your mode, and gyro switch position please.
10 41 40	P	Roger. Roger. ASCS control on select. Mode select off. Fly-by-wire thrust select low. Pitch torquing on. Gyros to cage, and pitch attitude on orbit.
10 41 53	CC	Hawaii. Roger.
10 42 29	CC	T/M commanded on this time. Faith Seven.
10 42 33	P	Roger.
10 43 14	CC	Faith Seven, Hawaii Cap Com. We're receiving R Cal at this time. Will you make sure you have your C-band beacon to ground command before AOS. Over.
10 43 24	P	Roger, will do.
10 43 41	P	C-band beacon coming to ground command now.
10 43 44	CC	Roger. Understand C-band, ground command now.
10 49 34	P	Took some pictures out of the window with the remainder of the first roll of film on the 16 mm. The color film camera in the bracket.
10 50 18	P	*Low nitrogen pressure in 475 (psi) auto, 490 (psi) manual. B-nut temps. Pitch down 86 (degrees), pitch up 65 (degrees). Yaw left 66 (degrees), yaw right 70 (degrees). Roll counterclockwise 98 (degrees), roll clockwise 92 (degrees). - Auto peroxide tank 82 (degrees), manual peroxide tank 68 (degrees), reserve peroxide tank 76 (degrees).
10 51 18	P	Isolated bus 28 volts. And I am pulling 6 amps, right now.

11 16 18	P	Tape (and radiation) experiment is now on. I'm eating a pot roast of beef. I've had considerable difficulty getting the water in it from this water device on the McDonnell water tank. I spilled water all over my hands, and all over the cockpit here trying to get some in it. I have succeeded in getting about half of it dampened and am proceeding to eat.
11 19 20	P	I am washing my face with a damp cloth now. Certainly feels good.
11 22 30	P	(Forcing grunt) This is ridiculous. Come out of that damned ditty bag - Pandora's locker.
11 28 31	P	Radiation experiment is off. Tape recorder to program.
11 31 00	P	*It is rather a strange feeling to be able to place objects out into the cabin and let go of them and they'll stay in relatively their same position. This is worrisome as well as an odd sensation. Handy sometime.

ZANZIBAR

11 33 07	CC	Faith Seven, Zanzibar Cap Com. I'd like to get a G.e.t. time hack in about 30 seconds.
11 33 15	P	Roger. - We have 11 34 30 on my mark. 5, 4, 3, 2, 1, MARK. (11 33 31)^{T}
11 33 36	P	That's 11 33 30.
11 33 38	CC	Roger.
11 33 49	CC	Faith Seven, Zanzibar Cap Com.
11 33 53	P	Go ahead.
11 33 54	CC	Your clock is now 7 seconds fast, plus 7 seconds.

ZZB-8

11 34 01	P	Roger. Understand. Plus 7 seconds.
11 34 06	CC	(Recovery area) 9-1 (retrosequence) time is 13 19 20. 13 19 20.
11 34 21	P	Roger. 13 19 20.
11 34 25	CC	If you have to set your clock you'll have to add 7 seconds to that.
11 34 30	P	Roger. Understand.
11 34 40	CC	Your T/M looks good on the ground, Faith Seven. Your T/M looks good.
11 34 45	P	Roger. Thank you.
11 34 49	CC	We'd like to have a TRF clock readout from the capsule also, please.
11 34 54	P	Roger. - Time to retrograde will be 22 23 20 on my mark. MARK. (11 35 07)T Retrograde time 33 58 26.
11 35 15	CC	We concur.
11 35 17	P	Roger.
11 35 57	CC	Faith Seven, Zanzibar Cap Com.
11 36 01	P	Go ahead.
11 36 03	CC	Everything looks real good on the ground. Cape says they have nothing else for you at this time. We'll see you next time around.
11 36 09	P	Roger, Zanzibar. Thank you.
11 49 58	P	*All right on number 2 (photograph), I've just taken (a picture, number 3) over India. And I'm just coming in over China very shortly. This is on the general purpose film in the Hasselblad.
11 51 21	P	*Photo three with the general purpose film. Here come the Himalayas. Number 4 (photograph) of the Himalayas. First three at 1/250, f/11. These are two . . . . That last one was 1/250 f/16.

COASTAL SENTRY QUEBEC

Unreadable	CC	Faith Seven.
Unreadable	CC	Hello Faith Seven, CSQ Cap Com. Over.
11 55 57	P	Roger. Faith Seven here.
11 55 58	CC	Roger. Reading you loud and clear, Gordo. Is the TV on?
Unreadable	P	Negative. I'll bring it on now. I didn't think it would work.
Unreadable	CC	Roger. Good head we didn't pick it up before here. I got your (contingency recovery area) 9-Able and Baker (retro-sequence) times for you if you're ready for them.
11 56 13	P	Roger, standby 1. - Roger. Go.
11 56 39	CC	Roger. 9-A is 12 +18 +24 and 9-B is 12 +43 +05. Over
Unreadable	P	Roger 12 18 24. 12 43 05.
Unreadable	CC	That's affirmative and Cape requests at the end of this pass you can turn your R and Z Cal switch off so it will be off for the rest period. Over.
Unreadable	P	Roger.
11 56 57	CC	There we go. We're getting a little picture on you here now, if we can get the thing adjusted a little better.
11 57 07	P	Roger. How's that?
11 57 10	CC	We're receiving a carrier on you here but we're not getting very good modulation. Just big light spots going on and off. Over.
11 57 18	P	Roger. Probably not getting too much light. Just one second, I should be getting enough earth shine off of it here to help.

11 57 25	CC	Okay, good. You upside down?
11 57 27	P	Roger.
11 57 37	CC	Is it on you?
11 57 39	P	Roger.
11 57 46	CC	Can you open the lens up a little bit on that. It's not getting enough light here.
11 57 50	P	Okay it's wide open now.
11 57 51	CC	Roger.
11 58 49	CC	You on fly-by-wire, Gordo?
11 58 52	P	Negative. I have everything powered down now.
11 58 56	CC	Roger. Just drifting. Affirm?
11 58 57	P	Roger.
11 58 58	CC	Roger.
11 59 04	P	Full drift with ASCS a-c powered down.
11 59 07	CC	Roger.
11 59 38	CC	You're sure looking good. Everything couldn't be finer on this pass.
11 59 43	P	Roger. Everything looks good here, John.
12 00 09	CC	How's cloud cover, do you have a pretty good view?
12 00 14	P	Quite a bit of cloud cover right over you here. A little bit earlier there was a pretty good open area.
12 00 23	CC	It should be interesting to look at.
12 00 26	P	Roger.
12 01 07	CC	For your info, Gordo, we're getting good reports from the monitor aircraft for later on, for retro too.

12 01 13	P	Roger. Thank you.
12 01 30	CC	Surgeon would like to know what your cabin temp is now.
12 01 33	P	Roger. Cabin temp is about 87 degrees.
12 01 37	CC	Roger, very good. You're looking fine.
12 05 58	P	*An interesting aspect of this little liquid experiment that I have along, is that the liquid remains on it in globules, hanging along the side in round globule form, and the air is trapped within it in globules, and does not separate from it.

HAWAII

12 11 40	CC	Faith Seven, Hawaii. Do you read?
12 11 46	P	Roger, Hawaii. Faith Seven reading you loud and clear.
12 11 48	CC	Roger. Reading you loud and clear. Standing by for blood pressure, fuel and oxygen.
12 11 52	P	Roger.
12 12 01	P	Blood pressure coming now.
12 12 03	CC	Roger.
12 12 09	P	Fuel is 81 percent auto, 101 percent manual. Oxygen is just about 170 percent primary, and 100 percent secondary.
12 12 30	CC	Roger, Faith Seven. Say again oxygen secondary.
12 12 33	P	100 percent.
12 12 35	CC	100, Roger. Blood pressure off at this time, please. And did you say 101 manual fuel.
12 12 46	P	That's affirmative. 101 manual and about 81 automatic.

12 12 51	CC	Roger. That's all we need. You look good on the ground, you're doing a great job.
12 12 57	P	Roger, thank you Buddy.
12 13 24	CC	Faith Seven, Hawaii. Your clock is holding 7 second error.
12 13 28	P	Roger. Thank you.
12 14 08	P	The eighth picture was shot over Hawaii to the south.
12 14 17	CC	Faith Seven, Hawaii. Could you give me suit (heat exchanger) dome temp, please.
12 14 21	P	*Roger. Suit dome temp is about 45 degrees. I increased flow. Got it down a little low, and I'm easing it back now.
12 14 31	CC	Roger. Understand, understand suit dome 45.
12 14 35	P	*That's right.
12 14 48	CC	Faith Seven, Hawaii. What about O_2 partial pressure.
12 14 53	P	Roger. O_2 partial pressure is about 4.2 (psi), cabin.
12 14 57	CC	4.2. Roger.
12 14 58	P	Roger.
12 15 18	P	Roger. - Now back to the scribe mark on the suit temperature selector of about 2.7 with the power down.
12 15 31	CC	Faith Seven, Hawaii. Our T/M shows suit dome of about, 38 degrees.
12 15 41	P	Roger. I just decreased the setting, just a minute ago, again.
12 15 45	CC	Roger.
12 17 33	P	*Suit dome temp's down to about - slightly below 40 degrees. Decreased the setting of the flow twice, and it's on its, should be on its way back up any moment.

12 21 36	P	*Short status report: Hydrogen peroxide and low nitrogen pressure 475 (psi) auto, 490 (psi) manual. B-nut temps. Pitch down 85 (degrees), pitch up 60 (degrees). Yaw left 55 (degrees), yaw right 70 (degrees). Roll counterclockwise 85 (degrees), clockwise 92 (degrees). . . . auto tank 85 (percent), manual tank 68 (percent), reserve tank 98 (percent). Isolated bus voltage 28 (volts), pumping from the condensate tank to the reserve tank, I have a syringe full. Suit circuit seems to be getting varying amounts of water, probably from the condensate tank, or tin can. Coolant water flow seems to vary considerabley. I have it clear back down to a setting of 1. Still haven't gotten the heat exchanger dome temperature out of the warning light area. It is now about 45 degrees. Never have been able to put water in these containers, that have water, due to the leaking of this valve in the back of it. I'm unable to put it into the water, into the plastic neck of the container and get water into it without leaking water all over the cockpit.

ROSE KNOT VICTOR

12 26 00	CC	Faith Seven, RKV Cap Com.
12 26 05	P	Hello RKV.
12 26 07	CC	We have Aeromed and systems go here.
12 26 18	P	Roger. Say again RKV.
12 26 21	CC	We have Aeromed go here, and systems go.
12 26 25	P	Roger. Very good. I'll take the temperature probe out now, then.
12 26 30	CC	We've got a long list of capsule readouts that the Cape requires before you go into the rest period.
12 26 42	P	Roger. Go.

12 26 43	CC	Okay, 24 volts main. Just rotate the switch through, Gordo. All positions on your d-c volts.
12 26 53	P	Roger, d-c volts. Main (bus) 24-½ (volts), isolated (bus) 28 (volts), main (battery) one is 25 (volts), main (battery) two is 25 (volts), main (battery) three is 25 (volts), standby (battery) one is 25 (volts), standby (battery) two is 25 (volts), isolated (battery) 28-½ (volts).
12 27 11	CC	Roger, understand. 150 va (inverter) volts?
12 27 17	P	Roger, 150 va is 121 (volts), fan 121 (volts).
12 27 24	CC	Fans bus 121 (volts)?
12 27 26	P	Roger.
12 27 27	CC	Suit coolant and cabin coolant control valve settings.
12 27 33	P	Roger. I'm back on 2.5 on the suit. Cabin is still shut down.
12 27 41	CC	Roger. Partial CO_2 and partial O_2.
12 27 45	P	Roger. Partial O_2 cabin is about 4.2 (psi), and suit CO_2 is on the bottom peg, zero.
12 27 55	CC	Roger. Auto and manual fuel pressure?
12 27 59	P	Roger. Auto fuel pressure 475 (psi), manual fuel pressure 490 (psi).
12 28 04	CC	Roger. Okay temperatures, just rotated through Pitch, and all the way through.
12 28 13	P	Roger. Retro 62 (degrees). Pitch down 75 (degrees), pitch up 60 (degrees). - Yaw left 55 (degrees), yaw right 70 (degrees). Roll counterclockwise 95 (degrees), roll clockwise 93 (degrees).
12 28 37	CC	Roger. H_2O_2 reserve, manual and auto.

12 28 41	P	Roger. Auto peroxide tank is 85 (degrees), manual is 68 (degrees) and reserve is 78 (degrees).
12 28 52	CC	Roger. Cabin heat exchanger outlet temperature.
12 28 55	P	Cabin heat exchanger outlet 72 (degrees), 250 inverter 112 (volts), 150 inverter about 1 er, just a second I'll get a light on, I'm getting in the dark, 125 (volts).
12 29 13	CC	Roger.
12 29 14	P	Fans inverter about 110 (volts).
12 29 17	CC	Roger.
12 29 23	CC	Okay, that settles this. Can you give me some indication of your tape remaining?
12 29 29	P	Roger. Just a moment. - Roger. I have about 75 percent remaining.
12 29 44	CC	Roger. Can you give us a blood pressure.
12 29 50	P	Roger. Coming now.
12 29 56	CC	Okay, the Cape advises that if you desire to turn your T/M to continuous, we'll cut down on the unnecessary communications for the rest of the rest period.
12 30 11	P	Roger.
12 30 31	CC	C.e.t. is showing plus 7, +7.
12 31 35	P	Roger. +7.
12 31 12	CC	Seven, RKV. Do you intend to go on a rest period from this site?
12 31 17	P	Roger.
12 31 46	CC	Seven, RKV. Are you sweating any?
12 31 50	P	Negative.
12 31 52	CC	No sweat.

RKV-8, PASS 9, CSQ-9

12 32 08	CC	We have you all go on Aeromedical and systems. Looks like you can settle down for a long rest.
12 32 14	P	Roger. Thank you.
12 32 36	CC	Seven, RKV. We have LOS.

PASS 9

13 17 17	P	Photo number 8 being made over Africa, to the north.
		*(Non-flight-related transmission omitted.)
13 18 47	P	Another being made over Africa.
13 20 32	P	I can see roads, and rivers, and some small towns, down here on the ground. Small villages are pronounced. Can almost make out the individual houses.
13 23 30	P	*Now we're in the next series of 12. Over . . . Africa. The first series were started over Africa, and across on orbit 9, on across Arabia, through India, and that last series of 3 or 4 pictures were made right over the Himalayas, and in the India, India - China area.
13 28 39	P	Checking fly-by-wire thrusters, they all work. Fly-by-wire lows, manual proportional, and checking manual thrusters now. Checking yaw, - and yaw works, pitch down works, pitch up works, roll left works, roll right works. Manual handle off.

COASTAL SENTRY QUEBEC

13 32 41	P	CSQ Cap Com. Faith Seven.
13 33 18	CC	Hello Faith Seven, CSQ. Roger. Received you, go ahead with your message.

13 33 24	P	Roger. Just passing over. Everything's nominal here I haven't really started my rest period yet. I had a little tussle with the heat exchanger, with the suit, and I finally got it adjusted.
13 33 38	CC	Roger. Understand, heat exchanger is adjusted now, for suit. We are still trying to pick up your TV here. We're not getting a very good picture on it. Over.
13 33 46	P	Roger.
13 33 48	CC	Roger. We had a message out around the range here to keep quiet that you were asleep and we thought it looked like a typical asleep type pass on your biosensors here.
13 33 59	P	Roger.
13 34 02	P	Roger. I was busy here just before the pass.
13 34 04	CC	Roger.
13 34 10	CC	Did you say you were asleep just before the pass. Over.
13 34 13	P	Negative. I was busy looking out the window and fiddling with this suit dome temp.
13 34 20	CC	Roger.
13 34 28	P	I've checked my manual and fly-by-wire thrusters and am ready to start my rest period now.
13 34 35	CC	Roger. Understand checked manual fly-by-wire. Ready to start rest period now.
13 34 39	P	Roger.
13 34 42	CC	All right. You will tell everyone to go away and leave you alone now. Okay?
13 34 48	P	Roger.

CSQ-9, Pass 10-11

13 34 52	CC	You're looking real good, Gordo. Everything is going real fine, boy.
13 34 55	P	Roger. Thank you, John.
Unreadable	P	*. . . fourth picture on that second series was made just, out from CSQ. Number 6 of second series, taken, over at 13 56. Went to sleep at about 13 50. Slept 'til 14 46. Quite soundly, slept quite heavily, awoke not realizing where I was. Completely, soundly asleep. Picture 8 of second series in the Burma - India area at 14 58 30. Took number 9, over the Himalayas.

PASS 10

15 11 35	P	*Standby inverter 102, 150 inverter 110 (degrees), 250 inverter 102 (degrees), H_2O_2 auto tank 85 (degrees), manual fuel tank 70 (degrees). Roll counterclockwise 78 (degrees), roll clockwise 82 (degrees). Yaw right 65 (degrees), yaw left 64 (degrees). Pitch up 58 (degrees), pitch down 70 (degrees). Retro 67 (degrees). I put the window cover on 15 14 15 for a period of time, and now have awakened.

PASS 11

16 28 51	P	*Short status report. Peroxide low pressure regulated 475 (psi) auto, 490 (psi) manual, clockwise thruster 72 (degrees), counter-clockwise thruster 78 (degrees). Yaw right at 61 (degrees), yaw left at 60 (degrees). Pitch up is 52 (degrees), pitch down is 58 (degrees). Retro is 55, auto 85, manual is 70, . . . reserve is 70. Photo series at 16 hours and 40 minutes. Having the problem with the suit exchanger dome temp, . . . down to the freezing mark with a (comfort control valve) setting of about 1-½, take a setting of 1 to 1-½ and then takes almost turning it off to get it back. It seems to be very inconsistent, in the settings that will take to hold an even heat exchanger dome temperature. Went asleep again and am

P (cont'd) awake now. Suit temperature is . . . 5.

PASS 12

18 04 20 P Photo sequence number 3 made on the Indian coast line, at 18 hours and 4 minutes. Next photo made at 18 hours and 5 minutes.

18 14 01 P *The time is now 18 hours and 14 minutes. Short status report. Nitrogen low pressures, 475 (psi) auto, 490 (psi) manual. Retro pack 71 (degrees). Pitch down thruster 58 (degrees), pitch up 50 (degrees). Yaw left 58 (degrees), yaw right 52 (degrees). Roll counterclockwise 72 (degrees), (roll) clockwise 70 (degrees). H_2O_2 auto tank 82 (degrees), peroxide manual tank 72 (degrees), peroxide reserve . . . , . . . main bus is 25-½ (volts), isolated bus voltage is 28-½ (volts). (Battery number 1) 25 (volts), number 2 is 25 (volts), number 3 is 25 (volts), standby 1 is 25 (volts), standby 2 is 25 (volts), isolated is 28-½ (volts), back to main. Reading 121 volts on the fans. Everything is proceeding along very well. Everything is nominal, except for this bothersome heat exchanger dome temp, and I just can't seem to keep it either from being on the freezing mark or going on over. I vary.the settings between . . . and completely off.

PASS 13

19 38 39 P *Went to sleep again, slept very soundly. And it's time for a short status report. Nitrogen regulated pressure, . . . auto 475 (psi), manual 490 (psi). -B-nut temps. First, retro temp 75 degrees. Pitch down thruster 55 (degrees), pitch up thruster 50 (degrees). Yaw left 56 (degrees), yaw right 50 (degrees). Roll counterclockwise 72 (degrees), roll clockwise 70 (degrees). -Peroxide auto tank 82 (degrees), manual tank 72 (degrees), reserve tank 75 (degrees). Isolated bus voltage 28.

19 42 15 P *One comment on these various sleep periods that I've had, nearly everytime that I have awakened, I found that I have been so soundly asleep I don't even know where I am when I awake.

20 23 37 P *Have a note to be added in for head-shrinkers. Enjoy the full drifting flights most of all, where you have really the feeling of freedom, and you aren't worried about the systems fouling up. You have everything turned off, and just drifting along lazily. However, I haven't encountered any of this so called split-off phenomena. Still, note that I am thinking very much about returning to earth at the proper time and safely. Over.

PASS 14

21 00 35 P Time for another short status report. Auto regulated pressure 475 (psi), manual 490 (psi). Retropack temp 75 (degrees), pitch down thruster 51 (degrees). Pitch up 49 (degrees). Yaw left 55 (degrees), yaw right 50 (degrees). Roll counterclockwise 72 (degrees), roll clockwise 70 (degrees). Peroxide auto tank 80 (degrees), manual tank 74 (degrees), reserve tank 74 (degrees).

21 02 39 P Darned suit heat exchanger (comfort control valve) again. Setting is down to 1-½. 1-½ held it for awhile. And now it's gone down to 40 (degrees) on the dome temp. Inlet temp 62 degrees.

21 05 16 P Number 7, sequence 3 was made looking back at Arabia. At 21 05, cabin temp is now 82 degrees, 250 inverter is 95 (degrees), 150 inverter is 115 (degrees), standby inverter is 95 (degrees).

MUCHEA

(Extended garbled transmission here. Sounds like Spanish)

21 22 34	P	Hello, Muchea Cap Com. Faith Seven here. Over.
21 22 39	CC	Go ahead, Faith Seven. This is Muchea Cap.
21 22 43	CC	Go ahead, Faith Seven. This is Muchea Cap Com.
21 22 46	P	Roger, Muchea Cap Com. Faith Seven. I'm awake now. Just thought I'd check in with you.
21 22 50	CC	Roger. How was your sleep?
21 22 54	CC	How was your sleep?
21 22 56	P	Very good.
21 22 58	CC	Do you like your coffee white or black?
21 23 02	P	I'll have tea, thank you.
21 23 04	CC	*Roger.
21 23 10	P	In fact, hot black tea would go very well right now.
21 23 14	CC	Roger.
21 23 18	CC	When you get a chance, will you give us your spacecraft status, and your status?
21 23 24	P	Roger. Everything is nominal here. I've had some difficulty with the suit heat exchanger dome temp and it's been running with the light on most of the time, but I have it well under control and the suit inlet temp has been running very comfortably.
21 23 45	CC	Very good.
21 23 47	P	My status is excellent.
21 23 50	CC	Roger. Will you give me an auto and manual fuel reading?
21 23 55	P	Roger. Let me get some more lights on here, since I'm in the dark.

21 24 00	P	*Roger. Auto fuel is reading 69 percent and manual 95 percent.
21 24 10	CC	Say again last.
21 24 11	P	Oxygen 150 percent on primary, 100 percent on secondary. The manual fuel is 95 percent.
21 24 23	CC	Roger. I didn't copy your manual fuel.
21 24 25	P	Roger. Manual fuel is 95 percent.
21 24 28	CC	I copied auto at 79.
21 24 32	P	Roger. It's 69, 69.
21 24 35	CC	Roger.
21 24 37	P	Cabin temp is 84 degrees.
21 24 41	CC	Roger.
21 24 55	CC	Standby, Faith Seven.
21 24 57	P	Roger.
21 25 13	CC	I have (recovery) area 15-1 retrosequence time. Please prepare to copy.
21 25 21	P	Roger. Go.
21 25 24	CC	22 02 13.
21 25 28	P	Roger. 22 02 13.
21 25 31	CC	That's affirmative. Area 15-1.
21 25 43	P	Roger. Got it.
21 25 45	CC	What's your present control mode?
21 25 49	P	I'm in full drift.
21 25 51	CC	Roger.
21 25 59	CC	We have about 1 minute to LOS.
21 26 02	P	Roger.

21 26 39	CC	Hello, Faith Seven, Muchea Cap Com. Do you have anything further to report?
21 26 44	P	Negative. I guess not. Everything's fine here.
21 26 47	CC	Roger. Systems report you go here and Aeromed, also.
21 26 51	P	Roger. Thank you.
21 26 53	CC	Roger.
21 36 40	P	*It is 21 36 46 NOW. (21 36 46)^{T}. I am observing lights of several small cities and scattered areas on the ground. Apparently over the east coast of Australia.
21 46 18	P	*I am viewing to the east now, and I can see very clearly as I mentioned before, a band of haze layer above the earth's horizon, through which the stars can be seen. Although they're quite faint here and then clear below it. It goes around the earth, approximately the same distance around, just a Corona type thing around the earth's surface.
21 49 38	P	*I would like to take this time to say a little prayer for all the people, including myself, involved in this launch and this operation. Father, thank You, for the success we have had in flying this flight. Thank You for the privilege of being able to be in this position, to be up in this wondrous place, seeing all these many startling, wondrous things that You've created. Help guide and direct all of us, that we may shape our lives to be good, that we may be much better Christians, learn to help one another, to work with one another, rather than to fight. Help us to complete this mission successfully. Help us in our future space endeavors, that we may show the world that a democracy really can compete, and still are able to do things in a big way, are able to do research, development, and can conduct various scientific, very technical programs in a completely peaceful environment. Be with all our families. Give them guidance and encouragement, and let them know that everything will be okay. We ask in Thy name. Amen.

CNV-15

CAPE CANAVERAL

22 03 39	P	Hello, Cape Cap Com. Faith Seven here.
22 03 47	P	Roger, shoot.
22 03 55	CC	The regulated low pressure scores.
22 04 00	P	Roger. I'm reading 475 (psi) auto and 490 (psi) manual.
22 04 10	CC	Could we have an H_2O_2 reading?
22 04 16	P	Roger. That's - say again.
22 04 21	CC	. . .
22 04 28	P	Just a minute on the . . .
Unreadable	P	Roger.
Unreadable	CC	Faith, can I have you on H_2O_2 tank temperature?
Unreadable	P	Auto tank is 81 degrees, manual tank is 74 degrees, reserve tank is 74 degrees.
22 06 05	CC	Faith Seven, Cape Cap Com. Over.
22 06 07	P	Cape, Faith Seven.
22 06 09	CC	Roger. Did you use any auto fuel during the sleep period?
22 06 15	P	Negative.
22 06 19	CC	Would you put your R and Z Cal to auto?
22 06 22	P	Roger.
22 06 26	CC	We reckoned your fuel to the 69 and 89 (percents). Over.
22 06 32	P	Roger. I read you 69 and 95.
22 06 38	CC	Roger.
22 06 42	CC	Is your tape recorder on schedule?

1. Pilot answer referred to current rest period only.

22 06 57	CC	We are getting a good picture of you on TV now. Over.
22 07 01	P	Roger. Understand.
22 07 04	CC	Did you transfer any water or urine? Over.
22 07 10	P	Boy, did I ever!
22 07 17	CC	Do you have any air wick observation?
22 07 27	P	Roger. They seem to separate water all right.
22 07 39	CC	Faith Seven, did you make any air wick observation? Over.
22 07 43	P	Affirmative. It does separate water. Over.
Unreadable	P	Did you read me, Cape?
Unreadable	CC	Roger. I read you now. Did you make an air wick observation?
22 08 00	P	Affirmative. It works.
22 08 04	CC	Roger. How is your comfort and humidity level in the suit?
22 08 11	P	Fine.
22 08 12	CC	Very good.
22 08 15	CC	Our surgeon has some goodies. Did you have any dreams?
22 08 20	P	Negative. I slept too soundly to dream.
22 08 24	CC	Roger. We thought you might have had one onetime when your suit dome light may have come on.
22 08 33	P	My suit dome light was on a good portion of the time.
22 08 36	CC	Roger. We understand that.
22 08 40	CC	We'd like you to give a body temperature to Canary on your next pass over them coming up. Would you set your oral probe on for that? Over.
22 08 50	P	Roger.

CNV-15

22 08 53	CC	Pass time at Canary is nominal, so about 2 or 3 minutes before would help.
22 09 00	P	Roger.
22 09 09	CC	Would you give us a reading on your coolant control valve settings and what they are now?
22 09 16	P	Roger. Right at the moment I'm reading about 1.8 on suit temp and the cabin is still turned off.
22 09 27	CC	Roger. We concur.
22 09 45	CC	Faith Seven. R and Z Cal program switch to off.
22 09 54	P	Roger. Off.
22 09 56	CC	And you can secure TV. We had a pretty fair picture.
22 10 00	P	Roger.
22 10 08	CC	We can see you were drifting and dreaming, can't we?
22 10 11	P	Roger.
22 10 30	CC	Faith Seven, Cape Cap Com.
22 10 32	P	Come in Cape Com, Faith Seven.
22 10 34	CC	I've been asked to relay a message to you from the president of the Republic of El Salvador. I will read. In the name of the Salvadorian government and people, and in my own right, it gives me pleasure to send you cordial greetings and sincere congratulations on the occasion of your valiant exploit, which constitutes an historic truimph for the free world. Julio Adalberto Rivera, President, El Salvador.
22 11 06	P	Very good, very good.
22 11 07	CC	Roger.
22 12 00	CC	Faith Seven, Cape Cap Com.
22 12 02	P	Go ahead, Cape.

22 12 06	CC	I'll give you C.e.t. hack at 50 mark.
22 12 08	P	Roger.
22 12 09	CC	That was 22 11 50.
22 12 13	P	Roger.
22 12 16	CC	MARK 12 minutes.
22 12 18	P	Roger.
22 12 24	P	. . .
22 12 36	CC	Faith Seven, you're cutting out, it's about LOS. See you next time around boy-san.
22 12 41	P	Roger.

CANARY ISLANDS

22 18 26	CC	Faith Seven, this is Canary Cap Com. You need not acknowledge this transmission, requesting you turn on your TV and your S-band beacon if you have not already done so.
22 18 40	P	Roger. TV's on.
22 18 49	CC	This is Canary Cap Com. Did you - put your - wait a minute, we're getting the body temperature now.
22 19 17	CC	This is Canary Cap Com. Surgeon requests that you hold your body temp probe in your mouth for about one more minute.
22 20 01	CC	This is Canary Cap Com. You may take the body temperature probe from your mouth now. Over.
22 20 09	P	Roger. Thank you.
22 20 14	CC	Your (contingency recovery area) 15-Bravo (retrosequence) time is nominal, and request a partial O_2 readout, please.
22 20 26	P	Roger. My 15-Bravo is nominal. Cabin partial pressure O_2 is about 4.2 (psi).

22 20 34	CC	Roger. Understand 4.2. I'd like to try to get a C.e.t. clock error here, so I'm going to give you a time hack. I'd like for you to give me the difference in the clocks. On my mark the time will be 22 20 40. MARK. (22 20 57)T
22 20 58	P	. . .
22 21 01	CC	Understand 15 seconds.
22 21 05	CC	Roger. . . .
22 21 07	P	Roger. Understand.
22 21 29	CC	Astro confirms 15. Over.
22 21 35	?	Roger.
22 22 15	CC	This is Canary Cap Com. Could you give me a cabin pressure readout, please?
22 22 20	P	Roger. Cabin pressure 5.2 (psi).
22 22 23	CC	Roger.
22 23 37	CC	We're getting pretty close to LOS here. Request you turn TV off, and the S-band beacon to ground command. Over.
22 23 44	P	Roger. TV off and S-band beacon to ground command.
22 23 47	CC	Roger.

KANO

22 27 16	CC	Faith Seven, this is Kano Cap Com. We have T/M solid. We would like a cabin (heat exchanger) dome temperature. That is the only high reading. Over.
22 27 24	P	. . .
22 27 34	CC	Say again.

Unreadable	P	. . .
22 27 44	CC	Roger.
22 27 49	CC	Astro, have you eaten? Over
22 27 58	CC	Astro, this is Kano Cap Com. Have you eaten? Over.
22 28 03	P	. . . Cabin dome is 72 degrees.
Unreadable	CC	Roger. Have you eaten? Over.

ZANZIBAR

22 36 27	CC	Faith Seven, Zanzibar Cap Com.
22 36 29	P	Roger, Zanzibar, Faith Seven.
22 36 32	CC	T/M looks good on the ground here. We have no big problems. Like to have fuel and oxygen readings.
22 36 39	P	Roger. . . . fuel, auto . . . , manual 95 percent. Oxygen 150 percent primary, and 100 percent secondary.
22 36 53	CC	Please repeat primary oxygen.
22 36 56	P	150 percent.
22 36 58	CC	Roger. Your (recovery area) 16-1 (retrosequence) time, 23 31 03. 23 31 03.
22 37 12	P	23 31 03.
22 37 16	CC	That is affirmative. That is g.e.t. and does not include your clock error.
22 37 20	P	Roger.
22 37 26	CC	Faith Seven. Have you eaten this morning?
22 37 30	P	Negative. Not yet this morning.
22 37 33	CC	Roger.

22 37 53	CC	Faith Seven, Zanzibar Cap Com. The Surgeon would like to know what, how you feel this morning?
22 37 58	P	Fine. - Excellent.
22 38 04	CC	Very good.
22 49 25	P	And here comes the short status report again. Nitrogen regulated low pressure, auto 475 (psi), manual 490 (psi). B-nut temperature. Pitch down 50 (degrees), pitch up 49 (degrees). Yaw left 55 (degrees), yaw right 51 (degrees). Roll counterclockwise 78 (degrees), roll clockwise 78 (degrees). Auto peroxide tank 80 (degrees), manual tank 72 (degrees), reserve tank 73 (degrees). Isolated bus voltage 28.

MUCHEA

22 53 25	CC	Faith Seven, Muchea Cap Com.
22 53 27	P	Roger, Muchea Cap Com. Faith Seven.
22 53 30	CC	Are you checking your high thrusters?
22 53 40	CC	Are you checking your high thrusters?
22 53 54	CC	Faith Seven, Muchea Cap Com. Do you copy?
22 53 56	P	Roger, Muchea Cap Com. I am not . . . my thrusters. Over.
22 54 01	CC	Say again last.
22 54 02	P	I am not checking my thrusters. Over.
22 54 05	CC	Roger. We had a partial T/M dropout.
22 54 10	P	Roger.
22 54 16	CC	Have you made any checks on thrusters?
22 54 19	P	Roger. I made a couple of them, 3 different ones of them. I'm going to bring up my rate indicators shortly and check the rest of them.

22 54 29	CC	Roger.
22 55 03	CC	Systems report T/M looks good and Aeromeds report you look good.
22 55 07	P	Roger.
22 55 33	CC	Are you changing the control valve setting on your suit heat exchanger?
22 55 38	P	Roger. - Suit dome is on its way down very slowly.
22 55 45	CC	Roger. We concur.
22 55 52	CC	Have you had your breakfast?
22 55 54	P	Negative.
22 57 00	CC	Faith Seven. Could you give me a report on that thruster check? Which thrusters are okay?
22 57 06	P	Roger. I've checked my yaw thrusters both auto and manual. I'm going to ASCS bus and then turn my rate gyros on, and in first-light then check the remainder of my thrusters.
22 57 24	CC	Roger.
22 57 26	P	While aligning the spacecraft.
22 57 28	CC	Say again.
22 57 30	P	I will check thrusters while aligning spacecraft, while uncaging gyros.
22 57 34	CC	Roger.
22 59 38	CC	We have approximately 1 minute to LOS.
22 59 42	P	Roger.
23 06 51	P	*Just brought the rate indicators to manual on position, and they're indicating about a half of a degree right roll rate, half a degree pitch up rate, and 1 degree left yaw rate. I have now checked my manual proportional thrusters, and they all function correctly, and C-band beacon on continuous.

GUAYMAS

23 31 02	CC	Faith Seven, Guaymas Cap Com.
23 31 07	P	Go ahead, Guaymas Cap Com, Faith Seven.
23 31 09	CC	You sound good, Gordo. Are you going to have time for the ASCS?
23 31 14	P	Roger. The ASCS is powered up. I powered it up about 1 minute ago. Right now, my rate indicators are powered up.
23 31 27	CC	Roger. Tape recorder continuous.
23 31 30	P	Roger. Tape recorder continuous.
23 31 32	CC	How about the C-band?
23 31 35	P	Roger. . . .
23 31 36	CC	Roger. - Are you going to check your thrusters over here?
23 31 44	P	Roger. I've already checked my manual thrusters and I've checked about half of my fly-by-wires. I'm going to wait 'til daylight and I'll get the rest of my fly-by-wires while I align the spacecraft.
23 31 59	CC	Roger. You say you're waiting for daylight.
23 32 01	P	Roger. I'm going to align the spacecraft with the thrusters while getting a check on the rest of them.
23 32 08	CC	Roger.
23 32 21	P	I'll check my fly-by-wires now and align my spacecraft manually on the manual proportional.
Unreadable	CC	Roger.
23 32 29	P	Checking fly-by-wires now. - Man, do those ever throw out the fire at night.
23 32 48	CC	Say again, Gordo. I didn't read that.

23 32 49	P	You can really see the sparks from the thrusters at night.
23 32 53	CC	Ha, ha! Roger.
23 33 13	P	Roger. All fly-by-wire low thrusters work correctly.
23 33 18	CC	Roger.
23 33 29	CC	Could you give me your fuel readings, Gordo?
23 33 33	P	Roger. I have 65 percent auto and 95 percent manual.
23 33 38	CC	Roger.

CAPE CANAVERAL

23 36 44	CC	Faith Seven, Cape Cap Com. Do you read? Over.
23 36 46	P	Roger, Cape Cap Com, Faith Seven.
23 36 49	CC	Roger. Welcome back, Gordo.
23 36 52	P	Roger. Thank you.
23 36 53	CC	I have a roll angle for you, for your dim light study. Over.
23 36 59	P	Roger. Go ahead.
23 37 01	CC	Your angle is 34 degrees, at sunset. That is, roll right, 34 degrees.
23 37 08	P	34 degrees. Understand.
23 37 10	CC	Could you give me a reading of your cabin air?
23 37 13	P	Roger. Cabin air temp's about 86 degrees.
23 37 17	CC	Roger, 86. Have you had a good meal today?
23 37 22	P	Fairly good.
23 37 25	CC	Roger.

23 37 27	P	I'm aligning the spacecraft now.
23 37 33	CC	Roger. Your attitudes look like you're almost in.
23 37 39	P	It would, because the gyros are still caged.
23 37 42	CC	That's interesting.
23 37 44	P	I say they would, because the gyros are still caged.
23 37 47	CC	Good deal. You've got real good attitudes on the caged gyros.
23 37 50	P	Roger.
23 37 52	CC	Did you read that I said roll right 34 degrees?
23 37 55	P	Roll right 34 degrees. Roger.
23 38 09	CC	Would you give us some TV, Gordo?
23 38 27	CC	Hello dahr.
23 38 28	P	Hello dahr.
23 39 32	CC	Faith Seven, Cape Cap Com. Would you give us a yell if you get an auto fuel light? Over.
23 39 37	P	Roger.
23 40 57	P	*Caged gyros coming to slave.
23 41 02	CC	Roger.
23 41 20	CC	Our scanners are checking out quite closely, Gordo.
23 41 24	P	Roger.
23 42 36	P	Going to auto.
23 42 46	P	Foiled it again.
23 43 10	CC	Faith Seven, Cape Cap Com.
23 43 12	P	Go ahead, Cape Cap Com, Faith Seven.
23 43 15	CC	Roger. You can kill your TV. Your scanners and attitudes match perfectly at LOS.

23 43 21	P	Roger. Thank you.
23 43 26	P	I'm on auto control.
23 43 28	CC	Roger. Understand on auto control.
23 43 30	P	Roger.

*(Unconfirmed transmissions omitted.)

CANARY ISLANDS

23 51 41	CC	Faith Seven, this is Canary Cap Com. We have T/M, solid. All systems are green. Do you confirm TV on? Over.
23 51 53	P	Roger. TV is on.
23 53 34	CC	This is Canary Cap Com. Could you send us a blood pressure now, if you please?
23 53 39	P	Roger.
23 53 46	CC	We are receiving blood pressure now.
23 56 22	CC	Faith Seven, would you take a deep breath and hold it, please?
23 56 26	P	Roger.
23 56 31	CC	Okay, exhale. - Exhale.
23 57 03	CC	Faith Seven, inhale, please.
23 57 50	CC	This is Canary Cap Com, we are coming up on LOS. You may turn off your TV camera, please.
23 57 54	P	Roger.

KANO

23 58 01	CC	Faith Seven, Kano has T/M solid.
23 58 04	P	Roger, Kano. All systems green here.

CONFIDENTIAL

KNO-ZZB-16

23 58 07	CC	I'll give you a check in a minute. Thank you.
23 58 10	P	Roger.
23 58 12	CC	They are all green on the ground.
23 58 14	P	Roger.
23 59 36	CC	Faith Seven this is Kano Cap Com.
23 59 40	P	Go ahead, Kano.
23 59 41	CC	I thought I'd tell you that (contingency recovery) Area 16-B (retrosequence time) is nominal.
23 59 45	P	16-B is nominal. Roger. Thank you.
24 05 20	CC	Site of Kano will have LOS at 13 08 56.

ZANZIBAR

24 06 39	P	Hello, Zanzibar, Faith Seven here.
24 06 42	CC	Faith Seven, Zanzibar Cap Com. Go ahead.
24 06 45	P	Roger. Zanzibar, I have a message for you.
24 06 47	CC	Roger.
24 06 51	P	Hello, Africa. This is Astronaut Gordon Cooper, speaking from Faith Seven. I am right now over 100 miles above Africa, speaking to the Zanzibar station. Just a few minutes ago, I passed Addis Ababa. I want to wish success to your leaders there. Good luck to all of you in Africa.
24 07 12	P	Are you ready for a consumable readout now?
24 07 14	CC	Go ahead.
24 07 16	P	Roger. Auto fuel 93 (percent), manual 93 (percent). Oxygen primary 145 (percent), secondary 100 (percent).
24 07 29	CC	Confirmed. C/M looks good on the ground here.
24 07 36	P	Roger.

CONFIDENTIAL

24 07 45	CC	How does it feel on the second day, Gordo?
24 07 48	P	Fine. I may get used to this thing, yet.
24 07 52	CC	Roger.
24 09 17	CC	Faith Seven. Zanzibar Cap Com.
24 09 18	P	Go ahead, Zanzibar.
24 09 20	CC	The Surgeon would like to know how deep is your breathing at the present time.
24 09 26	P	Roger. Not very deep.
24 09 28	CC	Roger. Thank you.
24 09 30	P	Here is a full breath.
24 09 34	CC	Please repeat.
24 09 35	P	All right. Now I have a full breath in.
24 09 39	CC	You are taking full breaths. Very good. That's what our recording on the ground shows.
24 09 43	P	Roger.
24 10 18	P	I am now in auto control. Set up for the dim light experiment. As soon as the sun approaches the horizon, I will align with the sun. Fly-by-wire. Cage and put gyros free. Roll 34 degrees right, cage, gyros free. Back on auto. And start taking the pictures.
24 11 03	CC	Faith Seven. Zanzibar Cap Com.
24 11 06	P	Go ahead, Zanzibar.
24 11 08	CC	How much tape do you have remaining on your recorder?
24 11 12	P	About 70 percent.
24 11 14	CC	Roger. Cape advises that you can go onto continuous tape recording.
24 11 20	P	Roger.

ZZB-16

24 13 50	CC	Faith Seven. Zanzibar Cap Com.
24 13 52	P	Go ahead, Zanzibar.
24 13 54	CC	Clock readout now shows a +16 seconds. I will give you a mark at 24 13 50.
24 14 02	P	Roger.
24 14 06	CC	1. MARK. (24 14 07)^{T}
24 14 10	P	Roger. I was reading 24 14 07 at the time. - That's about right. 16 seconds.
24 14 22	CC	Roger.
24 14 23	P	Yeah. I was reading just 6, going to 7. That would be right.
24 17 54	P	Okay. The sun is almost to the horizon. I'm going to fly-by-wire low. - Yawing over to the left just a little to get to the sun.
24 19 04	P	I'm perfectly aligned. Caging the gyros. Bang, bang. Gyros to free. I'm going to have to get them again. Quite aligned in yaw.
24 19 50	P	Boy! This is going to be a doozy. Right into the sun.
24 20 55	P	Okay, gyros caged. To free. 34 degrees right.
24 21 52	P	Gyros caged. Gyros free. Auto orbit mode. Lights off, warning lights off.
24 22 31	P	Here comes 1. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15. - 1,001. Number 2 exposure. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15. Third exposure. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15. Fourth exposure. Trip. 1,001. Release. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15. Trip. 1, 2, 3, release. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15. Trip. 2, 3, release. 1,001. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15. Number 3. 1, 2, 3, release. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15. Number 4. 1, 2, 3, release. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,

P (cont'd) 11, 12, 13, 14, 15. 10 second series. Trip. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, release. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15. Trip. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, release. - 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15. Trip. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, release. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15. Trip. 2, 3, 4, 5, 6, 7, 8, 9, 10, release. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15. 30 second exposures. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30,release. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, trip. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, release. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. 1, 2, 3. Go ahead, Muchea. 5, 6, 7, 8, 9, 10, 11, 12.

MUCHEA

24 27 57	P	Roger. Status is green.
24 28 00	CC	Roger. We have it.
24 28 02	P	Dad burn it 21, 22, 23, 24. Roger. Thank you. - Roger, I'm busy taking all these picture sequences, counting 1, 2, buckle my shoe, type thing.
24 28 23	CC	Roger.
24 28 26	P	Ha, Ha!, I'm up to 5,244 now. Ha! Ha!
24 28 43	P	5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, release. 1, 2, 3, 4, 5, 6, 7, 8, 9.
24 29 10	CC	. . . Minus . . . pitch attitude and about a -14 on your horizon scanner pitch output. Would you check this?
24 29 19	P	Roger. I am on gyros free, auto control, gyros free, pitch plane torquing on.
24 29 27	CC	Roger.
24 29 28	P	I am pitching around the plane of the ecliptic to take these pictures.
24 29 31	CC	Understand.
24 29 43	P	12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, release. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Identifier pictures, 2 of them. Oops, tripped 2 accidently. I'm on slave.
24 30 46	P	Faith Seven is now gone to slave and will let the scanners precess the spacecraft back around slowly.
24 30 51	CC	Roger. We concur here.

24 31 07	P	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78.
24 31 59	CC	Pitch attitude and horizon scanners.
24 32 01	P	80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, just a minute, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20.
24 32 33	P	Roger. My gyros, it looks like I'm fairly closely on. I can see the actual horizon. And of course, my gyros are being precessed by the scanners back slowly because they were off quite a bit being gyros free and pitch plane precession on.
24 32 50	CC	Roger. . . . You are coming in here now, too.
24 32 54	P	Roger. I wasn't sure the spacecraft would fly this way, but it seems to be doing all right.
24 33 01	CC	Roger.
24 33 07	P	Now for the 30 second exposures. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Roger. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. (223 second break here)
24 37 44	P	13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20. 30 second one coming. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22,

	P (cont'd)	23, 24, 25, 26, 27, 28, 29, 30. 10 second exposure. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, off.
24 40 54	P	Okay. Third series. - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20.
24 42 29	P	30 second exposure. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. 10 second exposure. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. 10 second exposure over. I don't believe the camera tripped right. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.
24 44 56	P	Okay, starting the next series. MARK (24 45 01)T, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14,15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74. Go ahead, Canton.

CANTON

24 45 59	CC	Roger. Your (recovery) area 17-1 (retrosequence) time is 25 04 12. Over.
24 46 08	P	25 04 02?
24 46 12	CC	Negative. 25 04 12.
24 46 16	P	Roger. 25 04 12.
24 46 20	CC	Affirmative.

24 46 28	P	That just about gets it. Thirty second one. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Ten second exposure. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.
24 48 51	P	Radiation experiment went on 1 minute ago.
24 49 38	P	Okay, one more series here for you. Starting NOW (24 49 45)^{T} 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, exposure off. Thirty second exposure. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Ten second exposure. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, off.
24 56 06	P	The last series. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, . . . 30, 31, (etc.) 40, (etc.) 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, . . . 2, 3, . . . 14, 15, 16, . . . 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60. There is the two minute one off. Thirty second one started. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Ten second one on. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and a big fat hen and that one's off.
24 58 24	P	And my fuel quantity light came on at 61 percent at 24 58 25.
25 00 25	P	Here comes the sunrise pictures. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16,

	P (cont'd)	17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. The one second one taken and off.
25 01 50	P	The second set of 30 and one. 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, the one second one, and off. And that winds up the zodiacal lights (photography). May they rest in peace.

*(Unconfirmed transmission omitted.)

GUAYMAS

25 03 22	CC	Faith Seven, Guaymas Cap Com.
25 03 25	P	Roger, Guaymas go ahead.
25 03 26	CC	Have you started your photos yet?
25 03 29	P	Man, that's all I have been doing all night long.
25 03 32	CC	Roger, Hasselblad?
25 03 34	P	Roger, I'm just getting them out right now.
25 03 37	CC	Okay, you going to power down first or after?
25 03 40	P	No, I'll power down after I take the first two shots on it. Actually, I'm not going to power down until I finish those shots. I'm going to leave the gyros up to do the shots with.
25 03 49	CC	Okay. Do you want to give me a mark when you take them so I can get your times?
25 03 53	P	Roger.
25 04 18	P	I'm having a little trouble getting things out of Pandora's Locker here.
25 04 22	CC	Roger.
25 04 38	P	Oh yeah, you might pass on to the Cape too, my fuel quantity warning light came on at 24 58. Twenty-four hours and fifty-eight minutes.

25 04 50	CC	Roger.
25 04 58	P	At 61 percent.
25 05 04	CC	Roger, Gordo.
25 05 49	P	Okay. I'm getting the first two shots right now.
25 05 53	CC	Roger.
25 06 31	P	Okay, that's the first two shots.
25 06 36	CC	Okay, Gordo.
25 06 52	P	Now, I'm going to fly-by-wire.
25 07 11	P	Yawing around to the 90 degrees point on the gyro.
25 07 17	CC	Roger, we read you.
25 08 54	P	Okay, snapping two more pics.
25 09 20	P	Caging the gyros.
25 09 27	P	Get down in proper attitude first here.
25 09 31	CC	Okay.
25 10 19	P	Now it's back to free.
25 11 49	P	Two more pics.

CAPE CANAVERAL

25 12 15	CC	Helloooo up there.
25 12 18	P	Hello down dere.
25 12 22	P	Man, all I do is take pictures, pictures, pictures.
25 12 26	CC	All I do is clean, clean, clean.
25 12 30	P	Ha, Ha. Roger.

25 12 38	P	I got all the zodiacal light pics and now I am busily engaged yawing around on the M.I.T. jobbies.
25 12 46	CC	Roger. You have my sympathy.
25 12 51	P	I'm not complaining, Ha, Ha.
25 12 57	P	I'm at the 270 point now getting the last two pictures in the thirty seconds.
25 13 02	CC	I have 17-Bravo (contingency recovery area retrosequence time) correction, if you can take it.
25 13 07	P	Roger, better hang on just a minute, I'm right - snapping pictures - right at the second.
25 13 13	CC	Okay, standing by.
25 14 12	P	Okay. I can take it now.
25 14 16	CC	Roger. 17-Bravo, 26 14 48.
25 14 25	P	26 14 48.
25 14 28	CC	That is affirmative. We'd like a little sun gun time if you want to flip it on.
25 14 37	P	Say again.
25 14 39	CC	TV on for a couple of minutes please?
25 14 44	P	Roger, TV coming on.
25 14 56	CC	Gordo, for information only, if you care to use the 6 inch outside, recommending a minimum f stop 16 or 22 with the filter. It's not necessary to do this if you do use it outside, we recommend going this way.
25 15 15	P	At 22 with the filter, is that affirm?
25 15 18	CC	Say again, please.
25 15 21	P	22 with filter.
25 15 24	CC	16, f 16 with filter.

25 15 28	P	Roger.
25 16 05	P	Okay, I'm caging my gyros.
25 16 10	CC	Roger.
25 16 13	P	And they caged correctly.
25 16 17	CC	Good show, it works.
25 16 18	P	Yeah, just like advertised.
25 16 22	CC	How about that.
25 16 28	P	Powering down my ASCS bus.
25 16 37	CC	Roger. Understand ASCS bus is off. You sure are a miser on the control fuel.
25 16 47	P	You say I'm noisy on the controls.
25 16 51	CC	I say you're miser on the controls.
25 16 57	P	Roger.
25 17 51	CC	. . . 1, 2, 3, 4, 5, do you read?
25 17 54	P	Roger, you are coming in very broken. Over.
25 17 56	CC	. . .

CANARY ISLANDS

25 26 01	CC	Faith Seven, this is Canary Cap Com. All systems are green. Do you confirm TV is on? Over.
25 26 11	P	Negative. TV is not on, Canary. I'm busy snapping some pictures.
25 26 24	P	TV coming on now.
25 26 26	CC	Roger.
25 28 46	SY	Faith Seven, Canary Systems.

CYI-KNO-17

25 28 48	P	Go ahead Canary, Faith Seven.
25 28 51	SY	You're looking real good here, systems-wise. This is our last pass at you. We'll see you back in, back in Houston. Keep up the good work.
25 28 59	P	Roger, will do. Thanks a lot.
25 29 35	CC	This is Canary Cap Com, could you give us a cabin O_2 partial pressure readout, please.
25 29 42	P	Roger. Cabin O_2 partial pressure is about 3.9 (psi).
25 29 47	CC	Roger.
25 29 58	CC	Was that 3.9 or 3.5? Over.
25 30 02	P	About 3.9.
25 30 05	P	Just a tad under 4. I'm going back on my suit. I've had my visor open for a while here.
25 30 11	CC	Roger.
25 30 21	CC	We're having T/M LOS here. Suggest you turn off your TV camera. Over.
25 30 26	P	Roger.

KANO

25 32 00	CC	Faith Seven, this is Kano Cap Com. We have T/M solid, and all systems are go.
25 32 06	P	Roger, Kano. Thank you.
25 35 28	CC	Faith Seven, this is Kano Cap Com. Your systems are still all green. Goodbye and good luck. Out.
25 35 34	P	Roger. Thank you Kano.

ZANZIBAR

25 41 50	CC	Faith Seven, Zanzibar Cap Com.
25 41 56	P	Go ahead, Zanzibar. Faith Seven.
25 41 58	CC	Faith Seven, Zanzibar Cap Com. Your systems look good on the ground.
25 42 05	P	Roger, Zanzibar. They look good up here, too.
25 42 08	CC	Okay. Could I have consumable readouts, please?
25 42 12	P	Roger. Auto fuel 60 percent, manual fuel 91 percent. Oxygen primary 145 percent, secondary 100 percent.
25 42 28	CC	Faith Seven, I read you. You are fading.
25 42 34	P	Roger.
25 42 56	CC	Faith Seven, Zanzibar Cap Com. Good luck on your pass.
25 43 01	P	Roger. Thank you.
25 49 33	P	Okay. Short status report. Nitrogen low pressure, auto 470 (psi), manual 490 (psi). B-nut temperatures. Pitch down 75 (degrees), pitch up 58 (degrees). Yaw left 70 (degrees), yaw right 70 (degrees). Roll counterclockwise 96 (degrees), roll clockwise 95 (degrees), Peroxide auto tank . . . 2 (degrees), peroxide manual tank 70 (degrees), peroxide reserve tank 76 (degrees). 250 inverter 116 (degrees), 150 inverter 128 (degrees), standby inverter 108 (degrees).

*(Non-flight-related transmission omitted.)

MUCHEA

26 00 54	CC	Faith Seven, Muchea Cap Com.
26 00 57	P	Howdy, Muchea Cap Com. Faith Seven.
26 01 00	CC	We have a systems go, and Aeromed go.

MUC-17

26 01 04	P	Very good.
26 01 09	CC	Aeromeds are standing by for blood pressure.
26 01 12	P	Roger, coming now. Does he know how to read it?
26 01 20	CC	Roger. They got it now.
26 01 33	CC	I have (recovery) area 18-1 retrosequence time. Prepared to copy?
26 01 40	P	Roger. Standby just a second.
26 01 41	CC	Roger.
26 01 47	P	Roger. Go.
26 01 48	CC	Area 18-1 (retrosequence time), 26 34 48.
26 01 56	P	Roger. 26 34 48.
26 01 59	CC	That's affirmative, (contingency recovery area) 18-A (retrosequence time) is 26 58 50.
26 02 10	P	That was (contingency recovery area) 18-A.
26 02 12	CC	Affirmative.
26 02 16	P	*I didn't get the rest of that, 26 what?
26 02 24	CC	26 58 50.
26 02 28	P	Roger. 26 58 50. Roger.
26 02 31	CC	And I have (recovery area) 18-2 (retrosequence time). 27 43 48.
26 02 38	P	Roger. 27 43 48.
26 02 42	CC	Roger. And these times does, do not include the clock error.
26 02 47	P	Roger. Understand.
26 02 49	CC	That first blood pressure was no good. Would you send another one? It was cut off early.

26 03 03	CC	Roger. We are getting your second blood pressure.
26 03 29	CC	That was a good blood pressure.
26 03 32	P	Roger.
26 03 35	CC	Systems report that your suit dome temp is decreasing slowly.
26 03 41	P	Roger. I'm running it down fairly low. I got it a little bit high.
26 03 45	CC	Roger.
26 03 48	P	It's been running consistently fairly low.
26 03 51	CC	Understand.
26 04 57	CC	Faith Seven. We have a message for you.
26 04 59	P	Roger.
26 05 02	CC	From the Australian Minister of Supply, the Honorable Alan Fairhall. - All Australia following your progress with lively interest. Muchea and Red Lake tracking station staffs, and Department of Supply are proud to be associated with this great NASA effort. Happy landings. End message.
26 05 20	P	Roger. Thank you very much.
26 06 55	CC	We have approximately one minute to LOS.
26 06 58	P	Roger.
26 07 21	CC	Could you give me a read on your partial O_2?
26 07 26	P	Roger. Cabin partial O_2 is about 3.9 (psi).
26 07 30	CC	3.9 (psi).
26 07 32	P	Roger.

CANTON

26 20 17	CC	Faith Seven, this is Canton Cap Com. Standing by.
26 20 22	P	Roger, Canton. I'm all green here.

HAWAII

26 27 00	CC	Faith Seven, Hawaii. Do you read?
26 27 04	P	Roger, Hawaii. Faith Seven.
26 27 06	CC	Faith Seven. All systems are green. We are standing by.
26 27 11	P	Roger. Thank you.
26 31 35	P	*And, we are approaching 26 31. We are between Hawaii and California. Very, very low rates. Turning on, my manual proportional control. Low rates.
26 32 33	P	I believe it's better to leave it as it is.
26 32 43	P	Now to get the camera out.
26 34 06	P	*And I made the first picture just then between, just off the west coast of the United States. Almost on the west coast.
26 34 49	P	Second one is coming in on the coast line. There are quite a bit of clouds, all different types and patterns. I took one getting in part of the coast line in under the clouds. That's number 2.
26 35 12	P	Snapping all these pics at f 5.6 and 1/125th.

CALIFORNIA

26 36 29	CC	Faith Seven, this is California Cap - .

26 36 32	P	Roger, California. Faith Seven.
26 36 45	CC	Faith Seven, this is California. We have you all green here on the ground.
26 36 51	P	Roger. Thank you. I'm all green here.
26 36 54	CC	Roger. When you take your photographs, will you turn your tape recorder to continuous?
26 37 00	P	Roger. I have the tape recorder on continuous.
26 37 48	P	Both of those pictures were made looking to, slightly to the south.
26 39 55	P	Looking back to the due west, inland on the desert area. In fact, there's the Salton Sea.
26 40 16	P	*There's the Gulf, and Baja California. Next one. There's El Centro area. I can make out individual fields. Smoke from the smoke-stack down there. There's some roads, houses. - A little airstrip. - There's a dry lake.

CAPE CANAVERAL

*

26 43 28	P	Faith Seven passing over Dallas.
26 45 56	CC	Faith Seven, this is Cape. Everything is go here. We are standing by.
26 46 01	P	Roger, Cape. Everything go here.
26 46 15	CC	Faith Seven. Would you like a G.m.t. hack? Over.
26 46 21	P	Roger. I would.
26 46 23	CC	All right. On my mark, G.m.t. will be 15 50 30. Standby, MARK. 15 50 30. (26 46 35)T

CNV-18

26 46 40	P	Roger. My G.m.t. clock is ten seconds fast.
26 46 47	CC	Understand the capsule clock.
26 46 53	P	That's the capsule clock.
26 46 55	CC	Roger.
26 46 59	CC	I have a correction to Diamond Head, retro-sequence time. Delta T, 4 minutes, 08 seconds for Diamond Head. Over.
26 47 11	P	10 minutes, 08 seconds.
26 47 15	CC	. . . 08.
26 47 16	P	4 minutes, 08 seconds.
26 47 21	CC	That is correct.
26 47 23	P	Roger.
26 47 28	CC	And if you should be inclined to, use the extra black and white 16 millimeter magazine outside, for general photography. Recommending f/16.0 since you have no filter.
Unreadable	P	Roger.
26 47 51	CC	We have no specific requirements for it, however.
26 47 56	P	Roger.
26 53 13	P	Radiation experiment coming on, NOW. (26 53 17)T. I'm at about, -10 degrees on pitch, roll right about 10 degrees, facing back to the west. Slowly oscillating in a left yaw rate.
26 56 08	P	I'm opening the KK clamp - And we'll see what happens here now.
26 57 51	P	*And it appears to be flowing, -, water out of the tin can.
26 59 00	P	Radiation experiment off.

27 02 26	P	The heat exchange dome temp immediately went down to the freezing point. Closing off KK clamp. - I'll have to continue on the original suit circuit.
27 09 15	P	Starting on the second series of the M.I.T. film, just short of Africa. Coast line should be coming in momentarily. - Took a shot out over the water of unusual, of good sized cloud buildups.
27 11 25	P	*Now the suit heat exchanger dome temp's starting back up. About thawed out.
27 16 38	P	Okay, short status. Roll clockwise 85 (degrees), roll counterclockwise 90 (degrees). Yaw right 68 (degrees), yaw left 75 (degrees). Pitch up 62 (degrees), pitch down 74 (degrees). Retro temp 75 (degrees). 250 inverter 108 (degrees), 150 inverter 124 (degrees), stand-by inverter 108 (degrees). Cabin outlet 72 (degrees). Auto peroxide tank 72 (degrees), manual peroxide tank 72 (degrees), reserve peroxide tank 75 (degrees). Correction on that, that auto peroxide tank is 82 (degrees). Isolated bus voltage 28 volts. - Camera going up in the - glove box.
27 26 08	P	(Yawn) Man, I dropped off to sleep again for a few minutes there.
27 29 50	P	Now, looks like the 1.5 (comfort control valve) setting is holding the - suit heat exchange dome temp for the moment. Almost down to the bottom, about 42 degrees.
27 30 47	P	Yo ho ho ho ho ho. (He is singing.)
27 31 51	P	Boy, what a beautiful view from up here. - Surprises you every orbit.

MUCHEA

27 33 39	CC	Faith Seven, Muchea Cap Com. Over.

MUC-18

27 33 42	P	Roger, Muchea. Faith Seven reading you loud and clear.
27 33 46	CC	Roger. Same. Would you place your telemetry switch in the continuous position please?
27 33 50	P	Roger. Coming continuous NOW.
27 34 15	CC	Roger. We have T/M.
27 34 19	P	Roger.
27 35 11	CC	I have some retrosequence times when you're ready to copy.
27 35 18	P	Roger. Go.
27 35 21	CC	Area 19-A (contingency recovery area) nominal.
27 35 28	P	Roger.
27 35 29	CC	19-B, 28 31 24. - Area 19-C, nominal.
27 35 45	P	Roger.
27 35 51	CC	Would you read back Area 19-B time?
27 35 53	P	Roger. 28 31 24.
27 35 57	CC	Roger.
27 36 34	CC	Systems here are go and Aeromed is go.
27 36 40	P	Roger. Thank you, I'm go from here.
27 37 03	P	Tell Warren to be careful and not get stuck.
27 37 06	CC	Ha, Ha. He knows about that.
27 37 12	P	Roger.
27 37 23	CC	Stuck on what?
27 37 26	P	On the outback.
27 37 28	CC	Roger. Acknowledge.
27 37 31	P	Roger.

27 37 57	CC	By the way, we have all joined tennis clubs.
27 38 02	P	Excellent. That's the best thing to do.
27 38 05	CC	Roger.
27 39 57	CC	Faith Seven, Muchea Cap Com. We read a very low suit dome temp.
27 40 02	P	Roger. I'm running it very low. I'm working it back up now.
27 40 17	CC	Say again, Faith Seven.
27 40 19	P	*Roger. I've already made a decrease in setting. It should be coming back up shortly.
27 41 51	P	*The suit dome temp is still acting up. Suit inlet temp is back up to about 68 degrees. The suit dome temp has gone down to about 38 degrees. Have suit coolant almost off now.
27 43 52	P	All right, suit coolant is shut completely off. Now it should come up.
27 50 10	?	. . . read you loud and clear.
27 50 45	P	Some of this fine plumbing they put in this thing. This sad thing on the needle, - on the diaphragm fitting has come out so I can't change the needle to any other fitting. - I'll have to leave the Kenny Kleinknecht clamp closed. - Meantime, I can't pump any more. - That container is full, and so is the other one.
27 52 24	P	I wish some of you guys who tried to stick in some of this plumbing and - connected here and there, and use it here and there would sit in here awhile and try and use the stuff.
27 55 33	P	Wow! - Look at that bright sunshine. Oooo weee!

HAWAII

28 00 28	CC	Faith Seven, Hawaii. Do you read? Over.
28 00 32	P	Roger, Hawaii. Faith Seven reading you loud and clear.
28 00 35	CC	Read you loud and clear. All systems are green. Standing by for fuel and O_2 readout.
28 00 40	P	Roger. Fuel 60/90 (percent). Oxygen 140/100 (percent).
28 00 55	CC	Say again, O_2 primary, please.
28 00 57	P	140 (percent), one four zero.
28 01 01	CC	Roger. Understand everything is green.
28 01 04	P	Roger. Thank you.
28 01 56	CC	Faith Seven, Hawaii.
28 02 00	P	Go ahead, Hawaii. Faith Seven.
28 02 02	CC	C-band in the continuous position?
28 02 05	P	Roger. It is.
28 02 06	CC	All right.

CALIFORNIA

28 08 07	CC	Faith Seven, this is California Cap Com.
28 08 11	P	Roger, California. Faith Seven.
28 08 13	CC	Roger. We have you green clear across the board, here.
28 08 18	P	Roger. Good.
28 08 19	CC	California standing by.
28 08 23	P	Roger.
28 13 10	P	Faith Seven passing over Baja California now. - See entire Baja California.
28 13 25	CC	Faith Seven. Were you calling California?
28 13 27	P	Negative. I was just commenting that I could see all of Baja California. It's all clear, all up and down.
28 13 38	P	Disregard.
28 13 40	CC	Roger, Faith Seven.
28 16 39	P	Faith Seven passing over Houston, Texas. Have it in sight loud and clear.

CAPE CANAVERAL

28 16 46	CC	Roger, Seven. We read that at the Cape.
28 16 50	P	Roger.
28 17 07	CC	Faith Seven, this is Cape. - We would like to see your TV returns, over.
28 17 12	P	Roger. I've got her on.
28 17 40	CC	Faith Seven, this is Cape.

CNV-19

28 17 43	P	Go ahead, Cape.
28 17 45	CC	I have you ATC (Air Traffic Control) clearance. Are you ready to copy?
28 17 49	P	Roger.
28 17 51	CC	Please pass to Major Cooper, in flight, from Air Force Secretary Zuckert and Chief of Staff General LeMay. It is with great pride and enthusiasm that the entire United States Air Force is following the progress of your historic flight. A dramatic contribution to aerospace exploration. Good luck, and God speed. Over.
28 18 21	P	Roger. Thank you.
28 18 24	CC	That's all right, Colonel.
28 18 37	CC	Faith Seven from Cape. Could you give me a comment on your general comfort, please?
28 18 44	P	*Roger. My general comfort is good, now. I've had a continuing battle with the plumbing in here. I was not able to open the KK clamp, due to the fact that, that system is full of water. One of the needles broke off, or the little insert into it broke, and I am unable to transfer any more water out of the condensate tank.
28 19 09	CC	Roger. I gather you are not bothered by it.
28 19 13	P	Negative. I am plenty comfortable. I've had trouble with the suit heat exchanger, keep having to run it up and down, and chase it, but it's doing fine.
28 19 23	CC	Looks like you are doing a real good job on that, apparently you are keeping yourself very comfortable.
28 19 28	P	Roger.

28 19 30	CC	I assume since you've had trouble with this clamp, that it is now in the, rather, since you've had trouble with the condensate transfer, that the clamp is now in the closed position.
28 19 41	P	That's affirmative.
28 19 44	CC	Roger. Good show.
28 19 53	P	Are you getting any TV yet?
28 19 57	CC	I think the light is low inside there, Gordo.
28 20 01	P	I'm outside.
28 20 09	CC	Are you in the sun?
28 20 10	P	Negative.
28 20 12	CC	I recommend you turn it off.
28 20 14	P	Roger.
28 20 18	CC	Also, how about the little squeezers, have they been beating their hearts out every ten minutes?
28 20 24	P	Roger. Faithfully every ten minutes, throughout the whole day and night, every time.
28 20 31	CC	A couple of beady yellow eyes, huh?
28 20 42	P	Ha, Ha, - Roger. I'm directly over Miami. I'm looking right down on Miami Beach.
28 20 48	CC	. . .
28 21 39	CC	Faith Seven, this is Cape. Would you give us a blood pressure now, please?
28 21 43	P	Roger.
28 31 44	P	Okay, you guys will have had it now . . . another measure . . .

28 41 31	P	Drink some water.
28 55 34	P	Okay. Radiation experiment coming on now.
28 55 48	P	I'm in full drifting flight, so I'll have random attitudes for it.
28 59 51	P	At 28 59, my 0.05g telelight came on after I turned my warning lights off and back on to dim. Have turned my 0.05g, and emergency 0.05g switch fuse, off.
29 02 38	P	Radiation measurement is off.
29 24 19	P	For my short status report. Peroxide regulated pressure, auto 470 (psi), manual 490 (psi). - 75 (degrees) pitch down, 60 (degrees) pitch up. Yaw left is 80 (degrees), yaw right is 65 (degrees). Roll counterclockwise is 78 (degrees), roll clockwise is 75 (degrees). - Auto peroxide outlet 72 (degrees), manual is 72 (degrees), reserve 75 (degrees).

HAWAII

29 28 15	CC	Faith Seven, Hawaii on air-to-ground relay, do you read? Over.
29 28 19	P	Roger, Hawaii. Faith Seven reading you loud and clear.
29 28 29	P	Roger. Faith - Faith Seven is reading you loud and clear, Hawaii.
29 34 07	P	Hawaii Cap Com, Faith Seven.
29 34 09	CC	Go ahead, Seven, this is Hawaii. Read you loud and clear.
29 34 13	P	Roger. Wonder if you would relay to the Cape - a little situation I had happen and see what they think on it. While turning my warning lights off and back on to dim, my 0.05g telelight came on in my telelight panel. Now the action that I have taken is, to turn off my

	P (cont'd)	0.05g switch fuse and my emergency 0.05g switch fuse. Would you relay to them, and get their idea on it? Over.
29 34 44	CC	Understand your 0.05g light came on and you turned your 0.05g fuse switch and emergency 0.05g fuse switch off.
29 34 56	P	That's affirmative.
29 34 59	CC	Is that affirmative?
29 35 01	P	Affirmative.
29 35 02	CC	Can we have T/M on?
29 35 06	P	Roger. T/M is on now, have it on ground command.
29 35 10	CC	I have retrosequence time for (contingency recovery) area 20-Alpha, is nominal.
29 35 18	P	Roger. 20-Alpha is nominal. Thank you.
29 35 22	CC	We also, pass on to you, turn C-band beacon on, a G.e.t. of 30 58 00.
29 35 33	P	30 58 00.
29 35 37	CC	Roger. Turn off at 31 08 00.
29 35 56	CC	Did you copy, Seven?
29 35 57	P	Negative. I got 30 58 00 on.
29 36 02	CC	Roger. Turn it off 10 minutes later.
29 36 05	P	Roger. Will do.
29 36	CC	Seven, this is Hawaii. Was that a red or a green telelight?
29 36 38	CC	Faith Seven, Hawaii. Do you read? Over.
29 36 40	P	Roger. Go ahead, Hawaii. Faith Seven.

HAW-CAL-19

29 36 42	CC	Roger. Was your 0.05g light red or green?
29 36 46	P	It was green. Over.
29 36 50	CC	Consumable readout please.
29 36 52	P	Roger. Fuel, 58 (percent) auto, 90 (percent) manual. Oxygen, 140 (percent) primary, 100 (percent) secondary.
29 37 02	CC	Roger. Understand.
29 37 28	CC	Seven, this is Hawaii Cap Com.
29 37 31	P	Go ahead, Hawaii. Seven.
29 37 37	CC	Faith Seven, Hawaii. Over.
29 37 39	P	Go ahead, Hawaii. Faith Seven.

CALIFORNIA

29 41 32	CC	Faith Seven, Faith Seven. This is California Cap Com.
29 41 35	P	Roger, California Cap Com. Faith Seven here.
29 41 39	CC	Roger, Faith Seven. Our panel looks good. Telemetry does not indicate 0.05g.
29 41 52	P	Roger. It must be a - . I just threw a glitch into the light when I was turning my warning lights off and on, then, probably.
29 42 02	CC	There is a little diode in your light test, that failed could cause that light to come on.
29 42 08	P	Roger. - Does MCC recommend that I go ahead and put my 0.05 and emergency 0.05g switch fuses back on?

29 42 21	CC	Faith Seven. Leave them off.
29 42 25	P	Roger.

GUAYMAS

29 44 07	P	Go ahead, Guaymas. Faith Seven.
29 44 09	CC	I have some retrosequence times for you, for (recovery area) area 20-1.
29 44 16	P	Roger.
29 44 17	CC	30 53 01.
29 44 22	P	Well, just a minute. Which one is that?
29 44 25	CC	Area 20-1.
29 44 28	P	Roger. 30 - .
29 44 30	CC	53 01.
29 44 33	P	53 01. Roger.
29 44 34	CC	Roger. And (contingency recovery) areas 20-B, C, and D are nominal.
29 44 42	P	Roger. Understand. Thank you.
29 44 45	CC	Roger. And 20-1 doesn't take in your clock error.
29 44 49	P	Roger. Understand.
29 48 38	CC	Faith Seven. Guaymas Cap Com.
29 48 40	P	Go ahead, Guaymas. Faith Seven.
29 48 42	CC	*Would you go ahead and power up your ASCS bus? We would like to know if you have your Amp Cal programmer.
29 48 50	CC	. . . gyros caged now?

29 48 51	P	Gyros are caged. Fly-by-wire, ASCS coming on normal now.
29 49 25	P	Guaymas, are you still reading me?
29 49 29	CC	Go ahead, Faith Seven.
29 49 32	P	Roger. You still have me on telemetry?
29 49 35	CC	Roger. You look good.
29 49 37	P	Roger. I am supposed to do this HF antenna test, now.
29 49 43	CC	Roger.
29 49 49	P	I will be on HF for a couple of minutes and then back on UHF.
29 50 13	P	This is Faith Seven on high frequency. Capsule elapsed time 29 50 20. Now for HF antenna test. My attitudes are zero (degrees) in roll. Am rolling 90 degrees and repeating.
29 51 37	P	This is Faith Seven on the second portion of the HF antenna test. C.e.t. 29 51 45. Now I am rolled 90 degrees. HF out.
Unreadable	P	Faith Seven is back on UHF.

CAPE CANAVERAL

29 52 26	CC	Faith Seven. This is Cape. How do you read? Over.
29 52 29	P	Roger, Cape. Faith Seven reading you loud and clear.
29 52 32	CC	Roger, Gordo. On this 0.05g business, we are interested in whether or not the Amp Cal has switched to 0.05g logic. Do you follow?
29 52 43	P	Roger.

29 52 44	CC	*We figured the best way to do it, after gyros have warmed up, is to uncage, initiate a slow rate in any axis, and see if you have attitudes. If you do have attitudes, we feel that the Amp Cal has not latched at 0.05g. Over.
29 53 01	P	Roger. Assume a slow rate in any axis and see if the attitudes follow. Right?
29 53 09	CC	Right. When you uncage the gyros, you'll have to set up a very slow rate and see if you have attitude indications.
29 53 16	P	Roger.
29 54 04	CC	Seven, from Cape. We may have LOS before you are able to do this. Once you have done it, report to us through some other station, and then power down the ASCS after your test is complete.
29 54 18	P	Roger.
29 55 07	CC	Seven from Cape. Have you uncaged gyros yet?
29 55 10	P	Negative. Not yet.
29 55 14	CC	All right. We may lose you. Advise the next station.
29 55 19	P	Roger.
29 55 21	CC	Try to advise us even if we've had LOS.
29 55 29	P	Roger.
29 57 41	P	Cape. Faith Seven here.
29 58 13	P	Cape Cap Com. This is Faith Seven on high frequency. How do you read on this? Over.
Unreadable	CC	. . .
29 58 28	P	Cape Cap Com. Faith Seven on high frequency.
Unreadable	CC	. . .

CNV-CSQ-20

29 59 09	P	Hello, Cape. Faith Seven on high frequency. Over.
Unreadable	CC	. . .

COASTAL SENTRY QUEBEC

30 48 03	CC	Hello, Faith Seven . . .
30 48 13	P	Roger, Faith Seven here. Go ahead.
30 48 16	CC	. . .
30 48 48	P	Faith Seven, here. Go ahead, John, just barely read you.
30 49 02	?	. . .
30 50 36	CC	Hello, Faith Seven. Hello, Faith Seven, this is CSQ Cap Com calling early. If you read me, Gordo, answer on HF. Over.
30 50 58	P	Roger, John. This is Faith Seven. Reading you about 4 by 4. How me?
30 51 05	CC	Hello, Faith Seven. CSQ Cap Com reads you very weak and unreadable. If you can read, give me status of your ASCS check, please. Over.
30 51 17	P	Roger. My Amp Cal is latched up 0.05g. I do not have ASCS. Over.
30 51 25	CC	Understand you do not have ASCS. Is that affirm?
30 51 29	P	That is affirm.
30 51 37	CC	Faith Seven, this is CSQ. Can you say again, trouble with your Amp Cal? I did not receive that part of your transmission. Over.
30 51 45	P	Roger. My 0.05g portion of the logic is latched in on the Amp Cal, so I do not have attitude indications through the auto pilot anymore.

30 52 01	CC	Roger . . . Amp Cal . . . Gordo, understand the Amp Cal is not working and the ASCS is inoperative, was your gyro in the slaved position when you overturned? Over.
30 52 11	P	Say again.
30 52 58	P	This is Faith Seven on UHF. How do you read, CSQ?
30 53 33	CC	Faith Seven, CSQ Cap Com. Do you still receive me? Over.
30 53 37	P	Roger, CSQ. Faith Seven on UHF. How do you read? Over.
30 53 41	CC	Roger. Still reading you, Gordo. Did you have any of your gyros switched to slave during the ASCS check? Over.
30 53 47	P	*Roger. I had them caged and then I went to slave, and in moving my rates, I did not get any attitudes. Over.
30 53 59	CC	Roger. Understand. No attitudes. Did you go into roll at all? Over.
30 54 03	P	Roger. I tried roll, pitch, and yaw. Over.
30 54 07	CC	Roger. You did not go into automatic roll. Is that affirmative?
30 54 11	P	*I did not power up the ASCS. All I did was turn my ASCS on, powered up my ASCS a-c bus. And when it was warmed up, then uncaged my gyros to the slave position, which should give me attitude.
30 54 30	P	And if - .
30 54 32	CC	Repeat that please. We don't have much time. Over.
30 54 34	P	Roger. I do not have attitudes when I go to slave on my gyros. When I uncage my gyros, I do not have attitude indications, with the ASCS a-c powered up.

30 54 48	CC	Understand you did not go into actual ASCS. Is that affirmative?
30 54 51	P	Negative. I did not.
30 55 39	CC	Faith Seven, . . .
30 55 41	P	Roger. Reading you loud and clear.
30 55 44	CC	Roger. I am reading you rather weak. You did not go on ASCS. You powered up, and went to the slave position, got no gyro indication. Is that affirmative?
30 55 58	P	That is affirm, affirm.
30 56 05	CC	Hello, Faith Seven. Be sure your T/M transmitter is on, and C-band beacon is on, for Range Tracker pass. I repeat, make sure C-band beacon is on the T/M is on for the Range Tracker pass.
30 56 21	P	Roger. It's on.
30 56 32	CC	Hello, Faith Seven. - this is CSQ Cap Com. . . . on. Acknowledge please. Over.
30 56 44	P	Roger. They are on. Affirm, John.

HAWAII

31 00 30	CC (CNV)	Faith Seven, this is Cape Cap Com. Over. (Loud squeal)
31 00 33	P	Roger. Go ahead, Cape Cap Com. Faith Seven.
31 00 49	CC (CNV)	Faith Seven, this is Cape Cap Com. Over. (Loud squeal)
31 00 53	P	Roger. Cape Cap Com, Faith Seven here. Go ahead.

31 00 57	CC (CNV)	Roger Gordo. . . . your Amp Cal is probably locked up on 0.05g. We are interested in just how much of your Amp Cal is working.
31 01 08	P	You're not coming through at all, Al.
31 01 11	CC (CNV)	. . .
31 01 14	P	Negative, I'm not reading you.
31 01 17	CC (CNV)	. . .
31 01 23	P	Al, I can't read you. My Amp Cal is locked up on 0.05g. I do not have attitude indicators. Over.
31 01 33	CC (CNV)	Roger. Roger. Can you read me now?
31 01 37	P	Just barely.
31 01 39	CC (CNV)	Roger. Standby a few minutes.
31 02 00	CC (CNV)	Hello Faith Seven. How do you read me now?
31 02 06	P	A little bit better.
31 02 09	CC (CNV)	Faith Seven, I do understand that you do not have attitude indications? . . . do you read?
31 02 20	P	Negative. I'm not able to understand you yet. Over.
31 02 29	CC (CNV)	Okay. Standby.
31 02 50	CC (CNV)	Seven, from Cape. How do you read?
31 02 51	P	Roger. Reading you better now.
31 03 14	CC (CNV)	Seven, from Cape. How do you read now?

HAW-20

31 03 17	P	Roger. Reading you loud and clear now.
31 03 25	P	Roger, Cape. Reading you loud and clear now.
31 03 28	CC (CNV)	Roger. We're interested in how much of your Amp Cal is still available to you.
31 03 42	CC (CNV)	Seven, we would like you to do a how-de-doody test over Hawaii, to find out how much of your Amp Cal is still available.
31 03 52	P	Roger. Do you say you want me to power up my ASCS?
31 04 12	P	Cape Cap Com, say again. You were cut out on that. Over.
31 04 30	CC	Faith Seven, Hawaii Cap Com. Do you read?
31 04 33	P	A little bit, Scott.
31 05 01	CC	Seven, Faith Seven, Hawaii Cap Com.
31 05 04	P	Roger, Hawaii. Faith Seven.
Unreadable	CC	Go ahead Cape.
31 05 06	F	*We want to use the transfer to your circuit and let Cape Cap Com talk with him this pass.
31 05 14	CC	Roger. You are relaying at this time.
31 05 17	F	Roger. Would you also make sure that your people are prepared to watch for the T/M signal also, after this pass, we would appreciate if you'd play your last pass over again, to make sure that you understand what we want in regards to what happened to the 0.05g light between the time you got acquisition of the . . .
31 05 47	CC	Roger, I copied.
Unreadable	SY	Hawaii command carrier on.

31 07 01	P	Hello, Hawaii. Are you reading Faith Seven now? Over.
31 07 24	CC (CNV)	Faith Seven, this is Cape. Over.
31 07 27	P	Roger, Cape. Faith Seven here.
31 07 37	P	Roger, Cape. Faith Seven here.
31 07 40	P	Roger, Cape. Faith Seven here. Go ahead.
31 07 43	CC (CNV)	. . .
31 07 53	P	You're cutting in and out, I understand you want to find out how much of my Amp Cal is gone.
31 08 00	CC (CNV)	Affirmative. We would like to have you first switch your ASCS 0.05g fuse switch on, and check the 0.05g light?
31 08 11	P	Roger. I'll do that now.
31 08 20	P	Roger. When I have put my ASCS 0.05g switch fuse on, my light comes green. Over.
31 08 28	CC (CNV)	Roger. Turn that fuse switch off and put your emergency 0.05g fuse switch on and check the light please.
31 08 35	P	Roger.
31 08 40	P	With the ASCS 0.05g switch fuse off, and emergency 0.05g switch fuse on, the light is not green. Over.
31 08 50	CC (CNV)	Roger. In the meantime Hawaii will check T/M. Do not forget that we would like . . . fly-by-wire . . .
31 09 27	P	You were cutting in and out. I didn't get any of that, over.
31 09 31	CC (CNV)	Okay. We will try it one more time . . . Over.

31 09 57	P	Roger. To go into auto and check for what?
31 10 00	CC (CNV)	. . . 0.05g.
31 10 08	P	You were cut out.
31 10 11	CC (CNV)	Roger. We would like to have you check for the roll rate which occurs after 0.05g.
31 10 18	P	Roger. Understand.
31 10 21	CC (CNV)	If you get this rate - .
31 15 22	P	Retro temp is 80 (degrees). Pitch down is 70 (degrees), pitch up is 65 (degrees). Yaw left 80 (degrees), yaw right 62 (degrees). Roll counterclockwise 72 (degrees), roll clockwise 68 (degrees). Auto peroxide tank 80 (degrees), manual 70 (degrees), reserve 72 (degrees). 250 inverter 101 (degrees), 150 inverter 121 (degrees), standby inverter 98 (degrees).

CALIFORNIA

31 16 44	CC	Faith Seven, Faith Seven, California Cap Com.
31 16 47	P	Roger, California, Faith Seven. Loud and clear.
31 16 51	CC	Be sure when you check for roll rate that the ASCS 0.05g fuse switch is in the on position.
31 16 59	P	Roger.
31 17 03	CC	. . .
31 17 08	P	*I have both fuse switches in the on position. My ASCS a-c bus is powered. I'm going to gyros slave. Now I understand I'm to go on, to auto. Is that affirm?

31 17 26	CC	Say again, Faith Seven.
31 17 28	P	Roger. I have ASCS bus powered. Gyros are slaved, and now I understand that they want me to go into auto and see if I get the roll rate. Over.
31 17 39	CC	This is affirmative, Faith Seven.
31 17 42	P	Roger. Then do I come right back off with it if I get the roll rate? Over.
31 17 46	CC	*This is true. You can stop the capsule with the fly-by-wire.
31 17 50	P	Roger. Going into auto, NOW. (31 17 52)^{T}
31 17 58	P	Roger. I do have the roll rate.

GUAYMAS

31 18 25	CC	Guaymas Cap Com.
31 18 26	P	Go ahead, Guaymas. Faith Seven.
31 18 29	CC (CAL)	You can turn off the ASCS now.
Unreadable	CC	And turn the 0.05g ASCS fuse switch off and the - .
31 18 39	P	Roger. I have my ASCS 0.05g switch fuse off, and I'm powering down the ASCS. Is that affirmative?
31 18 49	CC	Power down your ASCS.
31 18 53	P	Roger. Powering down ASCS.
31 18 56	CC	Cage your gyros.
31 18 57	P	Roger. They are already caged.
31 19 01	CC	Gyros caged. ASCS bus, turned off.
31 19 04	P	Roger.

31 19 13	P	*Would you ask the Cape, what do I have left now. I have Aux Damp, fly-by-wire and manual proportional, is that affirm, for retrofire?
31 19 46	CC (CAL)	. . . Com.
31 19 51	P	Go ahead, Guaymas.
31 19 53	CC (CAL)	. . .
31 20 05	P	Roger. What are they recommending? Do you know?
31 20 11	P	Roger.
31 20 17	CC (CAL)	. . .
31 20 21	P	Roger.
31 20 27	CC (CAL)	. . .
31 20 31	P	Roger. No problem.
31 21 10	CC (CAL)	Gordo. This is your last pass over us.
31 21 15	P	Roger. I'll see you in a couple of days.
31 21 18	CC (CAL)	Roger. You're doing an outstanding job. I'm proud of you.
31 21 19	P	Roger. Thank you, Gus.
31 21 23	CC (CAL)	Your friends in Mexico say adios.
31 21 25	P	Roger. Muchas gracias. - Muchas gracias. - That's French for thank you.
31 21 37	CC (CAL)	The same.

31 54 25	P	*Okay. Here I am at 31 54 28, now. Slow drift again in the nighttime. Still having trouble with the cabin, with the suit heat exchanger dome temp, got control of if here, pretty close. Will fool around with it for about another 2 hours and some odd minutes.
31 55 18	P	Everything looks good. I have 53 percent auto (fuel) and about 79 percent manual (fuel).
31 58 20	P	Okay.
32 20 55	P	I'm observing some cities, through the clouds at 32 20, 32 21.
32 21 17	P	Seeing out over Laos.

COASTAL SENTRY QUEBEC

32 22 02	P	Roger, CSQ Cap Com. Faith Seven here.
Unreadable	CC	. . .
32 22 18	P	Roger, CSQ Cap Com. Faith Seven reading you.
32 22 23	P	Roger. I read you, John.
32 22 38	CC	Faith Seven, this is CSQ Cap Com. Answer if you read me on HF. Over.
32 23 01	P	Roger, CSQ Cap Com. Faith Seven reading you.
32 23 07	CC	CSQ Cap Com, Roger. We're going to change your clock Gordo, to keep you from doing it. We have a list to copy here on this retro procedure. Are you ready for clock command? Over.
32 23 16	P	Roger. Go ahead.
32 23 19	CC	Command on. What we're doing is backing your clock off one hour. You'll still be able to use minutes and seconds okay for retro. Over.

CSQ-21

32 23 27	P	Okay.
32 23 29	CC	Okay. Here is the list to copy. Over.
32 23 37	P	Roger. Go ahead.
32 23 39	CC	Roger. Also, before we start this, make sure C-band is on for Range Tracker and also T/M. Over.
32 23 46	P	Roger. C-band and T/M are on.
32 23 55	CC	Roger. Okay, are you ready to copy?
32 23 58	P	Roger. Go.
32 24 00	CC	Roger, number one is attitude permission by-pass.
32 24 09	P	Go.
32 24 11	CC	Attitude permission by-pass is number one. Do you acknowledge?
32 24 14	P	Roger. I got that. Go ahead.
32 24 16	CC	Roger. Retrorocket arm switch, manual.
32 24 21	P	Roger. Got that.
32 24 24	CC	Roger. Fly-by-wire thrust select switch, high and low.
32 24 32	P	Roger. Got it.
32 24 33	CC	Roger. Retrosequence fuse switch, number 2.
32 24 40	P	Roger. Got it.
32 24 43	CC	Roger. Retromanual fuse switch, number 2.
32 24 49	P	Roger.
32 24 51	CC	Roger. ASCS a-c bus switch, on.
32 24 54	P	Roger.

32 24 56	CC	ASCS 0.05g fuse switch, number 1.
32 25 04	P	Roger.
32 25 06	CC	ASCS control switch, select.
32 25 16	P	Roger.
32 25 18	CC	Mode select switch, off.
32 25 25	P	Roger.
32 25 27	CC	Manual handle, push on.
32 25 34	P	Roger.
32 25 37	CC	Roger. That will put you on manual. If you want to go fly-by-wire all you'd have to do is pull the manual handle off and your mode select to fly-by-wire. Roger.
32 25 45	P	That's affirm.
32 25 46	CC	Roger, okay. Squib arm will come on at retrofire minus 5 seconds.
32 25 57	P	Roger.
32 25 59	CC	Roger. And I will count down to retrofire with the Cape so you can hear. Over.
32 26 04	P	Roger, and I'll manually use fire retro then. Is that affirmed?
32 26 09	CC	Roger. The next step is to depress fire retro override, in other words push the fire button. Over.
32 26 14	P	Roger. Understand.
32 26 16	CC	Roger. Now, if you have no retros, you can use as a backup, the following. If there are no retros the next procedure would be used as a back up.
32 26 26	P	Okay.

32 26 29	CC	Hold just a second. What does your clock read now? Over.
32 26 34	P	Time to retrograde 01 31 50 now.
32 26 40	CC	Say, your clock setting should read 34 59 52. Over.
32 26 47	P	Negative. It does not.
32 26 50	CC	Roger. Did you copy 34 59 52? Over.
32 26 58	P	Roger. 34 59 52.
32 27 01	CC	Roger. You can set it yourself after leaving station here. I think we should get the rest of this procedure now. Over.
32 27 06	P	Roger.
32 27 09	CC	Roger. If you have no retros, use, if you get no retros, use as backup the following. Number 1, retro delay to instant.
32 27 21	P	Roger.
32 27 22	CC	Press retrosequence button.
32 27 24	P	Roger.
32 27 26	CC	Okay. Some additional precautions. The retrojettison will have to be done manually.
32 27 31	P	Roger.
32 27 32	CC	Be sure that you do not arm the retrojettison switch until after the rockets have fired. Over.
32 27 38	P	Roger. Don't worry.
32 27 39	CC	Yeah, I'm with you. You'll probably not get a fire retro telelight, but we should get them okay here on the ground. Over.

32 27 47	P	Roger.
32 27 48	CC	Okay. Hold your retroattitude until jettison retro, keep rates as low as possible, maintaining visual reference as aid for low rates and at your nominal 0.05g time, select reentry mode.
32 28 03	P	Roger.
32 28 04	CC	That reentry mode of selection should be at about 34 09 19.
32 28 11	P	Roger.
32 28 14	CC	Okay. You'll come up on ASCS, go on auto with ASCS continuous, switch for your 0.05g and then your reentry. Over.
32 28 26	P	Roger.
32 28 27	CC	Okay. That's the whole works now, also go cabin fan normal now and your cabin control valve to 3.0. Over.
32 28 35	P	Roger. I already have it on.
32 28 40	P	What's wrong with reentering on Aux Damp on the reentry portion.
32 28 46	CC	Say again, Gordo.
32 28 48	P	Never mind, I'm losing you. Let's go UHF.
32 28 51	CC	Roger. Okay, see if you can get that 34 59 52 set up before you leave our telemetry. Over.
32 28 59	P	Roger, will do.
32 29 31	P	Roger. 34 59 52.
32 29 40	CC	Roger, Faith Seven. I have you at 34+59+52. Over.
32 29 45	P	That's affirmative.
32 30 09	CC	Faith Seven. CSQ. If you receive, switch to HF. Over.
32 30 20	P	Roger. Reading you loud and clear now, John.

CSQ-HAW-21

32 30 23	CC	You came back in loud and clear then. We have your clock setting 34 59 52, that's correct.
32 30 29	P	That is affirmative.
32 30 32	P	That's one hour off, right?
32 30 34	CC	Say again, Faith Seven.
32 30 36	P	That's one hour beyond, right?
32 30 37	CC	That's correct. When we count down, we'll use minutes and seconds only. Over.
32 30 42	P	Okay.
32 30 45	CC	They'll check you on this, on later in this pass. Over. We should be ready next time around.
32 30 50	P	Roger.
32 31 04	P	Is that next time around or the time after that?
32 31 09	CC	Say again.
32 31 10	P	Roger. That is the next time around, is it not?
32 31 13	CC	That is correct, next time around when we see you, I will be firing.
32 31 17	P	Roger.
32 31 23	CC	What is your attitude? Are you in drift now, Gordo?
32 31 26	P	That's affirmative.

HAWAII

32 40 42	CC	Hello Faith Seven, Faith Seven, Hawaii Cap Com. Do you read?

32 40 46	P	Roger, Hawaii Cap Com, Faith Seven. Loud and and clear.
32 40 49	CC	Roger, Faith Seven, Hawaii Cap Com recommend take a green as for go now and go over your stowage check list now . . . did you copy?
32 41 03	P	Roger. I'm practically all stowed right now.
32 41 09	CC	Say again, Faith Seven.
32 41 11	P	I'm practically completed with my stowage check-list now.
32 41 15	CC	Roger. You understand to take green for go, at this time?
32 41 19	P	To take what?
32 41 21	CC	Green for go. Take green for go at this time.
32 41 25	P	Roger, I understand. A green for go, will do.
32 41 31	CC	Roger. Zanzibar will go over this checklist that you copied from John and John will help you with the retrofire time. Also do you understand that the time in your clock now is retrofire time +1 hour? You should read at retrofire 01 00 00.
32 41 55	P	Roger. Understand.
32 41 58	CC	Roger. What's your PCO_2 reading please?
32 42 02	P	*Roger, PCO_2 is about 2-1/2 (millimeters of mercury) now.
32 42 19	CC	PCO_2 is 2.5. Is that right?
32 42 21	P	That's affirmative.
32 42 48	CC	Faith Seven, Hawaii Cap Com.
32 42 52	P	Go ahead, Hawaii.
32 42 56	CC	We want the retrofire check list completed over the Atlantic with the exception of your squib switch which you can get at retrofire -5 sec.

32 43 07	P	Roger, I intend to have it completed before then.
32 43 23	CC	Seven, Hawaii Cap Com. I'm sure you're familiar with the star pattern you'll be using during the retrofire.
32 43 32	P	Roger.
32 44 21	CC	Faith Seven. Hawaii Cap Com. Everything looks good on the ground. You might keep your eye on the PCO_2. What is your visor position?
32 44 29	P	Roger. My visor is open and I'm breathing off the cabin.
32 44 32	CC	Roger.
32 44 34	P	I'm going to emergency rate on my oxygen for a moment just to see if it's the gauge, or if it actually is building up a little.
32 44 42	CC	Roger. Understand emergency flow rate at this time? (Tone noted)
32 45 03	P	Roger. It does not seem to be decreasing on the gauge, so it must be the gauge error.
32 45 10	CC	Roger. We're reading an increase on the ground as well.
32 45 23	P	I'm back on normal oxygen rate.
32 45 27	CC	Understand back on normal.
32 45 30	P	Roger, fans are running.
		(standby a-c auto warning tone occurs at 33 03 09)T
33 05 43	P	Well, things are beginning to stack up a little. ASCS inverter is acting up. And my CO_2 is building up in the suit. Partial pressure of O_2 is decreasing in the cabin. Standby inverter won't come on the line. Other than that things are fine.
	P	All right, I've checked that.

ZANZIBAR

33 33 14	CC	Faith Seven, this is Zanzibar Cap Com. How do you read?
33 33 18	P	Roger, Zanzibar, Faith Seven reading you loud and clear.
33 33 21	CC	Faith Seven, Zanzibar Cap Com, let's start your checklist here.
33 33 28	P	Roger, go ahead.
33 33 29	CC	One item has been added. Verify visor is closed.
33 33 36	P	*Negative, visor is not closed at the moment, I have a high CO_2 rate in suit.
33 33 47	CC	Item number 1 on the checklist now reads, cage gyro and remain caged throughout reentry.
33 33 58	P	Roger. I have an item for you. My ASCS a-c inverter has failed, so I will be making a manual reentry.
33 34 09	CC	ASCS inverter has failed?
33 34 12	P	That is affirmative.
33 34 14	CC	Roger. Let's continue this checklist now. Attitude permission bypass, bypass position.
33 34 21	P	*Roger. Bypass.
33 34 23	CC	Retrorocket arm switch manual?
33 34 26	P	Roger, on manual.
33 34 28	CC	*Fly-by-wire thrust selector switch high-low.
33 34 34	P	Roger on high and low.
33 34 36	CC	Retrosequence fuse switch number 2.
33 34 39	P	Number 2.

33 34 42	CC	Retromanual fuse switch number 2.
33 34 46	P	Number 2.
33 34 47	CC	ASCS bus switch on.
33 34 51	P	ASCS a-c bus is off.
33 34 53	CC	Roger. ASCS 0.05g fuse switch to number 1 position.
33 34 59	P	On number 1.
33 35 01	CC	ASCS control switch select.
33 35 04	P	On select.
33 35 07	CC	Mode select switch off.
33 35 08	P	Mode select off.
33 35 11	CC	Manual handle push on.
33 35 14	P	Manual handle is on.
33 35 16	CC	*Right. Squib arm at retro minus 5 seconds.
33 35 27	P	Roger.
33 35 28	CC	And that will occur in approximately 25 minutes.
33 35 31	P	Roger, I understand.
33 35 35	CC	Have you tried the standby inverter on ASCS bus?
33 35 38	P	Roger, the standby inverter will not start.
33 35 41	CC	The standby inverter will not start.
33 35 43	P	That is affirmative.
33 35 45	CC	Roger. - Cape Flight advises you believe your CO_2 partial gauge in the capsule, as this was confirmed over Hawaii.
33 36 05	P	Cape advises what?

33 36 09	CC	We will advise you at this time, you have sufficient oxygen in to continue on emergency rate from now through reentry if required.
33 36 17	P	Ah, Roger. I understand.
33 36 22	CC	Shall we go over the retro backup?
33 36 26	P	Negative. I have that straight, I'll just go to retrofire to instantaneous and punch retrosequence.
33 36 35	CC	That is correct. You have the other additional precautions.
33 36 47	P	Negative. What's that?
33 36 48	CC	Retrojettison must be done manually.
33 36 52	P	Oh, Roger, Roger. I have those.
33 36 53	CC	Retrojettison switch to arm, after rockets fired.
33 36 58	P	Roger. I have that.
33 37 03	CC	You will probably not get a fire retro telelight.
33 37 06	P	Roger.
33 37 08	CC	Ground should be able to confirm, though.
33 37 11	P	Roger.
33 37 31	CC	Faith Seven, Zanzibar Cap Com.
33 37 34	P	Go ahead Zanzibar, Faith Seven.
33 37 36	CC	*We've had about 3 percent rise on the CO_2 partial. Do you think it is advisable to purge again at this time?
33 37 47	P	Negative. It seems to be holding pretty steady, over what it has been.
33 37 51	CC	Roger. We're getting very poor air-ground communications at this time.

33 37 56	P	Roger.
33 38 09	CC	. . . Faith Seven. Zanzibar Cap Com.
33 38 12	P	Go ahead Zanzibar. Faith Seven.
33 38 14	CC	We would advise the visor be closed prior to retrofire.
33 38 20	P	Roger, it will be.
33 38 35	CC	Faith Seven. Zanzibar Cap Com.
33 38 38	P	Go ahead.
33 38 39	CC	Cape advises closing visor.
33 38 42	P	Roger.
33 38 44	CC	Do you confirm.
33 38 46	P	Roger. Will close visor. Visor is closed and locked.
33 39 02	CC	Roger, visor is closed and locked. Continue to watch that PCO_2 meter and if it rises, go on emergency rate.
33 39 10	P	Roger.

COASTAL SENTRY QUEBEC

33 56 25	P	CSQ Cap Com, Faith Seven. Over.
33 57 03	CC	Hello Faith Seven, CSQ Cap Com. Over.
33 57 06	P	Roger, CSQ Cap Com. Faith Seven in retroattitude. Checklist complete.
33 57 16	P	Roger, CSQ Cap Com, Faith Seven.
33 57 19	CC	Faith Seven, CSQ Cap Com. Roger. You're sounding good. How's that check test? All complete?
33 57 24	P	Roger. All complete except for squib.

33 57 26	CC	Roger. How's the window attitude? Check okay?
33 57 30	P	Roger. Right on the old gazoo.
33 57 32	CC	That's the way, boy.
33 57 34	CC	*Okay. Our procedure, Gordo. - I'll give you the 1 minute hack before retrofire and then I'll give you a 10 second countdown to what would normally be retrosequence. This time there will just be a countdown to a 30 second point and then a 10 second countdown to retrofire and at the 5 point tell you to arm squib.
33 57 53	P	Roger. That's fine.
33 57 54	CC	Roger.
33 57 59	CC	How's your PCO_2 doing?
33 58 02	P	Oh, its coming on up. And my ASCS inverter has failed, few other little odds and ends.
33 58 09	CC	Okay. Roger.
33 58 11	P	*I'll shoot the retros on manual, and I'll reenter on fly-by-wire.
33 58 18	CC	Roger. Okay.
33 58 20	P	I'm looking for a lot of experience on this flight.
33 58 23	CC	You're going to get it.
33 58 26	CC	Okay, we've got the beginning of the 1 minute period and about 25 seconds here.
33 58 31	P	Roger.
33 58 48	CC	Okay. One minute to go on my mark. Standby.
33 58 54	CC	MARK. (33 58 54)^T
33 59 00	CC	Did you get that?

33 59 03	P	Roger. I got it.
33 59 04	CC	Roger. I'll give you a 10 second count here down to the 30 second point.
33 59 08	P	Roger.
33 59 14	CC	10, 9, 8, 7, 6, 5, 4, 3, 2, 1. Thirty (33 59 24)T seconds.
33 59 30	CC	Okay. The next 10 second count will be a count-down to your manual retro. Over.
33 59 35	P	Roger.
33 59 44	CC	10, 9, 8, 7, 6, squib arm. 4, 3, 2, 1, fire (33 59 53)T. Roger. A green one here.
34 00 13	P	Roger. I think I got all three.
34 00 16	CC	Roger. How did your attitude hold, Gordo?
34 00 18	P	Well, pretty fine.
34 00 20	CC	Good show boy, real fine. Looks like they came off right on the money on time.
34 00 25	P	Roger, I think so.
34 00 28	CC	*Roger. Very good. On the next mark at 60 seconds from that retro you should jettison retros, and you'll do that one manually, right?
34 00 37	P	Roger.
34 00 40	CC	Got any estimate on your attitude hold, in any axis how far you drifted off on retro. Over.
34 00 45	P	No, I sure don't. I held it relatively close, John, but I couldn't guess.
34 00 52	CC	That's the way to do it. Just too close, to tell any error. Good head.
34 00 55	P	Ha, ha. No, I wouldn't say that.

34 00 59	CC	Roger. You can go ahead and jettison retros and time.
34 01 01	P	Roger. Jettisoning retros.
34 01 09	P	And off they came.
34 01 14	CC	We have your signal.
34 01 17	P	Roger.
34 01 18	CC	*Okay. Dealers choice on reentry here fly-by-wire or manual, I think you said, you're coming back in fly-by-wire?
34 01 28	P	Roger. I think I'll come back in fly-by-wire.
34 01 31	CC	Roger, okay. You can hold retroattitude now for a while here. If you wanted to hold your attitude more close by holding retro-attitude until you get a little closer to 0.05g.
34 01 43	CC	Your 0.05g is 34 09 19. Just before you get to that you can come up to your zero reentry attitude. Over.
34 01 51	P	Roger.
34 01 53	CC	And you can establish roll at that time also.
34 01 56	P	Roger.
34 02 01	P	*What was the time on establishing that?
34 02 06	CC	*34 09 19. That is your 0.05g time.
34 02 11	P	Roger.
34 02 14	CC	Just a little bit before that you could come on up to zero zero.
34 02 20	P	Roger.
34 02 31	CC	Roger. Keep your rates down, keep your rates as near zero as you can.

34 02 36	P	Roger. Will do.
34 02 49	CC	*It's been a real fine flight, Gordo. Real beautiful all the way. Have a cool reentry, will you?
34 02 55	P	Roger, John. Thank you.
34 03 24	CC	Faith Seven, CSQ.
34 03 27	P	Roger, CSQ.
34 03 28	CC	ASCS 0.05g switch fuse to the off position. Over.
34 03 33	P	Roger. 0.05g switch fuse to the off position.
34 03 37	CC	Roger.
34 03 42	P	Roger.

RANGE TRACKING SHIP

34 08 21	CC	Faith Seven, Faith Seven, Faith Seven, this is RTK M and O (Maintenance and Operations). How copy?
34 08 27	P	Roger, Faith Seven. Reading you loud and clear.
34 08 30	CC	*Roger. RTK here. I have landing area weather for you. Ready to copy?
34 08 34	P	Roger.

HAWAII

34 13 07	CC	Faith Seven, Faith Seven, Hawaii Cap Com. Do you read?
34 13 11	P	Roger.
34 13 13	CC	Faith Seven. What is your status?
34 13 16	P	Roger. Doing fine.

34 13 21	CC	Faith Seven, Hawaii Cap Com. Say your status. Over.
34 13 25	P	Roger. Faith Seven is doing fine. Reentering.
34 13 29	CC	Roger. Is your altimeter off the peg yet? Over.
34 13 33	P	Roger.
34 13 36	CC	Say your altitude, say your altitude.
34 13 38	P	Roger, 95,000 (feet).
34 13 43	CC	Roger. Understand 85. Are you standing by for the Drogue at 40,000 (feet)?
34 13 49	P	Roger.
34 13 50	CC	We have tops of cloud in recovery area at about 36,000 feet.
34 13 58	CC	There is a 0.5 cloud coverage at 1500 feet. 5 to 6 foot waves. Surface wind 15 knots from 085 degrees. Standby for your recovery time. Did you copy?
34 14 15	P	Roger, you'll have to wait a minute, I'm just hanging on here now.
34 14 21	CC	Roger, Faith Seven. Say again your last.
34 14 31	P	I got a Drogue.
34 14 34	CC	Understand. Drogue is out.
34 14 35	P	Roger.
34 14 42	CC	*Think I got a, an oral report of Drogue out. Standby.
34 14 52	CC	Faith Seven, Hawaii Cap Com. Is your Drogue out at this time?
34 14 55	P	Roger. Drogue is out.

34 14 59	CC	Checklist follows. Snorkel ring at 20,000 feet. Landing bag switch to auto. Recovery arm switch manual. Fuel jettison fuse switch, number 1. Fuel cross feed handle, push on. Roll, yaw, pitch, T handles push on. Position the T/M switch, your option. ASCS select switch should be off. And give me the status on your fuel dump. Over.
34 15 47	P	Fuel is dumped.[1]
34 15 50	CC	Understand fuel is dumped. Pressure regulator handle should be pulled.
34 16 03	P	Roger. I have a good main.
34 16 07	CC	Say again, Faith Seven.
34 16 09	P	Roger, I have a good main chute.
34 16 11	CC	Good main chute, good show.
34 16 14	P	Roger, landing bag is down and green.
34 16 15	CC	Repeat, please?
34 16 16	P	Landing bag is down and green.
34 16 17	CC	Understand the landing bag is green. What is your rate of descent?
34 16 28	P	About 34 feet per second.
34 16 31	CC	Everything looks good, preparation for impact. Urine transfer shutoff valve, closed. Transfer hose, disconnect. Blood pressure hose, disconnect. Aeromed connector, disconnect. Helmet outlet hose, disconnect.

1 Pilot subsequently informed editor that he meant to say "fuel dump is armed". The rapidity of events at this moment precluded his rendition of a corrective statement to Cap Com.

34 16 59	CC	Faith, are you staying with me, Gordo?
34 17 02	P	Roger, I've got my list right here, Scott.
34 17 06	CC	Say again, Gordo.
34 17 11	CC	Roger, helmet should be unlocked and opened.
34 17 19	CC	Temperature probe should be disconnected.
34 17 24	CC	Unfasten your helmet neck ring seal.
34 17 31	CC	Tighten your straps.
34 17 36	CC	Lock the shoulder reel harness.
34 17 41	CC	Standby for impact.
34 17 45	P	Roger.
34 17 47	CC	Are there any recovery aircraft on air-to-ground now?
34 17 52	P	Negative.
34 17 56	CC	This is Hawaii Cap Com. Understand you are in communication with recovery aircraft, is that correct?
34 18 02	P	Negative. Negative, I am not. Over.
34 18 09	CC	We'll stay with you, then.
34 18 19	CC	Seven, Hawaii Cap Com. (USS) Kearsarge has visual contact with you at this time, over.
34 18 25	P	Roger, thank you. That sounds good.
34 18 29	CC	Good show, pal.
34 18 43	CC	Faith Seven, Hawaii Cap Com. Say your altitude.
34 18 47	P	Roger. 4,000 feet.
34 18 49	CC	4,000, your pre-impact check is complete, is that correct?
34 18 53	P	Roger.

CONFIDENTIAL

HAW-REC-22

34 18 55	CC	Understand pre-impact checklist is complete.
34 19 00	P	Roger. Fuel is jettisoned and all T handles are in.

RECOVERY

34 19 04	R1	Hello Astro. This is 1 Indian Gal. Over.
34 19 07	P	Roger, this is Astro, go ahead.
34 19 10	R1	Roger, 1 Indian Gal. We are circling you at about 500 feet you're coming down very nicely. Sea state is about 5 to 8 foot waves, a few white caps. Wind is just perfect for a Helo (Helicopter) operation. The carrier (USS Kearsarge) is about five miles away.
34 19 31	P	Roger.
34 19 42	R1	Astro, you are swaying just a little bit, looks like about a 50 or rather, correction a 30 foot sway. You're coming down very nicely. You are presently about 1,000 feet. The wind is from the southwest at about 12 knots, perhaps 15.
34 20 06	P	Roger, understand.
34 20 14	R1	Astro, 1 Indian Gal. How do you feel? Over.
34 20 17	P	Roger, I'm in fine shape. Excellent.
34 20 22	R1	Thank you Astro, this is Indian Gal. We still are circling you very nicely. You're now steadying up quite nicely, about 400 feet. You are passing my starboard side.
34 20 35	P	Roger.
34 20 36	R1	Have 3 Helos right around you. Got the swimmers with me. They'll be out just about the time you're setting down on the water.

34 20 44	P	Roger.
34 20 47	R1	The carrier is only about 3 miles away. Couldn't be a nicer shot.
34 20 50	P	But I missed that third elevator.
34 20 53	R1	Now you are in the water in good shape.
34 20 57	R1	Your parachute is still with you. Chute has spilled and is in the water.
34 21 09	R1	Collar in the water.
34 21 15	P	Roger.
34 21 23	R1	Your dye markers out now, Astro. Looks nicely. I'm coming in now for the swimmers.
34 21 39	R1	Astro, your capsule is on the side. The capsule, parachute did not deploy.
34 21 46	P	Roger.
34 21 49	R1	Now your capsule is coming up nicely. It's sitting at about a 30 degree angle on the water.
34 21 55	P	Okay.
34 21 56	R1	You look pretty good.
34 22 02	R1	I'm on top over you, directly overhead. Your capsule is now erected nicely. You're bouncing on the sea. I notice now that the parachute has released. I'm now going to drop the swimmers.
34 22 14	P	Roger. Hold them clear a minute and I'll get the HF antenna up.
34 22 38	K	Astro, from Begonia on Kearsarge. How do you read me? Over.
34 22 43	P	Roger, Begonia, Faith Seven. Read you loud and clear. Over.

34 22 47	K	Roger, how you feeling? Over.
34 22 50	P	Fine, couldn't be better.
34 22 52	R1	Astro, all the swimmers are out, the first one is on your capsule now, he's pounding. Do you hear him? Over.
34 22 57	P	Roger, good shape. (Shouting to swimmers).
34 23 13	P	Hello dahr, how are you? (Shouting to swimmers).
34 23 17	K	Gordon, this is Begonia. We estimate approximately 45 minutes to have you on deck on Kearsarge. Please advise your wishes and any info this subject. Over.
34 23 33	P	I'm okay. I'll wait on the boat. (Shouting to swimmers).
34 23 37	P	I'm in good shape.
		*(Non-flight-related transmission omitted.)
34 23 45	R1	Astro, this is 1 Indian Gal. Do you hear the swimmers? Over.
34 23 52	P	I just had my helmet off talking to the swimmers.
34 23 54	R1	Roger. I see you don't have smoke. Apparently, you are all right. What is, Begonia desires to know, what your desires about being picked up. Over.
34 24 02	P	Roger. I'd like to come aboard the carrier if they will grant me permission for an Air Force troop.
34 24 06	R1	*Roger. Begonia, this is 1 Indian Gal. Gordon Cooper desires to come on board the carrier if they will let an Air Force Officer aboard. Over.
34 24 18	K	Roger. Permission granted, of course, and I don't know whether he heard me before or not. Estimate about 45 minutes to have him on deck. Over.

34 24 30	R1	*Major, Begonia estimates 45 minutes for your on-deck time. What are your desires? Over.
34 24 37	P	Roger. I'll wait to go on board. Over.
34 24 40	R1	Roger, understand that you desire pickup by Wildcat . . .
34 24 44	P	Thank you sir. No, negative. I'll wait and go onboard the carrier. Begonia did you read? Over.
34 24 47	R1	Roger. I understand you will be hoisted by the carrier. Begonia did you read? Over.
34 24 53	K	This is Begonia. I copy. Out.
34 25 00	K	Indian Gal 1, Begonia. What status on collar? Over.
34 25 05	R1	Roger, collar is about half way around. The swimmers are in the water nicely. The capsule is working well.
34 25 12	K	Roger.
34 25 14	R1	The parachute was a little delayed in deploying. It is now riding very nicely in the water.
34 25 26	?	Roger Wildcat, Tea Kettle 222. Go . . .
34 25 31	R1	*They attached the collar just about all the way around. The sea state is the same as the ship.
34 25 39	R1	The collar, the capsule looks like it's riding at about a 20 degree angle. Quite steady in the water.
34 26 13	R2	One from two.
34 26 15	R1	One. Over.
34 26 16	R2	*Roger. Swimmers desire to save chute. Shall I deploy swimmers? Over.

34 26 20	R1	*This is one. Don't deploy swimmers at this time. The boat looks like it will pick up the chute. It is close enough.
34 26 29	R2	Roger.
34 26 30	R1	Wildcat, the collar now looks like it is all the way around the capsule, its just about to be inflated.
34 26 37	R1	The swimmers are still with it. The chute is still floating next to the capsule. They don't look like they are having any difficulty. Looks like a normal operation.
34 26 49	K	This is Begonia. Roger, out.
34 26 52	R1	*The collar is now inflated fully.
34 26 56	R1	It has picked the capsule up nicely. It is now erect, and the swimmers are making final adjustments.
34 27 06	K	Begonia. Roger, out.
34 27 08	P	Sorry, I missed that third elevator, Begonia.
34 27 12	R1	Begonia, Gordon Cooper says he's sorry he missed the third elevator.
34 27 18	K	I think it's a quite acceptable shot, Major.
34 27 25	P	Thank you.
34 27 33	R1	Begonia, the swimmers are now hanging on to the collar. It is fully inflated, the capsule is upright. The capsule looks like it's riding very nicely in the water, just going up and down slightly on the 5 to 8 foot waves. There is a few white caps around but they are not breaking over the tower.
34 27 57	R1	Looks like a normal operation and they are just waiting for him.
34 28 07	K	*This is Begonia. Gordon, are you in communication with the swimmers at this time? Over.

34 28 14	P	I can yell to them through the hatch here.
34 28 18	K	I understand that you can hear them through the hatch. Is that correct?
34 28 21	P	Roger, we can communicate by yelling back and forth, I believe.
34 28 26	K	Roger. Out.
34 28 42	K	Major Cooper from the USS Kearsarge. Welcome to the Pacific. Go6d landing.
34 29 01	R1	*Major, the Kearsarge is now making a down base leg. They are going to make a normal 180 approach to you. They are about 2 miles away coming down wind. They will start their turn into your position in about 10 minutes.
34 29 17	P	Roger. Very fine.
34 29 19	P	Hello. How are you doing? I'm fine. Okay. How are you? (Shouting to swimmers).
34 29 36	K	Major, they estimate your miss at 3,900 yards. Looks like a record.
34 29 43	P	Say again, sir. Say again, I was talking to the swimmers.
34 29 47	K	Roger. You missed by 3,900 yards, very acceptable.
34 29 51	P	Thank you.
34 29 54	P	What? I'll wait on the carrier. What? (To swimmers).
34 30 05	R1	Two, this is One. Looks like the parachute is sunk now, I don't see it anymore. There is a small Drogue chute still . . . upwind of the green dye.
34 30 15	K	Delighted to have you back in the Pacific and congratulations on a wonderful, wonderful ride.

REC-22

34 30 23	P	What? Yeah, I'll wait on the carrier. (To swimmers).
34 30 32	K	Gordon, this is Begonia. John Graham will be on this line and be stationed down near the hangar, near the elevator, about the time that we pick you up. Thought I would alert you that he will be on the line to talk to you just before you get out. Over.
34 30 52	P	Roger. Fine.
34 31 00	K	Is there anything we can do in preparation -.

DISTRIBUTION

This MA-9 Postlaunch Memorandum Report has the following distribution:

Director, D (1)
Deputy Director for Mission Requirements and Flight Operations, DO (1)
Deputy Director for Development and Programs, DP (1)
Assistant Director for Engineering and Development, E (2)
    Spacecraft Technology Division, EST (6)
    Crew Systems Division, ECS (6)
    Systems Evaluation and Development Division, ESD (6)
    Space Environment Division, ESE (6)
Assistant Director for Information and Control Systems, I (2)
    Computations and Data Reduction Division, ICR (5)
    Ground Systems Project Office, IGS (5)
    Instrumentation and Electronics Division, IIE (5)
Flight Operations Division, OFO (15)
Flight Crew Operations Division, OFC (10)
Mercury Project Office, M (25)
Gemini Project Office, G (7)
Apollo Spacecraft Project Office, S (8)
Public Affairs Office, PAO (4)
Astronaut Activities Office, AAO (17)
Reliability and Flight Safety Office, RFS (2)
Program Analysis and Evaluation Office, PAE (1)
Center Medical Operations Office, OAM (7)
Technical Information Division, ACI (1)
Technical Services Division, ACT (1)
Langley Research Center Representative, Axel T. Mattson, RAA (1)
Goddard Space Flight Center Representative, William B. Easter, GSF-L (1)
Network Liaison Office, Port Canaveral, Florida (5)
Project Engineering Field Office, Port Canaveral, Florida,
    Attn: A. E. Morse, Jr., MEF (5)
Reliability and Flight Safety Office, Port Canaveral, Florida, RFS - Cape (2)
Center Medical Operations Office, Port Canaveral, Florida, OAM - Cape (5)
Flight Crew Operations Division, Port Canaveral, Florida, OFC - Cape (5)
Atlantic Missile Range Operations, Port Canaveral, Florida,
    Attn: G. Merritt Preston, OPO (20)
Cape Canaveral Files, Port Canaveral, Florida,
    Attn: Lillian Prothman (20)
Manned Spacecraft Center Resident Manager, White Sands Missile Range, Post Office Drawer D, White Sands Missile Range, New Mexico
    Attn: Wesley E. Messing, W (1)

NASA Representative at McDonnell Aircraft Corporation, P. O. Box 516, St. Louis 66, Missouri
Attn: Wilbur H. Gray, MMR (3)
NASA Headquarters, Washington 25, D. C.
Attn: George M. Low, MD(P) (8)
Goddard Space Flight Center, Greenbelt, Md.
Attn: H. J. Goett, Director (1)
Goddard Space Flight Center, Greenbelt, Md.
Attn: Goddard Space Flight Center Library (2)
Langley Research Center, Langley Station, Hampton, Va.
Attn: F. L. Thompson, Director (1)
Langley Research Center, Langley Station, Hampton, Va.
Attn: Langley Research Center Library (2)
Ames Research Center, Moffett Field, Calif.
Attn: S. J. DeFrance, Director (1)
Ames Research Center, Moffett Field, Calif.
Attn: Ames Research Center Library (2)
Lewis Research Center, 21000 Brookpark Road, Cleveland 35, Ohio
Attn: A. Silverstein, Director (1)
Lewis Research Center, 21000 Brookpark Road, Cleveland 35, Ohio
Attn: Lewis Research Center Library (2)
NASA Flight Research Center, P. O. Box 273, Edwards, Calif.
Attn: P. F. Bikle, Director (1)
NASA Flight Research Center, P. O. Box 273, Edwards, Calif.
Attn: NASA Flight Research Center Library (2)
NASA X-20 (Dyna-Soar) Office (ASZR), Wright-Patterson Air Force Base, Ohio
Attn: P. F. Korycinski (2)
George C. Marshall Space Flight Center, Huntsville, Alabama
Attn: W. von Braun, Director (1)
George C. Marshall Space Flight Center, Huntsville, Alabama
Attn: Marshall Space Flight Center Library (2)
Launch Operations Center, Port Canaveral, Florida
Attn: Dr. Kurt Debus (5)
Technical Information Division (Library) (5)
Technical Information Division (Editors) (3)
Administrative Services Division (Control Point) (