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POSTLAUNCH MEMORANDUM REPORT

FOR

MERCURY-ATLAS NO. 8 (MA-8)

PART III - AIR-GROUND VOICE AND DEBRIEFING

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Cape Canaveral, Florida

October 23, 1962

[redacted]

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CONFIDENTIAL

POSTLAUNCH MEMORANDUM REPORT

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TABLE OF CONTENTS

N O T I C E

NO. 1: LIFT-OFF TIME (2-INCH MOTION) FOR THE MA-8 FLIGHT WAS 07:15:11.84 A. M. EST. RANGE ZERO TIME WAS ESTABLISHED AS 07:15:11.00 A. M. EST. 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-8 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 - AIR-GROUND VOICE AND DEBRIEFING. - CONTAINS THE POSTFLIGHT DEBRIEFING AND THE VERBATIM TRANSCRIPT OF THE MA-8 FLIGHT COMMUNICATIONS TAKEN FROM THE SPACECRAFT ONBOARD TAPE.

1.0 INTRODUCTION

This part of the MA-8/16 Postlaunch Memorandum Report contains the following sections:

1. A timed transcript of all voice communications by the astronaut and flight control personnel as derived from the onboard tape record.

2. The pilot's self debriefing, which was recorded aboard ship immediately following recovery when his impressions of the flight were most vivid.

These two section of the report were transcribed from tape recordings, and each is represented essentially verbatim with only light editing for clarity.

2.0 COMMUNICATIONS

2.1 INTRODUCTION

The following is a transcript of the MA-8 flight communications taken from the spacecraft onboard tape recording. This is, therefore, a transcription of the communications received and transmitted, as well as some inflight comments made by the pilot, Walter M. Schirra, while in a record-only mode (VOX record). In some instances, ground-to-air communications were not decipherable from the onboard tape. Where possible, these communications were extracted from the Goddard-Mercury Control Center Conference loop tape recording, and are included in the text in parentheses followed by the superscript G.

The first column shows the "capsule elapsed time" (CET) from lift-off, in hours, minutes, and seconds at which the communication was initiated. CET was reduced from the recording of the spacecraft clock commutated time segments which were on the onboard tape. This time was decommutated to analog form and recorded on a special tape, which was processed through a computer. Accuracy of this computed CET is $\pm$ ½ second.

At various times throughout the flight, the pilot or range station communicators indicated the precise time of an event by the word "MARK." The exact time at which the word "MARK" was transmitted was determined from the computer and is indicated by the time enclosed in parentheses followed by the superscript T.

Communicators are identified as follows:

CC - Spacecraft Communicator at the range station

CF - Flight Director at Cape Canaveral

CT - Communications Technician at the range station

P - Pilot

R - Recovery helicopter from the U.S.S. Kearsarge

S - Surgeon or Medical Monitor at the range station

Stoney - Blockhouse Communicator

All temperatures are given in ^{o}F; all cabin and suit pressures are in pounds per square inch, absolute; fuel and coolant quantities are expressed in remaining per cent of total nominal capacities; oxygen is expressed in hundreds of pounds per square inch, (psi, hundreds). Retrosequence times are expressed in "ground elapsed time" GET (hours, minutes, and seconds).

Within the text, a series of dots is used to designate portions of the communication which could not be deciphered. One dash indicates a pause during a communication. The station in prime contact with the astronaut is designated at the initiation of communications; the station or stations and orbital pass number are designated at the top (right and left hand corners) of each page.

2.2 Contents of Communication Transcript

CAPE CANAVERAL

	Stony	5, 4, 3
00 00 02	P	I have the lift-off. Clock has started. And she feels real nice.
00 00 08	CC	Wally, you got a pin for this flight?
00 00 10	P	Yeah, I got the pins on my office wall. Altimeter's off the peg.
00 00 15	CC	Standby for 20 seconds.
00 00 16	P	Okay.
00 00 18	CC	2, 1, MARK. (00 00 20)^{T}
00 00 21	P	Roger. Backup started and running good. I'll give you a hack at my 30 (seconds). Ah, she's riding beautiful Deke.
00 00 29	CC	Looks real fine from here.
00 00 30	P	MARK 30. Okay. Fuel is okay. Oxygen is okay. All systems appear go, and she's getting noisy.
00 00 42	P	Not at all too noisy. Easy to talk through.
00 00 52	P	Main cabin pressure is remaining on schedule. Fuel is okay. Oxygen is okay. Cabin pressure, 10 psi, and she's really moving.
00 01 16	P	Cape Cap Com Sigma Seven. Do you read? Over.
00 01 28	P	Cape Cap Com this is Sigma Seven. How do you read? Over.
00 01 37	P	Cape Cap Com, Sigma Seven. I read you. Over.
00 01 45	P	Cape Cap Com, Sigma Seven. I read. I am broadcasting in the blind. g is building. All systems are go here.

00 01 54	CC	Roger. How do you read now, Wally?
00 01 55	P	I read you beautiful.
00 01 57	CC	You had your transmitter keyed, that's why we couldn't read.
00 02 00	P	I'll be darn. I'm push-to-talk now.
00 02 05	CC	Standby for staging.
00 02 07	P	I have a BECO. I could see the flash.
00 02 16	CC	Staging.
00 02 17	P	Roger, staging. Standing by for tower. Fuel looks good. Oxygen looks good.
00 02 25	CC	Roger. Start a new flight.
00 02 27	P	Okay. I'm on push-to-talk, and the sun is coming in the window now. Okay. There goes the tower.
00 02 35	CC	Roger.
00 02 37	P	Auto retrojett off. This tower really is a sayonara.
00 02 41	CC	That pitch should be about -10 (degrees).
00 02 43	P	Roger. I have about -5. Cabin pressure is holding very well at, right at 6 psi.
00 02 51	CC	Roger.
00 02 52	P	And I'll give and electrical check now.
00 02 54	CC	Roger.
00 03 05	P	Okay, a-c and d-c are all in the green. It looks real good.
00 03 10	CC	Roger.

00 03 14	P	I'll go back on VOX again. How do you read me on VOX now?
00 03 21	P	Cape Cap Com, Sigma Seven.
00 03 22	CC	Go ahead, Seven.
00 03 24	P	Okay. I'm back on push-to-talk.
00 03 29	CC	Roger. You have a go from Control Center.
00 03 31	P	Roger. You have a go from me. It's real fat.
00 03 33	CC	Roger. Have a go from here.
00 03 36	P	Roger. It looks real good.
00 03 39	CC	Are you a turtle today?
00 03 41	P	Going to VOX record only. You bet (Correct answer recorded).
00 03 46	CC	Just trying to catch you on that one.
00 03 48	P	Nope - okay. I've finished VOX record.
00 03 51	P	Coming up on 4 minutes. I'll give you a hack.
00 03 54	CC	Good head.
00 04 00	P	MARK. (00 04 00)T
00 04 01	CC	Roger. Right on the nose . . . 3 pitch.
00 04 03	P	Okay, and I've got good fuel, about 101-95 (percent). Oxygen is fat 65-52 (psi in hundreds), correction 72.
00 04 14	CC	Roger.
00 04 22	P	She's starting to build up now.
00 04 25	CC	Roger.

CNV-1

00 04 29	P	Sunlight's in my upper right hand corner of the window, just peeking in at me.
00 04 34	CC	Roger.
00 04 49	P	How's the V/V_r?
00 04 51	CC	I get a 0.8 V/V_r.
00 04 53	P	Good show.
00 04 59	CC	Standby for SECO.
00 05 18	CC	SECO.
00 05 20	P	I have SECO. Cap sep, and in aux damp, and it's very pleasant. Going to fly-by-wire low. Going to fly-by-wire.
00 05 29	CC	Roger. Fly-by-wire.
00 05 32	P	Yaw is answering very nicely. Roll answers nicely. She's turning around very nicely.
00 05 44	CC	You have a go, 7 orbit capability.
00 05 46	P	Say again, I like that kind.
00 05 54	P	I see little ice crystals, I'm sure that's what it is around me now.
00 06 01	CC	You're a little garbled.
00 06 02	P	Okay. Got a good view of the earth now.
00 06 07	P	Coming around to retroattitude. Coming into retroattitude; and a good shot of the sustainer here. It's right in the window where it belongs. I am pitched up a little bit.
00 06 26	CC	Roger.
00 06 40	P	Okay. Just about into retroattitude.
00 06 46	CC	Roger. We have full communications. Tell me, can you confirm retrojett off?

00 06 54	P	That's affirmative. Retrojett is off.
00 06 57	CC	That's fine.
00 06 58	P	Okay. I'm getting set up for yaw. I can see yaw at (-) 34 already.
00 07 10	CC	You say you still have some yaw.
00 07 13	P	Roger. I just went into ASCS at about 7 minutes and 10 seconds. The sustainer is sitting very steady above me. I should say above the horizon. And I'm in chimp mode right now and she is flying beautifully.
00 07 34	CC	I'll give you (contingency recovery area) 1-B retro 16 22.
00 07 43	P	Roger. Understand 16 22. Is that correct?
00 07 47	CC	Roger. 16 22.
00 07 51	P	Okay. I've got my chart case out. I'll put that in. I'll send the blood pressure now for the medics.
00 07 59	CC	Roger.
00 08 02	P	Boy! That sustainer looks real cute. I'll pick her up in a moment and track her.
00 08 09	CC	For your information, you are slightly garbled-slightly garbled.
00 08 12	P	Okay. I'll use VOX-push-to-talk as much as possible.
00 08 16	CC	Roger.
00 08 21	P	Okay, I'm stopping that blood pressure run. Boy! This ASCS made tracking very nice. The sustainer is very stable. It is not oscillating at all. I see no vapors; it looks very clean.
00 08 48	CC	28 25

CNV-CYI-1

00 08 51	P	Say again Deke.
00 08 56	P	Cape Cap Com, Sigma Seven. Say again.
00 09 03	CC	Seven, Cap Com. You are fading - you are fading.
00 09 08	P	Roger.
00 09 15	P	Cape Cap Com. I read you loud and clear.
00 09 29	CC	Sigma Seven, Sigma Seven, Cape Cap Com. How do you read?
00 09 34	P	Cape Cap Com, this is Sigma Seven. I read you loud and clear. How me?
00 10 15	P	Cape Cap Com, Sigma Seven. How do you read? Over.
00 10 31	P	This is Sigma Seven. Squib off. Three retro fuse switches on. Fire-arm on. Going to fly-by-wire low.
00 11 30	P	This is Sigma Seven. Tracking sustainer very easily in fly-by-wire low.
00 11 56	P	Am going to manual proportional.
00 12 58	P	This is Sigma Seven. I am now in ASCS auto, retroattitude. Manual proportional works very well.

CANARY ISLANDS

00 14 31	P	Canary Cap Com this is Sigma Seven. Over.
00 14 40	CT	Sigma Seven this is Canary Com Tech. Transmitting HF/UHF. Do you read? Over.
00 14 46	P	Roger. Canary Cap Com this is Sigma Seven. Do you read me?
00 14 50	CC	Sigma Seven this is Canary Cap Com. Reading you loud and clear. We have valid radar track.

00 14 55	P	Roger. Good show on radar. Awfully sorry our friend Julian couldn't be with us. I would like to give you my report on control mode. First off, manual and fly-by-wire low are excellent; aux damp works excellent. I am now in auto mode; retroattitude. Attitudes holding beautifully. I am go. My suit temperature is going up a bit. I have set it at 4.5. Over.
00 15 29	CC	Roger. I copied suit temperature at 4.5. What does your suit temperature read?
00 15 33	P	Negative. That was suit dome - is reading 75 (degrees). I have set the suit at 4.5.
00 15 43	CC	Roger.
00 15 44	P	I am checking on my cabin. It's about 60 (degrees). I am going to leave it alone. The cabin heat exchanger is about 48 (degrees).
00 15 54	CC	Roger.
00 16 02	P	Canary, as far as I am concerned all control systems are perfect. The manual was slightly sluggish as predicted, but better than I have seen.
00 16 14	CC	Roger. Are you on UHF-hi at this time?
00 16 19	P	That is affirmative, and will be switching to UHF-lo for a check with you shortly.
00 16 24	CC	Roger.
00 16 30	P	I have made an electrical check. We had communication problems on the way across. And all the systems checked out very well. Oxygen is holding up very well. I will give the suit circuit a little more time to cool down.
00 16 50	P	My suit temperature at this time is 68 (degrees). I am not worried about it yet.

CYI-1

00 16 56	CC	Roger.
00 17 00	P	Everything else is green.
00 17 03	CC	Roger.
00 17 07	P	I am going to go to gyros free for a T_s + 5 check.
00 17 11	CC	Roger.
00 17 20	CC	I have a (recovery area) 2-1 retrosequence time if you want it.
00 17 24	P	Roger. Standby.
00 17 26	CC	01 28 21.
00 17 30	P	Roger. Correction to 2-1. 01 28 21.
00 17 36	CC	That's confirm.
00 17 37	P	Roger.
00 17 53	P	Okay. Looks like the dome is coming down a little bit. I'll stick with this setting for awhile.
00 18 00	CC	Which dome is that?
00 18 01	P	That is the suit dome. The cabin dome is 55 (degrees).
00 18 07	CC	Roger 5.
00 18 10	P	Canary Cap Com this is Sigma Seven. Do you read?
00 18 12	CC	I copy cabin dome setting at 5.5 and suit dome at 4.5.
00 18 18	P	Now those are not settings. Let me go over that. Suit dome temperature is 75 (degrees). Cabin dome temperature is 56 (degrees). Suit setting on the coolant valve is 4.5. Cabin setting is 4. Do you understand?

00 18 40	CC	I copy now.
00 18 41	P	Ckay. Going back to gyros normal. T_S+5 confirmed.
00 18 46	CC	Roger.
00 18 57	P	I see we're coming across the coast. I haven't used the periscope too much as yet.
00 19 04	CC	Roger. Are you on UHF-hi yet - or lo yet?
00 19 08	P	Negative. I will switch to lo now before I lose you. VOX off.
00 19 37	P	Canary Cap Com, Sigma Seven. On UHF-lo. How do you read?

KANO

00 20 25	P	Kano Cap Com this is Sigma Seven. On UHF-lo. How do you read? Over.
00 21 01	P	Kano Cap Com, Kano Cap Com, Sigma Seven. UHF-lo. How do you read?
00 21 12	CT	Sigma Seven, Sigma Seven this is Kano Com Tech transmitting on UHF/HF. Do you read? Over.
00 21 19	P	Roger. Kano Cap Com. Do you read me? UHF-lo. Over.
00 21 23	CT	Roger. Standby this frequency, Seven, for Cap Com.
00 21 27	P	Okay.
00 21 33	CC	Hello Sigma Seven this is Kano Cap Com. Standing by for your short report.
00 21 38	P	Roger. I am go. All system are go. I am in ASCS auto; maneuver is off. My T_r-10 bypass is to normal. The fuel and oxygen are all green. Everything is green. I am fat here. I would like a CET time check.

KNO-1

00 22 00	CC	Understand you want a CET ground check.
00 22 02	P	That's correct.
00 22 04	CC	Roger. At my mark it will be 22 10. MARK. (00 22 10)T
00 22 12	P	Roger. I am right on.
00 22 15	P	I am changing my suit setting to almost 5. Over.
00 22 22	CC	Understand. Changing suit setting to number 5.
00 22 27	P	That is correct. The dome temperature is at this time approximately 77 (degrees). I will leave it at number 5 for at least 10 minutes.
00 22 54	CC	Kano Cap Com standing by for any further reports, Sigma Seven.
00 22 57	P	Roger. Kano. Looks like you got good weather down there.
00 23 01	CC	That's affirm. Do your attitude displays check with your visual reference?
00 23 10	P	Very well. I noticed that the yaw reticle is performing quite well. I've been using it crossing land here.
00 23 19	CC	Roger. Understand.
00 23 23	P	I am going to try some of the periscope now. Rather unusual sight through the periscope. Not as thrilling as through the window, I'll have to admit.
00 23 42	CC	Understand.
00 23 44	P	Looks like we are coming up on some cloudy weather.
00 24 07	CC	Seven, our telemetry pitch attitude shows about 27 (degrees) minus and your scanner output shows about - oh, -36 (degrees).

00 24 17	P	Roger. I'm right on -34 (degrees). It correlates with the window reference mark and I feel quite content we are right on.
00 24 28	CC	Very good.
00 24 30	CC	How is your suit temperature doing now?
00 24 32	P	The suit temperature is now . . . still going up a little bit, it's about 72 (degrees). I am setting at suit . . . number 5 and I'll give it a little more time to try to cool down.
00 24 55	P	As soon as we have got a reverse in flow of this dome temperature we'll have a cut at it, I think.
00 25 00	CC	Roger.
00 25 01	P	Okay, we are picking up some pretty fair clouds now.
00 25 13	P	My inverters look real good.
00 25 15	CC	Roger. Understand. What does your suit dome temperature look like now?
00 25 20	P	It looks like it is holding. I may have to increase it after a little while. I'll let it sit for awhile.
00 25 34	CC	All the T/M systems look good, Seven.
00 25 36	P	Roger. I think the only problem I have is the suit circuit. I'll work on it for awhile and see how we are.
00 25 43	CC	Takes a wee bit of time for that to stablize?
00 25 46	P	Right. That's what I am trying to do.
00 25 57	P	The dome now is still holding at 78 (degrees). I think I will let it set for a little bit longer.
00 26 06	CC	Say again that temperature.

KNO-ZZB-1

00 26 08	P	The suit dome is 78 (degrees).
00 26 11	CC	Understand.
00 26 17	P	Cabin dome is 60 (degrees).
00 26 48	P	Cabin dome - Kano this is Sigma Seven. Do you read?
00 26 52	CC	LOS Seven.
00 26 54	P	Roger. Cabin dome is working very well. It's just fluctuating.
00 27 04	CC	Roger.
00 27 05	P	It goes between 52 and 58 (degrees). And I owe Frank Samonski, so far at least, 50 cents.
00 28 48	P	At this time, I have three axes practically on retroattitude. The yaw through the reticle usually observed as a rate and I am now trying to check for a change in attitude in yaw. I do notice that one cloud, even, gives you an attitude immediately as a reference. It's almost too accurate for the actual observation that I have within the capsule.
00 29 39	P	I am now going to low mag. Correction high mag on the periscope see how it looks? . . . yawed right about 5 degrees. See how she matches up with the periscope at this point. Say, we have the yaw axes (indicator) at about 10 degrees right, at this time, and clouds are tracking right up the line, as if the yaw axes might be off by as much as 5 to 6 degrees. Now this may be a minor problem; we will have to observe it.

ZANZIBAR

00 30 28	CT	Sigma Seven, Sigma Seven, . . . HF and UHF.
00 30 35	P	Hello Kano. This is Sigma Seven. You are both coming in broken but clear. Over.
00 30 42	CT	Sigma Seven. Standby for Cap Com. Over.

00 30 44	P	Roger.
00 30 47	CC	Sigma Seven, Sigma Seven this is Zanzibar Cap Com. Over.
00 30 53	P	Kano Cap Com, you are coming in weak and broken. Over.
00 30 59	CC	This is Zanzibar Cap Com, Zanzibar Cap Com. Over.
00 31 03	P	Roger. Zanzibar. Sorry I miscalled you. I am going to set my . . . setting on the suit coolant valve to 5.5. Over.
00 31 23	P	Zanzibar this is Sigma Seven. Do you read?
00 31 27	CC	Seven this is Zanzibar. You were cutting out. I didn't get your last message. Will you repeat?
00 31 32	P	Roger. Standby, I'm switching to UHF-hi.
00 31 36	CC	Roger.
00 31 58	P	Hello, Zanzibar this is Sigma Seven. How do you read? Over.
00 32 02	CC	Seven this is Zanzibar Cap Com. Read you loud and clear now. Go ahead.
00 32 05	P	Roger. I have set my suit control valve to 5.5. The suit dome temperature is 80 (degrees). Over.
00 32 19	CC	Roger. Understand.
00 32 20	P	The cabin dome is 55 (degrees) and is apparently under control.
00 32 27	CC	Roger. Understand.
00 32 30	P	My suit temperature has come down to 75 (degrees) at this time.
00 32 36	CC	Roger.

ZZB-1

00 32 38	P	In fact, that's a correction, it hasn't come down. It's just going there. I would like to give you a briefing on my control mode. I am in auto mode, the bypass switch is normal, maneuver off. Fuel is in the green. Oxygen is way in the green. All electrical is in the green.
00 33 03	CC	Roger. Seven. Your (recovery area) 2-1 retrosequence time is 01 28 21. Over.
00 33 20	CC	Seven, Zanzibar.
00 33 21	P	Roger. I'm sorry I was trying to get my card out. I understand 01 28 21.
00 33 25	CC	Yeah.
00 33 27	P	Okay.
00 34 39	CC	. . . Zanzibar.
00 34 41	P	Go ahead, Zanzibar.
00 34 44	CC	All systems are green here on the ground. We get a good T/M.
00 34 52	P	Roger. Zanzibar. I'm all green here. I'm still working on the suit current circuit.
00 35 02	CC	Roger. How do you feel? Uncomfortable?
00 35 05	P	I feel quite comfortable. I'm a little warm. Particularly from sunlight but other than that I feel fine.
00 35 13	CC	Roger.
00 35 14	P	I am holding the suit control setting at 5.5 for a little longer.
00 35 22	CC	Roger. You changed that over Kano awhile ago. Affirmative.
00 35 24	P	That's correct. Looks like you got pretty good weather down there, too.

00 35 33	CC	Very good.
00 35 34	P	I've got a lot of good clouds for yaw checks. I'll say that.
00 35 37	CC	Right.
00 35 38	P	Would you check your yaw reading on what you read for me in yaw at this time?
00 35 48	CC	Roger. We are getting about a +5 degrees. Over.
00 35 51	P	Roger. Concur. I am trying to come back toward 0 (degrees) now.
00 36 01	CC	Roger. We are pulling you right back to 0 (degrees) now.
00 36 03	P	Okay. That's the - that's the ASCS system doing it for me, of course. I'm going to have to increase the suit setting. I'm just barely breaking even. I'm going to set the suit control valve to number 6.
00 36 18	CC	Roger. Understand. It's been about 10 minutes.
00 36 22	P	Roger. Thank you. The cabin is holding very well on settings, and I'm perfectly comfortable there.
00 36 57	CC	Seven this is Zanzibar. We have LOS in approximately 1 minute. Anything else to report?
00 37 03	P	Nothing. I will keep the suit setting at this point until it gets a little hotter. If it does I may have to go up another half notch at about 45 (minutes), before I get to Woomera.
00 37 15	CC	Roger. Understand. I would like a reading on that before we get LOS please.
00 37 19	P	Roger. My system is 6. The dome is 81, 81 (degrees).

00 37 44	CC	Seven. All systems are still performing well here on the ground.
00 37 47	P	Roger.
00 38 11	P	This is Sigma Seven. Somebody broadcasting in the blind. I do not read you too well.
00 38 18	CC	Seven this is Zanzibar. Read you 5 by.
00 38 20	P	Roger. You are garbled. I will give you an HF call shortly.
00 38 25	CC	Roger.
00 38 48	CC	Zanzibar Cap Com. In the blind. How do you read? Over.
00 38 57	P	This is Sigma Seven. I read you. It's rather . . . very garbled. I did not observe my HF antennas on turnaround. The rates were just too much smaller, I assume. I am going to switch now to VOX off and go to HF.
00 39 45	P	Canary Com Tech, Canary - correction. Zanzibar, Zanzibar this is Sigma Seven. On HF. How do you read? Over.
00 40 11	P	Hello Muchea, hello Muchea Cap Com this is Sigma Seven. HF. How do you read? Over.
00 41 00	P	This is Sigma Seven. I have noticed minute objects that I can knock off the capsule, one or two, in the bright sunlight at CET 41 10.
00 41 17	CT	Seven this is Zanzibar. I barely read you HF check. Over.
00 41 23	P	Roger, Zanzibar, I read you loud and clear at this time. That is at 41 30 Zanzibar, getting HF loud and clear.
00 41 43	P	Muchea Cap Com, Muchea Cap Com. Sigma Seven HF. Over.

00 41 49	P	I am switching to push-to-talk.
00 42 00	P	Muchea Cap Com, Sigma Seven. HF check, push-to-talk. Over.
00 42 36	CT	. . .
00 42 51	?	12 53 00. He talked to Guaymas after we finished and IOS picked him up. Out.
00 43 01	P	The last station that talked on HF I could not identify. It came in very clear and should be recorded aboard the capsule at approximately 43 minutes, 10 seconds elapsed time.
00 43 24	P	I have switched to VOX transmit and record. I am satisfied that I can see yaw through the window on ASCS without the use of the reticle by letting images come up from all sides. It's only a matter of a short period of time before objects show translation immediately.
00 44 07	P	The pitch scribe mark does indicate up a little bit and as a result matches the retroattitude, which at this time, is 30 degrees. I am now yawed right approximately 10 degrees, and it looks like I am tracking right down the line.
00 44 35	P	I am at 45 minutes. I am going to increase the suit setting knob just a small amount, about a quarter of a turn. I think we almost have control of the situation. I have set the suit knob at 6.25. The dome temperature at this time is 82 (degrees). Suit inlet is 76 (degrees).
00 45 10	P	I definitely can see a right roll at this time of about 5 degrees, and I noticed the periscope is dark, meaning we are coming into the dark side. I will attempt to look for the changes through the periscope for any observations.

At this time, I can see nothing through the periscope for night observation, at least in this attitude. I'm not even sure when I have low mag, other than the position of the lever. The window is cloudy. I have sunlight on it now and it definitely has been clouded over by the escape tower rocket, not to a great degree. I am seeing the so-called fireflies drift dramatically at this point. I tried a couple of knocks and they definitely have a relative velocity to the vehicle, but apparently are part of the same orbital system. I definitely see them as white objects.

00 46 39 P I would like to take some water to drink at this point, but I would rather keep the visor shut to keep the system attempting to cool down. We may make some progress on the cold side. It looks like I am going to have to decrease the cabin, it's gone down to 45 (degrees) dome. I'm coming to 3.5 on the cabin.

00 47 03 P Checking on inverters at this time. They look very good. 150 is 102 (degrees). 250 is approximately 107 (degrees). Going back to cabin heat exchanger.

00 47 24 P Coming into the night side now at approximately 47 minutes elapsed time. I set the cabin suit to 3.5. The suit dome is now just, correction - the cabin dome is nearing 50 (degrees) again. I will leave that setting at 3.5 for a period of time.

00 48 19 P With this much sunlight, I cannot see stars at all. Sun is off to my left and I am getting close to sunset at approximately - 49 is the schedule time. That's just about right on. I'm approaching 49 and the cabin lights are on white. I am going to switch the cabin lights to red. And turn off that blasted lift-off correlation clock light.

00 49 03 P Oh, I almost missed my first sunset trying to get the right cabin light off. It is rather rapid as I was told it would be. I am not able to, there I have got Arcturus right on the right side where it belongs.

MUC-1

00 51 12	CC	Roger. Go ahead with status report. Over.
00 51 15	P	Okay. I am in auto mode at this point. Everything is acting perfectly. The maneuver switch is off. The systems are all green. I'm practically using no auto fuel. My only problem area is the suit circuit, which I am monitoring very carefully.
00 51 36	CC	Roger. Sigma Seven, I'll now give you an emergency voice check. The next transmission will be on emergency voice.
00 51 46	P	Roger.
00 51 50	CC	Sigma Seven, Sigma Seven this is Muchea Cap Com on emergency voice. Do you read? Over.
00 51 56	P	This is Sigma Seven. Read you loud and clear Gene on emergency voice. Very good. I am setting it down at about volume level 4.
00 52 04	CC	Roger.
00 52 06	P	I'll give you a blood pressure.
00 52 08	CC	Roger.
00 52 15	CC	Has anybody asked you yet to drink water, Sigma Seven?
00 52 18	P	Negative. I've tried not to get into that. If I can get the suit temperature down a little bit, I'll open the visor and get some water then.
00 52 25	CC	Roger. Understand. Status of the Woomera flare test is okay. They are going to light them, but there is broken clouds and light rain. No lightning reported. They will fire flare.

00 52 38	P	Is the place covered with clouds? Over.
00 52 43	CC	Negative. Broken clouds - the last estimate I got was 0.8 and several breaks.
00 52 50	P	Roger. Understand.
00 52 54	CC	Sigma Seven, will you give us a cabin heat exchanger temperature, please. Over.
00 52 58	P	Roger. That is 41 degrees. Over.
00 53 05	CC	Roger. Understand. Your body temperature readouts on the ground are not good. We are not paying any attention to your body temperature readouts. Over.
00 53 16	P	Roger. I understand.
00 54 09	CC	Sigma Seven this is Muchea. What is your suit dome temperature again?
00 54 13	P	It is now holding at 82 (degrees), at a coolant setting of 6.5. Over.
00 54 23	CC	Say again - being interfered with there. Will you repeat?
00 54 29	P	Roger. My dome temperature is 82 (degrees). My coolant . . . 82, number 82.
00 54 43	CC	Sigma Seven. Your transmissions are now very noisy. We will stand by and not contact you for awhile. You are due to contact Woomera in about 3 minutes.
00 54 57	P	Roger.
00 55 08	P	Woomera this is Sigma Seven. Over.
00 55 13	CC	Go ahead. Sigma Seven.

MUC-1

00 55 15	P	Is this Muchea or Woomera?
00 55 17	CC	Muchea. You are coming in much better now.
00 55 19	P	Roger. I have the moon right in the center of my field of view. It's a marvelous yaw reference. Just no sweat on it at all.
00 55 29	CC	Roger. Understand. Very good yaw reference.
00 55 32	P	That's affirmative. I'm still on automatic control. I'm going to switch to fly-by-wire shortly.
00 55 41	CC	Roger. We will standby and expect you to report control mode when you change to fly-by-wire low; and gyros free.
00 55 49	P	I am switching - My cabin is working okay. The suit is okay. I'm going to go down for the yaw check. Correction, for the flare check now. I'm pitching down in fly-by-wire low.
00 56 05	CC	Roger. Understand.
00 56 12	P	Fly-by-wire low working very well. Trying to hold-40 (degrees in pitch). Correction, - 50 (degrees).
00 56 27	CC	Roger.
00 56 29	P	Setting is -50(degrees). Gyros are free. Holding at -50 (degrees). Standing by for flare. Roll and yaw are holding. I see the flare on my left which is kinda wrong, I think. I think I saw a flash of lightning. Probably - that is lightning I'm seeing, not the flare. I'm seeing more lightning. It's going to be hard to tell what I am seeing whether it's lightning or flares.

WOOMERA

00 57 09	CC	Sigma Seven this is Woomera Cap Com. Over.
00 57 12	P	Roger. Woomera. Go ahead.
00 57 15	CC	This is Woomera Cap Com. Flare ignition will be in 1 minute 20 seconds.
00 57 20	P	That's one reason why I can't see it, because I am looking at lightning, obviously.
00 57 25	CC	And I didn't receive your gyro switch position.
00 57 29	P	Roger. I am in fly-by-wire low and I have gyros free.
00 57 37	CC	Roger.
00 58 08	P	There appears to be no trouble at all in tracking the gyros. The - there was a large problem for me in trying to get the right cabin light dimmed down to red. It's very hard to reach due to ditty bag. I have not even messed around with the camera. I don't intend to until I have the suit circuit under control.
00 58 35	CC	Roger. You have 5 seconds to flare ignition.
00 58 39	P	Roger. I am tracking -50 degrees pitch.
00 58 42	CC	Ignition now.
00 58 43	P	Roger. I have lightning only. It looks like you're just about socked in. I'll stay here for a while and then come back up to ASCS shortly. I think I saw lightning right below me but it couldn't have been the flare. It should burn steadily as I understand it.
00 59 03	CC	Correct.

00 59 07	P	The lightning looks like a big blob, rather than a jagged streak we are use to seeing when earthbound. Just looks like a big - almost like a antiaircraft shot. A big blob of bright light, and then it fades out almost instantly. It definitely looks like you are overcast. By the way, how is my HF coming through to you all?
00 59 35	CC	Clear at Woomera.
00 59 37	P	Very good. I am on HF and dipole, as you may know.
00 59 41	CC	In fact, we picked you up when you began working Muchea.
00 59 44	P	You did? Very good. Well, looks like we got the poles out.
00 59 48	CC	Roger.
00 59 57	P	I think I'm going to - between you and Canton, will make another attempt at the suit temperature control. We, definitely, aren't making much progress. I'm holding my own. That's all.
01 00 15	CC	Roger. You're picking up a little plus yaw now.
01 00 19	P	Roger. I concur. I was looking for the flare. Are you lit now?
01 00 24	CC	From heresay. Have you found it?
01 00 26	P	Roger. I've got a steady light in sight. That's because I've pitched up though. Now, it looks like we're getting much clearer weather here.
01 00 37	CC	. . ..

01 00 41	P	Must have some ground lights in sight here.
01 00 53	CC	Picking up some plus roll now.
01 00 55	P	Very good. I've been searching around a little bit for this. Okay, I'm going to hold that pitch still now. Holding the yaw still. Stopping roll. And I'm sorry I can't see your flare. I'm going to start pitching for ASCS.
01 01 29	CC	We have 10 seconds of flare left, and Cape requests your suit temperature.
01 01 36	P	Say again.
01 01 45	CC	Requesting your suit inlet temperature and dome temperature.
01 01 49	P	Roger, my suit inlet is 78 (degrees), my dome temperature is 82 (degrees).
01 02 00	CC	Sigma Seven this is Woomera Cap Com. Your transmission was not received.
01 02 06	P	Roger, my suit inlet is 78 (degrees).
01 02 07	CC	What is your suit and dome temperature?
01 02 22	P	This is Sigma Seven. I say again. My suit inlet temperature is 78 (degrees). My suit dome is 82 (degrees).
01 02 33	CC	Okay. We got that.
01 02 34	P	Roger. I'm going to increase my setting to 7 on the coolant control on the suit. I'm now in automatic mode, gyros are normal.
01 02 50	CC	Suit setting at 7.

01 02 52	P	The suit coolant valve setting is 7. That is correct.
01 02 56	CC	Scanners and attitudes agree here.
01 02 58	P	Roger. I'm in orbit mode and tracking very well.
01 03 03	CC	Roger. We had T/M LOS. Correction, we've got it back.
01 03 07	P	Roger. I'm going to decrease the cabin setting. It's still running a little cool.
01 03 20	CC	Roger.
01 03 22	P	I will set the cabin at setting number 3.
01 03 27	CC	Roger. Number 3 for cabin.
01 03 30	P	I just set now, MARK, (01 03 31)^{T} at number 3, and the suit is riding at number 7.
01 03 38	CC	Roger. And Woomera has had T/M LOS. We are standing by HF.
01 03 47	P	Roger. Am definitely see some white at this time under the overcast, and I'm sure it must be one of your major cities, possibly Brisbane. I'm not sure.
01 04 06	CC	All we got was, "under the overcast", on that transmission.
01 04 10	P	It looks like a city under the overcast. I'm not sure. At about - almost right in the middle of the window at this time.
01 04 26	CC	Sigma Seven, Woomera read your last transmission.
01 04 57	P	This is Sigma Seven. Going to fly-by-wire low and pitching up to reentry attitude. Selecting reentry on attitude select.

01 05 56	P	I'm now in reentry attitude. Standing by to go into automatic mode. Fly-by-wire tracks absolutely beautifully, just as it worked in the trainer. Very positive results from using the procedures trainer. There is no doubt about it, time does pass rather rapidly. Going back to automatic mode. I got pitch down signal, just a slight low thruster, and everything seems to be all right. This probably was a slight error in the corrected readout. I was right on, I believe, in all three axes. The capsule logic is working very well, and is tracking very well in reentry.
01 06 50	P	I will check my time as 1 plus 06 plus 50 seconds when I went into reentry attitude. The stars are very easy to see. I see quite a few, but am bothered by a considerable amount of red light. I, now, am going to devote some attention to the suit circuit for a minute or so. Then prepare to go back into retroattitude for Canton.
01 07 28	P	One definitely gets the illusion of looking way up above you at this attitude, and if there is no horizon, it's just a black sky. The amount of light in the cockpit is quite high. Once one gets adapted and it can be reduced, of course, by the cabin light. At this point, I am somewhat reluctant to reduce the light level in here, due to the problem with the suit circuit. I'm using my fingertip lights liberally. It is observed that in future flights, we must have some catch-all device that we can stuff objects into, and have them trapped there for a period of time. I'm driving at the problem of the washer and small crimped piece of metal. I . . . believe I finally got them stuffed into the little bag on the hatch. Suit temperature is just holding its own. I am hot, and probably will have to decrease the setting. I am sure I don't understand why the suit circuit takes so long to react. My cabin circuit works beautifully. I'm going to go back to fly-by-wire low; select retroattitude; and fly to retroattitude.

CANTON

01 09 16	CT	Sigma Seven, Sigma Seven this is Canton Com Tech. Do you read? Over.
01 09 21	P	Canton this is Sigma Seven. I read you. At this time, I am in fly-by-wire low, pitching down to retroattitude for ASCS. Over.
01 09 35	P	Canton Cap Com, Canton Cap Com. Sigma Seven.
01 09 42	CT	Sigma Seven, Sigma Seven this is Canton Com Tech. Do you read? Over.
01 09 46	P	Canton Com Tech this is Sigma Seven. I read you loud and clear. How me?
01 10 03	CT	Sigma Seven this is Canton Com Tech. Do you read?
01 10 07	P	Canton Com Tech, Sigma Seven. Read you loud and clear.
01 10 24	CT	Sigma Seven, Sigma Seven this is Canton Com Tech. Do you read? Over.
01 10 28	P	Canton Com Tech this is Sigma Seven. Read you loud and clear. How me?
01 10 39	P	Canton Com Tech, Canton Com Tech. Sigma Seven. Loud and clear. How me? Over.
01 10 49	CC	Sigma Seven. This is Hawaii Cap Com.
01 10 52	P	This is Sigma Seven. Go ahead.
01 10 59	CC	Sigma Seven this is Canton Cap Com. Over.
01 11 03	P	Canton Cap Com this is Sigma Seven. How do you read me? Over.

01 11 46	P	Canton Com Tech, Canton Com Tech this is Sigma Seven. UHF-hi. Over.
01 11 54	CT	Sigma Seven this is Canton Com Tech. Do you read? Over.
01 11 58	P	Canton Com Tech this is Sigma Seven. I'm on UHF-hi. How do you read? Over.
01 12 27	P	Canton Com Tech, Canton Com Tech. Sigma Seven. Over.
01 12 34	CT	Sigma Seven this is Canton Com Tech. I read you 3 by 3. Over.
01 12 39	P	Roger. Status report. I have sent you a blood. All systems are green, but for suit circuit, which I am working on carefully. I am in ASCS retroattitude; gyros normal; maneuver off. I am working on the suit circuit. I am still holding setting number 7. Over.
01 13 05	CC	Sigma Seven. Repeat, I got your status green; ASCS retro; gyros are normal; holding at 7. Repeat all others.
01 13 17	P	Roger. I am holding the suit coolant valve setting, George, at number 7. Over.
01 13 25	CC	Say again. Holding suit at what and what?
01 13 29	P	The coolant valve setting is at number 7. The coolant control valve for the suit circuit.
01 13 39	CC	Roger, Sigma Seven. Would you give me your standard report again. Over. This is Canton Cap Com.
01 13 47	P	Roger, Canton. You did read that I was in ASCS retro? You did read that I had my maneuver off? You did read my gyros were normal? I'd like to get the suit circuit discussed. Everything else is green.

CTN-1

01 14 05	CC	Roger, Sigma Seven. Go ahead.
01 14 08	P	I have the suit setting for the control valve at number 7. I have the suit dome temperature of 82 (degrees). I have suit inlet of 78 (degrees). Do you understand?
01 14 26	CC	Roger, Sigma Seven. I understand.
01 14 29	P	I am increasing my suit setting at this time to 7.5. Over.
01 14 37	CC	Roger, Sigma Seven. Understand increasing your suit setting to 7.5. Over.
01 14 44	P	That is affirmative.
01 14 55	CC	Sigma Seven. Request you push stop button on your blood pressure. Over.
01 15 00	P	I have done that. I just didn't come through right. Did that clean up the trace? Over.
01 15 12	CC	Say again. Over.
01 15 13	P	Is your EKG okay now?
01 15 17	CC	Roger, Sigma Seven.
01 15 30	CC	Sigma Seven. How do you feel right now? Are you hot?
01 15 35	P	Not uncomfortably hot, but just a little warm. I'm trying not to take a drink of water until I can get this suit circuit under control. If I can't get it under control right away, I will be drinking some water.
01 15 48	CC	Roger, Sigma Seven.
01 17 05	P	Canton Cap Com. Sigma Seven. Over.
01 18 27	P	Boy, this is a wrestling job with this ditty bag.

01 18 33	P	I'd just as soon not even go into it. Finally got one dosimeter out, and will have to put it up on the hatch and it's the - let me mark, wait one, I can't even see anything on it.

HAWAII

01 18 59	CC	Sigma Seven, Sigma Seven. Hawaii Cap Com. Calling HF.
01 19 07	P	This is Sigma Seven. Sigma Seven on UHF-hi. Does anybody read? Over.
01 19 19	CC	Sigma Seven, Sigma Seven. Hawaii Cap Com on HF.
01 19 25	P	VOX off.
01 20 03	P	This is Sigma Seven on HF. Hawaii. Do you you read? Over.
01 20 09	CC	Roger. Sigma Seven . . ..
01 20 14	P	Hawaii. You're coming in broken. I cannot read you. I'm handling HF at this time. Over.
01 20 54	P	There's Jupiter.
01 21 16	P	Guaymas Cap Com, Guaymas Cap Com this is Sigma Seven. On HF. Do you read me? Over.
01 24 12	P	Hello, Guaymas Cap Com, Guaymas Cap Com. Sigma Seven. HF. Over.
01 24 40	P	I'm now starting to see the sunrise in the periscope. First light in the periscope during this particular orbit as a result of the night side. It is obvious that the periscope has no function whatsoever in retroattitude on the night side. First light that I get is right now at a CET of practically 1 25 - 1 hour and 25 minutes. The sunrise is coming in

rather rapidly through the periscope. I do have the lighted objects that John mentioned, and I can create some by knocking them off. I definitely have a sensation of their being a field and varying in size from small to bright. The periscope itself is blinding me. I'll have to put the chart on it, so I can see out the window. I am in condition for retro at anytime, so I have nothing else to do but look out this window. Assuming that the suit circuit is satisfactory. That chart helps no end to cover up that blasted periscope. Quite a large field of these objects. Definitely is confirmed that you can knock them off the hatch, as Scotty said. And they stream off at, definitely there is no problem in judging that they are going away from the capsule, at a different rate than you are. They are definitely going slower, in velocity, than the capsule itself. One rap, and you can see them sliding aft. They are too small an object for photography. I would not even attempt to take a picture of them. Retroattitude is being held very well by the ASCS. I should be able to reach Guaymas by now.

GUAYMAS

01 26 52	CT	Guaymas Com Tech on HF/UHF. Do you read? Over.
01 26 56	P	Guaymas Cap Com, Guaymas Cap Com this is Sigma Seven. Over.
01 26 59	CC	Guaymas Cap Com, reading you 3 by 3. Give me a quick rundown on how you feel, Wally, and suit and dome and inlet temperatures, please.
01 27 09	P	Right, Scott. I feel fine. I'm sure we're getting in on this suit circuit. The dome temperature is holding now. It's just about 81 (degrees). I'm making a change in it. The suit inlet temperature is at about 78 (degrees). I think another cut at the controls will solve this problem.

01 27 29	CC	Roger. Say again your suit inlet temperature, please, and what is your control setting?
01 27 34	P	Roger. The suit inlet is 78 - 78 degrees. The setting is exactly 7.5 on the circuit control valve.
01 27 46	CC	Roger.
01 27 50	P	Scott, I feel we're in very good shape for one more orbit at least, and we'll see how we can hack this suit circuit here.
01 27 58	CC	Understand, Wally. We have a go. Are you ready to copy (recovery areas) 3-1 and 6-1 times?
01 28 03	P	Roger. Standby.
01 28 10	P	Okay, Scott.
01 28 12	CC	Roger. 3-1 is 03 01 20.
01 28 18	P	Oh, back to 20 now.
01 28 19	CC	Roger.
01 28 21	P	Okay.
01 28 23	CC	6-1 is 08 51 33. Read those both back and give me a standard report, please.
01 28 29	P	Will do. Okay. 3-1 is 03 01 20. 6-1 is 08 51 33.
01 28 41	CC	Right. The report, please.
01 28 42	CC	Okay, stand by. I'll stow this pencil. I'm in chimp configuration. The capsule is flying beautifully. All thrusters are working well. The gyro switch is normal. Maneuver switch is off. All systems are green on green; and I'm bird-dogging the dome temperature at this time on the suit circuit.

GYM-1

01 29 08	CC	Okay, Wally, give me your cabin dome and cabin temperature. Also, your flow control setting on cabin, too.
01 29 19	P	Okay. I have cabin temperature of 100 (degrees), cabin dome, 40 (degrees); cabin heat exchanger is 42 (degrees); the setting on the cabin is 3 and it's holding steady for a long period of time. I'd rather not change that.
01 29 40	CC	Okay. And now your fuel and oxygen, please.
01 29 43	P	Okay. You want number?
01 29 44	CC	Roger.
01 29 45	P	Okay. The numbers on fuel 100 (percent) for auto, 95 (percent) for manual, oxygen is 62 primary, 72 (psi, in hundreds) secondary.
01 30 01	CC	Roger. And on my mark the ground elapsed time will be 1 hour, 30 minutes and 10 seconds. Standby. MARK. (01 30 11)^{T}.
01 30 13	P	I am exactly 1 second slow. Correction, I am 1 second fast.
01 30 18	CC	Roger. Understand. One second fast, and looks like you're good for another one, Wally.
01 30 24	P	Okay. And I saw some of John's friends up here; I'm afraid to say, although I knocked them off the way you did it. Ha! Ha!
01 30 33	CC	Roger. Interested in your report.
01 30 34	P	I imagine. John listening to some of that, too?
01 30 38	CC	Roger.

01 30 41	P	Basically, what I saw was the firefly color that John saw, which I could create at other times as white color. I'm definitely convinced it's capsule - a capsule derivative and once in a while, even now, I see one go by.
01 30 59	CC	Roger. That's good to hear.
01 31 02	P	I'm getting a very good yaw check with the yaw reticle in the ASCS mode. Having no trouble with that at all.
01 31 12	CC	Wally, are the particles luminous or reflecting?
01 31 16	P	Scott, I think they are reflecting. I'm going to go ahead now, Scott, and do some yaw check as long as I've got some good terrain to look at and leave the particles off for a while.
01 31 27	CC	Okay. We are just about . . . losing T/M. We're reading roughly 0, 0, and (-) 34 (degrees) at this time.
01 31 38	P	Roger. Understand.
01 32 26	P	This is Sigma Seven. I am now commencing day yaw checks. I am - Guaymas. Do you read? Over. This is Sigma Seven. I'm going to send a blood pressure at this time.
01 32 42	CC	Sigma Seven, Guaymas Cap Com. Reading you on HF.
01 32 47	P	Roger. I'm going to fly-by-wire low at this time.
01 32 52	CC	Roger. You're loud and clear on HF now, Wally.
01 32 55	P	Roger, Scott.
01 33 14	P	I moved my left arm too much on that last transmission. I'll give another one a little later.
01 33 20	CC	Roger.

CAPE CANAVERAL

01 33 23	CC	Sigma Seven, Cape Cap Com. How do you read?
01 33 25	P	Hi, Deke, I read you loud and clear. How me?
01 33 27	CC	You're coming in fairly good.
01 33 32	P	This reticle is working very well for yaw, as well as for almost any other attitude.
01 33 49	CC	Sigma Seven, Sigma Seven, this is Cape Cap Com.
01 33 51	P	Go ahead, Cape.
01 33 55	P	Cape Cap Com, go ahead. Cape Cap Com this is Sigma Seven. I read you loud and clear. How me?
01 34 11	P	Sigma Seven, Sigma Seven, Cape Cap Com.
01 34 14	P	This is Sigma Seven. Go ahead, Cape, I read you loud and clear.
01 34 18	CC	You are coming in about 3 by.
01 34 20	P	Okay.
01 34 23	P	I'm okay. Standby, I'm going back to ASCS. It's gotta hold me up (delay me.) The capsule - I'd like to straighten out this problem that you are - obviously have seen on the suit circuit. I have had very little luck in bringing it down. I'm going to increase the setting to 8 at this time. I am on 8 now - the suit dome is now about 81 (degrees). It has dropped about a degree. Do you understand?
01 35 02	CC	Understand suit dome is 81 (degrees).

CNV-2

01 35 07	P	That is correct. Suit dome is 81(degrees). The suit inlet is about 76(degrees). I'm making a little ground on it.
01 35 15	CC	That sounds promising.
01 35 16	P	Yeah, I think it is. I didn't want to rush into it, and I didn't get too hot. I know you are concerned. I'd rather come up on the right setting than dicker around going back and forth.
01 35 27	CC	Roger.
01 35 28	P	Now all the systems are working very well. I'd like to give you a rundown on the control systems. My fly-by-wire is excellent. Manual was slightly sluggish but very good. The capsule at this time is in auto mode, maneuver off, gyros normal. $T_S + 5$ did check out very well. The fuel is holding up as you can see, as well as the oxygen.
01 35 57	CC	Okay, sounds good.
01 35 58	P	Okay. I'm going to continue with my day yaw checks now.
01 36 02	CC	Next transmission will be on emergency voice.
01 36 06	P	Roger.
01 36 14	CC	Sigma Seven, Cape Cap Com, transmitting emergency voice. Over.
01 36 18	P	Roger. I read you loud and clear. I'm going to send you another ...(blood pressure) here, because I moved too much on the last one.
01 36 27	CC	Roger.
01 36 52	CC	Seven, Cap Com.

01 36 54	P	Go ahead, Deke.
01 36 56	CC	Your (contingency recovery area) 2 Bravo retro.
01 36 58	P	Standby 'till I finish my blood here. Okay, I'm done. Okay, go ahead with your 2 Bravo.
01 37 11	CC	2 Bravo, 01 48 32.
01 37 15	P	48 32. Is that correct?
01 37 22	CC	01 48 32.
01 37 25	P	32 Roger. Understand. 01 48 32, 2 Bravo.
01 37 32	CC	We suggest you have a drink of water if you haven't had one recently.
01 37 36	P	No, I haven't. I've tried not to open the visor. I want to get the circuit going down. I think we might have a chance to take a quick one. I'll get ready for one.
01 37 46	CC	Okay. If you're reading this, I want to clear you on one item.
01 37 49	P	Okay.
01 37 51	CC	You indicated high thruster action at Bermuda and Muchea on switch over from ASCS to fly-by-wire. Has this been apparent to you?
01 38 01	P	Negative. It has not. I have one case where I went into reeentry attitude after - correction, before - Canton but this was to check the stars at night after Woomera. And I got a twitch then, which I think was a high thruster.

CNV-2

01 38 20	P	Otherwise, it dropped in beautifully on transition from control mode to control mode.
01 38 28	CC	You're pretty poor transmitting, let's try UHF once.
01 38 32	P	Okay. Standby, VOX off.
01 38 58	CC	Seven, Cap Com, UHF. How do you read?
01 39 12	P	Deke. I read you loud and clear. How me?
01 39 14	CC	How you reading now?
01 39 17	P	I read you fine. I just had some water and it does feel kinda good.
01 39 21	CC	Roger, loud and clear.
01 39 25	P	Say again.
01 39 26	CC	Looks more readable on UHF.
01 39 27	P	Okay. We'll use that around the pad.
01 39 33	CC	Have some Echo sighting data for you if you're interested.
01 39 38	P	Yeah, I'd like to hear about it.
01 39 40	CC	In the second orbit over Zanzibar, time 15 23 Zulu. Azimuth should be 2.30 (degrees), elevation 83.25 (degrees).
01 39 59	P	Roger, we'll see if we can take a peek at it.
01 40 04	CC	Our recommendation is that you decrease suit valve to position 3 and observe dome temperature for 15 minutes. If this doesn't help, then go back to 7.

01 40 15	P	Deke, I finally got a grasp on this thing. I'm beginning to feel a little cooler. And the suit inlet temperature is now down to 76 (degrees). Over.
01 40 26	CC	Roger, understand you would prefer to maintain a status quo, is that correct?
01 40 30	P	No, I've been sneaking up on this thing for almost a whole orbit.
01 40 36	CC	Roger.
01 40 38	P	Do you understand?
01 40 39	CC	Roger.
01 40 53	P	Cape Cap Com, Sigma Seven.
01 40 56	CC	Go ahead.
01 40 57	P	I really do feel I am getting cooler. The suit inlet is now about 75 to 76 (degrees), so I am making progress. Over.
01 41 08	CC	Roger, understand. You are getting a slight decrease.
01 41 09	P	That is affirmative. I would rather not throw in the sponge on the settings I have so far.
01 41 18	CC	Roger, understand. You would prefer to let it stabilize a while longer.
01 41 21	P	Right. I'm going to go back to some more yaw checks.
01 41 40	P	Going to fly-by-wire low.
01 41 44	CC	Fly-by-wire low.
01 41 45	P	Roger.
01 42 04	CC	Sigma Seven, Cap Com.

CNV-2

01 42 05	P	Go ahead, Deke.
01 42 07	CC	Bermuda again shows high thruster action on switch over to fly-by-wire.
01 42 12	P	I'm positive I'm not getting it, because if - I'd be leaping all over - I'd be leaping all over the sky if I were getting highs at this point. I haven't used more than, oh, 1/2 degree per second.
01 42 40	CC	Sigma Seven, Cap Com.
01 42 42	P	Go ahead Deke.
01 42 47	P	Go ahead Cape Cap Com.
01 42 50	CC	Roger, you are fading. We are about at LOS. Flight would still prefer that you consider going to position 3 after evaluating 8 a while longer.
01 43 02	P	Roger. Understand.
01 43 07	P	Roger. I'm now getting into attitude. Standby for 0 (degrees) yaw, and pitch and roll. This will be - .
01 43 24	P	Yaw is now approximately 0 at this time - MARK. (01 43 31)^{T}. I will look - about 4 degrees left. Correcting in pitch, yaw is okay, going to go back to ASCS to get gyros straightened out, gyros are normal at this time. I'm setting up into the tight pattern.
01 44 35	P	Rates are just about right on, attitudes right on, going to fly-by-wire, gyros normal. At 1 44 50 approximately, we are back into chimp configuration. Understand I will have LOS at Bermuda; next station is Canaries. At this point suit temperature is now down to 75 (degrees), dome is still high.

01 46 38	P	On the 0 - on the 0 to 50 - on the 0 to 50 Roentgen Scale at 01 hour 46 minutes, there is practically no reading at all.

CANARY ISLANDS

01 48 47	CT	Sigma Seven this is Canary Com Tech, transmitting UHF/HF. Do you read? Over.
01 48 52	P	Hello, Canary Com Tech, this is Sigma Seven. I read you loud and clear. How me? Over.
01 48 57	CC	Roger, Sigma Seven, this is Canary Cap Com, reading you loud and clear. We'd like to get some temperature readings from you. Cabin suit and cabin dome and suit dome. Over.
01 49 08	P	Okay, I'll give you a readout. Suit dome is 80 (degrees), suit inlet temperature is 75 (degrees), cabin dome is 41 (degrees), cabin temperature is 97 (degrees), suit coolant setting is 8, cabin is 3. I will follow . . . . .
01 49 40	CC	Do you feel that these settings now are giving you adequate cooling.
01 49 44	P	I am going to take Flight's suggestion, and reduce my setting to unit 3 for a few minutes, and then try back at 7 if this does not work. Over.
01 49 56	CC	Roger. I copied.
01 49 57	P	I am now going to setting number 3 on the suit temperature control.
01 50 04	CC	Roger.
01 50 09	P	At 1 hour and 50 minutes.
01 50 12	CC	Roger. What is your present control mode?
01 50 23	P	I am in ASCS. I have completed yaw checks with the window, I am going to try some yaw checks with the periscope at this time.

CYI-2

01 50 34	CC	Roger.
01 50 39	P	Switching to fly-by-wire low, gyros free.
01 51 20	P	I can definitely see a yaw pattern in the window, in the periscope, in the reticle. The window itself is satisfactory at (-) 34 degrees, I've covered the gyro and am now coming back to the left to remove yaw.
01 51 44	CC	Roger. Did you, how far did you have to come back on yaw?
01 51 48	P	I am not there yet. I'd say about 25 to 30 degrees, I'm stopping yaw at this time. The periscope checks with the window and the reticle and I'm going to give a mark shortly, to try to get all the rates stopped. I am just about in retroattitude now, and yaw looks real clean. I'm going to pull off and look. It's about 1 degree of yaw, to the right - MARK. (01 52 20)T. Okay, I'm satisfied with that kind of day yaw check. That was done in retroattitude. I had a real good cloud layer, that was what was the cue.
01 52 32	CC	Roger. How do you feel about systems at the present time now?
01 52 33	P	All systems are green except for the suit cooling and it definitely is - the dome temperature is going up at this time. I'm going to go back on ASCS for a while and hack out a network.
01 52 52	CC	Roger.
01 52 56	P	I will not go to ASCS. Ah, by the way, how about taking a look at my high thrusters. Have you seen any high thruster action at all?
01 53 04	CC	Standby.
01 53 06	P	I shouldn't have had any at all.

01 53 12	CC	Wally, did you already switch to ASCS?
01 53 16	P	Negative. I have not switched.
01 53 18	CC	Do it now.
01 53 20	P	Say again.
01 53 24	CC	Go ahead and switch.
01 53 26	P	I'm going - have I had any high thruster action so far?
01 53 29	CC	Negative.
01 53 30	P	Okay, that's good. I'm still in fly-by-wire low, standby switching now, flop. I'm going - .
01 53 41	P	Say again.
01 53 42	CC	No high thrusters.
01 53 44	P	Okay, good deal going, gyros normal.
01 53 46	CC	Roger, that is affirmative.
01 53 49	P	I have completed my day yaw checks. I am very satisfied with the technique of taking care of roll as I . . .
01 53 58	CC	Sigma Seven, Sigma Seven this is . . .. Do you read? Over.
01 54 05	P	This is Sigma Seven. I had to give up on this lower temperature. Everything's going up.
01 54 11	CC	Okay, I'll report that to the Cape.
01 54 13	P	I'm going to set in to number . . ..

KANO

01 54 15	CT	Sigma Seven this is Kano Com Tech, transmitting on UHF/HF, do you read?
01 54 20	P	Roger, Kano. I read you loud and clear. How me?
01 54 24	CC	. . . read you here. Report . . . setting number.
01 54 27	P	Okay. I've set it back to 7.5.
01 54 32	CC	Roger. I copied 7.5.
01 54 34	P	The suit dome went up to 82 degrees.
01 54 38	CT	Sigma Seven this is Kano Com Tech, transmitting on UHF/HF. Do you read? Over.
01 54 44	P	Could you read me, Canaries?
01 54 49	P	Hello Kano, hello Kano.
01 54 52	CT	Sigma Seven Sigma Seven this is Kano Com Tech, transmitting on UHF/HF. Do you read? Over.
01 54 58	P	Kano, I read you loud and clear. How me? Over.
01 55 09	CT	Sigma Seven Sigma Seven this is Kano Com Tech, transmitting on UHF/HF. Do you read? Over.
01 55 16	P	Kano this is Sigma Seven. Read you loud and clear. How me? Over.
01 55 18	CC	Roger, Seven, I read you weak but readable. Standby this frequency for . . ..
01 55 24	P	Okay.

01 55 32	CC	Sigma Seven, . . . how do you read?
01 55 34	P	I read you loud and clear. I wonder whether Canary's got my last on the suit system. I've got 82 degrees on the dome and went back up to a setting of 7.5 on the coolant valve. Over.
01 56 00	CC	Sigma Seven, Kano Cap Com.
01 56 03	P	Go ahead, Kano.
01 56 14	P	Kano Cap Com, Sigma Seven, go ahead.
01 56 27	P	Hello, hello Kano Cap Com, Sigma Seven. Over.
01 56 55	P	Kano, Cap Com this is Sigma Seven. Go ahead.
01 56 59	CC	Sigma Seven, Kano Cap Com . . ..
01 57 08	P	Kano Cap Com, this is Sigma Seven, go ahead.
01 57 14	CC	Sigma Seven, we don't read you.
01 57 16	P	Roger, Kano. This is Sigma Seven. I read you loud and clear. Sigma Seven switching to HF.
01 57 31	CC	Sigma Seven, Kano Cap Com.
01 57 43	P	Kano, this is Sigma Seven. Over.
01 57 47	P	Hello, Kano Cap Com. Sigma Seven. Over.
01 57 51	CC	Roger, Sigma Seven. I have not read your transmissions. Over.
01 57 55	P	Roger. I had to switch to HF at this time, and am in VOX at this time. HF. How do you read?

KNO-2

01 58 04	CC	Negative, Seven. Would you say again?
01 58 07	P	I'm on VOX - correct, I am going to push-to-talk on HF. Do you read me now?
01 58 13	CC	Roger. I read you better now.
01 58 16	P	Okay. Do you want some suit stuff?
01 58 18	CC	Roger. How is your suit doing?
01 58 20	P	Okay. I've already caught the dome temperature. Went up to about 82 (degrees). I've got it back to 81 (degrees). The suit inlet went up to 80 (degrees). I've got it back to 78 (degrees). I am back at the setting of almost 7.5 on the suit set selector. I'm going to setting number 8 at this time.
01 58 43	CC	Understand. You are going to number 8 on suit setting.
01 58 47	P	That is correct.
01 58 50	CC	Would you say again your suit temperature.
01 58 52	P	Suit temperature at this time is dropping slowly. It is now 77 (degrees).
01 58 59	CC	You're rising?
01 59 01	P	Negative. It is dropping - lowering.
01 59 03	CC	What is your dome temperature?
01 59 06	P	It is coming down. It is now 81, 81 (degrees).
01 59 10	CC	Roger, I copied.
01 59 11	P	Okay, I think we got locks on it by going higher in settings.

01 59 17	CC	Say again. You were garbled.
01 59 19	P	I think we have the situation under control.
01 59 28	P	I am now in ASCS, gyros normal, maneuver off, all systems green. I am green.
01 59 35	CC	Roger. Understand. Auto retro.
01 59 39	P	That is affirmative.
01 59 46	CC	Our telemetry shows pitch attitude of 25 (degrees) negative and our scanner shows 36 (degrees) negative.
01 59 59	P	Roger, your scanner is correct. I am indicating 36 (degrees) negative that it checks with the window.
02 00 11	CC	Sigma Seven.
02 00 13	P	Go ahead. Go ahead.
02 00 17	CC	Standby for a (contingency recovery area) 2 Charlie retro time.
02 00 25	CC	Sigma Seven. Kano Cap Com.
02 00 27	P	Go ahead. I'm ready to copy.
02 00 34	CC	Sigma Seven, do you read?
02 00 36	P	I read. Go ahead, Kano.
02 00 40	CC	Sigma Seven.
02 00 43	P	Kano, this is Sigma Seven. Go ahead.
02 00 47	CC	This Kano Cap Com transmitting in the blind, Sigma Seven. 2 Charlie time is 02 04 30.
02 01 03	P	This is Sigma Seven. Roger. 02 04 30, for 2 Charlie.
02 01 16	CC	Sigma Seven come in, please.

KNO-2

02 01 19	P	This is Sigma Seven. I read you loud and clear. How me?
02 01 22	CC	I read you now. Did you get my 2 Charlie time?
02 01 26	P	Roger. 02 04 30.
02 01 32	CC	Would you say it back to me.
02 01 34	P	Roger. 02 04 30.
02 01 41	CC	That is Roger.
02 01 47	CC	How is your suit temperature now, Seven?
02 01 52	P	It is now coming down to about 76 (degrees) and the dome is 80 (degrees). We're going in the right direction.
02 02 00	CC	Is your cabin temperature holding?
02 02 04	P	Cabin temperature is under control. It is 95 (degrees). 95.
02 02 11	CC	Roger.
02 02 17	CC	How do you feel?
02 02 20	P	I feel very comfortable now. I'm cooling off at last.
02 02 24	CC	Very good.
02 02 26	P	I am going to manual proportional at this time.
02 02 31	CC	Are you going to power down?
02 02 32	P	Negative, this is manual proportional.
02 02 34	CC	Roger, understand.

02 02 41	CC	T/M LOS, Seven.
02 02 46	P	Roger.
02 02 54	CC	Seven, do you read?
02 02 57	P	This is Sigma Seven, I read you still.
02 03 00	CC	I read you very clear, Wally.
02 03 02	P	Roger.
02 03 12	P	Gyros are free.

ZANZIBAR

02 04 53	CT	Sigma Seven Sigma Seven Zanzibar Com Tech transmitting HF/UHF. How do you read? Over.
02 04 59	P	Sigma Seven on HF. Read you loud and clear. How me?
02 05 21	P	Zanzibar, Sigma Seven. Over.
02 05 25	CC	Sigma Seven Sigma Seven this is Zanzibar. I am not reading your sigmal. What are you transmitting on, please?
02 05 34	P	Sigma Seven on HF.
02 05 41	CC	Sigma Seven Sigma Seven this is Zanzibar Cap Com. Do you read? Over.
02 05 51	CC	Sigma Seven Sigma Seven this is Zanzibar Cap Com. Do you read? Over.
02 05 55	P	Zanzibar, this is Sigma Seven. I read you loud and clear. How me? Over.

02 05 58	CC	Roger, I'm not reading you. I'm not reading you. Very, very weak. Will you report the suit control setting now, and how do you feel?
02 06 12	P	This is Sigma Seven. I feel marvelous and I have finally knocked suit control.
02 06 35	P	This is Sigma Seven. I had a slight case of double authority here. I got very bored with manual proportional during the drifting period and forgot to put the rate command switch to auto, . . .it's about one stroke in pitch.
02 06 52	P	Zanzibar, this is Sigma Seven. Over.
02 07 01	P	Zanzibar Cap Com, Sigma Seven. Over.
02 07 19	P	Zanzibar Cap Com, Sigma Seven. Over.
02 07 30	CC	Sigma Seven, this is Zanzibar. Over.
02 07 41	CC	Sigma Seven Sigma Seven this is Zanzibar. Over.
02 08 53	P	Zanzibar Cap Com, Sigma Seven on UHF. Over.

INDIAN OCEAN SHIP

02 09 57	P	Indian Ocean Ship, Indian Ocean Ship, Sigma Seven. Over.
02 10 45	P	Indian Ocean Ship, Indian Ocean Ship, Sigma Seven on UHF-hi. Over.
02 11 11	P	Indian Ocean Ship, Indian Ocean Ship. Sigma Seven. Over.
02 12 04	CC	Sigma Seven.
02 12 09	P	Indian Ocean Ship, Indian Ocean Ship. This is Sigma Seven. I read you. How do you read me? Over.

02 12 15	CC	Read you now. Do you have anything at this time. Over.
02 12 18	P	Roger, I have good news. The suit dome temperature is now 70 degrees. The suit inlet temperature is now 70 degrees. Over.
02 12 51	CC	Sigma Seven Sigma Seven. Surgeon wants to know if you feel particularly hot.
02 12 57	P	No, I feel very comfortable. Did you read what I've got for the suit temperature?
02 13 04	CC	Roger, understand.
02 13 18	CC	Sigma Seven, this is IOS Cap Com standing by. Over.
02 13 22	P	Roger. I want you to read back what temperatures I gave you on the suit dome and on the suit inlet. Over.
02 13 30	CC	Roger, the suit temperature is 70 (degrees). The suit inlet temperature is 70. Over.
02 13 38	P	Roger, the dome is now about 63 degrees and is holding fairly steady. I will monitor it so it doesn't go too low.
02 13 50	CC	Roger, 63 (degrees), dome, holding steady. Over.
02 13 54	P	Roger, I think we've got that problem licked.
02 14 47	CC	Sigma Seven, I have about 1 minute to LOS. Over.
02 14 54	P	Roger, everything is good here. Thank you very much for waiting for me to come by again.

IOS-2

02 16 32 P IOS, this is Sigma Seven. I'm not sure whether you realize but I have been in auto mode retroattitude. Over.

02 16 58 P At last we have solved the suit circuit temperature problem. I can see why Scott was concerned about this record position only. There is no side tone as well. The suit temperature at this time is - CET 2 17 20 MARK. (2 17 20)^{T} - is 68 degrees and I'm feeling marvelous. The suit dome is about 72 degrees again. Apparently, it does fluctuate, and we are going into the night side at this time. I believe we have the suit circuit under good control. I will go back to VOX push-to-talk. Standing by for Muchea at 25 (minutes). Gotta watch one sunset.

02 17 55 P Sunset is rather striking, I don't think that I need to waste much time looking at them. They are very interesting. The other thing, it's fascinating is how black it is when your eyes are not adapted. I definitely can see some coating on the window. Going back to VOX at this point in UHF-hi to transmit. Opening visor to wipe off the right microphone. I licked it. Closing visor. Visor was sealed immediately for the suit circuit to go to work for me. I don't want to get fouled up with it again. The suit inlet is holding very nicely at about 68 (degrees). So the dome again is going to go back up. It's now up at 76, 75 (degrees). Apparently this higher setting is the one we want. Think I'll put in another half a mark on that now and we may have her locked. She's getting kinda cool at last so I know where I want to go with the setting. I have set the coolant quantity for the suit and control lever at 8.5 at 2 hours 19 minutes, 28 seconds. The readout the dome at this time is 75 (degrees).

The suit inlet is 68 (degrees). Very pleasant. I can feel cool air crossing my face. The oxygen quantity looks real good, 60 and 75 (psi, in hundreds). I have been watching the 250 inverter. It is approaching 140 degrees, and the 150 contrast is down to about 100 degrees. Standby is about 100 (degrees) which is cabin temperature. Thirdly, the 250 - that one's suffering, and I will keep an eye on it. Cabin heat exchanger is definitely settling out at 40 degrees, and its given me a hard time because I obviously owe Frank Samonski 50 cents. I'm pleasantly surprised. Cabin fuel too, is reading a little high. Let me see now, we're carrying 5.5 psi. it's reading about 5 point, correction, 5.3, that's not too high for this cabin. It's getting nice and dark out, I think I'll take a peek out at the stars at this point. The cover for the battery for the flashlight on the left glove is coming loose. Only where - where the switch is, is no problem, just a case of wearing out before they should. Drifting, checking my wrist watch as a backup and I have 2 hours and 51 minutes. Correction, that's 2 hours and 21 minutes. Check that, 2 hours and 21 minutes and 35 seconds. Right on. We're not too bad, we better get a CET check at Muchea on this trip.

02 22 25 P Going for the computer. Clock is reading about 2 hours and 23 minutes. We'll say 2 24. At 2 24 we should pick up Muchea, also pick up a yaw check. 2 24 we have 05 36 on the other set.

IOS-2

02 16 32	P	IOS, this is Sigma Seven. I'm not sure whether you realize but I have been in auto mode retroattitude. Over.
02 16 58	P	At last we have solved the suit circuit temperature problem. I can see why Scott was concerned about this record position only. There is no side tone as well. The suit temperature at this time is - CET 2 17 20 MARK. (2 17 20)^{T} - is 68 degrees and I'm feeling marvelous. The suit dome is about 72 degrees again. Apparently, it does fluctuate, and we are going into the night side at this time. I believe we have the suit circuit under good control. I will go back to VOX push-to-talk. Standing by for Muchea at 25 (minutes). Gotta watch one sunset.
02 17 55	P	Sunset is rather striking, I don't think that I need to waste much time looking at them. They are very interesting. The other thing, it's fascinating is how black it is when your eyes are not adapted. I definitely can see some coating on the window. Going back to VOX at this point in UHF-hi to transmit. Opening visor to wipe off the right microphone. I licked it. Closing visor. Visor was sealed immediately for the suit circuit to go to work for me. I don't want to get fouled up with it again. The suit inlet is holding very nicely at about 68 (degrees). So the dome again is going to go back up. It's now up at 76, 75 (degrees). Apparently this higher setting is the one we want. Think I'll put in another half a mark on that now and we may have her locked. She's getting kinda cool at last so I know where I want to go with the setting. I have set the coolant quantity for the suit and control lever at 8.5 at 2 hours 19 minutes, 28 seconds. The readout the dome at this time is 75 (degrees).

The suit inlet is 68 (degrees). Very pleasant. I can feel cool air crossing my face. The oxygen quantity looks real good, 60 and 75 (psi, in hundreds). I have been watching the 250 inverter. It is approaching 140 degrees, and the 150 contrast is down to about 100 degrees. Standby is about 100 (degrees) which is cabin temperature. Thirdly, the 250 - that one's suffering, and I will keep an eye on it. Cabin heat exchanger is definitely settling out at 40 degrees, and its given me a hard time because I obviously owe Frank Samonski 50 cents. I'm pleasantly surprised. Cabin fuel too, is reading a little high. Let me see now, we're carrying 5.5 psi. it's reading about 5 point, correction, 5.3, that's not too high for this cabin. It's getting nice and dark out, I think I'll take a peek out at the stars at this point. The cover for the battery for the flashlight on the left glove is coming loose. Only where - where the switch is, is no problem, just a case of wearing out before they should. Drifting, checking my wrist watch as a backup and I have 2 hours and 51 minutes. Correction, that's 2 hours and 21 minutes. Check that, 2 hours and 21 minutes and 35 seconds. Right on. We're not too bad, we better get a CET check at Muchea on this trip.

02 22 25 P Going for the computer. Clock is reading about 2 hours and 23 minutes. We'll say 2 24. At 2 24 we should pick up Muchea, also pick up a yaw check. 2 24 we have 05 36 on the other set.

02 23 13 P Perth should be coming into view and it should be - oh, what a beautiful yaw check this is, and it's approximately 10 degrees left of path. Better make that about 12 degrees left to path. Just on the edge of the window, and that should give us 0 (degrees) yaw. I cannot see anything through the periscope that would help me. It is too - it is too cloudy. I'm coming out on VOX 1, 2, 1, 2. VOX is now coming in very well.

MUCHEA

02 24 03 CC Sigma Seven Sigma Seven this is Muchea Cap Com. How do you read? Over.

02 24 [illegible] P Muchea, this is Sigma Seven. Read you loud and clear. How me?

02 24 11 CC Read you loud and clear, also, Wally. How about a standard report.

02 24 15 P Okay, Gene, I'll give you the suit thing first so everybody is off the hook. We have a dome on the suit of 72, that is dome temperature (degrees). I have a suit inlet of 66 (degrees) on the suit and the suit setting is 8 and I am very happy with the suit circuit at this time. I am very comfortable.

02 24 43 CC Roger. Cape advises they are very happy with the whole situation at this time. Particularly, the ECS systems solved itself, and they seem to think you have a good handle on the whole situation there.

02 24 55 P Roger, I lost it for a while when I went back to the 3 setting, but I didn't stay there very long. It definitely should be about 7-1/2 to 8. At this point, I am on ASCS auto retroattitude. I am going to go to fly-by-wire shortly. I had been on gyros normal, and maneuver has been off.

All systems are green. I snapped off about 2 percent of manual (fuel) one time by hitting RSCS. It was double authority. It was my boo-boo. It was just one pitch down motion.

02 25 34 CC Roger. Understand and stand by.

02 25 37 P Okay, I would like to go ahead with my night yaw check on fly-by-wire low.

02 25 42 CC Roger. We'll stand by.

02 25 44 P Okay. Now I'm using the moon which is to the left of me, and it's a real good fix for it. I'm just gonna go ahead and cover up the attitude indicator and you can watch the yaw. I'm going to gyros free, trying to select to fly-by-wire low at this time. I'm gonna put the moon in the center of the window first - and holding roll and pitch and then put the moon back where it belongs. The moon is approaching the center of the window at this point. Okay, I'm gonna stop it there, and we'll put the roll control in to get that balanced out. Okay, at this point, I will get 0 roll. I have overshot the moon and am picking up the planet Mercury which is nice and bright, and that's a little bit far to the right. Now take a check off and we'll see how many degrees we've got here in yaw. About 20, which is enough for a quantitative check. We'll bring her back now. And I have to go ahead with slight roll motion each time I do this. This is to track the horizon naturally.

02 27 06 CC Roger. Understand.

02 27 11 P Okay, we're coming to the right as you may be able to see, and we're coming around very well. I still have to correct my roll out. Coming up on yaw attitude very shortly here. I'm

quite satisfied with both day and night checks. I've been real pleased with it. I have to say this has been a real treat to see these bears flow into place.

02 27 39 CC Roger, everything checks out just as you say on the ground indication, Wally.

02 27 44 P Okay, I'm gonna give you a mark on the moon now for a yaw reference. I would say this is now zero yaw. MARK. (02 27 51)^{T}.

02 27 56 CC Fine. We had a -4 on the ground. That's pretty good.

02 27 59 P -4. Okay, I'll check here. Looks about right. I could have come right a little bit more. Okay, that's about all I need for the night yaw checks, and, as far as I'm concerned, I'll go back and give the guys some more ASCS time. I don't see any reason to burn up too much fuel. Now I'll give one you one of the things for your Sir John.

02 28 26 CC Roger. Understand. There's a few lights on at . . .. Can you see anything?

02 28 33 S We seem to be getting reasonable body temperatures now, Wal.

02 28 36 P Oh, very good. Warren, nice to hear from you, old man.

02 28 40 S Me too. How are you, Sand Groper?

02 28 41 P Oh, great sport. Understand some suds are on the way back.

02 28 50 P I might as well look down and see if you fellows have got some lights on. I'm gonna kill the blood pressure.

02 28 55	CC	Shannon runs out of fuel, . . . he doesn't get bogged down in the sand.
02 28 59	P	Ha! Ha! I still have black skid marks on my swim fins from your trip into the bush. Okay, you can see I've yawed right again. I need to come - correction, yawed left. I need to come right, the moon is right on the horizon. I'll put it right on again, just to show you how easy it is to acquire. I seem to be holding up on my fuel minimum so I'll go ahead and play with it a little bit here. Okay, we're just about on in yaw, and still off in roll. I'll slap her in and we'll have it made. Here comes roll to straighten her up. Coming up on roll - okay, I'm quitting right there. That's about as good as I'll ever give you. Little off in roll here. There we go. Now, that's what I would give you. Okay, I'm gonna go back to gyros normal, and let them come back on the line. I'm going to set up now and uncover the instruments for chimpanzee configurations. Dammit, I'm sorry, auto mode.
02 30 13	CC	Roger. I understand.
02 30 15	P	I broke my promise.
02 30 22	CC	We had you on a +5 (degree) roll when you uncovered.
02 30 26	P	Right, that's about right. Oh! I've got some lights down there. How about that?
02 30 33	CC	Good, that's us.
02 30 34	P	That's a great deal. Sure thank you-all. I've got a washer in here. I captured a washer and a little piece of metal and this looks like sort of a conical washer like a Voishan type or something, better not be.

02 30 50	CC	Fine - can you give us another blood pressure. That one cut off a little too soon.
02 30 54	P	Okay, let me get back into configuration here. I'm going to ASCS at this time. And she walked in without any high thrusters, I believe. Will you double check that? And for that, I'll give you a blood pressure.
02 31 09	CC	Roger.
02 31 11	P	Got to check the Sanborn I guess, for that one. Coming up on BPMS. Gene, I'm real pleased with the suit temperature now. I've got a real steady 65 (degrees). Although the dome is reading just about 70 (degrees) as a steady number.
02 31 37	CC	Roger. 65 and dome 70.
02 31 39	P	Right. The cabin is just sitting here fat, dumb, and happy, I haven't had to do a thing to it. Now, have you been watching my 250 inverter?
02 31 54	CC	I've got 55 (degrees) on the ground.
02 31 57	P	I've got 140 (degrees) here. And the trend has been very slow building up. I don't think I'll change the cold plate settings. The 150 is holding about . . ..
02 32 08	CC	This is Muchea - recommend you go over to Woomera.

WOOMERA

02 32 10	P	Roger. Woomera Cap Com, Sigma Seven. Over.
02 32 15	CC	Sigma Seven, Woomera Cap Com. Loud and clear. Over.

02 32 18	P	Roger. Nice to be back over Woomera.
02 32 21	CC	Same here. And . . ..
02 32 22	P	I'm a little bit . . ..
02 32 23	CC	. . . mode.
02 32 24	P	Okay.
02 32 25	CC	. . . condition.
02 32 26	P	Roger. I am in ASCS auto, in other words a normal mode. Gyros are normal, maneuver is off, all systems are green. I'm real happy with the suit circuit at this time.
02 32 41	CC	Roger. We received your last reports from Muchea and is that auto retro?
02 32 46	P	That is auto retro. Would you give me a time hack at 33 minutes. Over. That's 2 hours, 33 minutes.
02 33 06	CC	You want to get your blood pressure stopped?
02 33 08	P	Roger. Can you read me?
02 33 10	CC	Affirmative, we are reading you.
02 33 12	P	I need a mark on capsule elapsed time. Your ground elapsed time, give it to me at 30 seconds.
02 33 20	CC	Roger.
02 33 26	CC	5, 4, 3, 2, 1. MARK 02 33 30. (02 33 30)^{T}
02 33 34	P	Roger. I read 31. I'm 1 second fast. That's very good.

WOM-2

02 33 39	CC	Your T/M readout on your capsule elapsed time occasionally reads out 1 second fast and then comes out to be correct with our time, then it gains a second again.
02 33 50	P	Welcome to the Quiver Club.
02 33 52	CC	Roger.
02 33 55	P	Okay, I think I gave you some good old blood for that one. Thanks for the swap.
02 34 02	S	Roger, that was the stop button. The stop button, we're still getting it.
02 34 07	P	Okay, I'll stop her.
02 34 09	S	Roger.
02 34 10	P	I'll try to give you the full bit.
02 34 13	S	Thanks.
02 34 14	P	You were so nice asking for it. I had to give it to you.
02 34 17	S	We meant the stop button.
02 34 20	P	Oh, for gosh sakes, I gave you a whole new one.
02 34 23	S	Ha! Ha! It never quit.
02 34 25	P	I see.
02 34 26	S	Looks good now.
02 34 27	P	Good show. Okay, I feel happy about the fuel condition. We've got - I'm reading 95 (percent) auto, 90 (percent) manual. What are you reading?

02 34 38	CC	Reading 98 auto and manual 94.
02 34 46	P	Well, how about that.
02 34 48	CC	Beautiful.
02 34 50	CC	Okay, Spacecraft Commander, this is Woomera Systems. Do you have any high thruster actions during your last pass over Woomera and Muchea?
02 34 59	P	I don't think so, because I was just cruising over you that time in fly-by-wire low and ASCS. I had one . . ..
02 35 06	CC	Z Cal jumped down here and indicated high thrust. We think that was probably erroneous.
02 35 14	P	I'm quite sure it was, because I would have noted it rather rapidly. I made one large thrust application in the flight so far, where I was going back from manual proportional to fly-by-wire and I forgot to move the rate command switch to auto. I had one pitch function and you really know it. So if I had a high thruster, I'm sure I would have known it.
02 35 37	CC	Roger.
02 35 38	P	Very good. Thanks for looking out for me.
02 35 43	CC	Everything looks green down here.
02 35 45	P	Oh, it's great up here.
02 35 47	CC	Standing by.
02 35 48	P	Righto. I'm seeing a lot of your lightning now.
02 35 53	CC	Yeah, we got a bunch.
02 35 54	P	I'll bet you have. Sorry I couldn't see your flare just - I thought I saw, but it's just lightning all the time.

02 36 03	CC	Maybe next time.
02 36 05	P	Okay. I see Africa. Looks pretty good down there. We'll give them a whack at it. Don't give up though, I think the flare will help us some day.
02 36 19	CC	We'll let Gordo take a look at it.
02 36 23	P	Right. I'm gonna do a little star gazing now.
02 36 29	CC	Woomera has T/M LOS.
02 36 30	P	Roger, Woomera.
02 36 34	CC	Sigma Seven, Woomera.
02 36 36	P	Go ahead, Woomera.
02 37 38	P	There's the old Corona Australis, shows in beautifully, and we've got Nunki. We've got Kaus Australis, and Nunki is right on the flight path where it belongs. I'm reading 0 yaw, 5 degrees left roll, in retroattitude. I sure would like to know why it's so complicated. And up above those boys I should pick up another brighty. That must be, has to be Altair. Very good. You actually get the feeling that you aren't really going over Australia on this flight. Okay. Now let's see, we finished yaw check for those boys, coming up on Canton. They get more ASCS than they reckoned for this time.
02 38 53	P	That's right, on HF at 3 plus 20, everything else is in order. Take another look at that dome there, over there. Suit temperature is 64 (degrees) and I'm really happy.
02 39 20	P	T_r-10 back to normal. I've done that earlier. Okay, we got - got suit pressure. Go ahead

and take a look at the inverters again here. 250 is 141 (degrees), 150 is about 107 (degrees). Well enough alone. Standby is . . . 7. Just about ambient. Negative, it's even a little . . . . The cabin pressure is about 5.3 (psi), which is perfect. Suit dome is 72 (degrees). Cabin dome is 45 (degrees) and cabin is holding. Suit temperature is about 64 (degrees) and I like it. Oxygen is 60 (psi, in hundreds). Cabin O_2 is 5.3 (psi), and a complete electrical.

02 41 00 P All batteries are reading about 23½ (volts) or higher, ammeter is just about steady at 20 amps. Wanted to check before we power down, ASCS is 115 (volts). Fans is about 115 (volts), standby 0 (volts). Okay, the cockpit is clean. It's obvious that that damn antenna situation is no good. Just brought HF back in bicone again.

CANTON

02 42 06 CT Sigma Seven Sigma Seven, this is Canton Com Tech. Over.

02 42 12 P This is Sigma Seven, I read you loud and clear. How me?

02 42 21 P Okay, we're back in dipole.

02 42 23 CT Seven, Canton Com Tech, how do you copy?

02 42 27 P Canton is coming in early. No, he's coming in about on time.

02 42 34 P Canton Com Tech, this is Sigma Seven. Read you loud and clear. How me?

02 42 39 CT Sigma Seven Sigma Seven. This is Canton Com Tech, Canton Com Tech. How do you copy? Over.

02 42 51 P Canton Com Tech, this is Sigma Seven. I read you loud and clear. How me? Over.

CTN-2

02 43 02	CT	Sigma Seven Sigma Seven this is Canton Com Tech, Canton Com Tech on HF. Over.
02 43 10	P	Canton Com Tech this is Sigma Seven. How do you read me? Over.
02 43 16	CT	Sigma Seven Sigma Seven this is Canton Com Tech on HF/UHF. Over.
02 43 30	CT	Sigma Seven Sigma Seven, this is Canton Com Tech, Canton Com Tech, how do you copy? Over.
02 43 38	P	Canton Com Tech, this is Sigma Seven. I read you loud and clear. How me?
02 43 46	CT	Sigma Seven, Canton Com Tech. I read you 5 by. Over to Cap Com. Over.
02 43 52	P	Roger, I'm here too.
02 43 57	CC	Sigma 7 this is Canton Cap Com. Over.
02 44 00	P	Roger, Canton. All right I'll give you a short report. I am in auto retro mode, gyros normal, maneuver off, all systems are green, suit circuit is under positive control.
02 44 26	CC	Roger, Can - Roger, Sigma Seven.
02 44 30	P	This is Sigma Seven. I am ready at this time for a retrosequence if required. All I have out is one star chart and that's it.
02 44 43	CC	Roger, Sigma Seven.
02 44 45	P	And you'd better not give me one. Ha, Ha, Ha.
02 44 50	CC	Say again, Sigma Seven.
02 44 51	P	I don't want one. Ha. Ha.
02 44 53	CC	Roger.

02 44 55	P	She is really performing like a jewel right now.
02 45 03	CC	Say again, Sigma Seven.
02 45 05	P	I said she is performing like a little jewel.
02 45 08	CC	Roger, that's great.
02 45 10	P	Now, the only thing we had trouble with so far is the suit circuit, and we've got that pretty well licked.
02 45 17	CC	That's what I understand from listening over the Goddard conference (network communications loop).
02 45 20	P	Now, just for your briefing, I've got a suit inlet (temperature) now of about 63 degrees, and the dome is holding steady, at 70 degrees.
02 45 33	CC	Roger, understand.
02 45 34	P	I'm perfectly comfortable. I'm gonna quit with that thing while I'm ahead.
02 45 39	CC	Roger.
02 45 44	P	Some of that reason that I've lost HF communications, I believe, is that I keep bumping that switch from dipole to bicone. You understand?
02 45 54	CC	You say you keep bumping the switch from dipole to bicone?
02 45 59	P	That is correct. So on the HF check here, I'm set up for it. I think we can probably get a good one this time.
02 46 06	CC	Roger.

CTN-2

02 46 07	P	That's at 3 hours and 20 minutes, of course. Apparently I've got to keep checking that thing for bicone. Correction - for dipole.
02 46 17	CC	Roger, understand.
02 46 20	P	I just have to move my elbow to the right, and I knock it.
02 46 24	CC	I see.
02 46 28	P	It's not critical. It's just a way of doing business. I had compared the night yaw checks over Muchea and Woomera, and am very satisfied with the results. With known objects it is absolutely no problem at all to acquire yaw. In addition, we can watch . . . down through the window.
02 46 47	CC	Roger, that's what I heard. I heard your report at Woomera.
02 46 53	P	Roger. There is nothing new up here, then.
02 47 02	CC	Roger. We have nothing. No questions here.
02 47 06	P	Roger. Apparently, the 250 inverter is not going up very much. My reading is still remaining about 140 degrees.
02 47 19	CC	Roger.
02 47 33	P	I guess Frank Samonski knows I owe him a half a dollar by now.
02 47 38	CC	Roger.
02 47 53	P	For your information, because you can't read it, my retro (package) temperature at this time is 72 degrees.
02 48 01	CC	Roger. Understand 72 degrees.

02 48 05	P	That is correct.
02 48 06	CC	Thank you. Seventy-two degrees.
02 48 09	P	Seventy-two degrees for the retro heater. Retro rocket rather. There are no heaters.
02 48 49	P	I'm opening the visor just for a moment to scratch my nose.
02 48 55	CC	Roger.
02 48 56	P	And closing visor. I missed on that, I'm gonna have to reseal that. Okay, it's re-sealed. I'd just as soon not stay on that cabin any longer than necessary.
02 49 12	CC	Roger.

HAWAII

02 49 35	CT	Sigma Seven, Hawaii Com Tech. How do you read? Over.
02 49 38	P	Hello, Hawaii Com Tech. I read you loud and clear. How me?
02 49 46	P	Hawaii Com Tech. This is Sigma Seven, read you loud and clear. How me? Over.
02 49 50	CC	Sigma Seven, Hawaii Cap Com.
02 49 52	P	Hi, Gussie, how ya' doin'.
02 49 56	CT	Sigma Seven, Hawaii Com Tech.
02 49 59	P	Hawaii Com Tech, Hawaii Cap Com, this is Sigma Seven. I read you loud and clear. How me?
02 50 04	CC	Sigma Seven, this is Hawaii Cap Com. How do you read?

HAW-2

02 50 09	P	I read you loud and clear.
02 50 15	P	Hawaii Cap Com, I will start a standard report for you. I am in auto retroattitude. I have gyros normal, maneuver off, all systems are green, and go for the next orbit. Over.
02 50 37	CC	Roger, Wally. Understand all systems are green and go. We indicate you have a go down here.
02 50 44	P	Roger.
02 50 45	CC	Could you give me a CET, . please?
02 50 47	P	Roger. Standby for a mark at 50. MARK 50. (02 50 50)T. That's 2 hours 50 minutes plus 50 seconds.
02 50 52	CC	Roger. We indicate you're 1 second fast.
02 50 56	P	Roger, Gus. I think everybody's got the readings on the suit circuit, I won't bother bringing that up anymore.
02 50 59	CC	Roger. I'd like to have a cabin temperature and a cabin dome temperature.
02 51 04	P	Okay. Cabin temperature is 97 (degrees). The dome is 45 (degrees).
02 51 08	CC	Say again dome temperature.
02 51 17	P	45.
02 51 20	CC	Roger. 45.
02 51 22	P	And the setting has not been changed for a long time.
02 51 26	CC	Roger.

02 51 27	P	I have not changed the setting on the inverters. I'll give you a recap on those. Inverters are at 4. That's the (coolant control) valve setting. The cabin is at 3. The suit is at 8.
02 51 43	CC	Roger.
02 51 45	P	And it's working all very fine. I've got about 62 (degrees) inlet now on the suit.
02 51 52	CC	Would you push your blood pressure stop button, Wally?
02 51 56	P	Roger.
02 52 01	P	Now you don't have to ask me for it, you have to tell me to stop. This is horrible. Ha!
02 52 06	CC	I'd rather ask you to give it.
02 52 08	P	I liked your dispatch the other day. It helped.
02 52 14	CC	I almost forgot. Aloha, from Hawaii.
02 52 16	P	Oh! Aloha.
02 52 24	P	Got some real good night yaw checks, Gus. It just slops right in.
02 52 28	CC	Roger.
02 52 29	P	And, your reports on manual proportional, just about right. The tail-off is what you see more than anything else. It's a little sluggish.
02 52 51	CC	Wally, Cape seems to think you're in good shape also.
02 52 53	P	Roger. I feel fine. This old bird is really performing up here.

HAW-2

02 52 59	CC	Good show.
02 53 25	CC	Wally, give me a reading on your attitudes now.
02 53 29	P	Okay, I am rolled left about 7 degrees. Yaw right 2 degrees. Pitched up about 4 degrees.
02 53 41	CC	Roger. Pitch up 4 degrees.
02 53 43	P	That's affirmative.
02 53 45	CC	Roger.
02 53 46	P	We have a ± 5½ degree envelope on this one, Gus.
02 53 51	CC	Roger.
02 53 59	P	She's tracking beautifully. I haven't had a thruster one problem. Really nice.
02 54 05	CC	Roger. Give me your pitch attitude again, Wally. We don't agree with that.
02 54 09	P	Okay, I have an indicated (-) 30 degree pitch, and it checks with the window just about right on the button, Gus.
02 54 18	CC	Okay, Roger. I misread you then.
02 54 21	P	I'm sorry I said + 4, I was going up from the retro mark which would probably confuse you.
02 54 29	CC	Yes, you did.
02 54 30	P	I can imagine.
02 54 31	P	Okay, I'll read them out the way I see them instead of the way the SEDR (Service Engineering Department Report) boys do it.

I'm getting the old fireflies again. I guess John is relieved. I haven't been looking for them - they're just there.

02 54 49 CC Okay.

02 54 52 P They're just freebees. You can see some big ones and some little ones. They're almost impossible to photograph. Most of them are of a less magnitude than I'd say a good star. Every once in a while you see some of the big ones.

02 55 08 CC Do you see them close to you?

02 55 11 P Oh, yeah, you can actually see relative motion, Gus. You can see them right by the window, then have them drifting way away. Looks like you see them way out because the velocity between you and fireflies is definite.

02 55 27 CC Roger. Wally, I think we're losing you. Will you stand by for California?

02 55 31 P Okay, Gus. I want to talk about this to John. He's the one that's been waiting. I guess we're gonna have them all the time.

02 57 54 P Sunrise over the West Coast. It is rather disappointing because it is just about socked in completely; smog and cloud conditions. I am seeing breaks as I approach the coast line. Someday, I'll get a flight across the Pacific without clouds underneath me.

02 58 26 P The attitudes check out very well. No doubt about it. Yaw can be seen with the periscope. And it can be acquired very rapidly. It can also be seen through the window without any device.

02 59 05 P Covering up the periscope again. Standing by for John.

CALIFORNIA

02 59 10	CC	Hello Sigma Seven, Cal Cap Com. Do you receive? Over.
02 59 12	P	Hi, there John. I read you loud and clear. How me?
02 59 16	CC	Hello Sigma Seven, Cal Cap Com. Do you read?
02 59 19	P	Cal Cap Com, Sigma Seven. Loud and clear. How me?
02 59 22	CC	Roger, loud and clear, Wally. Looks like things are leveling off pretty good up there. Looks like it's going fine now. You got a status report?
02 59 28	P	Yes sir. I'm real happy with this bird. I am in ASCS auto mode, retro attitude, I have gyros normal, maneuver off, all systems are green. I've got the suit circuit under control as you probably know by now, and a delightful report for one John Glenn. I do see fireflies.
02 59 52	CC	Good boy.
02 59 54	P	And they were your color, John. That was a very good description. Although during the bright side, if I rap them, they're definitely white. While on the sun center sunrise, they come out the true firefly color you described.
03 00 16	P	John, did you read all that?
03 00 18	CC	This is Cal. Now reading you very weak, Wally. You faded after that first good transmission there. I got that you were seeing the fireflies and then you faded out on your description. Repeat please.

03 00 29	P	Okay. How do you read me now?
03 00 31	CC	Loud and clear again.
03 00 32	P	Okay, we're back on UHF-hi. They were definitely the fireflies that you described at sunrise. I haven't been looking at sunsets particularly. As we get brighter, for example, now when I'm in the daylight and I rap it, I get white crystals which look like ice.
03 00 53	CC	Roger, got that all okay. Understand as described at first, and they got whiter as you go into better light.
03 00 59	P	Right, I've got white ones right now that are sort of drifting around. Look like little bits of frost.
03 01 05	CC	Roger, sounds good. Are you read to copy (recovery area) 4-1 retrosequence? Over.
03 01 11	P	Roger, go ahead John.
03 01 13	CC	Roger. Incidentally, you have a go for the next orbit in case you were wondering. Cape concurs with that one. Your retrosequence time for 4-1 is 04 32 36. Over.
03 01 25	P	32 36.
03 01 26	CC	Roger. 04 32 36. And Cape advises just proceed with normal flight plan. Looks like things are going fine.
03 01 33	P	Yeah, I feel real happy with everything. I stopped everything to get a hold of that suit circuit and that seemed to fix it up.
03 01 40	CC	Roger, that had everybody concerned for a while, but looks like it is in good shape now.

CAL-2

03 01 44	P	I was sure everybody was jumping up and down on that one.
03 01 46	CC	You were right.
03 02 09	P	It's kind of hard to describe all this, isn't it John?
03 02 12	CC	Yeah, it sure is, Wally. Can't describe it.
03 02 16	P	No, - real, real thrill.
03 02 20	P	Too bad you're all socked in. I hope to see you pretty soon though.
03 02 24	CC	Haven't even looked outside.
03 02 25	P	Ha, Ha, Ha. That was my problem when you were going over.
03 02 32	P	I guess you heard my yaw reticle is working out very well.
03 02 36	CC	Yeah, that's real good. Glad to hear it.
03 02 54	P	I definitely did detect some fogging on the window from the tower rocket, John.
03 03 00	CC	Roger, got that. Some fogging on the window from the rocket.
03 03 04	P	Yeah.
03 03 12	P	I'm gonna try your idea on pitch technique here for drifting. I think that'll be fun.
03 03 18	CC	Say again, Wally, didn't get it.
03 03 19	P	I'll try your technique on the drifting period for this orbit by using - I think that will be a lot of fun. I just had a hole out here with an island. Looks like that might have been San Clemente, I'm not sure. Yeah, I'm over land now.

03 03 39	CC	Roger.
03 03 40	P	I'm getting a good sight of the U.S.A. We just got the typical California fog belt behind me and looks like I'm getting a watch at the Salton Sea, I believe.
03 03 53	CC	Roger. That's where Scott and I both picked up loud and clear over here. Seems to be always clear back in there.
03 03 59	P	Yeah, just as soon as you get over the ridge line.
03 04 03	P	I don't see anybody water skiing today. Is it cold?
03 04 08	CC	Not that cold.
03 04 10	P	Ha, Ha, Ha.
03 04 44	P	That's about as far north as I can see is the Salton Sea. You get a real good look at Baja California. And I probably can see Guaymas loud and clear, the way it seems.
03 04 56	CC	Looks like you have pretty good visibility today, if you see all that area.
03 05 00	P	Yeah, I can see just about as far as the Salton Sea north. I can see the Mt. Whitney area, but not much of it for the snow capped peaks that are just about on the horizon now.
03 05 15	CC	Right.
03 05 16	P	And I can see with a little craning, around almost the southern tip of the Baja peninsula.

CAL-GYM-2

03 05 25	CC	Sounds like you've got a real good view today with not much cloud cover up there over a lot of it.
03 05 30	P	No, just the coast is all that's socked in. The rest of it's CAVU (clear and visibility unlimited). As long as I get some ASCS time I can look. I've got some roads down here that are pretty obvious to me right on the flight path. I'm really talking to you for a long way, John.
03 05 58	P	Cape Cap Com, Sigma Seven.
03 06 16	P	Cape Cap Com, Sigma Seven.
		GUAYMAS
03 06 22	P	Muchea Com, correction - Guaymas, Sigma Seven.
03 06 26	CC	Roger. Go ahead Sigma Seven.
03 06 28	P	Okay, Scott, things are going real well up here. Gonna get a grip on that coolant system, and your comment was very valid. If a guy has time, he can usually work it out.
03 06 41	CC	Roger, Wally, you faded out at the last. Understand everything is good up there, you have another good trip.
03 06 48	P	Right, I think I had a good look at your station going over.
03 06 51	CC	Roger, understand.

CAPE CANAVERAL

03 07 10	P	Cape Cap Com, Sigma Seven. Over.
03 07 21	CC	Sigma Seven, Sigma Seven. Cape Cap Com.
03 07 24	P	Roger, Deke. I'm on push-to-talk at this time. How do you read? Over.
03 07 29	CC	Roger. Reading you 5 by.
03 07 30	P	Roger, this is UHF-hi.
03 07 33	CC	Roger.
03 07 34	P	Going to VOX.
03 07 40	P	Cape Cap Com, Sigma Seven. On VOX
03 07 42	CC	Roger. You're good on VOX.
03 07 44	P	Okay. I'm sending you one. Control mode is ASCS; auto retro; gyros normal; maneuver off. All systems are green. I'll give you a readout on the domes here, if you'd like.
03 08 11	P	Cape Cap Com. Sigma Seven.
03 08 13	CC	Sigma Seven. Cape Cap Com.
03 08 15	P	Did you read the report?
03 08 17	CC	I read the report. Awaiting the dome temperature, particularly suit.
03 08 20	P	Okay. Suit dome is 70 (degrees). Cabin dome is 45 (degrees). That blasted cabin heat exchanger is 40 (degrees). Suit inlet is 62 (degrees), and I'm very comfortable.
03 08 38	CC	Excellent.
03 08 40	P	Are you ready for me to make a power down yet?

CNV-3

03 08 43	CC	Very good. Would you give us all three inverter temperatures at your leisure.
03 08 49	P	Okay. I'll give you those, and then I'll power down.
03 08 52	CC	Roger.
03 08 53	P	250 is 143 (degrees). It's gone up about 2 degrees in the last 40 minutes. The 150 is about 105 (degrees). The standby is about, ha, 110 (degrees) I'd say. A little warmer.
03 09 12	CC	Roger.
03 09 13	P	And the retro heaters, the retropackage temperature is about 74 (degrees), and it's stayed there almost all this time.
03 09 21	CC	Roger. That's very good.
03 09 22	P	Okay. I'm gonna go into a power down.
03 09 25	CC	Roger. Understand.
03 09 26	P	I'll give a readout on how I do it. Selecting fly-by-wire. Going to gyros caged. Judging gyros caged. I'm going to 0.
03 09 44	CC	Roger.
03 09 45	P	Going to ASCS bus, turning it off, and that's 0 volts. And am I clear to kill my beacon?
03 09 56	CC	Affirmative.
03 09 57	P	Okay. Beacon off. The rates are . . ..
03 10 03	CC	Hit your blood pressure stop button, we're still getting BP.

03 10 06	P	Yeah, instead of getting asked for it, I'm gotta asked to stop it now.
03 10 11	CC	That's a welcome changeover.
03 10 13	P	There go the beacons off.
03 10 15	CC	Roger.
03 10 16	P	I caught your Z Cal. Okay, the rates are nice and zeroing. I'm going back to normal position instead of fly-by-wire.
03 10 28	CC	Roger.
03 10 29	P	Gyros are caged, and the VOX is off. I'm going to select reentry for the attitude, so I got that set up for the powering-up procedure.
03 10 38	CC	Very good.
03 10 40	P	Okay, I've got fly-by-wire low, and the normal on the ASCS mode, auto, gyros caged, maneuver is still off. And the bea - and the beacons are off. Here she's cruising along very happily.
03 11 01	CC	Very good. Are you ready for a (contingency recovery area) 3-C retro(time)?
03 11 03	P	Say again.
03 11 04	CC	Are you ready for your 3-C retro time?
03 11 08	P	I'm sorry. You're very garbled.
03 11 12	CC	Are you ready for your 3 Charlie retro time?
03 11 15	P	Okay. I'll try to get it from you, Deke. I - you're garbled, say them very slowly.
03 11 20	CC	03 39 36.

CNV-3

03 11 26	P	Okay. You came in loud and clear.
03 11 28	CC	All righty.
03 11 29	P	03 39 36 for 3 Charlie.
03 11 35	CC	That's affirmative.
03 11 36	P	Okay.
03 11 39	CC	Let me give you a GMT time hack, see how we are there at this time.
03 11 42	P	Yeah. That's probably all fouled up. Okay. You give it to me.
03 11 46	CC	On my mark, I'm 15 27 00 - MARK. (03 11 50)[T]
03 11 52	P	27?
03 11 54	CC	Affirm.
03 11 55	P	Holy Malone! That's got a, okay, that thing is, really a pile of gabog. I've got 24.
03 12 05	CC	. . . .
03 12 07	P	Well, let me try that GMT on my back-up clock here. Any time.
03 12 15	CC	Want a mark on the back-up?
03 12 17	P	Yeah.
03 12 19	CC	Okay. 03 12 25 on my mark. - MARK. (03 12 26)[T]
03 12 30	P	That was 15 47 30. Is that correct?
03 12 36	CC	I gave you a mark on CET, CET.
03 12 40	P	Oh, oh, oh. I'm sorry, I was looking at my back-up.
03 12 43	CC	Okay.

03 12 45	P	Let's try for CET again at 50 (seconds).
03 12 47	CC	Roger, in 3 seconds. MARK. (03 12 51)^{T}
03 12 52	P	Okay. I am a second and a half fast.
03 12 53	CC	Very good.
03 12 55	P	GMT - of 28 coming up, actually, I've passed it.
03 13 01	P	Give me 28 15.
03 13 05	CC	MARK. (03 13 05)^{T}
03 13 07	P	Very good, I'm about 3 seconds slow on the back-up. That's the best one.
03 13 14	CC	. . . .
03 13 15	P	Say again.
03 13 17	CC	Roger. Did you see Echo?
03 13 19	P	Negative. I could not get to it. I was trying to conserve some more fuel there, and couldn't get pitched up in the right attitude for it.
03 13 27	CC	Roger. How about Mercury?
03 13 30	P	Mercury? Loud and clear. I used Mercury and the moon for my night yaw check.
03 13 37	CC	Roger.
03 13 38	P	No, this thing has, ah, practically no rates indicated, Deke, but I'm now, I'd say rolled over, oh, probably 30 degrees to the left. - Pretty close to pitch attitude, and of course it's pretty hard to tell what yaw is under these conditions.
03 13 58	CC	Roger. Eat and drink - you're also fading.

CNV-3

03 14 04	P	Okay. I think I'll try some of that.
03 14 06	CC	Roger. We'll leave you alone for awhile.
03 14 09	P	Okay. That might be fun, too. I'm now going to go ahead and do an orientation test.
03 14 13	CC	. . ..
03 14 14	P	Okay. Thank you.
03 14 31	P	Okay. On the orientation test. - I touched the manual lever; I touched the clock, a rivet above the clock at about 10 30 just between the clock face and the yaw indicator. On the emergency rate lever, I touched it right on the button.
03 14 53	CC	You're coming in garbled. You must have your mouth full
03 14 55	P	No. I'm just, ha ha, I'm talking about my orientation test.
03 15 01	CC	Roger.
03 15 16	P	Okay. We finally got the right scale for this. - I've got to go to VOX record. Got the right scale for the dosimeter - and it is reading - about, less than 0.1, exactly 0.04. I am now putting the dosimeter back on the hatch - which is the lowest scale reading.
03 16 00	P	I'm back on VOX transmit now. Do you read, Deke? I've ended up with a beautiful 90 degree roll to the left. Boy, what a nice eight-point roll this is. Coming up for HF reception. Going to transmit HF, VOX off.
03 16 38	CC	Sigma Seven. Cape Cap Com. Do you read? We are approaching LOS.
03 16 59	P	This is Sigma Seven broadcasting on HF. Deke, how do you read this now?

03 18 30	P	It should be noted that the ammeter is reading 12 amps as advertised - apparently, somebody is getting to me with a R Cal on the cabin O_2. The ammeter is just about exactly on 12 amps.
03 18 56	P	There is a slight rate in yaw about ½ degree per second, it's almost impossible to take out without having to fly it out. This does look like an appropriate time to get ready for an HF check. Turning the VOX to push-to-talk.
03 20 04	CC	Sigma Seven this is Cape Cap Com. Transmitting HF, for a voice check. At 03 10 - MARK. (03 20 11)^T
03 20 18	CT	Sigma Seven this is Canary Com Tech. Transmitting HF check at 03 20 21, MARK, out. (03 20 24)^T
03 20 32	CT	Sigma Seven this 03 20 30 Kano.
03 22 49	P	Going to VOX record. Looking at the window with sun glow all over it. It definitely is a smoked pattern with streaks of light. Powdery debris on it - some of it has a pink color, sort of a pinkish-orange color. Probably from the RTV 90 sealing devices that were around the rings and sealing parts of the system - the tower jettison system.
03 23 25	P	Definitely have a reduced visibility as a result of this. The rate, at this point, at 3 23 35, MARK, (03 23 35)^T are almost all zeros.

CANARY ISLANDS

03 23 49	CC	Sigma Seven this is Canary Cap Com. Transmitting on UHF/HF.
03 24 00	P	Hello, Ca . . .

CYI- 3

03 24 06	CC	Sigma Seven this is Canary Cap Com. Transmitting on HF/UHF. How do you read?
03 24 45	P	Canary Cap Com this is Sigma Seven. UHF. Do you read me? Over.
03 25 26	P	This is Sigma Seven. On HF. Canary Cap Com I read you. Did you read me? Over.
03 25 36	CC	Roger. Sigma Seven this is Canary Cap Com.
03 25 42	P	Roger. I'm having a ball up here drifting. Enjoying it so much I haven't eaten yet. I'm going to start to eat now. Over.
03 25 55	CC	Sigma Seven this is Canary Cap Com. Do you still read?
03 25 58	P	That's affirmative, Canary. Do you read me?
03 26 01	CC	I read you about 4 by 4.
03 26 03	P	Roger.
03 26 05	CC	How's everything now?
03 26 06	P	Very good.
03 26 14	P	At this point, I definitely have a feeling of flying along yawed, 90 degrees, rolled right 30 degrees, and pitch almost right on the horizon.
03 26 30	CC	Roger. Sigma Seven. I did not read.
03 26 33	P	Roger. I have a slight yaw rate about a half a degree per second. I'm recording as well as transmitting, naturally, and I appear to be yawing right around into proper yaw angle.
03 26 54	CC	Sigma Seven this is Canary Cap Com. You're unreadable.
03 26 57	P	Roger.

03 27 33	P	In VOX record. I've just checked the stick out - while in drifting flight - to see if I would get any rates built up by stroking the stick, and I did n t. It's working beautifully.
03 31 11	P	Visor open - now.

KANO

03 32 14	P	Kano.
03 32 18	CT	Sigma Seven this Kano Com Tech. Transmitting on HF. Do you read?
03 32 22	P	Kano Cap Com this is Sigma Seven. On HF. I read you. Do you read me? Over.
03 32 43	CC	Sigma Seven this is Kano Cap Com. How do you read?
03 32 56	CC	Sigma Seven this is Kano Cap Com. How do you read?
03 33 07	P	Kano Cap Com this is Sigma Seven. I read you loud and clear. How me? Over.
03 33 12	CC	Roger, Seven. I read you - fairly weak and a little garbled.
03 33 20	P	Roger. How do you read me now? I'm on push-to-talk, HF. Over.
--------	CC	(I read you very weak, Seven.)[G]
03 33 41	CC	Sigma Seven. How do you read?
03 33 43	P	This is Sigma Seven. I read you loud and clear. How do you read me? Over.
03 34 06	CC	Sigma Seven this is Kano Cap Com. Do you read? Over.
03 35 59	CC	Sigma Seven this is Kano Cap Com. Transmitting on UHF.
03 36 08	CT	Sigma Seven this is Kano Com Tech. Transmitting on HF. Do you read? Over.

KNO-IOS-3

03 36 26	CT	Sigma Seven, Sigma Seven this is Kano Com Tech. Transmitting on HF. Do you read? Over.
03 36 35	P	This is Sigma Seven. I read a station on HF. Say again. Over.
03 36 40	CT	Sigma Seven this is Kano Cap Com. Transmitting on HF. Do you read? Over.
03 36 46	P	Kano Com Tech this is Sigma Seven. I read you loud and clear on HF. How me?
03 36 54	CT	. . ..

INDIAN OCEAN SHIP

03 40 06	P	Indian Ocean Ship this is Sigma Seven. Over.
03 40 14	P	Indian Ocean Ship. Sigma Seven. Over.
03 41 29	P	Indian Ocean Ship. Sigma Seven. Over.
03 42 20	P	Indian Ocean Ship. Sigma Seven. Over.
03 43 07	CT	Sigma Seven, Sigma Seven this is IOS Com Tech. Do you read? Over.
03 43 12	P	Indian Ocean Ship this is Sigma Seven. I read you loud and clear. How me?
03 43 23	CT	Sigma Seven this is Indian Com Tech. I read you loud and clear. Standby for Indian Cap Com. Over.
03 43 30	P	Roger.
03 43 32	CC	This is IOS Cap Com.
03 43 40	CT	This is Indian Ocean Ship Com Tech. Sigma Seven. Go ahead, please.
03 43 46	P	Indian Cap Com this is Sigma Seven. Over.
03 43 49	CC	Roger. I read you now. Over.
03 43 51	P	Roger. I read you too.

03 43 55	P	You got T/M on me? Over.
03 43 58	CC	That is Roger.
03 43 59	P	Okay. I'm going to power up the ASCS bus.
03 44 02	CC	Say again?
03 44 04	P	I'm going to power up.
03 44 06	CC	Roger. Understand. You're going to power up.
03 44 12	P	Inverter on. All okay. Turned it on at 44 (minutes).
03 44 28	P	I'm on fly-by-wire at this time.
03 44 55	CC	Sigma Seven, Sigma Seven. I've lost communications.
03 45 02	P	Roger.
03 45 18	CT	Sigma Seven this is Indian Com Tech. Do you read? Over.
03 45 21	P	Indian Com Tech. Affirmative. I heard you loud and clear.
03 45 24	CC	Roger. This is IOS Cap Com. Standing by. Over.
03 45 27	P	Roger.
03 45 34	CC	Sigma Seven. We have just been advised that we have visual sighting at this time. Over.
03 45 38	P	Roger. I'll have to go by and say hello.
03 45 42	CC	Roger.
03 46 28	CC	. . . over.
03 47 55	CC	Sigma Seven, Sigma Seven this is IOS Cap Com . . .

03 52 08	P	On the powering up. I went to gyros normal, finally, after getting gyros set at approximately three zeros with the maneuver off. There was no high thruster transition. Then, when I set up for three zeros, I did get a high thruster transition in the reentry select attitude. However, this is probably due to the no rate gyro run up case.
03 52 41	P	I am flying at three zeros on ASCS mode at this time, to see if this helps me reestablish. At approximately 4 hours, I just find out where I am as far as the moon goes.
03 52 56	P	Having little trouble getting stars oriented as to which ones they are, and this is going to be the problem. Particularly with two gadgets to hold in your hand for a computer. This doesn't help one bit.
03 53 17	P	There is a star that occurs at 3 hours and 53 minutes. What it is, is going to take a while to find out. Read the computer, set up, 3 hours and 53 minutes, and the time at 55, set up to a standard - 56 minutes . . . standard . . ..
03 54 09	P	I should have the moon - in sight - by now - and do not. Therefore, I better go searching for it.
03 54 37	P	Going to fly-by-wire low. Gyros free.
03 55 10	P	Going to gyros caged. Gyros are caged.
03 55 51	P	There's Cassiopeia which is to the north.
03 57 08	P	There's our friend the moon. We're due over Muchea at what time, 4 hours - get set up then.
03 57 48	P	Gyros are going to be . . ..

MUCHEA

03 58 04	CC	. . . Muchea. Over.
03 58 05	P	Muchea Cap Com this is Sigma Seven.
03 58 10	P	Hello. Hello, Muchea Cap Com. Sigma Seven.
03 58 15	CC	Sigma Seven, Sigma Seven this is Muchea Cap Com. Do you read? Over.
03 58 21	P	This is Sigma Seven. I read you loud and clear, Muchea. How me?
03 58 38	P	Muchea Cap Com. Sigma Seven. I read you loud and clear. How me?
03 58 42	CC	How do you read?
03 58 58	CC	Sigma Seven, Sigma Seven this is Muchea. Do you read?
03 59 03	P	Muchea Cap Com this is Sigma Seven. On UHF. How do you read me now? Over.
03 59 10	CC	Sigma Seven, Sigma Seven this is Muchea. On UHF. Do you read?
03 59 15	P	Sigma Seven. I read you loud and clear, Muchea. How me?
03 59 19	CC	Roger. Read you and clear also. I called you two or three times on HF and got no answer. You're loud and clear on UHF. How's your status?
03 59 28	P	Roger. My status is fine.
03 59 31	CC	Are all svstems under control?
03 59 33	P	That's affirmative. I just used the moon to lock on. I will give you a short report. I'm just going to go on the ASCS . . . if you watch my thrusters.

MUC-3

03 59 45	CC	Roger.
03 59 50	P	I will go on ASCS; reentry attitude.
03 59 55	CC	Roger. You're on now according to us.
04 00 02	P	Roger. I'm just about going in. I'm not on it. Ha. Ha.
04 00 12	P	Okay. I'm going in it now, on gyros free. I'm going to go to gyros normal.
04 00 21	P	Okay, Gene. I'll give you a readout on what we've got up here.
04 00 24	CC	Okay.
04 00 31	P	First off, I'm in auto reentry; I'm in auto; gyros are normal; maneuver is off; all configuration is of reentry; bypass switch for rate gyros is in normal. Give you a fuel readout, the auto tank is 90 (percent), manual is about 90 (percent). Give you a read on the suit which has been very comfortable now. The suit temperature is 60 (degrees). My dome is down to 45 (degrees). I'm going to back it off a half a notch. I'll go to 0 and then come back up again. Over.
04 01 18	CC	Okay, Wally. Stand by.
04 01 27	S	Sigma Seven. How about blood pressure?
04 01 33	P	On the way.
04 01 36	CC	Roger. John Glenn suggests that you have time when the numerous particles first appear, at sunrise, to tap the side of the capsule, and test his favorite theory.
04 01 57	P	Roger. I have done that Gene, and they do come from the capsule.

04 02 03	CC	Roger. And he suggests later on, when they appear like white particles, that you do the same and this might prove that they are the same particles.
04 02 11	P	I tried that too.
04 02 13	CC	You got the same result?
04 02 14	P	That's affirmative.
04 02 15	CC	Roger.
04 02 43	CC	Sigma Seven. If you're not doing anything, can you give us an attitude readout.
04 02 47	P	Okay. My indicated attitudes are 0 degrees pitch, 10 degrees left yaw, 0 degrees roll. Over.
04 03 07	CC	We concur. Very good.
04 03 09	P	Roger. How do the scanners look?
04 03 21	CC	Within 4 degrees, Wally. They are consistent, also.
04 03 26	P	Roger. I think I got the bear lined up pretty well, then.
04 03 30	CC	Roger. Everything looks very good here. You sound very good, and it looks like go for 6. I think from here I'll just ask the doctor in.
04 03 39	P	Okay.
04 03 41	S	How do you feel?
04 03 42	P	Very good. I'm enjoying the ride very much.
04 03 46	S	Excellent.
04 03 54	P	You can tell Chris I got bored racking around and I just decided to give him his auto retro. Actually auto reentry attitude at this point. Over.

04 04 06	CC	Roger.
		WOOMERA
04 04 27	CC	Sigma Seven. Woomera Cap Com.
04 04 30	P	Hello, Woomera. Go ahead.
04 04 35	CC	Sigma Seven. Woomera Cap Com. Did you say you were going to auto retro?
04 04 41	P	Negative. I'm in auto reentry at this point.
04 04 45	CC	Roger. We received your Muchea report, and we're standing by.
04 04 51	P	Roger, Woomera. Thank you.
04 04 57	CC	What is your comfort control valve suit setting?
04 05 03	P	Roger. It is now set at 7.5. I went back to 0 and came back up again. Over.
04 05 15	CC	(Roger.)^{G} Would you repeat that last part?
04 05 17	P	Say again?
04 05 19	CC	We received you going to zero, but we didn't know what it was set at.
04 05 24	P	Roger. 7.5.
04 05 26	CC	(All systems)^{G} green at Woomera.
04 05 29	P	Roger. My suit dome is 62 degrees at this time.
04 05 37	CC	Suit dome 62 (degrees).
04 05 38	P	Correct.
04 05 41	CC	Thank you. You . . ..
04 05 50	CC	You reported the suit dome at 45 (degrees) over Muchea. Is this correct?
04 05 55	P	That's correct. It moved that fast.

-- -- --	CC	(Good.)[G]
04 06 28	CC	We are about to have LOS here at Woomera.
04 06 32	P	Roger.
04 06 33	CC	Anything else for the Cape?
04 06 35	P	Negative. Everything's going along fine here.
04 06 39	CC	Roger.
04 08 29	P	Roger. At this period, I'm looked ahead at the flight plan. I frankly feel that a lot more star information is needed, for nailing down attitudes - or a better computer. I'm rapidly working here when I shouldn't have to be.
04 11 20	P	At 4 11, it is 1 15 on the star chart computer, ...
04 11 30	?	. . ..
04 11 44	P	I have Jupiter off on the right side, right corner of the window.
04 12 07	P	. . . Altair
04 12 15	P	I can see the double stars of Grus all forming a line - coming right into the center of the window. Jupiter, of course, is a real bright one. I can see Ankaa and - correction Al Naiir, and that, this must have been Peacock. Al Naiir is slightly to the right of the flight path. I'm flying, but that must be her. Jupiter shows up in the corner of the window. Proper head position, Formalhaut shows up to the right of flight path. Jupiter in the right corner. It checks at this time. Very nice.
04 15 21	P	. . ..

WOM-3

04 15 58	P	Don't tell me this compass is working? I should talk more. What I have been doing, I have been getting the standard source of light out. At this point, for the capsule, for my face because I am looking straight up at the compass is really rolling in the plane of the roll axis. I have a North pointing toward my right elbow. The compass definitely takes a swing when I move.
04 17 32	P	The compass is too much affected by the attitude instruments and gyros behind them. That's why I can't bring it to close to them. I am holding it just about halfway between the instrument panel and my face and in reference to a line halfway between the glove box and the pack. At the CE time of 4 18, it is pointing directly at the forward hatch clamp line. It seems that this is the restraining pin link for the hatch. I guess they can stow that for future reference.
04 18 57	P	. . . get rid of that for awhile.
04 19 04	P	We are on time 4 hours and 19 minutes. On ASCS and I will pitch down. At this point, going to fly-by-wire low - to reentry attitude for Hawaii.
04 19 35	P	Selecting reentry attitude.
04 19 45	P	Always surprising when you finally see some object and the rate really shows up.
04 20 09	P	I am stopping the capsule in reentry attitude. Taking roll out. Yaw is zero; roll is coming out. I want to acquire this, and then watch it. Roll looks good. Pitch is coming in; yaw is coming in. Rates and attitude are good. . . . ASCS a little low thruster tweek and very nice. I will warm up the T_E-10, gyros for their benefit. And starting to get some light on the scope, just barely.

04 21 49	P	I have a feeling I am off in pitch, but I think it is that damn horizon air glow line. Makes you think it's higher than it is. I still have the feeling though that I am pitched down about 10 degrees further than I want to be. If we are that close, we will let the scanner work on the problem.
04 22 44	P	Now we are indicating retroattitude. We are fairly close to it. So the scanners are torquing it up about 5 degrees I'd say.

HAWAII

04 22 55	CC	Sigma Seven. Hawaii Cap Com.
04 22 59	P	Roger. Hawaii Cap Com this is Sigma Seven. How do you read?
04 23 02	CC	We are reading you okay now. How about giving a short report?
04 23 06	P	Okay, good. I am in ASCS; retroattitude; gyros are normal, the maneuver switch is off. I am warming up the T_r-10 bypass for the rate gyros. I still have fly-by-wire low selected. All quantities and systems are green. I am green.
04 23 31	CC	Roger. Could you give me your cabin dome temperature, and cabin temperature, and valve setting.
04 23 38	P	Roger. The suit dome is 68 (degrees). The cabin dome is 48 (degrees). The suit setting is 7.5. The cabin setting is 3. Over.
04 23 59	CC	Roger. Give me your cabin temperature, suit temperature, and inverter setting.
04 24 04	P	Okay. Cabin temperature is 92 (degrees), and I'll give you inverters. Stand by. - Main inverter is, 250 inverter is about 143 (degrees). The 150 is 102 (degrees). Standby is about 115 (degrees).

HAW-3

04 24 28	CC	Wally, I cut you out there. Give me your water valve setting on your inverter.
04 24 33	P	On the inverter it is 4.
04 24 38	CC	Roger.
04 24 40	P	That seems to work pretty well so far for the whole flight, Gus.
04 24 43	CC	Okay fine. Cape feels you are in good shape Wally, and so I have good news. They give you a go for 6 orbits.
04 24 48	P	Hallelujah.
04 24 51	CC	They request you stay in retroattitude, and go ahead and prepare for retro like you would normally.
04 24 58	P	I understand.
04 25 00	CC	And remain in retroattitude until you pass your (recovery area) retro 3-1 time.
04 25 04	P	I understand.
04 25 06	CC	And then proceed with your flight plan.
04 25 08	P	Okay, Gus. I will see you out there shortly.
04 25 11	CC	Roger.
04 25 45	P	These attitudes look honest as can be, Gus.
04 25 48	CC	Roger.
04 25 52	P	How do the scanners check out with you?
04 25 55	CC	You're looking real good down here, Wally. We can see nothing wrong.
04 25 57	P	Good deal. I use the moon and then later on Jupiter to line up some of the other stars. A little too dim to bet on every time.

04 26 07	CC	Roger.
04 26 11	P	The star computer device I have helps a lot to confirm stars, but it's a little hard to acquire them to begin with.
04 26 19	CC	Roger.
04 26 30	CC	I guess the only thing I don't have is your suit inlet temperature. Could you give me that?
04 26 32	P	Roger, 62 (degrees).
04 26 35	CC	62 (degrees). That sounds good.
04 26 37	P	Yeah. It's been very comfortable since I finally got that final setting.
04 26 41	CC	Roger.
04 26 45	CC	How much water have you had Wally?
04 26 47	P	I took a big sip awhile ago, and then I just had a tube of peaches and a couple of those cubes.
04 26 53	CC	Okay. Good.
04 26 54	P	Now it looks like a good time to take a drink of water, over you.
----- --	CC	Visor open?
04 27 15	P	My visor is open now.
04 27 18	CC	Roger. Visor open.
04 27 52	CC	Wally, give me your pressure . . . readout.
04 27 56	P	Just a second Gus, I am trying to stow this water hose.
04 27 59	CC	Okay.

HAW-CAL-3

04 28 01	P	Partial pressure oxygen.
04 28 06	CC	Say again.
04 28 08	P	Are you asking for PO_2 ?
04 28 10	CC	Roger.
04 28 13	P	Okay stand by. That is about 4.2 (psi) and I am back on the suit again.
04 28 21	CC	Roger.
04 28 23	P	That is actually as pure as we normally would have it. That is why I didn't want to stay on too long.
04 28 29	CC	Roger. Check your visor close.
04 28 32	P	Roger. The visor is closed and sealed up. Suit visor bottle is way up in the green.
04 28 40	CC	Roger.
04 29 09	P	Well Gus. We - at least we got some fuel coming over here this time.

CALIFORNIA

04 32 12	CC	Sigma Seven. Cal Cap Com.
04 32 14	P	Cal Cap Com this is Sigma Seven. Read you. Do you read me? Over.
04 32 18	CC	Roger. Read you loud and clear, Wally. Looks like it is all go for a next orbit. Do you concur?
04 32 25	P	Roger. Everything feels good here, John.
04 32 32	CC	Roger. Standing by for your report.
04 32 34	P	Roger. I am in ASCS auto at this time; in reentry attitude; the gyros are normal;

maneuver is off; all systems are green. Auto fuel is 89 (percent), manual is 90 (percent). My temperatures at this point are very comfortable. The suit inlet is 62 (degrees), the dome is 69 (degrees). I believe I am all set to power down. Over.

04 33 12 CC Roger. That's next on the flight plan here. You are all set to power down if you concur. And I would like to check your clock setting. What do you have on the clock there? Over.

04 33 21 P Okay. I will give you a mark at 30 seconds.

04 33 24 CC Your ECT I have here, what's your setting for retrosequence. Over.

04 33 27 P Roger. 08 hours + 50 + 21.

04 33 32 CC Roger. Thank you.

04 33 38 CC What is your cabin pressure, Wally?

04 33 40 P Roger, the cabin pressure is just about 5.1 (psi).

04 33 45 CC Okay. Sounds good.

04 33 47 P Right. Not much time for that one for this orbit is there John?

04 33 56 CC What? Say again please?

04 33 57 P There wasn't much time to get ready for coming down, coming down this time was there? Sorry I couldn't go back to Hawaii for you this way. I'll see you out there, I guess.

04 34 09 CC Wally, yeah right here at the end of six. Do you have any comment with regard to relative motion of those particles that you saw? Did you see any of them moving past, or did you see any of them coming toward you if you were facing in the direction of flight? Over.

CAL-3

04 34 23	P	I never had the direct opportunity of them coming toward me John, but they definitely were going away from me. I could get a big blast of them, either green fireflies or white ice crystals, by rapping on the capsule almost anytime.
04 34 38	CC	Roger. If you happen to have a chance at sunrise, anytime between now and end of flight, you might see whether you can see any coming toward you during that period also.
04 34 47	P	Roger. Understand.
04 34 49	P	Okay. I am going to shove off for a relaxation period.
04 34 53	CC	Good show. Understand you are going to power down.
04 34 55	P	That's affirm. I'll give you a readout on it, so you can watch it.
04 34 56	CC	(Roger) G
04 35 03	P	Going to fly-by-wire. Going to gyros caged.
04 35 09	CC	Roger.
04 35 11	P	Gyros are three zeros at this time. ASCS bus off. I have 0 volts.
04 35 23	P	Roger. Powering down the beacons, ground command.
04 35 26	CC	T/M's dropped.
04 35 27	P	Roger. I have 12 amps at this time.
04 35 31	CC	Roger. That's what we show.
04 35 32	P	Roger. Okay I am going from fly-by-wire back to normal now, so I can keep a cold stick.
04 35 42	CC	Roger.

04 35 44	P	Okay. I am in normal, and I am going to select reentry attitude select for powering up time.
04 35 59	P	And she's all set.
04 36 17	CC	. . . this is Cal, you are looking good. . . . see you next time around.
04 36 21	P	Right'o John, and thanks so much for your help.
04 36 23	P	Roger.
04 36 35	P	At 04 36 37. I took a light reading, and the light value is 13 for ASA 160.
04 36 47	CC	Roger. Got it.
04 36 51	P	I'll see if I can flounder around with the camera now and get a picture of the Baja.
04 36 57	CC	Roger. I understand getting a picture of Baja California.
04 37 00	P	I am just breaking out the camera now, John.
04 37 02	CC	Okay, very good.
04 37 03	P	Right. I'm sure I'll be ready for it though.
04 37 49	P	Okay. Setting in 11 - and we can look down towards the Salton Sea again - on infinity.
04 38 02	CC	Yeah. That's a pretty good setting from up there.
04 38 04	P	Yeah. . . . actually, I am looking north of the Salton Sea because of the yaw effect I must have in here. There is just a slight yawing effect just left of the capsule. Maybe about a quarter of a degree per second. Enough to bring me up towards the U.S.A.

CAL-3

04 38 44	CC	Roger. Understand. Little slow yaw rate to the left. You are beginning to fade a little bit here. Probably won't get you much longer.
04 38 51	P	Okay. I'm yawing to the right. Sorry I misled you.
04 38 55	CC	Roger.
04 40 10	P	Going to VOX record.

CAPE CANAVERAL

04 40 14	P	Roger. Standby 1 second Deke.
04 40 41	P	Roger. Made a dosimeter check, and it is still less than the last reading.
04 40 46	P	Cape Cap Com, Sigma Seven in UHF-hi. Go ahead.
04 40 59	P	Cape Cap Com, this is Sigma Seven, UHF-hi. Go ahead.
04 41 04	CC	Go ahead, Sigma Seven, this is Cape Cap Com.
04 41 10	P	Cape Cap Com, Sigma Seven UHF-hi. How do you read? Over.
04 41 13	CC	You are now coming in about 4 by.
04 41 17	P	Roger. I am in drifting mode, everything is working beautifully.
04 41 24	CC	. . .
04 41 26	P	Say again.
04 41 29	CC	. . .
04 41 33	P	You are coming in garbled Deke.
04 41 35	CC	Here are your retro times, if you are ready.
04 41 38	P	Roger. I think I will be through in a second. I will take them.
04 41 41	CC	Roger.
04 41 45	CC	(Recovery area) 4-2 is 05 44 05.
04 41 53	P	Do that one over again and I will be right on. You're in clear now.
04 41 57	CC	Okay 4-2 is 05 44 05.
04 42 04	P	Okay. 4-2 is 05 44 05.
04 42 09	CC	Right. (recovery area) 6-1 is 08 51 24.

CNV-4

04 42 14	P	24.
04 42 16	CC	(Contingency recovery areas) A and B are nominal and I'd like to give you a GMT hack and see what your clock is doing now. Give you one at 16 57 35. MARK. (04 42 26)^{T}
04 42 28	P	Roger. I'm reading 55 45.
04 42 31	CC	Pretty good.
04 42 32	P	Let's check the backup clock and we will hack that.
04 42 35	CC	Roger.
04 42 37	P	Anytime.
04 42 41	CC	For your information, we are going to start calling you Venus. IOS visually sighted you on the last pass.
04 42 49	P	How about that?
04 42 52	CC	Did you have your steak?
04 42 54	P	Yeah. Did you?
04 42 56	CC	Yeah It was okay. Did you eat it?
04 42 59	P	Would you do me a time hack again on GMT?
04 43 02	CC	Okay, GMT. 16 58 15. MARK. (04 43 06)^{T}
04 43 08	P	15 okay. I'm 15 - that was just about 3 seconds slow on my backup clock.
04 43 15	CC	Very good. Flight would like to talk to you now.
04 43 17	P	Okay.
04 43 19	CF	Wally, we have some Echo sighting data. You prepared to copy?
04 43 24	P	Just get my pencil out. Standby. Okay, go Chris.

04 43 28	CF	00 17 30 is contact time for 4 minutes. Azimuth 99.5 (degrees), elevation 90 (degrees). Echo will be in the light, the capsule in the dark.
04 43 46	P	That should be fun, shouldn't it?
04 43 47	CF	Roger. Been a real good show up there. I think we are proving our point old buddy.
04 43 52	P	I hope so Chris. I am enjoying it.
04 43 55	CF	Roger.
04 44 09	CC	Sigma Seven . . . standing by.
04 44 12	P	Roger.
04 44 34	CF	Sigma Seven, Cape Flight.
04 44 35	P	Okay, Flight.
04 44 38	CF	We are ready to go into fast time if you are.
04 44 40	P	Ha Ha Ha Ha Ha! That's a good one. Very good.
04 45 08	CF	Sigma Seven, Cape Flight.
04 45 10	P	Go ahead there Chris.
04 45 12	CF	The . . . retrosequence now shows 08 51 21 which means you can advance it exactly 1 minute and that would be the correct time. You can do that anytime you want to.
04 45 25	P	Advance it 1 minute?
04 45 28	CF	Affirmative. That would be 08 51 21.
04 45 32	P	Okay. I will throw a minute in now. You reading me alright?
04 45 36	CF	Affirmative.
04 45 37	P	Okay.
04 45 44	P	. . . That's a trick. Okay, I got 08 51 20 . I'll throw another second in. I've got 08 plus 51 plus 21.

CNV-4

04 45 46	CF	Roger. We concur.
04 46 00	P	Roger.
04 46 01	P	Ah boy, I just happened to drift into an inverted position right now. For some reason or another, you can tell that the bowl was upside down.
04 46 56	P	Cape Flight, Sigma Seven.
04 47 00	CF	. . .
04 47 04	P	You can tell Cape Sir John that we have practically nothing on the navel engagement.
04 47 27	CC	Sigma Seven, this is Cape Cap Com, we did not get your message to Sir John.
04 47 31	P	Roger. Never mind.
04 47 33	CC	. . . Cape Cap Com.
04 48 24	P	I took picture 4, - 4a at 4 48 29, which is the coast of United States. I assume - I will have to look at my map shortly and see where we are. A rather large cloud mass at this point. We will stow the camera again. The drift rate isn't consistent enough that you can just take a picture and then put the camera away. Plus, the camera is a little hard to take out and put back in again.
04 49 23	P	At 4 hours and 50 minutes, I can't get that camera back out of that box again. Time to take a picture. Better stay in there for awhile.
04 50 01	P	Camera will not work in (to) the glove box favorably.
04 50 21	P	Reading at light value 13-½, and a . . . inside.
04 50 36	P	. . . .
04 50 51	P	I punched the wrong button twice. I did not get a picture of the iris.

04 50 57	P	I am just about straight down. We will take some cumulus pictures. The time hack is 4 hours 51 minutes. The picture will be a 5a color.
04 52 13	P	The dome (temperature) is holding at 70 degrees. Cabin dome is 50 degrees. Suit inlet is comfortable at 62 (degrees). Suit pressure is steady at 5 psi. Very interesting cloud formation for picture 6b on the color back. Rather nice collection of circular clouds.
04 52 46	P	. . . shot at 250 56. (1/250 second at f 5.6).
04 53 52	P	At 04 53 53. Bit of in a rolled over attitude with the nose fairly high. . . . the light value (setting) was 13.
04 54 17	P	I can actually see the little object that looked like a snowflake this time, going away from the capsule. In the same flight path, of course. Definitely, looked like a piece of white, but it is quite visible against the black sky that I see now. . . . the stars that go away from us. Definitely has a different velocity than the capsule itself.
04 55 29	P	4 55 and still am sighting some of the snowflake effects. 250 inverter is now approximately 135 degrees. Suit dome (temperature) is 72 (degrees). The cabin dome is about 46(degrees).
04 56 47	P	Sun right in view again. . . . that should be the proper yaw angle, approximately, because that's where the sun would be at sunset.
04 57 02	P	Coming up on 5 hours, so I'll be getting prepared to copy the intermediate report at this time. I will not put the camera all the way in the case at . . .
04 57 44	P	. . .
04 58 21	P	Capsule is working very well at this point. 250 (inverter) is 132 (degrees), 150 (inverter)

is . . . 5. Standby (inverter) is 120 . . . thrusters . . . right, over 100 (degrees) left. Pitch down (thruster) is 105 (degrees). Pitch up (thruster) is 100 (degrees). Cabin heat exchanger (setting) is 4.0. Roll left manual (thruster) is 79 (degrees). Roll right auto (thruster) is 110 (degrees), roll left auto (thruster) is 105 (degrees). Think we will go back and pick up the retro. Temperature is 80 (degrees). This is at almost exactly 5 hours.

04 59 59 P Ready for the 5 o'clock report. Fuel is 89-90 (percent). Oxygen 56-75 (psi, in hundreds). Suit inlet is . . .. Dome (temperature) is 70 (degrees). Cabin dome (setting) is . . . 0.8. That should be enough for now.

05 00 50 P Got more targets of opportunity.

05 00 59 P At 5 hours and 1 minute I am shooting pictures of weather almost vertically. There is a light value of 13-½. Gives me 250 and 5 6 (1/250 second and f5.6) roughly. Infinity is the setting.

05 01 46 P Light value of 13 for that same subject. I shot at 13-½. Seems like a very low setting.

05 03 00 P If I don't talk much more than this, it won't be very long to real time this tape recorder. Coming up on IOS at 5 hours and 15 minutes. Quite obvious that you don't care really what attitude you are in. There is always that concern about trying to get back into the attitude you must be in. Particularly, when you are coming around at the end of the third orbit to buy off on a go or no-go.

05 04 20 P When I get much more I look at the earth. Rates at this time, having powered down at approximately 4 hours and 35 minutes are almost exactly 0. There is a very, very slight pitch rate. Approximately maybe ½ degree per second.

05 05 16 P . . . stowing the camera again . . . to get out until after . . ..

05 06 28	P	Okay, should be coming up on Africa pretty soon. Tip her over and see how she looks without light.
05 06 43	P	. . . sunlight in my eyes now. Get a tan on this flight at last.
05 07 39	P	Hello Ascension, hello Ascension, this is Sigma Seven. Over.
05 07 52	P	Hello Ascension, hello Ascension, this is Sigma Seven. Over.
05 08 10	P	Hello,Ascension, hello Ascension, this is Sigma Seven. Over.
05 08 38	CC	Sigma Seven, Sigma Seven, Ascension Cap Com on HF, do you read?
05 08 46	P	This is Sigma Seven. I read a station, very garbled, please identify.
05 09 46	P	At this point in time, which is of course just prior to sunset, we are coming up with a batch of the white particles. They show up in the blue sky. I have the horizon almost in sight. And they are drifting away from me.
05 10 08	P	Let's check and see if we actually do get yaw out of these. They are tending to go up in relation to me, rather than tending to draw away aft. With this kind of lighting I can really see the illusion of visibility, due to the external problem of having smoke on the outer panel. Definitely is not on inner panels. It is quite easy to see by changing panels through reflections that it's the outer panel.
05 11 05	P	We are now going into night coming up in 5 hours 11 minutes. Suit dome is setting at 7.0 very happily. Suit itself is at 62 (degrees) and I am happy.
05 11 28	P	Testing, 1 2.

05 11 36 P I have some pretty stars in sight, and also I have the little white objects that seem to come from the capsule itself and drift off. If they are a yaw check it's fantastic. I suspect that the star I see is Arcturus. It would be very interesting - it is neither. It is one of the white objects. . . . two stars are staying quite still. The white object actually looked like it came toward me, but it wasn't. I can actually see the particle now, flying off as John described it, as a lathe shaving. It's a very good description of it.

05 12 39 P My rates are now just about 0 in all three axes. I still have light in the periscope, of course. I am looking straight up and yet at this point which is . . . , that my attitude is - let me get into the couch here. I really can't pick it too well, I am just about inverted at this point, and that my nose is above the horizon. As a result I notice that these particles keep tending aft of me, relative to me at any time.

05 13 48 P Periscope is blacking out rather rapidly at sunset.

05 13 57 P It is almost blacked out completely at this point. It is really not usable.

05 14 45 P Getting a real burst of light in the window. I really don't know what it is. At this point I should be coming up on the sunset. Five hours 15 minutes. Periscope is dark. I must be just getting a last look at the horizon; yet I'm not down on it. Here we go into night rather rapidly. Now we're into the night side. I am apparently pointed towards the surface of the earth, as I can see clouds with lightning in them.

INDIAN OCEAN SHIP

05 15 53 P Indian Ocean Ship, this is Sigma Seven. How do you read? Over.

05 15 58	CC	. . . with a little bit of background noise. Over.
05 16 05	P	Roger, I have to run my volumn up to read you. I am talking UHF-hi at this time. I am drifting, and I suppose dreaming. I understand you saw me last time, over.
05 16 20	CC	That is Roger. We had a 5 minute visual sighting for about 9 degrees or over.
05 16 28	P	Very good. Looks like you've got some lightning down your way now.
05 16 33	CC	Do you have an intermediate report for me at this time?
05 16 36	P	That's affirmative. Are you ready to copy - all systems were green at the time. At 5 hours fuel was 89 (percent) auto, 90 manual. Oxygen 56 (psi, in hundreds) primary, 75 secondary. Were you copying?
05 17 07	CC	Roger, I have your load and oxygen only at this time.
05 17 12	P	Roger. The fuel quantity, did you get that?
05 17 15	CC	Negative.
05 17 16	P	Okay, 89 (percent) automatic, 90 manual.
05 17 24	CC	Roger. Your gyros and maneuver switch?
05 17 27	P	Okay, gyros are caged, maneuver switch is off. I am powered down.
05 17 35	CC	Roger. We have request from the Cape for a blood pressure reading since they did not get one at pass over at MCC. Over.
05 17 41	P	Okay, you deserve one anyway. Coming up. In addition, I would like to give you the suit inlet temperature, which was 62 degrees.

05 17 54	CC	Roger.
05 17 55	P	The suit dome (temperature) is 70 degrees and the circuit is comfortable.
05 18 03	CC	Wonderful. We also have a request from the Cape. On your next pass over California, between 6 08 and 6 10, they are going to pass your voice to live TV. Over.
05 18 19	P	Roger, understand at 6 08 to 6 10.
05 18 23	CC	They would like you to say something to the live TV audience at that time. Over.
05 18 27	P	Roger.
05 18 39	P	At this time I will perform an orientation test. Missed the manual fuel (handle) by 2 inches, and capsule repressurization (handle).
05 18 58	P	Try to touch the yaw attitude (indicator) touched the yaw attitude (indicator) at 270 degree indication. Try to touch the manual emergency rate lever. And I will - I put my hand right on it. I believe I am through on this test over the other (yawning) - I'm yawning - by considerable margin.
05 19 39	CC	Sigma Seven, this is IOS Cap Com.
05 19 41	P	Go ahead.
05 19 42	CC	Readouts at this time?
05 19 44	P	Say again.
05 19 45	CC	Anything you want from the ground readouts at this time?
05 19 49	P	Negative, looks like everything's clean. I guess there's not much sense in giving me scanners because I'm pretty well cruising along here.
05 20 00	CC	Roger, do you have your time on your intermediate report.

05 20 05	P	That was at 5 hours 00 minutes 00 seconds.
05 20 09	CC	Good.
05 21 39	P	I can see my attitude now. I am - looks like it's pretty good attitude. It's pitched down about 55 or 60 degrees.
05 21 54	P	No, that's all wrong. I can now see that I must have been inverted. The horizon is coming into view, and some stars.
05 22 59	CC	Sigma Seven, IOS Cap Com, 1 minute to LOS.
05 23 02	P	Roger, IOS, thank you for your cooperation and enjoyed talking with you.
05 23 28	P	IOS, I'm going to try HF again after I leave you just to see how we do.
05 24 16	P	Indian Ocean Ship, this is Sigma Seven on HF. How do you read? Over.
05 24 47	P	IOS, this is Sigma Seven on HF. How do you read? Over.
05 25 04	P	This flight I think I can take a whack at this photometer at last.
05 25 25	P	Turn off the cabin lights first. - It's off - Extincted - total loss.
05 26 33	P	Getting - getting a good look at Orion at this time. Beautiful view of it. There are the Pleiades, Alvagrin. I'll look at Alvagrin and see what I can do with that.
05 27 18	P	I have extincted Alvagrin to read at 05 27 27. Now this experiment isn't going to be valuable; I need cabin lights to see. It's awfully hard to find the extinction photometer. Let's see if I can do it now. Contrasted Alvagrin, the standard source, under the same lighting conditions. Extincted at 3.8.

05 28 08	P	I'm unable to run any more tests on stars at time. I am coming back to the view of the surface of the earth. There's quite a bit of moonlight, and as a result the horizon is very bright.
05 28 29	P	I'll put the photometer in an area where it may be available again. At 05 28 48, the rates are almost exactly-negative-yaw is 0; pitch is -½; and roll is roll left ½. We definitely have a cold stick.
05 30 59	P	This quiet time must be getting to a lot of people on the ground. I think we should probably put some more data in here. Gathered at 5 hours and 31 minutes. And about this time they want an intermediate report. We'll get it for them.
05 32 57	P	Okay, we'll take an electrical check. Main bus is 24 (volts) - Isolated bus is - clicking because of the clock, of course-and that's 27 to 27-½ (volts).

MUCHEA

05 33 27	P	Hello Muchea Cap Com this is Sigma Seven. I read you. How me, over?
05 33 36	CC	Sigma Seven, this is Muchea Cap Com. I think I read . . . say again.
05 33 44	P	Roger, this is Sigma Seven. I read you loud and clear, Gene. There is no change in my status. Over.
05 33 56	CC	Sigma Seven, this is Muchea, I did not read you very well, but would request blood pressure. Doctor Berry would appreciate blood pressure during last three orbits.
05 34 13	P	Roger, Gene. I say there is no change in my status since the last report at 0500. Over.
05 34 26	CC	Roger, understand no change in status since your last report.

05 34 32	P	That is correct; all quantities are the same.
05 34 36	CC	All quantities are the same.
05 34 38	P	Roger. And temperatures. Gene, I do have one change. The 250 inverter is now 120 (degrees).
05 34 59	CC	Roger. check, 250 inverter is now 120 (degrees).
05 35 05	P	Very good.
05 35 11	CC	Roger. We do not have telemetry, so, if you pressed your blood pressure button it isn't doing us any good. If we get telemetry, we'll give you another call.
05 35 21	P	I was wondering how the heck you were gonna get it. It will go onboard (tape recorder) though. All d-c power is 25 volts or greater. Over.
05 35 33	CC	Say again.
05 35 34	P	All d-c power, d-c, is 25 volts or greater. Over.
05 35 48	CC	Did you say d-c volts are 25?
05 35 52	P	That is affirmative. All of them - they are all in good shape.
05 36 40	P	This is Sigma Seven, at 5 hours, 36 minutes, 45 seconds. No yaw rate, a slight left roll rate of ½ degree per second. A slight pitch up of ½ degree per second.
05 37 23	CC	Sigma Seven, this is Muchea. I have not read your transmissions for the last minute. Hand you over to PCS.
05 37 32	P	Roger, Muchea.

PACIFIC COMMAND SHIP

05 37 47	P	Hello, Pacific Command Ship, Pacific Command Ship. This is Sigma Seven on HF. Over.

PCS-4

05 38 05	P	Hello, Pacific Command Ship. PCS, this is Sigma Seven. HF. Over.
05 42 20	P	Hello PCS, PCS. This is Sigma Seven. How do you read? Over.
05 42 30	CC	Sigma Seven, PCS. We read you weak but readable. How me?
05 42 33	P	I read you loud and clear, Al. And nice to talk to you today.
05 42 40	P	. . . .
05 42 44	P	I am talking on HF at this time.
05 42 52	CC	Standby, Seven.
05 42 53	P	Roger.
05 43 10	CC	Seven, this is Cap Com. Anything you want to say.
05 43 13	P	Nothing in particular. Wanna say hello to you though. All the systems are perfect. There are no changes in quantities since the 05 00 summary. Over.
05 43 30	CC	Roger. We have one message for you. They would like to attempt to contact you over Hawaii through the relay airplanes. So, would you please go up to UHF prior to acquisition of Hawaii? Over.
05 43 46	P	I understand, Al, Roger.
05 43 53	CC	We do not have T/M as yet. We might pick it up in a couple of minutes.
05 43 57	P	Right, I'm - very far south of you as you know. How's the weather there?
05 44 04	CC	You sound a little scratchy to me, Wally.
05 44 06	P	Roger, we're still pretty far apart. How is your weather there?

05 44 13	CC	Say again.
05 44 14	P	How is the weather there?
05 44 18	CC	Weather actually is fairly good here in location. I think on your next pass you might be able to see the typhoon. I'll give you a bearing and distance when you come over next time.
05 44 27	P	Very good, we had quite a flap on this suit circuit for the first orbit as you may know.
05 44 40	CC	Sorry, Seven, not reading you very well.
05 44 42	P	Roger, I said we had a lot of trouble with the suit circuit in the beginning of the flight.
05 44 53	CC	Sigma Seven, you're breaking up too much.
05 44 55	P	Roger. I'll be back.
05 45 00	CC	Why don't you - why don't you take a rest for awhile, you've been talking quite a bit.
05 45 06	P	Good show.
05 46 00	CC	. . . Hawaii.
05 46 10	P	That is correct Al, and we'll talk better next time around.
05 46 16	CC	Roger. See you next time.
05 46 18	P	Roger, it's real nice up here today.
05 47 33	P	At this point I'm in VOX record. I'm going to switch to UHF for relay aircraft in Hawaii area. The time is 05 hours 47 minutes 44 seconds.
05 47 49	CC	. . . I'll give you a mark on GET of 05 48 00 - 3,2,1. MARK. (05 48 02) GET 05 48 00.
05 48 08	P	Roger, I had that 03 seconds. I am 3 seconds fast on you Al.

PCS-WAT-4

05 48 16	CC	Understand 3 seconds fast.
05 48 18	P	That is correct.
05 48 20	CC	Roger.
05 48 22	P	I am going to switch to UHF at this time. You are really crystal clear here.
05 48 28	CC	Roger. See you next time.
05 48 29	P	Roger.
05 48 51	P	This is Sigma Seven, broadcasting in the blind on UHF-hi. Does anybody read, over.
05 49 05	?	. . .
05 49 21	P	Hello Huntsville, hello Huntsville, this is Sigma Seven, do you read my UHF-hi, over.
05 49 46	?	. . .
05 50 09	P	At 05 hours, 50 minutes, I have a yaw rate of ½ degree per second right, a pitch rate of ½ degree per second up, a roll rate of ½ degree per second left.
05 50 41	CC	Sigma Seven, Sigma Seven, this is . . . Cap Com on HF, do you read?
05 50 47	P	This is Sigma Seven, station calling, I can just barely hear you over.

WATERTOWN

05 50 56	CC	Sigma Seven Sigma Seven, this is Watertown Cap Com on HF. If you are copying me, Cape Flight requests that you go to UHF, go to UHF, and try to contact the relay aircraft. I say again - in the blind, Cape Flight requests that you go to UHF and attempt to contact the relay aircraft.

05 51 20	P	This is Sigma Seven, read you loud and clear Watertown. I have been on UHF.
05 51 26	P	Relay aircraft this is Sigma Seven. Please patch in Hawaii. Over.
05 51 40	CC	Sigma Seven, Sigma Seven, this is Watertown Cap Com. Cape Flight requests that you go to UHF - go to UHF - and attempt to contact relay aircraft.
05 51 51	P	This is Sigma Seven. I am on UHF. Understand requirement.
05 51 57	P	Relay Aircraft, Relay Aircraft, this is Sigma Seven. Over.
05 52 14	P	Relay . . . .

HAWAII

05 52 15	CC	Hawaii Cap Com.
05 52 16	P	Hi Gussy. How are you reading me?
05 52 20	P	Hawaii Cap Com this is Sigma Seven. I just read you loud and clear.
05 52 38	CC	Sigma Seven Sigma Seven, Hawaii Cap Com.
05 52 42	P	Hawaii Cap Com, this is Sigma Seven, read you loud and clear. How me?
05 52 54	P	Hawaii Cap Com, Sigma Seven, I read you very clear and loud. Over.
05 53 09	CC	Sigma Seven Sigma Seven, this is Watertown Cap Com on HF. If you read, go to UHF, go to UHF, and attempt to contact relay aircraft.
05 53 29	P	Hawaii Cap Com, Hawaii Cap Com, Sigma Seven. Over.
05 53 56	P	Hello, Hawaii Cap Com. This is Sigma Seven. Over.

HAW-4

05 53 59	P	Hawaii Cap Com, Hawaii Cap Com, this is Sigma Seven. Over.
05 55 56	P	This is Sigma Seven, having the effects of flying inverted in a sunrise, 90 degrees yaw. It is the most obvious thing to you, what your direction of path is. Like looking out of a railroad train window. You see the terrain going by you. There are clouds of all varied types. I can see them sweeping by me just by the 90 degree plane-in the-90 degrees to the longitudinal axis of the vehicle. Very, very graphic display of yaw. As I swing around now, my blunt end is starting to go into proper yaw attitude although I am inverted. I see a small island at this point. And it's nice and bright in the cockpit again. We have light at approximately 5 56 this pass. There, we're almost swung around into yaw now.
05 57 10	CT	Sigma Seven, Sigma Seven, Hawaii Com Tech. How do you read? Over.
05 57 14	P	This is Sigma Seven, UHF-hi. I read you loud and clear. How me?
05 57 26	P	Hawaii Com Tech, Sigma Seven, I read you loud and clear. How me? Over.
05 57 31	CT	Sigma Seven, Sigma Seven, Hawaii Com Tech. How do you read? Over.
05 57 34	P	I read you loud and clear, Hawaii, how me? I believe I just saw Midway that time. Be back down that way a little later. That was right about 5 . . . 7 to 6 and looking back.
05 57 54	CT	. . . do you read?
05 57 56	P	Hawaii Com Tech, Sigma Seven. Loud and clear.
05 58 08	CT	Sigma Seven, Com Tech, Hawaii. How do you read?
05 58 13	P	Hawaii, Sigma Seven. I read you loud and clear.

05 58 16	CC	Sigma Seven, this is Hawaii, this is Hawaii Cap Com.
05 58 19	P	Hi, Gus. How are you doing?
05 58 21	CC	Real good. How about you?
05 58 22	P	Oh, fine. I'm not bored up here. I just flew over Midway a while ago. Got a good look at that. I'm steaming up towards you-all now, of course, north of you. I gave Gene Duret my intermediate report - if he could pick me up on HF. Actually . . . .
05 58 45	CC	Go ahead with your report.
05 58 46	P	Okay, as you know, the control mode is set up for drifting. The mode selected is normal, auto, gyros caged. I've selected reentry attitude. I'm of course in fly-by-wire low. The maneuver switch is off. I'll give you the fuel quantities and oxygen. Just to check yours against mine. I still have 89 (percent) auto and 90 (percent) manual.
05 59 20	CC	Roger. Was that 89-90?
05 59 22	P	That's affirmative 89-90.
05 59 25	CC	Roger.
05 59 26	P	Oxygen, I have 55 and 75 (psi, in hundreds).
05 59 31	CC	Roger.
05 59 33	P	At 05 hours no minutes no seconds, I have 56 (psi, in hundreds) on the oxygen and 75. There is practically no change on it.
05 59 45	CC	Roger.
05 59 46	P	Suit inlet temperature is still about 61 to 62 (degrees). The dome is about 72. It's about as cool as I want it. It's just beautiful.

05 59 57	CC	Roger. We confirm those quantities, Wally. Looks like you're in good shape. Did you get the message to go to UHF prior to elapsed time of 6 18.
06 00 08	P	Right, I have that on my card, also Watertown got it to me on HF. But neither Watertown nor you could hear me. I heard you loud and clear.
06 00 19	CC	Were you reading me through relay?
06 00 20	P	That's affirmative, so I would suggest to you, broadcast in the blind if you have something hot for me.
06 00 26	CC	Roger. I'll do that anyway, and I'm glad to hear that you got us at least.
06 00 30	P	Right, I heard you way back and, I'd say at about 5 hours and 53 minutes.
06 00 39	CC	Say that time again.
06 00 40	P	Five hours and 53 minutes.
06 00 43	CC	Repeat the whole time. I missed it.
06 00 45	P	Five hours 53 minutes.
06 00 49	CC	Roger.
06 01 03	P	Sure breaking tradition on this pass.
06 01 07	CC	Roger, how do you like drifting flight?
06 01 10	P	Great sport. The rates are not consistent. They do change.
06 01 17	CC	Roger, understand. Your rates do change.
06 01 19	P	That's affirmative. I've never had more than about, uf, I would say about 3/4 of a degree per second in any one direction.
06 01 30	CC	Wally, you're cutting in and out on voice. Possibly we're losing it.

06 01 34	P	Okay. Can you read me better with the push-to-talk?
06 04 33	P	At 6 hours and 4 minutes - we have a 1 degree per second right yaw rate. 0 degree per second pitch, and 3/4 of a degree per second left roll. No change in fuel quantity. No detectible thruster action. We are swinging around and acquiring the horizon at this point.

CALIFORNIA

06 05 48	P	California Cap Com, this is Sigma Seven, over.
06 06 04	CC	Hello Sigma Seven, this is Cal Cap Com. How do you feel, over.
06 06 07	P	Read you loud and clear, John. How me?
06 06 09	CC	You're loud and clear. Everything's solid down here. I guess you got the word on the 6 08 bit. Is that affirm?
06 06 14	P	That's affirmative. You have T/M on me now? I'll power up before all that jazz.
06 06 20	CC	Okay, Roger, T/M is solid.
06 06 21	P	Okay. I have gyros normal, auto, gyros caged. I am going to power up and then go - correction - gonna power up and fly-by-wire. Monitoring the a-c bus at this time. She comes up to 115 (volts). I have 25 amps, in good shape.
06 06 45	CC	Roger. We confirm.
06 06 47	P	I'll hold off on my beacon. Clock's at 6 06 approximately I guess, when I powered up, so that it would be good at about 6 11. I have no change in consumables, John. It looks real good here.
06 07 06	CC	Roger. Everything's looking fine here. We have T/M solid and we confirm your actions here.

06 07 11	P	Roger. I got a real weird attitude at this point I'll clue you. Ha, ha, I'm looking down at the earth. I'm sort of coming toward you head first, inverted.
06 07 23	CC	Roger. You can pick your own up from that standpoint.
06 07 26	P	Yeah. You really get the illusion you're ready for a split S every once in a while, don't you?
06 07 33	CC	Right.
06 07 40	CC	Wally, I'll give you a count to the 6 08 here so we . . . start in. They're going to have it on for 2 minutes beginning at 6 08. That's about 20 seconds, here.
06 07 46	P	Okay, John, sounds like fun.
06 08 04	CC	Okay, Sigma Seven. This is Cal Cap Com. You're at 6 08. Two minutes on live TV. Go ahead, Wally.
06 08 10	P	Roger, John. Just came out of the powered down configuration where we had the ASCS inverter off. It came up in good shape and will stay on now for the rest of the flight. The amps and volts are reading properly. The amps are now down to about 19 amps, after we powered up. They were up to 25 at first. I'm coming toward you inverted this time, which is an unusual way for any of us to approach California, I'll admit.
06 08 44	CC	Roger, Wally, you got anything to say to everyone watching you across country on this thing. We're going out live on this.
06 08 50	P	That sounds like great sport. I can see why you and Scott like it. I'm having a trick now. I'm looking at the United States and starting to pitch up slightly with this drifting rate. And I see the moon, which I'm sure no one in the United States can see as well as I right now.

06 09 08	CC	I think you're probably right.
06 09 09	P	Ha, ha. I suppose an old song "Drifting and Dreaming" would be apropos at this point, but at this point I don't have a chance to dream. I'm enjoying it too much.
06 09 22	CC	Things are looking real good from here, Wally.
06 09 24	P	Thank you, John. I guess that what I'm doing right now is sort of a couple of Immelmans across the United States.
06 09 37	CC	Roger. Wally, have you had a chance to observe a haze layer any?
06 09 42	P	Yes, I have. It's quite fascinating; in fact, it's misleading in the evening. Gives you the feeling that you are pitched down quite far. Have you noticed that?
06 09 54	CC	Roger.
06 09 55	P	It's projected up much higher in the evening.
06 10 06	P	Ah, I see you got me on a Z Cal.
06 10 12	CC	Negative, did not send Z Cal, Over.
06 10 14	P	Oh, somebody did. Maybe Scotty.
06 10 18	CC	May have.

GUAYMAS

06 10 19	CC	Roger . . . Z Cal off now.
06 10 22	P	See, you can't be sneaky with me, can you Scott? Now I got the P O_2 (oxygen partial pressure), which goes to 0 when you do that. Okay, R Cal. How's that? Anybody want blood pressure.
06 10 34	CC	Say again, Wally.

06 10 36	P	Okay, I'll send you blood pressure now.
06 10 40	CC	Roger, standing by. Cal coming off.
06 10 44	P	Blood pressure on.
06 10 54	CC	We have your blood pressure. Standing by for a standard report.
06 10 58	P	Roger, Scott. I am in drifting flight, but I have powered up the ASCS a-c bus. It has come on the line very well. I will power up the beacons later. The control mode selected is fly-by-wire although I'm not controlling in it. The auto switch is auto, gyros switch is still caged. The reentry attitude is selected, maneuver is off. The quantities are all in the green. Suit temperature is about 60 (degrees). I'm quite comfortable with it. Electrical is green and a-c is green.
06 11 47	CC	Roger, and could we have one more blood pressure, please. I didn't get the last. Your (recovery area) 5-1 TORF (time of retrofire) I have. Are you ready to copy?
06 12 00	P	Let me get that first, then I'll give you the blood pressure.
06 12 03	CC	Roger, 07 18 10.
06 12 06	P	07 18 10.
06 12 10	CC	That's Roger. At 07 18 10, and for your information, Ascension copied you on your last pass and they are standing by to copy you again this time.
06 12 21	P	Roger, I'll send you a BPMS.
06 12 23	CC	Roger.
06 12 27	P	I have your 07 18 10.
06 12 31	CC	That is Roger, 07 18 10 for (recovery area) 5-1.
06 12 35	P	Roger.

06 13 03	CC	Incidentally, Wally, if we have LOS before we read the last of your blood pressure, don't forget to turn her off.
06 13 12	P	Roger. Thank you.
06 13 22	P	Going to VOX record only momentarily.
06 13 26	P	Now in the dosimeter check, it is still reading less than 1/10 on the lowest scale.
06 14 40	P	(Picture) Able 8 taken at 06 14 40. A coastline. It should have been the coast of . . . Tampico, just south of Texas.
06 15 23	P	All color shots have been made so far, no black and white. I'm going to try to take another shot here of a cloud structure, at 06 15 30.
06 15 37	P	Go ahead. Go ahead. Cape Cap Com.

CAPE CANAVERAL

06 15 45	CC	Sigma Seven. Cape Cap Com.
06 15 47	P	This is Sigma Seven. Go ahead, Deke.
06 15 50	CC	Roger, you're coming in weak and intermittent. Can you read us? Over.
06 15 54	P	Roger. I'm coming up at this time at - just across the Yucatan Peninsula here.
06 16 05	CC	Sigma Seven. Standby, we're still not reading you.
06 16 07	P	Roger.
06 16 25	CC	Sigma Seven. Cap Com. Let's try it again.
06 16 27	P	Deke, this is Sigma Seven. Just passing over the Yucatan peninsula.
06 16 35	CC	Roger. You're still weak and intermittent.
06 16 38	P	Roger.
06 17 04	CC	Sigma Seven. Cap Com. How do you read now?
06 17 06	P	I read you loud and clear. How me?
06 17 09	CC	Roger, you are loud and clear. You were very garbled before.
06 17 11	P	Roger. I'm doing partial control on fly-by-wire low. Will acquire ASCS when I get in retroattitude. No problem, just the bird's flying beautifully, and give her a break.
06 17 27	CC	Roger.
06 17 30	P	When you have a yaw of 90 degrees, it's just like looking at a train window - that's all there is to it. That's about what I'm going through now. Just walking right around the horizon, Deke.

CNV-5

06 17 44	CC	(Roger)[G]
06 17 48	P	Let's put a little . . ..
06 17 49	CC	. . . pressure for environment.
06 17 51	P	Say again, Deke.
06 17 52	CC	Give us a cabin pressure.
06 17 54	P	Roger. Standby. Okay. It's about - just about 5 (psi) on the button.
06 18 01	CC	Roger.
06 18 02	P	Okay.
06 18 06	CC	Have you eaten yet? We haven't been able to confirm this.
06 18 08	P	That's affirmative. I had some peaches and a couple of cubes. I didn't want to eat it all up in one batch.
06 18 15	CC	That's a good idea.
06 18 18	P	Spread it out a little bit, you know.
06 18 20	CC	How are you feeling in general?
06 18 23	P	Very fine, Deke. It's the first time I've had a chance to relax since last December. I've been exercising a little bit to get my muscles toned up as well. Not exactly walking around but a little bit of stretching.
06 18 42	CC	. . . (You say - you say you are what?)[G]
06 18 46	P	Roger.
06 18 50	CC	Did you say you'd like to get up and walk around?
06 18 52	P	I did a little exercise.
06 18 54	CC	Roger. Understand.

06 19 01	P	I'm just about in retroattitude now. Just about made a complete 180 (degrees).
06 19 13	CC	(Roger Seven, Cape Cap Com . . . .)[G]
06 19 15	P	I'm going to pick up pitch very shortly.
06 19 25	CC (Auto 1)	Cape Cap Com. Auto One, do you read?
06 19 39	CC (Auto 1)	Sigma Seven, Sigma Seven. Auto One. Do you read?
06 19 41	P	This is Sigma Seven. Read you loud and clear. How me?
06 19 49	CC	Hello, Cape Cap Com . . . .
06 19 55	CC (Auto 1)	Sigma Seven, Sigma Seven. Auto One. Do you read?
06 20 01	CC	Go ahead. Cape Cap Com.
06 20 16	CC (Auto 1)	Sigma Seven, Sigma Seven. Auto One. Do you read?
06 20 20	P	This is Sigma Seven. I read you loud and clear.
06 20 24	CC (Auto 1)	Roger. Sigma Seven. Cape Cap Com. Auto One.
06 20 33	CC	. . . .
06 20 35	CC (Auto 1)	Roger, Cape Cap Com. Auto One. Contact . . . relay.
06 20 40	CC	. . . Cape Com Tech. How do you read?
06 20 44	CC	How do you read Auto One?
06 20 48	CC	Roger.
06 20 53	CT (?)	Did you call Com Tech?
06 20 55	CC (?)	. . . .

CNV-5

06 21 03	CC (Auto 1)	Sigma Seven. Auto One. Do you read Cap Com?
06 21 05	P	That's affirm. What's your problem?
06 21 15	CC (Auto 1)	Sigma Seven, Sigma Seven this is Auto One. Can you read Cape Com Tech?
06 21 19	P	That's affirmative. For God sakes.
06 21 32	Warfare[1]	Auto One. Warfare. Do you read me?
06 21 34	CC (Auto 1)	Roger. Auto One. Reading Warfare loud and clear.
06 21 38	CC	Roger. Go bravo then.
06 21 41	CC (Auto 1)	Roger. Bravo.
06 21 46	CC	Auto Two Bravo.
06 21 58	?	Mercury will pick it up.
06 22 10	Warfare	Auto Two. Warfare. Do you read?
06 22 12	CC (Auto 2)	Auto Two reads Warfare.
06 22 14	Warfare	Roger. Give Sigma Seven a call.
06 22 16	CC (Auto 2)	Sigma Seven. Auto Two. Do you read?
06 22 18	P	This is Sigma Seven. I read you. What do you want?
06 22 22	CC (Auto 2)	Sigma Seven. Auto Two. Do you read?
06 22 31	CC	Hello Sigma Seven. Cape Cap Tech. How do you copy?
06 22 3+	P	I copy you loud and clear, Murph.

[1] Relay aircraft communicator at Cape Canaveral.

06 22 36	CC	Roger. Standby for Cape, please.
06 22 38	P	Okay.
06 22 45	CC	Sigma Seven. Cap Com. How do you read now?
06 22 48	P	Read you loud and clear, Deke. How me?
06 22 50	CC	Much better. Got you through Grand Turk relay now.
06 22 53	P	Oh! How 'bout that. I'm now in auto reentry mode. Over.
06 23 03	CC	Understand. Auto retro mode.
06 23 05	P	Negative. Auto reentry mode.
06 23 09	CC	Roger. Understand. Reentry.
06 23 11	P	Roger. And she looks like she's really well lined up.
06 23 16	CC (Auto 1)	Sigma Seven, Sigma Seven. Auto One. Do you read?
06 23 26	CC (Auto 1)	Sigma Seven, Sigma Seven. Auto One. Do you read?
06 23 36	CC	. . ..
06 23 41	CC (Auto 1)	Sigma Seven, Sigma Seven. Auto One. Do you read?
06 23 59	CC (Auto 1)	Sigma Seven, Sigma Seven. Auto One. Do you read?
06 24 06	P	Auto One this is Sigma Seven. I read you. How do you read me? Over.
06 24 15	P	This is Sigma Seven on VOX record only. I have reestablished auto mode in normal with no high thruster action. At this point I have 85 percent auto, 90 percent manual. And I feel, now that I am on ASCS, I can do some

experiments where before I was not able to. I will now pitch the capsule down on fly-by-wire low. First I will check to see - if I turn on my beacons, nobody down here can get to me on those. At 6 hours and 25 minutes - if anybody has a beacon in South America they deserve to hear it. Beacons are on, for a good 3 amps. Opening visor to wipe off chin, and I think I'll take a drink of water.

06 26 22 P Closing visor. Okay. Let's take a look and see where we are. At this point we made a dosimeter check. I will pitch down on fly-by-wire to reentry attitude. Now let's give it a manual proportional go this time.

06 27 37 P In manual proportional, with manual lever pulled out, and having selected rate command. I'm slowly but surely coming into retro-attitude. All axes are working very well. Setting up in roll. Getting yaw rates, pow, pow. And I want this to count - I'm going to go back to fly-by-wire low.

-- -- -- P That was stupid. Now we go to fly-by-wire low. I had a case of double authority and really flotched it. But better conserve our fuel. It's much too easy to get into double authority, even with the tremendous logic you have working on all these systems. The pitch is in; yaw is in; selecting reentry attitude; roll is in; going to ASCS, reentry now. And she's in.

06 29 58 P Okay. I think we can change backs, and get some weather bureau pictures if it's possible. Shoot up the rest - the rest of these, just lightly. That's A 10 at 6+30 hours, and 11 is coming up, and 6+30 hours with a cloud bank off to the left. Okay. I'll get the plate back on, and save this at A. Take the plate back out again, zap. Okay. That's wound up, A 12 to go.

06 31 23	P	The capsule at this point is, at 6 hours and 31 minutes, it is under chimp configuration. I've used manual proportional to a great degree. I now have 79 (percent) in manual (fuel) and 81 (percent) auto. Let's see how we stand. Ah, 81, 80 auto, 71 manual.
06 32 25	P	I fouled up, oh shucks.
06 33 07	P	That's clever. - Weather bureau back is finally out. First shot not worth using, so I'll change that. - Okay. We got slider out. Weather filter in, if I can get it. This side toward lens. There, we got a filter in. I'm going to shoot at ASA 64.
06 34 42	P	Take a light value at 06 35 minutes, and that light value is 13 for 64 ASA. Very good. Fairly bright. . . . I'll give her 13, and we'll punch off a couple quickies because of the first bad one. First shot taken at 6 35 25.
06 35 47	P	Second shot 6 35 45.
06 36 37	P	Capsule is in perfect attitude. Ideal shots for weather bureau. Think I even put on finder at this time. Shooting black and white of the clouds.
06 37 01	P	In the white. Ready to shoot at 6 - 06 37 07. That was an oblique. Shot number 3. I'll take shot number 4 almost as straight down as I can sight. Beyond a little bit of shadow as we approach sunset. Okay, that was 6 37 34.
-- -- --	P	That's capsule elapsed time. At 6 38 we will copy the manual intermediate report and I can do that at this time.
06 38 48	P	Okay, at 6 hours and 35 minutes we are at 81 (percent auto fuel) - 79 (percent manual fuel). . . .cabin 90 (degrees). . . suit 63 (degrees) . . .. Dome 71 (degrees).

CNV-5

06 40 25	P	We're now at 6 40. Going to map two.
06 41 43	P	At this point, I made a complete electrical check. All electrical systems are green. The amps are about 19 amps. This is very logical after we've been inserted. The load has been diving over release of relays at T_r+5.
06 42 04	P	All the equipment is in good order. Coming up over IOS for 6+50, in the night, and this time I want to go down the star charts to check this bear out. That is why I am on ASCS.
06 42 27	P	Had the fun with experimenting and now will get the fun of being ready for reentry at any time. Okay. Let's see - we got IOS at 6 40. 6 40. . . . same as 0 52.
06 44 03	P	There is a nice interesting horizon. The sun is off to the left about - oh I'd say 40 degrees. There's a dark line of the surface of the earth, orange at the clouds - a light yellow, a light white and a blue band. A very light blue and I have the Planet Mercury in sight at this point. Before the sun has set. And it's in the proper position.
06 44 37	P	Describing the blue band. There's a relatively dark blue band right at the surface of the earth, and a light blue band, and another dark blue band, and a large white band which is the air glow, and then a deep black one and sorta goes from a grayish blue in to a dense black. Almost looks like underneath a rain cloud as far as the transition from the blue band to the total darkness.

And I'll bring up my fingertip lights. And at 06 45 52 Mercury is right on the horizon. Arcturus should be in view, but I guess we we can't get her.

06 45 45 P Okay, I (06 45 46)^{T} see Mercury going through the - air glow. We'll see if she holds up. When I said, "I see" that was the beginning of it. MARK, (06 46 10)^{T} the first change of color, which is now a light blue. And it's still visible. MARK, (06 46 12)^{T} a darker blue. Visible MARK, (06 46 16)^{T} into the yellow orange of the surface of the earth. This was - Mercury, dropping over the horizon. I should be picking up the moon and Venus fairly soon. At 6 46 - and at 6 48 I'm over IOS.

06 49 12 P Okay, it looks like we are getting some lighted areas over the southern tip of Africa. I definitely have a city in sight, and - this is Sigma Seven. On transmit, I've had on VOX record only. I definitely have a city in sight in Africa. It first showed up at 06 49 30 seconds. The lights come up very clear. I'm in retroattitude at this point to give a mark on my position, and the moon is on my flight path for yaw reference.

06 50 07 P I'll bet you any money that city my left, and was Port Elizabeth.

INDIAN OCEAN SHIP

06 50 43 P Indian Ocean Cap Com this is Sigma Seven. Over.

06 51 06 P Indian Ocean Cap Com. Sigma Seven. Over.

06 51 26 CC Sigma Seven, Sigma Seven. Unable to read your transmission. Over.

06 51 34 P Indian Ocean Cap Com. Sigma Seven. Over.

06 51 37 CC Roger. I read you now. Over.

IOS-5

06 51 39	P	Roger. I read you weak.
06 51 43	CC	Do you have a short report for me? Over.
06 51 45	P	Roger. I'll give you my configuration. I am in auto, retro control mode; gyros are normal; maneuver switch is off; all consumables are in the green; electrical is checking out very well; capsule is tracking well. The moon is perfect reference at this point, it is right on the predicted path as well as Venus, as you probably know from down there.
06 52 18	CC	Roger. We have a CET. You have about a plus 3 second lead on your CET.
06 52 27	P	Would you give me a countdown on CET, please.
06 52 30	CC	Roger. On my mark it will be 06 52 33. MARK (06 52 36)^{T}
06 52 38	P	That was 33 - that's about a 4 second difference. I see you have some good ole' lightning again.
06 52 51	CC	Sigma Seven. Not to mention the word, but will you send a BP? (blood pressure) Over.
06 52 56	P	Okay.
06 53 35	CC	This is IOS Cap Com. Standing by.
06 53 38	P	Roger. If you'll stand by I'm going to take a check on Venus, at this point, for extinction to see how she looks.
06 53 45	CC	Roger.
06 54 26	P	Okay. Venus is extincted at 06 54 29, at a value of 5.2.
06 54 40	CC	Seven. What was the time you stated?
06 54 44	P	I'm just recording data.

-- -- --	P	The standard light is also extincted at 3.8.
06 56 04	P	Picture taken, 06 56 27 black and white, of the moon. With the weather bureau filter pulled out. Picture number 6. And as the moon sets we'll try one more at a lower shutter speed. Trying to hold it carefully. That's the second picture taken of the moon at moon set. At this point the camera back will be reinstalled and the camera stowed in case of retro attempt.
06 57 12	P	Hello! - A pretty flash of light.
06 57 52	P	Camera is going to be stowed in the space dome.
07 00 12	P	. . ..
07 00 24	P	Auto beacons. Beacons are on power now. Camera is stowed.
07 03 31	P	Okay while I'm reading instruments, the 250 is 145 (degrees). That is the 250 inverter. The 150 inverter is 105 (degrees), and the standby inverter is 119 (degrees), retro temperature is 75 (degrees). Yaw right 100 (degrees), yaw left 90 (degrees), pitch down 96 (degrees), pitch up 102 (degrees), cabin heat exchanger 42 (degrees), roll left manual 98 (degrees), roll right auto 108 (degrees), roll left auto 108 (degrees), samey, samey. Very good. And this report was made at 07 04 40.
07 06 07	P	All systems look very good at this point. This is as tight a vehicle as anyone can imagine.
07 10 29	P	At 07 hours 10 minutes and 30 seconds, I see a lighted area. Very well lighted. - It shows up more like an airport. Better identify where that would be - that should be the Phillippines. Possibly it's at Zamboanga, and that's 07 hours 10 minutes

and 30 seconds. Very graphic series of lights. Very easy to see.

07 11 38 P Correction, at 07 hours and minutes put me over.

07 11 48 P . . .. It's marked on the chart at 07 hours and 10 minutes. I was looking down at - almost in retroattitude. It showed up very clearly.

07 12 25 P Now we're getting a planet in sight. Roger. Jupiter. I can see a string of stars for Grus, and good ole' Formalhaut - there in the upper corner, Grus coming down through the middle. And Formalhaut coming right down middle. Very good.

07 13 24 P All attitudes seem to be checking out very well. Head and couch with scribe line works. My reticle at this, quick check on it.

07 13 47 P Unable to dim reticle sufficiently for a night acquisition. MARK again Grus that is, of the stars themselves in the window. . . .. Thaurus is coming right down through the center line. Could yaw right about 5 degrees which would satisfy dead reckoning. Then roll left about 5 (degrees) which is quite graphic. For retro, this looks like a very good set-up. Be no problem at all flying attitude here with the moon bright . . . light which would be dawn's light. Occasionally you can see a ground light, particularly, along the island chain at this point.

PACIFIC OCEAN SHIP

07 15 52 CT Sigma Seven, Sigma Seven this is PCS Com Tech, PCS Com Tech. Do you read? Over.

07 15 58 P This is Sigma Seven. Read you loud and clear. How me?

07 16 02	CT	Roger. Sigma Seven. Reading you 5 by, 5 by. Going to Cap Com.
07 16 06	P	Roger.
07 16 10	CC	Hello Seven. Standing by for your report.
07 16 11	P	Roger, Al. I am in auto; retro; the gyro switches are normal; maneuver is off. The capsule is prepared for retrosequence but for stowing two charts. I'm sure we're go. I have 81 percent auto, (fuel) 80 percent manual (fuel), which is the same as my intermediate report. They did not change. I have 52 (psi, in hundreds) on primary, 75 (psi, in hundreds) on secondary oxygen. Suit is go at 62 (degrees). Same as before.
07 16 53	CC	Roger, Seven. I did not catch your manual fuel reading. You broke up a little bit. Will you give that to me please?
07 16 58	P	Roger. Manual is 80 (percent).
07 17 04	CC	Roger. I have 81 (percent) auto, 80 (percent) manual, oxygen 5,200 (psi) and 7,500 (psi).
07 17 12	P	That is correct.
07 17 13	CC	Well, I would say you were definitely go. We are out of contact with the Cape at the moment, but looks like you are good for the full route.
07 17 20	P	Right you are. Now my CET, I guess, is about 3 seconds fast, as you know.
07 17 29	CC	Roger. Why don't you give me a time hack on it?
07 17 31	P	Okay. I'll give you a 35. MARK 35. (07 17 35)T
07 17 37	CC	Roger. You are about 3 seconds fast. I show your TORF (time of retrofire) as 08 Volume 1 21.
07 17 44	P	Roger. That is what I have in.

PCS-5

07 17 47	CC	Your T/M on CET is also 2 seconds fast. The retrosequence for (contingency recovery area) 5-Echo is nominal.
07 17 56	P	Roger. 5 Echo, Al. It's a real ball.
07 18 01	CC	Man - sound like you're really enjoying it. I'll give you a few seconds of silence while I send through a calibration.
07 18 07	P	Okay.
07 18 50	CC	Seven this is Cap Com.
07 18 52	P	Roger. I see you are still on R Cal.
07 18 54	CC	Affirmed. The R Cal is now off.
07 18 58	P	Roger. I have it coming off.
07 19 00	CC	We've been comparing the free surface effect of liquid on the center of gravity of the capsule, and we recommend that you drain the bilges prior to reentry.
07 19 10	P	Ha! Ha! Ha!
07 19 11	CC	It's during the coming orbit.
07 19 13	P	I'm concur.
07 19 16	CC	Also, Seven. At LOS, which should occur about 07 21, the typhoon will be located about 400 miles about 45 degrees left of your track. So you should be able to pick it up.
07 19 31	P	Oh, very good. I'll look for it.
07 19 34	CC	And we are reading you loud and clear and will be standing by for your HF check at 7 20.
07 19 40	P	Roger.
07 19 42	CC	If you have nothing further, I'll see you next time.

07 19 45	P	Okay. I'll drop in.
07 19 49	CC	Standing by.
07 19 50	P	Roger, Al. Thanks a lot.
07 20 06	P	Gyros are free.
07 20 16	CC	Seven. PCS.
07 20 22	P	This is Sigma Seven. On HF. This is Sigma Seven. On HF. Giving a short count at 07 hours, 20 minutes, 34 seconds CET. This is to check for HF coverage on the world wide range. The duration of the transmission is to last 60 seconds. I wish I knew what else I could say to eat up the time. If I breathe hard enough this might help. The capsule is working very well and I believe we are just about coming up on the end of a 60 second mark. Using HF transmit and record throughout the world wide range. And this is Sigma Seven. Checking out.
07 21 31	CC	Seven this is PCS. Do you still read?
07 21 34	P	That is affirmative on HF. How do you read me, Al?
07 21 38	CC	Loud and clear, Wally. Could you, if you have time, give us a readout on how you are coming on your orientation tests? Over.
07 21 44	P	I seem to be improving. What I am touching is just these three items, but I get closer to them each time I whack at it.
07 21 54	CC	Very good. The head shrinkers will be delighted.
07 21 58	P	I guess they are out of a job altogether.
07 22 01	CC	Okay Wally san. See you next time.
07 22 02	P	Righto Al. Thanks again.

HUNTSVILLE AND WATERTOWN

07 22 05	CT	Sigma Seven, Sigma Seven this is Huntsville Com Tech.
07 22 10	P	Huntsville Com Tech this is Sigma Seven. On HF. Do you read? Over.
07 22 15	CT	Sigma Seven, Sigma Seven this is Huntsville . . . . Sigma Seven, Sigma Seven this is Huntsville Com Tech.
07 22 38	CC (HAW)	Sigma Seven. Hawaii Cap Com. Could you read me?
07 22 41	P	Huntsville Com Tech. This is Sigma Seven. On UHF. Hawaii Cap Com. I read you. Over.
07 22 48	CC	Sigma Seven this is Cap Com. Over.
07 22 53	P	Roger. Huntsville this is Sigma Seven. Read you loud and clear. Have you anything to relay to the Cape? Over.
07 23 06	P	Negative. Everything here is going honky dory. Apparently I am committed for six and I am very happy about it. The whole rig is running beautifully. In case Al couldn't relay my fuels. I have 81 (percent) auto, 80 (percent) manual, - I am in auto, retro control mode at this point.
07 23 30	CC (HAW)	Sigma Seven. Please say again. Over.
07 23 35	P	Okay. I am in auto, retro control mode at this point. - Gyros are free for the scanner test.
07 23 54	CC (HAW)	Sigma Seven. Will you give it to me HF, please?
07 23 59	P	Hawaii Cap Com. Can you read me UHF? Roger. Switching to HF. Standby for warm up.
07 24 15	CC (HAW)	Sigma Seven. Say again UHF.

07 24 24	P	This is Sigma Seven. On HF. Do you read me HF? Over.
07 24 31	CT	Sigma Seven this is Watertown Com Tech. I read you UHF. Over.
07 24 34	P	This is Sigma Seven. Watertown. On HF. I read you UHF. How do you read me? Over.
07 24 48	CT	Sigma Seven, Sigma Seven this is Watertown.
07 24 52	CC	. . . are you still go? Over.
07 24 58	P	This is Sigma Seven. I am go. Sigma Seven. Switching UHF.
07 25 13	CC	Sigma Seven. Are you still go? Sigma Seven, Sigma Seven. Are you still go? Are you still go?
07 25 42	P	Hawaii Cap Com, Hawaii Cap Com. Sigma Seven. On UHF. I am very much go. Over.
07 25 57	CC	Sigma Seven, Sigma Seven this is Watertown Cap Com. How do you read HF? Over.
07 26 01	P	Watertown this is Sigma Seven. On HF - correction, I am on UHF-hi. I read you HF loud and clear.
07 26 09	CT	Sigma Seven this is Watertown Com Tech calling HF. How do you read? Over.
07 26 16	P	Watertown. Sigma Seven reads you loud and clear.
07 26 27	CT	Sigma Seven, Sigma Seven this is Watertown Com Tech. How do you read HF?
07 26 36	P	Watertown Cap Com this is Sigma Seven. I read you loud and clear UHF. Over.
07 26 47	CT	Sigma Seven, Sigma Seven this is Watertown Com Tech. On HF. How do you read?

HTV-WAT-HAW-5

07 26 55	P	Sigma Seven reads you loud and clear. Out.
07 27 02	CT	Sigma Seven, Sigma Seven this is Watertown Com Tech. HF. How do you read?
07 27 08	P	This is Sigma Seven. Read you loud and clear. Out.
07 27 15	CT	Sigma Seven, Sigma Seven this is Watertown Com Tech. HF. How do you read?
07 27 31	CT	Sigma Seven, Sigma Seven this is Watertown Com Tech. HF. How do you read?
07 27 44	P	Hawaii Cap Com, Hawaii Cap Com. Sigma Seven. Do you read? Over.
07 28 17	P	Hawaii Cap Com, Hawaii Cap Com. Sigma Seven. Over.
07 29 15	CT	Sigma Seven, Sigma Seven this is Watertown Com Tech. HF. How do you read?
07 29 28	CT	Sigma Seven, Sigma Seven this is Watertown Com Tech. HF. How do you read?

HAWAII

07 29 46	CC	Seven. Hawaii Cap Com. Go ahead.
07 30 07	CC	Seven. Hawaii Cap Com. . . . over.
07 30 12	P	Hawaii Cap Com this is Sigma Seven. How do you read now?
07 30 34	P	Hawaii Cap Com. Sigma Seven.
07 30 41	CC	Sigma Seven, Sigma Seven. Hawaii Cap Com. I read you. Over.
07 30 45	P	This is Sigma Seven. I read you loud and clear. How me?
07 31 01	P	Hawaii Cap Com. Sigma Seven. Over.

07 31 07	CC	Sigma Seven, Sigma Seven. Hawaii Cap Com.
07 31 10	P	Roger. Hawaii Cap Com this is Sigma Seven.
07 31 29	P	Hawaii Cap Com. Sigma Seven. Hawaii Cap Com. Sigma Seven. UHF-hi. Over.
07 31 39	P	Hello, Hawaii Cap Com. Sigma Seven. UHF-hi.
07 32 00	CT	Sigma Seven, Sigma Seven. Hawaii Com Tech. On HF/UHF. How do you read? Over.
07 32 04	P	Hawaii Com Tech. Sigma Seven. Loud and clear. How me?
07 32 21	P	Hawaii Com Tech. Sigma Seven. Loud and clear on UHF/HF. Over.
07 32 32	CT	Roger, Sigma Seven. Read you on HF/UHF. Stand by for Hawaii Cap Com.
07 32 37	P	Roger.
07 32 39	CC	Sigma Seven. Hawaii Cap Com. Over.
07 32 42	P	Roger, Gus. I've been reading you for a long time. Over.
07 32 45	CC	Ah, that is good. We lost all contact with you. I have correct retrosequence time for (recovery) area 6-1. Are you ready to copy?
07 32 57	P	Stand by 1 second here.
07 33 00	CC	Are you ready to copy retrosequence time, Wally?
07 33 02	P	Okay, go.
07 33 03	CC	Roger, 08 51 27.
07 33 07	P	Roger, 08 51 27.
07 33 11	CC	That's correct.
07 33 12	P	Okay.

HAW-5

07 33 15	CC	Give me your status.
07 33 16	P	Roger. My status is go. I could receive all the stations in the Pacific, but they apparently weren't receiving me. Would you advise them to transmit in the blind. I had very good communications with the Pacific Command Ship.
07 33 33	CC	You say you had good communications with PCS?
07 33 36	P	That is affirmative. Ideal.
07 33 39	CC	Roger. You are cutting out here. It's difficult to understand you. That's good communications with PCS?
07 33 45	P	That is affirmative.
07 33 46	CC	Roger. Roger.
07 33 49	P	I could hear Watertown, Huntsville, and you, loud and clear all the time.
07 33 58	CC	Roger.
07 33 59	P	I still have ample fuel. The capsule is tracking beautifully in auto, retro mode. I have 81 (percent) auto and 80 (percent) manual.
07 34 13	CC	Wally.
07 34 14	P	Go ahead.
07 34 15	CC	Would you reset your clock?
07 34 17	P	Roger. To 08 51 27. Standby. Roger, it is set to 08 51 27. Do you concur?
07 34 33	CC	Roger. I have that setting.
07 34 37	P	Roger.
07 34 39	CC	When you take into account your error in CET, it should be set at 08 51 31, Cape advises.

07 34 47	P	Roger. This means I have to punch retro-sequence. Right?
07 35 03	CC	Will you give us a blood pressure?
07 35 05	P	Roger.
07 35 35	CC	Wally, give me a CET.
07 35 41	P	Roger. I have - I'll give you 45. MARK (07 35 44)^{T} 45 seconds. That's 07 hours, 35 minutes 45 seconds. Did you read, Gus?
07 36 00	CC	Wally, we lost you. I think your transmitter is fading out. I'll give you a CET at 07 36 10.MARK 07 36 10. (Computed mark garbled, unobtainable)
07 36 18	P	Roger. I got your mark. I am 4 seconds fast. Did you read Hawaii?
07 36 27	P	Hawaii Cap Com. I am 4 seconds fast. Sigma Seven transmitting in the blind.

CALIFORNIA

07 40 29	CC	Hello Sigma Seven, hello Sigma Seven this is Cal Cap Com, Cal Cap Com. Broadcasting in the blind. We have had a power failure on our receiver. I am broadcasting in the blind. Reset your clock for retrosequence at 08 51 33. This takes into account your clock error at last readout. You had last report had 27 seconds set in. This should be 33 by last CET check we had with you. Cape wants you to reset that at 33. This is Cal broadcasting in the blind.
07 41 10	P	Roger, Cal. I have set in 05 - correction, 08 hours, 51 minutes, 33 seconds. Guaymas Cap Com, do you read? Over.
07 41 35	P	Guaymas Cap Com. Sigma Seven. Over.
07 41 44	CC	Sigma Seven this is Cal Cap Com. Repeating

broadcast in the blind. Cape advises reset your clock to 08 51 and 33 seconds, and 33 seconds. Cal out.

07 41 59 CC Sigma Seven this is Cal Cap Com, in the blind again. Make sure face plate is closed. Face plate closed.

07 42 17 CC All right. This is - Sigma Seven - this is Cal. We have your change on T/M of 08 51 and 33, showing good. This is correct setting.

GUAYMAS

07 42 33 CT Sigma Seven this is Guaymas Com Tech. Do you read? Over.

07 42 37 P Roger, Guaymas. How do you read me? Over.

07 42 39 CC Roger. Sigma Seven. Guaymas Cap Com. Loud and clear. They had a power failure up the California way. We're reading your correct retrosequence time 08 51 33. On my mark, let see, your capsule elapsed time is at this moment 4 seconds fast, Wally. This - this takes into effect this error. Over.

07 43 09 P Roger, Scott. I understand. Excuse me. Just finished my beef and vegetables. I am in good shape up here. I have had good communications with Al. The clock is set properly. The capsule is tracking well.

07 43 29 CC Roger. Very good. Remember to close your face plate at this time. Remember also do it prior to reentry.

07 43 39 P Roger. I have done that.

07 43 41 CC Okay, at this time.

07 43 42 P Roger. Face plate is closed and I have had a navel maneuver.

07 43 48	CC	Roger.
07 43 50	P	Everything looks real good, Scott.
07 43 52	CC	It looks real good down here Wally. Doing a good job and we are looking forward to seeing you shortly at Midway way.
07 44 00	P	Roger. We'll get some boat duty in too.
07 44 10	P	Scott. Do you have horizon scans on me?
07 44 13	CC	Roger. Wait one, Wally.
07 44 16	P	I would like to have you check my roll attitude.
07 44 23	CC	Roger. CET on my mark will be 7 hours, 44 minutes, 30 seconds. MARK. (07 44 30)^{T}
07 44 31	P	What? Is that right? That's what my clock says.
07 44 36	CC	Right. That was CET. The Cape asked for that. We are showing 4 seconds behind you Wally.
07 44 43	P	Oh, okay. That was right on. Now what is my roll attitude on your scanner?
07 44 50	CC	Okay. Your roll scanner shows minus - minus - minus 10 (degrees), Wally.
07 45 03	P	Roger. I concur. Believe I am a little bit steeper than 10 (degrees) left. I'll bring that out with the manual axes and then let her fly it again. And see what she does.
07 45 20	CC	Wally. How about one more blood pressure before you leave?
07 45 28	P	Roger. Standby.
07 45 34	CC	Sigma Seven. On my mark, the ground elapsed

GYM-5

		time will be 7 hours, 45 minutes, 40 seconds. Standby. MARK. (07 45 44) T
07 45 46	P	Roger. I concur.
07 45 47	CC	Roger.
07 46 09	P	Going to fly-by-wire low at this point. Manual lever in. The capsule attitudes appear to be very good.
07 46 30	CC	That's fly-by-wire low at this time. Sigma Seven?
07 46 33	P	That's correct. I just want to check this roll out during the daylight side. Pitch is real honest and so is yaw. I think I've got to correct about 6 degrees worth of roll though.
07 46 50	CC	Roger. Gyros are normal? Is that correct?
07 46 52	P	That's correct.
07 47 10	CC	Wally, we also show a gyro free position on the ground.
07 47 14	P	Roger. I just went to that free. Standby.
07 47 20	CC	Roger. And do you plan to return to ASCS shortly?
07 47 25	P	Momentarily.
07 47 26	CC	Roger.
07 47 27	P	Just coming on to it.
07 47 30	CC	Okay. Stop the blood pressure. We got a good one, Wally.
07 47 32	P	Okay. Stand by - normal ASCS.
07 47 39	CC	Roger. We're reading - gyros normal.

07 47 43	P	Roger. The scanner test was what the problem was. And the roll went off as we anticipated it would. And I am going back to gyros normal, at this time, which is about 2 minutes early. This is the routine that was on the flight plan, if you'll see it.
07 48 00	CC	Roger.
07 48 04	P	Okay, we should pick up this roll problem that I had there now that we've got the scanners back on the line. Looked pretty good for pitch though, it's beautiful.
07 48 18	CC	Roger. And the gyros are showing, at this time, only a 4 degree difference, and that is decreasing.
07 48 26	P	Roger. That's the deal. That's what I wanted you to check for me while I was over your station, Scott. Thank you. So it looks like the ASCS is pure. I am now in -
07 48 37	CC	Scanners are also in agree - pitch scanners in agreement with your gyros, and we have T/M LOS.
07 48 45	P	Roger. I'm happy here.
07 50 12	P	This is Sigma Seven. A 30 second HF check, at 07 50 minutes commencing at 10 seconds after that. This is a 30 second duration test, as I pass down through the coast of Baja California, enroute to South - South America. Every system is working very properly. I have 5 more seconds of check to go. Test out. Sigma Seven. Switching to UHF for relay.
07 51 38	CC (Auto 2)	Warfare. Auto Two.

CANAVERAL

07 51 48	CT	Sigma Seven. Cape Com Tech. Do you read? Over.
07 51 51	P	Roger, Cape Com Tech. I read you loud and clear. How me?
07 51 57	CC (Auto 1)	Warfare. Auto One relay.
07 52 00	P	Cape Com Tech. Sigma Seven. How do you read, UHF relay?
07 52 12	P	Cape Com Tech. Sigma Seven. On UHF. Over.
07 52 16	CT	UHF relay is good. Do you read? Over.
07 52 24	CT	Sigma Seven, Sigma Seven. Cape Com Tech, Cape Com Tech broadcasting 1 2 3 4 5 4 3 2 1. How do you read? Over.
07 52 33	P	I read you loud and clear, Murph. How do you read me? Over.

QUITO

07 52 38	CC (?)	TMS calling. Repeat please. . . .. Did you receive Cape Com Tech? Over.
07 52 44	P	Hello, Quito. This is Sigma Seven. Can you relay to Cape that I read them loud and clear? Over.
07 52 50	CC	Yes, you are coming through fine. Any traffic you have, be glad to take it. Go ahead.
07 52 56	P	Everything here is all set. Would you relay to the Cape, I have everything under control. We are all set here.
07 53 02	CC	Very fine. Thank you very much. You don't have any word to pass on? Can you say anything in Spanish to the fellows down here?

QUITO-6

07 53 12	P	I'm afraid I can't. Except I would like to come down and visit you. I'm enjoying a beautiful sight of the country.
07 53 19	CC	Certainly nice to hear that, but could you say just a few greetings to them? They would appreciate it so much. They want to put you on their radio down here.
07 53 27	P	I must send my greetings to the other people of our same area. The fact that we are two hemispheres joined is even proven today by our capability of flying over each other's countries realizing that we are one and the same.
07 53 44	CC	Would you say, "Buenas dias," or something like that back to them?
07 53 49	P	Right, all I can do on that now is say, Buenas dias you-all.
07 53 54	CC	Ha, ha. Thank you so much. I think they'll love that.
07 53 57	CC (Auto ?)	. . . Cape Com Tech? Over.
07 53 59	P	Would you relay to Cape Com Tech - Cape Com Tech that I can read him?
07 54 03	CC	Who can you read?
07 54 05	P	Would you relay to Cape Canaveral Com Tech that I read him.
07 54 10	CC	That you do read Cape Canaveral right now?
07 54 13	P	That's affirmative.
07 54 14	CC	Okay, will tell him. Thank you a lot.
07 54 18	CC (Auto 1)	Sigma Seven. Auto One Cap Com. Did you receive Cape Com Tech? Over.

07 54 23	P	Sigma Seven. Affirmative.
07 54 28	CT	Sigma Seven this is Cape Com Tech. This is Cape Com Tech. How do you read? Over.
07 54 34	P	Sigma Seven. Loud and clear.
07 55 09	CC (Auto 1)	Sigma Seven. Auto One Cap Com. Do you read? Over.
07 55 14	P	This is Sigma Seven. Affirmative. I do read.
07 55 18	CT	Sigma Seven, Cape Com Tech UHF/HF. How do you read?
07 55 24	P	Sigma Seven. Loud and clear.
07 55 28	CC	Were you calling Quito or Cape Com?
07 55 33	P	Trying to talk to the Cape. But apparently they don't realize I am still talking. Quito, I can hear them all loud and clear.
07 55 42	CC (Auto 1)	Cap Com. Did you read Cape Com Tech? Over.
07 56 03	CC (Auto 1)	Sigma Seven, Sigma Seven. Auto One Cap Com. If you read, give a short count. Over.
07 56 10	P	This is Sigma Seven. We don't a transmitter exercise. I do read 1 2 3 4 5 5 4 3 2 1. Sigma Seven. Out. I'm tired of carrying on Com.
07 56 33	CC (Auto 1)	Sigma Seven, Sigma Seven. Auto One Cap Com. Can you read? Over.
07 59 06	P	At 7 hours, 59 minutes, 10 seconds, light value reading, for the black and white film, is 13 for ASA 64. Setting light value of 13. Taking picture number 7 with filter. The continent of South America is difficult to photograph because of all the weather. I will take a panorama at this time. Starting at 7 59 almost 8 hours. In

fact, it will be 8 hours. MARK (08 00 00)^{T}, 7, 8, 9 black photographs, black and white film. Ten photographs, black and white film. The shots are being taken at 250 5.6 (1/250 second and f5.6) at infinity. Taking number 11, looking to the left. I am coming across the South American continent at this point. I have a large river in sight. Take a picture, camera facing down as much as possible. I believe I got the capsule window very nicely there. I'll come back to - B-1 now. I've shot the 12 first pictures. I'm on B-1, shooting at the cloud streaks. I've shot B-2 and these are all black and white shots, with weather bureau filter in at 08 02. I will take the last pictures of this series. That is the end of the weather bureau pictures. I believe we've taken enough to satisfy the requirements. Pulling out the filter. Restoring the slide to the back. Removing black back.

08 03 37 P Bring out color back. Taking a light value reading of the South American continent at 08 04 commencing, - gotta change the ASA number. ASA number changed to 160. Light value being measured at this time. Light value is 15.

08 05 01 P Very interesting terrain pictures. I will take one of the horizon just for posterity. At this time, that picture was A number 12, resetting to B and now have B-1. Taking some colored pictures of the South American continent. I don't think we'll have much luck with them.

08 06 09 P That was at B-2. Coming up on B-3. Pitch down at this time to approximately 10 degrees. The roll error that developed during the period where we had the scanners off has disappeared. At this point, I am going to increase the suit flow to approximately - just a tad to increase the cooling for reentry. See if I can bring it down a little bit more. There is almost perfect attitude.

Yaw is good. Pitch is down a little steep. It's definite that the yaw reticle is not good for night work.

08 07 46 P I'm going to stow the camera now for the check on the Durban light. As we did not have any luck with the flare.

08 08 44 P Camera is stowed. Photometer is light enough to take out and leave out. I will make another check on a low-level gadget here before we terminate. And it has gone up about the thickness of one line. Is now reading 0.06 that is less than 0.1. All of these will now be stowed in the glove box; they have been on the hatch, adjacent to the hatch detention spring nearest the emergency rate handle. In a vertical plane parallel to the bag that holds the extra goodies that can't be shoved other places.

08 10 52 P At 08 hours and 10 minutes. Going to pitch up to reentry attitude shortly. No reason to keep glove box open at this time. Have to get the standard source of light. I may be able to get it. Put that away in a hurry. That'll stay there. That is the yaw cover. Everything else is ready.

08 12 02 P Skies are getting darker.

08 12 30 P Fly-by-wire low and pitching up to reentry attitude. Going to fly-by-wire low, now (08 12 39)^{T}.

08 13 19 P Attitude okay. Pitching back down to reentry attitude, correction retroattitude. No reason to stay at reentry attitude. No reason to stay at reentry attitude, when we can see so well in retroattitude. And this is truly the attitude we need to fly. Coming up on retroattitude. Roll checks out. Yaw checks out. Reentry attitude is on select. Stopping pitch shortly. (Pitch is drifting in very slowly). Pitch is stopped - on pitch. Going to ASCS auto, gyros are normal, maneuver is off.

QUITO-6

08 14 34	P	Closed face plate. Opened it momentarily, merely to wipe my nose, and try to clear a lens, which I cannot do. Reentry select. Camera is stowed. I will now extinct the standard light source - and cannot move the cabin light on the starboard side; therefore, I will extinct it as a continual reference. There, it is now extinct, at 3.3. Cabin source extincted at 3.3 at 08 hours 15 minutes and 35 seconds CET.
08 16 06	P	Fly-by-wire low did check out very well.
08 18 02	P	Moving suit setting to 8 at this time. That is the suit coolant quantity settings to 8. Suit inlet is now 65 (degrees), which is comfortable. In fact, I was quite cool before, but I'd like to get cool again. And the dome is about 73 (degrees).
08 18 23	P	Cabin is all set. I don't want to lower the dome any more. It's been very good. Checking on time 18 minutes. Okay on the clock. Thrusters - roll left auto is 119 (degrees). Roll right auto is 115 (degrees). Roll left manual is 100 (degrees). Cabin heat exchanger is 43 (degrees). Pitch up auto is 95 (degrees). Pitch down auto is 95 (degrees). Yaw left auto is 80 (degrees). Yaw right auto 100 (degrees). 250 inverter, oh how nice, less than 160 (degrees). The 150 inverter - is 110 (degrees). Standby is 125 (degrees). Turning to cabin heat exchanger.
08 19 42	P	Checking out d-c volts at this time. Main bus 24 (volts), isolated bus 27½ (volts), one is 25 (volts). Two is 25 (volts). Three is 25 (volts). Standby one is 25 (volts), standby two is 25 (volts), isolated is 28 (volts). Back to main. ASCS and fans are both 115 (volts). Drawing 20 amps. Oxygen remaining 50 (psi, in hundreds) primary, 75 (psi, in hundreds) secondary.

08 20 47	P	Will perform an orientation test at this time while I' m on ASCS and not so busy. Reaching for manual handle - and on it, exactly on it. Reaching for yaw attitude. I hit it at 20 degrees, right 20 degrees. Reaching for emergency handle. Right on it, negative, that one - slightly off touched the side of the box first. I didn't hit it exactly, I'm sure. That is completion of the orientation test.
08 21 29	P	I have the moon in sight. There is Venus. The moon is tracking beautifully. Right on in yaw, right on in pitch, right on in roll. All three axes are very beautiful.
08 22 07	P	Seems so sad just a little less than a half an hour left to play with this. I am now going to fly-by-wire low. Gyros free, to pitch down to observe the Durban light. Gyros free, fly-by-wire low, correction, I am going to manual proportional at this point. I have not charged any rates so I will go back to ASCS. Clean. Over to rate command. Manual proportional out. I will try this mode out for size. Down a very small amount, 23 minutes.

INDIAN OCEAN SHIP

08 23 05	P	Indian Ocean Ship this is Sigma Seven. Do you read? Over.
08 23 15	P	Indian Ocean Ship. Sigma Seven. Do you read? Over.
08 23 28	P	Indian Ocean Ship. Sigma Seven. Do you read? Over.
08 23 40	P	Indian Ocean Ship. Sigma Seven. Do you read? Over.
08 23 49	CC	. . . how do you read? Over.
08 24 05	P	Indian Ocean Ship. Sigma Seven. Do you read? Over.
08 24 08	CC	Roger, Sigma Seven. Read you 5 by 5.

IOS-6

08 24 12	P	Roger, Indian Ocean Ship. Have not seen the flare. I am pitching back up to retroattitude.
08 24 20	CC	Roger. Were you able to check the Durban lights?
08 24 22	P	I mean the Durban lights. I was not able to see them. I see some lights on the ground - at this time - in the middle of the window, which is just about the time for the Durban lights. They are underneath clouds and are not good enough for complete recognition. Over.
08 24 49	CC	. . . short report.
08 24 56	P	Say again. Over.
08 24 59	CC	Could you give us a short report? Over.
08 25 01	P	Roger. I am back in - retroattitude. I'm going back to chimpanzee configuration. The gyros are normal. Everything is stowed but the photometer, which will be stowed shortly.
08 25 22	CC	Roger.
08 25 26	P	I have set my suit circuit cooling valve to position number 8 just to precool a little bit, and it is working properly.
08 25 37	CC	Roger. Can we have one more blood pressure at this time? Over.
08 25 44	P	Roger. Coming up.
08 25 59	CC	Sigma Seven. Did you say that your att - your mode was ASCS retro?
08 26 05	P	I'm coming to that just now.
08 26 06	CC	Roger.

08 26 15	P	I have the moon setting at this point.
08 26 21	CC	Say again.
08 26 22	P	The moon just set. And I have lightning in sight over this area.
08 26 25	CC	Roger. Are you about ready to go through your pre-retrosequence checklist?
08 26 31	P	That's affirmative. Just stand by 1 second. Will go to ASCS.
08 26 37	CC	Okay.
08 26 44	P	Okay, ready for pre-retrosequence checklist.
08 26 49	CC	Do you want some help with it?
08 26 50	P	Say again.
08 26 52	CC	Do you want some help with the checklist?
08 26 54	P	Negative. I am in attitude at this time. I will give you the rest of the checklist for your reading.
08 27 01	CC	Roger. Would you push to stop blood pressure, please.
08 27 07	P	Roger. Have got that done. I've got attitude select retro.
08 27 15	CC	Roger.
08 27 17	P	I've got retro correction thrusters on - normal instead of low. I'm going to switch to HF antenna to bicone although I'm using UHF - at this time.
08 27 32	CC	Roger.

IOS-6

08 27 38	P	I am on bicone, and the visor is closed. All other items are in their proper position. Over.
08 27 48	CC	Roger.
08 27 52	P	Checklist complete except for squib switch arm.
08 27 56	CC	Roger. Could you give us a cabin pressure and suit readout?
08 28 00	P	Roger. Standby. The cabin pressure is 4.9 (psi) almost 5. The suit temperature inlet is 63 (degrees). The cabin temperature is 92 (degrees).
08 28 20	CC	Sigma Seven. Say again cabin pressure. Did not read you.
08 28 24	P	Cabin pressure is 5., 5.0 (psi).
08 28 29	CC	Roger.
08 28 35	P	I am warming up gyros although they should have a bypass anyway.
08 29 02	CC	Sigma Seven. Everything looks good. IOS standing by.
08 29 06	P	Roger, IOS. It looks good here.
08 30 45	CC	Sigma Seven. We have 1 minute to LOS.
08 30 48	P	Roger, I am completely secure here and ready for retrofire on command.
08 30 49	CC	Roger.
08 31 11	P	All attitudes check out perfectly here. How do they check with you there?
08 31 27	P	This is Sigma Seven. I will check fly-by-wire high thrusters at this time.
08 34 15	CC	. . ..
08 34 32	CC	. . ..

08 34 50	P	At this time, I have completed the high thruster checks. A delayed report. Each axis worked beautifully. I now have 75 (percent) auto (fuel) and 75 (percent) manual (fuel).
08 35 41	P	All attitudes are responding very nicely. Suit heat dome is about 72 (degrees), suit inlet is about 63 (degrees), coming down just a tad. Definitely it - optimum flight setting of about 7½ to 8 for this vehicle. I will crack it up another notch to 8. I have set the - suit regulator for the coolant quantity to position 8, at CET 08 36 23.
08 36 35	P	That's a more accurate reading on fuel if I can get my fingers up to it would be 78, 78 (percent) - prior to retro. I am set up to have retro performed - automatic control - subsequent to retro - I will switch to fly-by-wire and pitch up to reentry axis - correction - subsequent to retro jettison, switch to fly-by-wire, pitch up reentry attitude and select rate command at 08 . . ..
08 40 35	P	Cabin, at this time, is monitoring at about 4.8 (psi). The suit apparently about 4 (psi), and the suit pressure gage is reading 4.9 (psi). This is the suit pressure gage on the suit.
08 41 03	P	The index finger - finger-tip light left hand finally failed. They really do not have the long-time durability that we're looking for.
08 41 19	P	The horizon is very clear. Roll and pitch look very good. Yaw looks good. I believe we've got a medley of stars coming into sight now to give us a fix.
08 41 37	P	One gets the illusion that you're on a train or some other vehicle, due to the humming, and you feel that you should be on a track of some kind and you're driving down. Much like the sound of

		the ship when you're under way at sea. The blower noise, I assume, and the inverters give you the same illusion.
08 42 14	P	Okay. We got Grus, and we got Jupiter in the right position. So our yaw reference is right on the money. No problem with that. When I lean way down I can pick up Jupiter, and Formalhaut should come down very shortly after.
08 42 36	P	Have a slight roll to the right, which is indicated by the gyro as well. Coming on 8 minutes and 50 seconds.
08 43 24	P	T_r-10 relay must have set in, although I have no clues - other than the ASCS rate gyros coming up and I can't bet on those since they're in anyway by the switch being selected to T_r-10 bypass.
08 43 49	P	Gyros normal. Attitude - fly-by-wire. Retrofire armed, the 3 fuses are armed. We are fat!
08 44 04	P	There is Jupiter, and there is Formalhaut in the middle of the window, this time around. Attitude is real stiff now. Just by chance, I assume. Roll is right on, yaw is right on.
08 44 41	P	Cabin PO_2 at this time is about 3.9 to 4.0 (psi). Cabin heat exchanger is about 50 (degrees), at this time. Dome just happens to be on an upswing now.
08 45 01	P	Dome, cabin dome is about 57 (degrees). Cabin temperature is 90 (degrees). Suit inlet is 62 (degrees). Oxygen remaining 50 (psi, in hundreds) primary, 75 (psi, in hundreds) secondary. All electrical looks good. Fuel remaining, still is, 78, 78 (percent).
08 45 53	P	Coming up on the 5 minute to go to retrograde light.
08 46 34	P	Five minute to go retrograde light is on.

08 47 01	P	Attitude looks very good, nice and stiff. Pressure is holding very well. Vehicle looks very good.
08 47 23	P	Roll left, not so good. Let's see what we have. Five degrees roll shows up very readily.
08 48 21	P	Checking over the other systems. They all seem to be fairly constant. Suit dome is still about 71 (degrees), suit inlet is 62 (degrees), which this time is comfortable. Cabin pressure and suit pressure and suit pressure gauge all match within about 1/10 of a psi. Getting some light in the periscope at this time.
08 48 54	P	About 2 minutes to go to retrofire. I'm in UHF-hi, transmit and record, R/T. All fuse switches are in the proper position but for the landing switch fuses.
08 49 17	P	Here comes some sunlight.

PACIFIC COMMAND SHIP

08 49 55	P	Pacific Command Ship this is Sigma Seven. Do you read? Over.
08 50 04	CC	Sigma Seven this is Pacific Command Ship. Do you read? Over.
08 50 08	CC	Affirmative, Seven. Are you reading me?
08 50 09	P	Roger, Al. Read you loud and clear.
08 50 12	CC	Understand you're ready to go home, Wally.
08 50 14	P	Roger. I've got everything all set, Al, except for the squib switch, which I'll put on your count.
08 50 20	CC	Very good. You're going to use ASCS retro, and manual proportional standby.

PCS-6

08 50 26	P	That is affirmative. The handle is sitting in at this time; I'll pull it out.
08 50 31	CC	Okay. Your attitudes look very good, Wally, and your clock is 5 seconds fast. - So with the present setting, we should time out right on time.
08 50 39	P	Roger, Al. I've got - I'm coming up on 30 seconds to go. I'll give you my light.
08 50 46	CC	Okay.
08 50 49	P	I've got the 5 minute light on. This is the 30 second light - 5, 4, 3, 2, 1, LIGHT (08 51 02)^{T}. There it is. I've got a light and a tone. Tone is out.
08 51 07	CC	Very good. The timing is right on, Wally. I'll count down to retrosequence, and you'll arm the squibs at 5.
08 51 14	P	That's correct.
08 51 22	CC	Here we go at 10, 9, 8, 7, 6, 5.
08 51 28	P	Squib arm.
08 51 30	CC	3, 2, 1. SEQUENCE (08 51 32)^{T}.
08 51 34	P	I have sequence, and capsule is nice and tight. Got attitude green. She sitting here like a tight rock, Al.
08 51 42	CC	Roger, attitude looks very good from here, Wally.
08 51 44	P	Yeah. They looked beautiful here, too. Oh boy! She's a good little capsule, I'll clue you.
08 51 52	CC	Here you go.
08 51 53	P	Roger.

08 51 57	CC	5, 4, 3, 2, 1, 0. (08 52 02)^{T}
08 52 04	P	I've got (retro rocket number) 1, and she's holding real tight. Very tight. I got 2, my attitudes are right on the money. I've got 3.
08 52 17	CC	Very good. We confirm on T/M. Retros 1, 2, and 3. Attitudes holding very well. Retro jettison switch to arm.
08 52 24	P	Roger.
08 52 25	CC	Emergency retro jettison fuse switch is on.
08 52 28	P	Roger. They are all on. Retro jet is armed. Got sunlight. Everybody's very happy. I'm going to fly-by-wire, Al, to pitch to reentry attitude. Manual is going in.
08 52 41	CC	And we show you have about 68 percent auto and 84 percent manual fuel left. I think our readings are probably a little closer than yours.
08 52 50	P	I've got 68 (percent) auto and 78 (percent) manual.
08 52 56	CC	Roger.
08 53 00	P	Standing by for retro jett. I have retro jett, and light is green. I could hear it by the way.
08 53 10	CC	Very good. We confirm retro jettison.
08 53 12	P	Okay. I am using fly-by-wire low to pitch up to reentry attitude.
08 53 18	CC	Okay. We're following you here.
08 53 20	P	Roger. I am a little sloppy on the roll as you may see. No strain. I'm going to put her right into ASCS when I get up here. Okay. She's in reentry as far as roll goes. Okay. The scope is coming in. I'm on the gyros.

PCS-6

08 53 40	CC	Roger. We confirm scope retract on T/M.
08 53 43	P	Roger.
08 53 44	CC	And you're very close to reentry attitude.
08 53 47	P	Roger. I'm in reentry attitude now.
08 53 51	CC	Roger. Understand you will go to RSCS prior to 0.05g, with aux damp as a back up.
08 53 57	P	That is affirmative. I'm now going to ASCS at this time. And she's tight and holding.
08 54 05	CC	Understand you are in ASCS.
08 54 07	P	That is correct. I want to see if the reentry logic was in.
08 54 11	CC	Roger. And you will go to RSCS prior to 0.05g.
08 54 15	P	That is correct, Al. I want to give her a checkout. Those retros were real cute, and right on the money.
08 54 25	CC	Roger.
08 54 26	P	I'd say attitudes didn't vary 1 degree.
08 54 29	CC	Real tight. Real tight.
08 54 30	P	Righto. I think they're gonna put me on number 3 elevator.
08 54 35	CC	Ha, ha. Good show. Stand by I'll call the Cape. See if they have anything.
08 54 39	P	Okay, Al.

08 54 49	P	Okay. Post retro, I read 65 (percent) auto (fuel), and about - 78 (percent) manual (fuel). Manual lever is in. I'm in ASCS at this time.
08 55 10	CC	Understand you are still in ASCS but the manual lever is in.
08 55 14	P	That is correct. What is my nominal time for 0.05g.
08 55 19	CC	Standing by Wally. We have LOS. See you later.
08 55 22	P	Roger, Al.

WATERTOWN

08 56 57	CT	Sigma Seven, Sigma Seven this is Watertown Com Tech. UHF. How do you read?
08 57 02	P	Roger. Watertown Com Tech this is Sigma Seven. Read you loud and clear. How me?
08 57 07	CT	Sigma Seven this is Watertown Com Tech. I read you weak, I read you weak. Please make another transmission.
08 57 13	P	Roger. I read you loud and clear, Watertown. How do you read me now?
08 57 19	CT	Sigma Seven, Sigma Seven this is Watertown Com Tech. I read you broken up. I read you broken up. Please make another transmission.
08 57 27	P	Roger. Watertown. I read you loud and clear. Please make your transmissions to me in the blind, if I do not acknowledge.
08 57 37	CT	Sigma Seven, Sigma Seven this is Watertown Com Tech. I read you 3 by 3. Stand by, I'll turn you over to Com - Cap Com.

WAT-6

08 57 45	P	Roger.
08 57 55	CC	Sigma Seven this is Watertown Cap Com.
08 57 58	P	Roger. Watertown Cap Com. How do you read me?
08 58 02	CC	Weak and unreadable, at the moment. But I will transmit in the blind. Please check to make sure your face plate is closed and sealed. Do you read?
08 58 10	P	Roger. Face plate closed and sealed.
08 58 13	CC	Will you verify that your scope is fully retracted and the door closed. Does it look dark?
08 58 18	P	The scope is retracted, and I think you'll have to confirm that for me.
08 58 23	CC	Understand - I just barely understood you, but I'll go ahead. Will you confirm that the UHF/DF switch is in the R/T position.
08 58 32	P	That is correct.
08 58 37	P	I am standing by to check out my RSCS mode at the proper time.
08 58 47	CC	Sigma Seven. Did not understand the last transmission but assume you read that we should have UHF/DF switch in the R/T position. I do not have any landing recovery information for you at the moment, but I'll pass it on to you if I can.
08 59 03	P	Roger. Have you acquired track?
08 59 09	CC	Expect LOS blackout anytime. I'll keep transmitting in the hope that it will get it on your tape recorder.

08 59 16	P	Roger.
08 59 22	CC	At main chute deploy if you get a chance, will you shut off your three water controls to help out the data reduction people?
08 59 28	P	Wilco. If I get a chance. Ha, ha.
08 59 36	CC	Sigma Seven. Don't forget to watch your your cabin pressure and your altimeter. If they do not check, pull your decompress or your snorkle handle.
08 59 45	P	Roger. Understand.
08 59 50	CC	Sigma Seven. I'll keep on talking in the hope that we can clear this blackout problem. At 17K, your O_2 emergency light should come on. At that time pull your snorkle.
09 00 01	P	Roger. Understand.
09 00 04	CC	You should have sent your blood pressure.
09 00 07	P	I did.
09 00 11	CC	I still have you on T/M. No blackout yet.
09 00 13	P	Roger. I'm going to check out rate command at this time.
09 00 18	CC	Roger. Understand. Checking out rate command.
09 00 29	CC	Sigma Seven. Do you still read?
09 00 31	P	Sigma Seven. Read you loud and clear. How me?
09 00 34	CC	Clear.
09 00 35	P	Roger.

WAT-6

09 00 40	CC	Wally, by the way, how do you feel? All your systems okay at this time?
09 00 43	P	Oh, they're beautiful - very good. Every control mode has worked perfectly.
09 00 53	CC	Lost you on T/M.
09 00 55	P	Roger.
09 01 19	P	I have selected aux damp and rate command at this. The window is almost completely occluded. It would be impossible to see out of it at this point.
09 01 38	P	I'm seeing things come off, but I can't see them very clearly. There we go into 0.05, a green. I am hands off at this point. In rate command, in aux damp. And I have a roll rate started. A slight pitch rate, not bad at all. I can see out the window for some strange reason at last. There goes another long spiral like looking device. I will give another blood pressure at this point, subsequent to 0.05 g. All rates are very nominal. Rate command is working quite well I would say.
09 02 44	P	Going back into g-field. And the attitude looks very stable. I'm rolling right around the horizon. I'm going to stop my blood pressure at this time - and sit back here and regroup. I can see the ion layer. I'm inverted at this time.
09 03 14	P	Attitudes are controlling very well. Seems to be plenty of manual fuel. I'm still at 72 percent. Definitely has the cyclic rate in pitch at this point. Yaw is fairly stiff; g is building up. Capsule is quite stable.

There is a green flow - and looks like orange streaks every once in a while. RSCS is doing very well on reentry. Rather unusual slow roll. Building up to 2g's. I have plenty of fuel in rate command. Seeing sparkles coming by now. A definite green glow, like a limeade; g's building up. Oscillations are very good at this point. About 3g.

09 04 18 P Still in a relatively horizontal attitude. Rate command working well. Glad she's holding. Doing very well. Coming up to 5½ (g). Rate command still holding, fuel is still 70 (percent), seems low. Coming up to 6½ (g), 7g's. Coming up to 8g. Rate command holding. Taking a pretty big yaw out. Not too bad, I have it pretty well. Manual (fuel) is 60 percent. She's flying it very well.

09 05 29 P Coming off. Peak-g was an indicated 7½ (g).

09 05 38 CC I read you weak. How do you read?

09 05 40 P Roger. Read you well, loud and clear. - I still have about 3g on. Capsule performing very well. Rate command holding pretty well. Altimeter off the peg. Attitudes holding very well.

HAWAII

09 06 05 CC Sigma Seven this is Hawaii Cap Com.

09 06 07 P Roger. Go ahead.

09 06 09 CC Everything appears to be nominal.

09 06 11 P Roger. Seems nominal here. Everything looks good. Got 55 percent auto fuel. Passing through 70,000 feet, 65,000. Attitudes are very stable. Coming up on 60 (thousand). Rate

command doing very well. Coming up on 50 (thousand). She looks like a sweety. Coming up on 45,000. I'm down to about 1 g. Preparing to punch the drogue, at 40, 41 (thousand). I'm punching drogue, and the drogue is out. You can hear it, I can't see it because of the clouds. Attitudes are holding well. Manual lever is in. RSCS fuel is going pretty fast. I can see the drogue now. Drogue looks very good. I'm going to aux damp to. Actually don't need it. Rate command is burning itself out. And aux damp is doing nothing, just sitting there. I'll put in auto mode just to let her pump out.

09 07 30 CC - about 3 seconds.

09 07 31 P Roger, I'm coming down on 20,000. Standing by for snorkle. Cabin pressure is increasing. Snorkle should go. I believe snorkle lid blew. I felt them I will pull it anyway. I have an emergency rate. I think I led the snorkle a little bit on that one.

09 07 58 P I'm dumping H_2O_2. Switch fuse on. Standing by. Recovery arm is "arm". Standing by for main chute. All switches are in proper position. Manual fuel is almost all gone. There goes drogue and main is out. It's - she's out beautiful. Bright blue sky. And it's dereefed, and looks like a sweety pie. Auto fuel is dumping. Rate of descent is about 35 (fps) at this time. I see no problems at all. I'm going to get prepared for impact. Auto fuel is dumping out. Cabin pressure is increasing properly. All systems look real good. I am cool, I am not hot. Main chute looks delightful. Rate of descent is 35 feet per second. I have no reason to select anything else. Landing bag is out.

09 09 09	CC	Roger, Wally. How do you feel?
09 09 10	P	I feel marvelous. This is a beautiful flight, wasn't it?
09 09 15	CC	Understand, you feel marvelous.
09 09 18	P	That is affirmative. I'm opening visor at this time to relieve my ears?
09 09 26	CC	Did you get the weather in the recovery area?
09 09 29	P	I probably had too much to say. What do you fellows have?
09 09 32	CC	Roger. Weather is 2,000 broken, visibility 10 miles, 3 foot seas. We don't have any tracked IP yet but you should be very close to the Kearsarge.
09 09 42	P	Roger. Sounds good, Gus. It's a beautiful chute here. I want to get a good description out before we got into the - the drink here. I'm preparing for impact by disconnecting the visor hose.
09 10 01	CC	What's your altitude, Wally?
09 10 03	P	Say again.
09 10 06	CC	Altitude?
09 10 07	P	I'm now at about 6,000 feet.
09 10 12	CC	Understand, 6,000.
09 10 13	P	That's correct. I'm not rolling at all on this chute. Okay I've got that darn visor hose off, and the Velcro strap loose. Visor seal is dumped. I take off the exit hose from the helmet - and stuff that up in the toolies. I'm not even hot here, Gus.

HAW-6

09 10 55	CC	You say it's hot.
09 10 56	P	I am not hot. I am very comfortable.
09 11 01	CC	Say again here. Just don't read.
09 11 03	P	I am very comfortable.
09 11 07	CC	Talk slow. You come in clear then.
09 11 09	P	Roger. I am very comfortable.
09 11 14	CC	Very good. We understand.
09 11 17	P	I want to stay aboard.
09 11 22	CC	. . ..
09 11 24	P	I am turning off ASCS bus. I'm going to get rid of these coolant valves that the fellows wanted, they're all going to 0. And I hear the aux beacon already.
09 11 58	CC	. . ..
09 13 06	P	I am about ready to impact now. I'm just about on the water.
09 13 46	P	Oh! stay dry baby.
09 13 52	P	Okay. It's taking a while to right itself but I think I've got the small end out of the water here. Can you read? Over.
09 14 01	Flag Plot[2]	Roger. Sigma Seven. Flag Plot. Are you stable and on the water?

[2]Communicator onboard the recovery vessel, U.S.S. Kearsarge.

09 14 05	P	Looks like I'm stable on the water. The whip antenna is up. I can see it. I will switch to whip antenna.
09 14 13	P	I am definitely canted over pretty far, but there seems to be no water in the capsule, and I am very comfortable. She is righting herself very nicely, at this time.
09 14 23	CC	Roger. Carrier has you visual and the helos are on their way.
09 14 28	P	How about that? That's great.
09 14 32	CC	Do you still feel better?
09 14 33	P	Oh! I always feel better. There, she's getting nice and straight now.
09 14 42	CC	Say again, Wally.
09 14 45	P	She's getting up there nice and straight now.
09 14 49	CC	Talk very slowly. I have difficulty reading.
09 14 51	P	Okay. She's almost erect in the water at this time. I'm going to put up the whip antenna, Gus, and turn the squibs off. Standby.
09 15 05	CC	I'm sorry, Wally. I didn't read that.
09 15 09	P	Okay. I have put the whip antenna up, and I'm turning off the arm squibs.
09 15 17	CC	Whip antenna is up. You're turning off the squib arm.
09 15 20	P	That is correct.
09 15 22	P	Okay. I'm going to check the cockpit, to be sure we don't get the boys in trouble. Everything looks real good, Gus. This is a real sweetie pie of a capsule.

HAW-REC-6

09 15 34	CC	Roger. I agree.
09 15 36	P	I am in comfort, absolute complete comfort. The suit inlet is now 72 (degrees), the cabin is about 98 (degrees). That's all. I feel very comfortable.
09 15 51	CC	Roger. Repeat the last part before the very comfortable.
09 15 55	P	The suit inlet temperature is 72 - 72 (degrees). The cabin temperature is 98 - 98 (degrees). I'm going to retract the scope manually to get it out of the way for the boys when they come around.
09 16 27	CC	Wally. You landed about 9,000 yards from the carrier. How about that?
09 16 30	P	That's pretty close isn't it?
09 17 33	P	Boy this is a sweet little bird. I just can't get over it.
09 18 10	CC	Wally. Hawaii Cap Com.
09 18 12	P	Go ahead.
09 18 16	CC	Recovery has been advised of your status. You're comfortable. They see the whip antenna, and they are on the way.
09 18 22	P	Very good. I am very comfortable.

RECOVERY

09 18 33	R1	Hello Astro, Hello Astro this is Swiss One. How do you read me. Over.
09 18 37	P	Roger. Swiss One this is Astro. How are you today?

09 18 40	R1	Fine, fine. Got your squibs off. Give me a short count, please.
09 18 44	P	Roger. A short count follows: 1 2 3 4 5 5 4 3 2 1. This is Astro. Sigma Seven. Very happy to be back in the Pacific league.
09 18 57	R1	Good. Glad to be able to talk to you.
09 19 00	P	Oh, it's a good habit.
09 19 06	R1	Hello Astro this is Swiss One. We have you on sight. You're looking good from here, on the green dye.
09 19 16	P	Roger, I seem to be bathing in it, don't I?
09 19 20	R1	Roger. I'm going to fly overhead, come back around and drop the swimming team.
09 19 23	P	Okay. Good show.
09 19 32	R1	Wally. You look fine.
09 19 34	P	Good show. How's it? She looks pretty erect to me. She's canted off a little bit towards what would be my left side. Is that correct?
09 19 42	R1	That's affirmative.
09 19 43	P	Roger.
09 19 46	R1	Okay. We're going, now coming in with the swimmers.
09 19 48	P	Roger, Swiss One.
09 19 54	P	I can hear you now.
09 19 55	R1	Roger. You've got four helicopters overhead.
09 19 59	P	Oh, that'll do.

REC-6

09 20 18	P	Tell the fellows I am perfectly comfortable. I can wait as long as they want.
09 20 22	R1	Understand.
09 20 23	P	Okay. Don't tell them. Don't let them get their hands cut on something on here - go at it casually.
09 20 30	R1	Roger.
09 20 31	P	Thank you.
09 21 12	R1	Okay, Astro. The swimmers are in the water.
09 21 14	P	Roger.
09 21 30	P	I see a little old string hanging along down the side here. Oh! That's my dye marker.
09 21 36	R1	I see your die marker, is very bright green.
09 21 39	P	Yeah. I can see it through part of my window. Apparently, what I was looking at was the piece of string and that was the dye marker. Howdy fellows!
09 21 51	P	Do they know I'm all right. I assume, I heard them knock on the capsule.
09 21 54	R1	Astro. Understand you requested you - you want to remain in the capsule? You want to know if we know that?
09 22 00	P	I assume they do. Don't they?
09 22 03	R1	Right.
09 22 15	R1	Astro. This is the Swiss pilot. The carrier is about three quarters of a mile - closing.

09 22 24	P	Okay, pilot. I think I would prefer to stay in and have a - a small boat come alongside and using your collar routine, of course, to support me, and having a ship pickup. Over.
09 22 38	R1	Roger. Understand. You want ships small boat. Will give them that word right away.
09 22 41	P	Okay. I think they are briefed to make a - attachment with a small boat and then hoist me aboard.
09 22 51	R1	Please say again, the last.
09 22 54	P	I understand that this is the Kearsarge, is that correct?
09 22 57	R1	Affirmative.
09 22 59	P	She is briefed, I understand, to bring me and the capsule aboard together.
09 23 05	R1	I'll wait one.
09 23 06	P	Okay.

3.0 ASTRONAUT'S SELF-DEBRIEFING

3.1 Countdown and Powered Flight

The countdown itself went off very successfully; there were absolutely no problems. The only delay was caused by the Canary Island's radar system, and this proved to be worthwile in that the trajectory was well defined, and upon horizon time at Canaries, I did hear that they had good radar acquisition.

The boosted flight itself was disappointingly short. By this I mean a lot of training is done to get a feeling for the emergencies that may occur. Unfortunately, the emergencies that we practiced so often either in the Procedures Trainer or Procedures Trainer correlating with the Cape-Bermuda aborts makes the most pronounced impression upon you. This in contrast was a successful, normal flight where you have many new experiences. I still believe that the amount of practice we had prior to insertion is important in that you must be prepared for reaction to an emergency, rather than thinking one out.

3.2 Powered Flight

There is no doubt about lift-off. If anything I was somewhat surprised about lift-off occurring earlier than I anticipated. I heard the verniers start felt them thrusting; I heard the main engines start. I decided not to have the mirror down, although I had considered this in order to observe the engines actually lighting-off and the cooling water starting. But with the mirror down I would have covered the rate indicators, and I wanted to monitor those during boosted flight. During ascent the communications with Cape Cap Com were perfect. I never felt rushed; all the events were in order.

I had as much, if not more, time than in the simulator to make my checks; my scan pattern was developed to where it was instinctive. I thought from my training that I might have missed on making a good electrical check prior to three minutes, really subsequent to tower jettison, and I found that I had completed that in time. There was absolutely no doubt about BECO. The change in acceleration was quite obvious. In the trainer itself you seemed to wait for the acceleration forces to decrease. There is no doubt in your mind whatsoever, that these forces decrease in actuality. I had in my mind, since beginning this mission, check-off points for various emergencies; for example, a no-BECO abort, a no-staging, and a 3 plus 50 abort. It was a very pleasant feeling to check each of these off and put them behind.

I knew that I had staged without having to wait for confirmation from Cape Cap Com, which by the way, did come in rapid order. You can detect the flashback (smoke) of the booster stage as it parts from the sustainer, and you can see the escape rocket leave, and I am sure that the

rocket blast left a film on the window. I made a remark on the onboard tape about that during flight. The film that was left had colored splotches that were somewhat of an orange color. This could have been the orange paint from the base of the tower system, or it could have been some of the RTV-90. In the various viewings through the window as the sun crossed it, particularly during the drifting period, particles and filmy streaks were quite evident on the outer window surface. This area definitely should be protected, as this does diminish your visible field.

Proceeding on through boosted flight -- I did feel that we had a rather slow acceleration during the sustainer period which I was prepared to see, and it just surprised me that it was truly that way. I guessed that SECO was somewhere around 5 plus 15, even as late as 5 plus 16 which was about the end point that SECO might occur. As a result, I was trying to struggle with my left hand to come up to the Aux Damp switch, and realized there wasn't much I needed to do about that; so I remained comfortable in the couch. The forces in boosted flight as I have mentioned, seemed to be much less than the forces experienced during reentry. This I'm sure is best explained by the fact that you have a breathing point at BECO, and, of course, have a rather fine breathing point for G drop-off at SECO. Reentry on the other hand is a steady build up of G and is equally as exciting as boosted flight.

3.3 Orbital Flight

At SECO the capsule lighting did not seem to help very much. The lights themselves were somewhat dim, and I knew the events better by the feel and sound than I did by the effect of the light itself drawing my eye to it. I immediately selected Aux Damp and knowing from my previous training that there was no rush, I selected Fly-By-Wire Low, then came back and placed the Mode Select Switch in Fly-By-Wire and commenced turnaround. I resisted every impulse to look out of the window at this point, as I wanted to make the turnaround a fuel-minimum turnaround. The turnaround obviously in that case was done on the gyros. I discussed the turnaround as I was performing it and got exactly what I wanted -- approximately four degrees per second left yaw and had no trouble with any of the low thrusters at this time or ever after. I believe I got into retro attitude at about six minutes and 50 - 55 seconds. By this I mean in retro attitude to where I could have accepted retrofire if I needed it.

I selected ASCS -- and dropped into this mode without any high thruster action coming on. I do recall ground stations stating that high thruster activity was detected by Bermuda at this time, or this might have been in a subsequent pass over Bermuda. At no time, at least at no time prior to interrogation about high thruster activities, did I ever experience any. And I am positive that I could easily judge high-thruster activity as compared to low thruster, since I did use high

thrusters later in the flight.

Proceeding on to the Canary Islands, the flight itself was textbook already; it felt very simple. I never did feel rushed; I felt that I could send a blood pressure, for example, and had not much else to do. After turnaround I was very intrigued by looking at the sustainer itself. I was somewaht surprised to see the sustainer engine near me where the adapter section was far away. By this description I mean that it was basically in an attitude where it must have turned lengthwise 180 degrees. It was moving very, very slowly in relation to its insertion attitude, although it had managed to make 180° turnaround during the time I had made my 180° turnaround. I was also impressed with the fact that it was almost black in appearance rather than the silvery, shiny vehicle that I had seen on the gound. And the white belly band of condensed moisture, the frost itself, was apparent to me. It followed the exact path that was predicted, and this helped me very much in satisfying myself that we were flying with good horizon scanners. It tracked down through the window as advertised. I did not see any crystals coming out of the sustainer engine as Scott Carpenter described it

There was probably no greater feeling than the statement from Cape Cap Com that I had a seven orbit, at least a seven orbit capability. I got a good ten minute check from the Jettison Tower and Cap Sep lights going out. They went out, I'd say, at about 10 plus 11 or 12 -- a little later than the predicted numbers, although this too is not significant. The fact is, as I think back now, they should have been even later than that, since we had a late SECO as compared to nominal SECO of 5 plus 05. So I just realized now that this should be later. I believe I had LOS with Cape Cap Com prior to ten minutes. Although I had everything under control, I did store away all of the events that I had performed, meaning by this switch positions to relay to Canaries to satisfy the Flight Director and the gang back at the Cape.

At about 10 plus 30 I went to Fly-By-Wire Low, again, and tracked the sustainer as it traversed down through the window, and it was a thrill to realize the delicate touch that you could have with Fly-By-Wire Low. This delicate touch is an art that a pilot hopes to acquire in air-to-air gunnery to get some hits. In this case the control system was so sweet that it just amounted to a light touch and a few licks in either axis to get the response you wanted. I could point the spacecraft at anything I wanted to. I did feel while looking at the sustainer that, "Yes", I could see it, that I could track it, but I did not feel that the two relative motion problems would be so easy to solve that I could blithely say, "Yes", I could steam along and join up with him.

I feel that the relative velocity even though it was on the order of possibly 20 - 30 feet per second different, was enough to cause a problem, particularly at this time where you are becoming acclimated to a new environment. These problems would be difficult to solve by your own inherent trajectory analysis -- the idea of affecting a rendezvous. I think that when you build up to a rendezvous you'll need more time than just right at the point of insertion to affect this. For example, if you asked me, if I had another flight tomorrow -- with as much intimate knowledge as I have now of the system -- could I have affected a rendezvous after insertion? I, frankly would hesitate to say, "Yes".

At Canaries, the flight itself had settled into a very normal pattern. I was content with the autopilot function. Having pitched up with Manual Proportional, I was content that the system was exactly as I felt it would be. The Manual Proportional system that we have simulated in the Procedures Trainer at the Cape now is almost identical to what I experienced in flight. I don't think I could judge one thing different than the other, meaning that MR-4 pilot's description of the Manual Proportional system was very accurate. The greatest effect I did notice was the tail-off rather than the response to control input. As a result, you have a tendency to overshoot, and you can't park the spacecraft in the attitude you want it in without having to counteract and then recounteract a tail-off. As a result of this evaluation for almost every case where I went from Manual Proportional back to Automatic mode, I switched to Fly-By-Wire Low to kill these small rates down to where I could transition to Automatic mode without going into orientation high thrusters. And to my knowledge, except for two goofs which I will discuss later I did not get high thrusters.

Africa itself, I didn't have much chance to assess as a viewing sight; I was much more interested in what was going on inside the vehicle. I did, of course, notice the desert terrain color of Africa; I found it very difficult not to notice it. The country itself was exactly as I anticipated from the chart I have in front of me at this time. Although at this time I also was well aware of the fact that we were working up to a suit system cooling problem. I decided then to devote my primary attention to solving this situation before I got yanked out of orbit. I was well aware of that fact that people were probably jumping up and down thinking here we go again on another suit circuit crisis. And with proper concern I decided that I had better solve this one. We've had too many simulations in this area and this one was real.

Each station was a pleasure to talk to, particularly on the first orbit where my enthusiasm to communicate with the range was highest, but as we succeeded through subsequent orbits, communications became not a nightmare, but at least an interference with the flight, and I do recall

literally complaining about people calling incessantly -- trying to get contact with me. If something's going on that is critical, if you need to get something in, get it in, broadcast in the blind. I continually told stations, I recall telling Hawaii Cap Com to flip this around the net-that I was reading everybody when they were trying to call me -- if they had an important message, to flip it in, and as everyone may recall, at California they had experienced a power failure. California Cap Com sent me a new retrosequence time for end of orbit, 08 51 33. I plunked it in, and the Cap Com, in the blind, did after about three transmissions or two acknowledge that he saw the change. And this, too, is truly an answer to his communications. So if there is something than can be read on the ground, accept this as a "Roger" rather than having them carry on any discussion. I thought the California Cap Com handled that beautifully and was a very commendable job. Continuing around the orbital path the communications went well.

I did not want to leap into a high setting for the suit circuit. I wanted to increase, as I said I would do, the flow settings about half a mark every ten minutes, and if you realize I had to go from four to eight; this represents about eight half marks. This would take about 80 minutes. You must give the pilot time to settle down on these things. We had all agreed that it would take about ten minutes to get a new change. I would say at a setting of about seven I had arrested the increase in suit temperature and the increase in dome temperature and I needed, I'd say, about another ten or fifteen minutes to get where I was going. I did not want to "zap" the system. I felt that I had everything monitored. I saw the temperature going up as I increased flow; the temperature rate was decreasing. The request from MCC was valid. They did not have as much information as I did on this, and finally after many requests from each station, I agreed that they may have made an analysis that I had not. Therefore, I did back down to number 3 position, gave it about ten minutes and saw both the dome temperature and the suit inlet temperature increasing again and I immediately went from there to about 7.5 and arrested the temperature increase.

Continuing around the orbital map, I do feel that we had as much information as I could give during the flight recorded. Unfortunately, I too had the same concern that the MA-7 pilot did -- that in the VOX Record position only, you aren't recording. This is only because you don't hear side-tone. I did check this on the pad, and for some reason or other I had the feeling I would hear side-tone. I'm somewhat confused about this, and I suggest that we all check this out again, and I only can pray that we did get something on VOX Record position only.[1] Some of these things are destroyed in your work, these confidence things, by all the GSE cabling. I think we need a little more practice in the capsule without all this GSE

[1]The recordings were normal.

cabling, the MOP circuits coming in, and depend upon the capsule once in awhile. We changed batteries often enough that we can afford to give a man a fully integrated capsule check-out run sometime back prior to SEDR-77 to get used to how the capsule runs on internal power. This might alleviate this concern I had as well as the MA-7 pilot had about recording in VOX Record only position. I feel very strongly about using this position. I wanted to conserve electrical power; I believe I did. I was thrilled to see how high the battery voltages were reading subsequent to landing. To me, although we don't have a system for measuring the actual electrical power remaining, these readings are a cue, and I was very impressed with the high voltage readings subsequent to landing.

I don't believe I need to discuss the weather, the sun, or the stars. I would like to discuss what went on in the cockpit. Each station I believe got as much information as I had available to give them. Once we nailed the suit circuit down, and I began to feel cool, I knew we were in Go status, I had achieved my goal of using minimum fuel. I had planted the seed long ago that I wanted to do some control manuevers other than in automatic mode. I also had stated, and I think I have proven it, that I did want to use the Auto mode when I got bored with flying it, and this is what the heck the thing is in there for, in my estimation. Admittedly, we have taken over a system that was built to be completely automatic and then tried to get some switches in, and some versatility in, to give man a capability of making the vehicle do what he wants it to do. I had satisfied myself with my capability of controlling the vehicle before I got to Canaries, and I made that report. From that time on, I merely wanted to make observations that seemed to have merit and use the control system only at those periods where I had to re-establish the attitude within the limits required to drop back into the Auto mode. Immediately, while crossing the Atlantic to the Canaries, yaw attitude was evident to me. The simulation that Flight Crew Operations Division at Houston brought to the Cape is as graphic a simulation as I can ever try to duplicate other than doing what I did yesterday. This is a very fine simulation of yaw. I discussed that on onboard tape, I don't believe I need dwell on it.

The weather chart that was prepared for me was ideal for the use, I found, in that I seem to be now approaching cockpit equipment that, again even though I had cut things down to the bone, I still had too much junk to play with in the cockpit. The star charts were perfect for the use that they were required for. Unfortunately, in that we do have the potential of a hold -- during launch we must carry excess star charts. They were annoying. I ended up using the one star chart we intended to use for launch, and it was quite accurate and most satisfying to me -- particularly the planets. This is one of the most important additions to the printed star chart. Knowing the location of a star or a planet on the chart, you could actually pick up roll and pitch as well as yaw from it. Particularly the cluster that I used centered around

Fomalhaut. Jupiter was in the right corner of the window in retroattitude Fomalhaut was just coming into the center of the window on track, and the constellation Grus which consisted of a series of double stars was aiming right to the yaw reference. If anyone needs to check me on this merely look at the star chart at approximately 1 hour plus 24 minutes, and the grouping will show. This was a perfect reference prior to approaching the Pacific Ship retro time.

It was rather strange; I had gone on record very strongly about not having excess requirements for blood pressure, and I doped off with this new change, which was new to me, of not turning off blood pressure. So, I had a novel approach at least. I was having a series of regrets to turn off blood pressure. As I wasn't rushed on the flight, this was not a critical problem, and I did not feel concerned about it.

The comradery of everyone concerned with the flight preparations and equipment meant a great deal to me. The thrill of getting into the vehicle, seeing a key on the control stick pin and the big kick I got out of finding a neatly wrapped sandwich in the ditty bag--all these little things do really help to make you realize that there are a lot of other people interested in what you're doing. We know this inherently, but these visible examples of it do mean a lot. I think its about time I got over this serious I-hope-you-live-through-this-type-of-thing attitude and settle down to our routine aspirations which I think we are approaching as a result of this flight. I feel very content that we have truly had a textbook flight out of this one.

Going back to the equipment -- looking at the slide-out charts that the backup pilot thought of for the glove box, I can say this was the best idea we've ever had for personal equipment within the vehicle. It was very easy to keep up on the flight. The only thing that could be lacking from it would be the actual graphic picture of the surface of the earth. This isn't important really. I've had the philosophy ever since I've flown airplanes that when I want to look at the surface of the earth, it's when I'm preparing to land, and this is about what I did on this flight. It was interesting to look out and see it. I used the window, and I refuse to do without it for attitudes. I assessed the periscope; felt I gave it a fair shake and would go gladly without it again. In fact, prior to retro itself, I had the periscope covered continually with the chart of the surface of the earth and the retrosequence times. I did not need a how-goes-it for the fuel, as I had fuel remaining in the right hand margin of the pull out flight plan. They did start to jam towards the end of the flight only because the paper surface that was attached started to peel off one of them as I would put them in and out again frequently, and this would start to tear them. I do believe that these should be used, as I had used them, as a writing surface.

The intermediate reports were rather fun to give when I passed over a station; as an example, at five hours I made a copy of the intermediate

report, and when I passed over Indian Ocean Ship at five hours and twenty minutes, I was supposed to give the intermediate report. And I noted it was exactly the same as the report I was giving over the Indian Ocean Ship, and this is logical in that I was in drifting flight at the time. I have notations on the clips that I pulled out, and unfortunately I missed the back of one where a little smue or smoe was sketched in where it says "Blank, isn't it?". I am getting a kick by looking at it now, but I didn't see it in flight. The camera and the ditty bag are a mess. I had a lot of trouble working with it. It was a wrestling match. My initial interest in the camera was not high as many people at the Cape may recall but when we had to go with a camera, at least I was sold on the idea of having to go with it, I decided we would go first class. I don't believe I took more than about ten or eleven color pictures and possibly about fifteen black and white.

I was depressed about the tremendous quantity of cloud coverage and apparently this is going to be our bug-a-boo forever on space flight. Africa on the first and second pass was CAVU. The states were CAVU when I crossed over the ridge along the Baja California peninsula and was very good to see, although only out of curiosity. I could see yaw attitudes very easily from it as well. I believe the charts I carried with me in the chart folder were sufficient, particularly for any problem areas.

It was rather fun as I said not to worry about fuel usage. And I feel in my mind, that the Manual Proportional is not necessary as a control system requirement since it definitely did not give me what I wanted, and I feel that I would like to fly next time with two fly-by wire systems. We've put that to bed.

The computer for the star charts is definitely a liability. It worked perfectly, but it's another device you've got to move around the cockpit. Somehow or other we've got to have that computer as a circular slide rule for the next mission, and I would suggest that it would be affixed to the glove box door face, so that you can look at it at any time merely set it when you need it. I definitely had the feeling during the night passes that I was not as well equipped as I could have been on finding constellations. If you are drifting, and we do intend to drift on a long mission, you can't sit there and keep track of what the drift is. By this I mean, as you drift you pass over, pass through as far observations are concerned, a dark sky and a horizon, sometimes inverted, sometimes rolled, you pass through a field of view where you look at the earth again. You see yaw attitude -- bang -- just like that as you see the surface of the earth, then you come back up through the sky again. When you are on the dark side your only reference is the horizon and a known star. I could see yaw attitude with the stars. I definitely knew which way I was headed. But I did feel uneasy in that I could not find my pet star or pet group of stars for a fixed yaw reference, meaning attitude rather than rates. And as a result I did a lot of straining looking over a larger field of view bymoving my head way forward. I imagine I got some good

exercise during the night period trying to find some old buddies that I could use as check points to find some of the fixed stars. Orion did show up at one time and this surprised me, and I chased it all the way around, and I believe I used Aldebaran as an extinction star. The experiments to me from the beginning were not the prime reason for making this flight, and I'm afraid they did'nt get much attention. But in addition, I did feel that I had a real good grasp of what the Mercury capsule did consist of.

When I acquired yaw in attitudes as I came over Muchea on the third pass -- this was prior to the end of the third orbit retrosequence time -- I was very pleased when I talked to Muchea Cap Com that he and I agreed exactly but for possibly a 4 degree error in yaw which did show as well on my capsule attitude, meaning that the yaw indication was 4 degrees to the left, and this is what he had called out from the ground. His scanner readings were right on with what the attitudes were, and I had just acquired these attitudes just shortly prior to Muchea by using the moon and the planet Venus adjacent to it. They actually showed up over Indian Ocean Ship and were very easy to work with. They both lined up to give me roll and pitch as well as yaw attitude. The air - glow was rather surprising at night. It was much, much thicker than I imagined. I'd say it represented about a quarter of the field of view out of the window when I was in retro attitude, and this surprised me. I thought I was looking at clouds all the time until I saw stars down at the bottom of the air glow. This was probably the biggest surprise I had in the flight. I never did really get a good feeling for it from the MA-6 and MA-7 pilots. It just never did sink in to me that it was as large in magnitude as it really was. I think its best if I could sit down and sketch what I saw rather than try to do it with words, so that the next pilot can see this. Words somehow or other don't seem to do the job. We need to do some more blackboard time is what I'm getting at. I was very pleased with the fact that I could visually determine attitudes on both the day and night side.

I'd like to leave the equipment at this point. I feel we've discussed it as much as it need be and go into the ditty bag. I could not get to the food cubes. I did not feel I had a requirement to get to them; I was not that hungry. I ate the peaches first, which is what I was looking forward to eating, and finally I felt I better get some more water in my system and some more food in, since I had been without food for an extended period. I never did really feel hungry; I ate because I felt I should. And I took the beef and vegetables which were very palatable.

I wanted to avoid taking water during the early part of the flight only in that I felt that it was important to keep the suit circuit as a closed system until we licked it. And finally, when I had it pretty well under control, I took a fair amount of water. I don't feel even now that I dehydrated myself. I probably did lower my water content, and I think

this was only due to the protracted period on the pad I urinated frequently while I was on the pad. I think possibly it was three times. And this I understand is due to the system accepting the fact that there's too much fluid in the abdominal structure, and it says it is too fluid -- we're cooled up, let's drive some of it out -- and it passes off water into the bladder. At least that's the routine I followed

I had a real wrestling match getting the camera backs out of the ditty bag, and they were in the optimum position. I got all the little junk out and spread it all over the place. It took me a long time to get the dosimeters off. There was too much Velcro on them. As a result the force required was fantastic to part the dosimeters from the Velcro of the ditty bag itself. In addition, the flaps that secure the cover of the ditty bag were continually getting stuck to the internal hook area of the ditty bag, and this was driving me batty. I finally got plain out and out disgusted with the whole thing and ended up just ignoring the ditty bag finally and stowed the camera much earlier than I intended to, just to get rid of that problem. I was much more interested in what we were doing with the capsule.

I felt that we were well aware and prepared on times. The chart that we had prepared for keeping track of the appropriate retrosequence times was perfect. I notice that my writing is quite legible. I am looking at the chart itself now. And the errors were of a magnitude that would require my making a change and this is great. We really followed our original philosophies. I didn't see a change of less than about 14 seconds, and we had talked about 10 seconds as nominal for a change; therefore, every change that was given to me was in order. I notice here, I have two notations looking for Echo. Possibly my mind was much more concerned with what I was doing than for external observations, and as a result I didn't give them the proper credit. There was one observation to be made at 20:17:30 GMT, azimuth 99.5°, elevation 90°, and I immediately in my mind accepted the information but rejected the attempt to look for it as I did not want to distract myself from the inside of this vehicle. I am only going to apologize in that I don't feel that I would want to join the astronomer's club at this point; I frankly wasn't interested. The numbers I have here I spend about two or three minutes on reviewing trying to figure where in the devil am I supposed to look with these numbers. But I probably should have had these numbers given to me in relation to a known attitude and looking in a known direction. I'll let that one drop.

It was sort of fun to talk with California Cap Com when we came over California on the IV loop. I suppose this will be something different from what we've done in the past, and I definitely felt very comfortable with each of the fellows. It was a real treat to pass over each station and realize that they're as excited as I was and as envious as anyone could ever be. I think we should give John Glenn a

day in court on his 'fireflies'. I think in debriefing we should cover this more carefully with John and Scott.

3.4 Retrosequence

I'd like to get to the retrosequence and fold up this debriefing. At the nominal retrosequence, Pacific Ocean Ship Cap Com gave a perfect count; I felt content. Sequence and Attitude light came on on time. I was sitting there ready to punch retrosequence. I did have the cover off and put it back on again. The capsule was stiff which was what I wanted. At the time of retrofire, it seemed agonizingly long from when the retro should have fired and when it did fire, and I'm sure it was probably about 0.1 of a second. This is probably the most critical time of the flight, at least subsequent to insertion, when you know that these babies have to work. Again I was poised to punch off the Fire Retro button and back it up -- I had the cover off again and put it on I guess sometime after. I did notice at least that I had the cover back on during descent. The retros were crisp, clean and each one was a definite sound. I felt that there was no doubt in my mind that each retro was firing. It was as obvious as could be. The capsule, if it varied as much as half a degree, I'd be amazed. It may show up that much on the tape, and I was watching those rather than anything else. I satisfied myself that the attitudes were clean; I had checked out the window and had plenty of cues in case things did go to worms. The attitudes were holding on like a nail. I could see stars that didn't even quiver. I was using cross-checks. I figured the ASCS was working well at this time, since I was checking it against the outside. I didn't even look at the periscope. In fact, it was a source of problem in that I was getting sunrise light through it and it was more blinding that anything else, so I threw the dark filter over it. This I think should put the periscope to bed. I had no feeling whatsoever of wanting to use it to back up the retro.

3.5 Reentry

Subsequent to retrofiring, I went to fly-by-wire. I had the Retro Jettison switch armed in time. The retros pickled off, -- I was flying in fly-by-wire, of course, it seemed a little bit sloppy, too; I guess I was probably excited about the fact that the retros did fire and wasn't the cool head that I thought I was. The attitudes went off maybe ten or fifteen degrees in roll and probably that much in yaw and pitch. Not truly sloppy flying, but it wasn't up to my standards. I then brought her up to reentry attitude on fly-by-wire and intentionally licked off a

couple of high thrusters just to see what it felt like. They reacted very well. I should go back prior to retrosequence. I checked the high thrusters then, and on the first demand for each high thruster in all three axes, it lit and acted beautifully. It was a tremendous feeling to know that we have no problem with the high thrusters becoming cool.

After the retrosequence events -- correction -- After the retro events in reentry attitude, I did not want to park in Rate Command and flip out a batch of fuel. I have always felt that RSCS was the most expensive fuel-consuming system in the vehicle, and it sure proved that. I believe I hit retro with 78/78 which was higher than my mark, and I was quite pleased that I had that much. After retrofire the Auto fuel was somewhere around 52 or 53; these numbers I don't feel I need to remember. We've got everything recorded on onboard tape, voice reports, ground reports, and they're details that I am not going to try to carry right now. I did get into reentry attitude, happily. Felt very comfortable with it. The scope retracted on time. When we were in reentry attitude, I noticed that the capsule was still a little sloppy; I tightened it up and then went into ASCS mode or Auto mode. I wanted to see if the logic had picked up for reentry, and it plopped right in and held beautifully. Then I set up Rate Command to give it a small check. It responded very well. I was satisfied that the system was working and was so satisfied that I even came up with a requirement that was way out in left field as far as remembering it and as far as importance is concerned -- but I did zap off a blood pressure. This is how content I felt at this time.

Then I noticed frequently during the last orbit I had trouble seeing the left side of the cockpit. This was due to the water splotches that blew up on the inside of the faceplate, and as a result, I had to use the fingertip lights frequently and tilt my head to get a clearer section through the visor to see various switches. And I checked and double checked frequently to be sure everything was in its proper position.

At any rate, my cue for .05G was the roll rate coming on rather than the .05G light, and this is perfectly normal. I don't think there is anything unusual, but that was my cue. I wasn't seeing well on the left side of the cockpit. Again, I say this was the splotches on the visor. Coming into the actual penetration -reentry this was a very, very thrilling experience. The vehicle with a roll rate is something you just can't possibly visualize in your mind. It's a real nice slow series of slow rolls, and you really feel like you're back in the old fighter seat just playing games. Looking out at the sky and at the surface of the earth which was starting to brighten up, the roll pattern was very slow and deliberate. You could sit there and integrate your attitude out of this

very easily, and I knew that the spacecraft was as stable as an airplane. It was beautiful.

As we started winding up the g's I could see external cues which were of great interest. It didn't seem to influence the flight any, but from a curiosity standpoint it was quite exciting. I missed the hissing that John Glenn and Scott Carpenter described. Possibly because I was concentrating so much on how the RSCS system was performing. I was prepared at any time to throw it into Aux Damp. Remembering that we started with 78% RSCS, I probably consumed half of a percent, at the most, checking it out. We really sucked out a batch of it during that reentry; I mean before drogue. After drogue, of course, it just drained right on out. But before drogue, that system must have been down to about, I'd say, 25 to 20% fuel remaining. As expected this is a terribly expensive mode.

I had two occasions in my mind where I felt I would come off RSCS and go to Aux Damp. And if you recall from switch positions this meant moving the Rate Command switch to Auto; that was all. Watching this fuel flow looked just like a fuel flow meter. The manual tank was visibly dropping, almost like a leak, at least a leak as approximated in training. Yet, I wanted to give it all the breaks it could have. The second time, I noticed that I had the sense that I wanted to go to Aux Damp was when the rate left the nominal 2.5 to 3 degrees per second, particularly in yaw. Pitch seemed to be tighter than yaw. At one time I had a large yaw rate that went off-scale to the left, and then it held to about 5 degrees per second and then did the typical fanning that we have seen in the training that we had at Langley on reentry. It started to hold again so I gave it all the breaks I could and let the system take it all the way through. I did not ever switch to Aux Damp. I knew I had fuel in reserve. I was perfectly content with the ASCS logic and felt that I had a powerful system backing me up, and I wanted to put RSCS to bed.

I did see the green glow from the cylindrical section. It was a very pretty color; probably best described as a limeade color, a little green and chartreuse mixed together. A little stronger yellow than I had heard from in earlier descriptions and did not see any distinctive differences as I anticipated with the different beryllium panels or actually panels that replaced the beryllium shingles. There were no variances in color, not a chromatic effect or rainbow effect. I did see something -- that I recall the MA-6 pilot mentioning, and he mentioned it as if it were part of the straps going by or decelerating faster than he, and it looked like something that was, oh, I'd say about the width of the strap and probably about three feel long, two to three feet long, which again in my mind approximates the retro package straps. This was well into reentry. It was during the period of time when I saw the green glow, and I definitely said, "My

gosh, that's the same thing John saw!" And it must be something else because that retro pack really shoved off when it jettisoned. It was a real healthy "clang". I knew it had shoved off, and yet, we had suspected I wouldn't hear it. Every event, by the way, throughout the flight was a definite sound, and I never did miss an event by a sound cue.

The drogue I punched off at 40,000 feet. The altimeter came off the peg very nicely. I don't recall monitoring rates of descent prior to drogue nor subsequent to drogue although it sticks in my mind that I saw something like a 120 to 140 feet per second while on the drogue. There was a definite, strong thrumming accompanied by the drogue deployment, sort of like being on a bumpy road. The G pulse on reentry was not severe in any sense of bothering me, but it seemed to take much longer than I anticipated. And this was predictable, but it's just one of those things that you can't seem to approximate in real time even on a centrifuge, which I was on just recently. I guess it's just awfully hard to pack all these cues and inputs into your mind and just pull them out at the drop of a hat. Physiologically, I never felt any strain as far as the reentry went. Each event came into place as happily as I wanted them to. I was probably about ten or fifteen seconds slow on getting the H_2O_2 Jettison Fuse Switch on, and this I can only blame on the intrigue and interest in looking at the drogue up there pounding away.

The window definitely was occluded much more by the reentry and I should mention what I saw on the water which I believe might have been taped, too, but after impact the water -- I mean long after impact -- the water from the recovery paramedics and their suits, was washing this deposit off there. And you could see that it reacted much like molten sugar, and it was reacting in the same way in that it was water soluble, and it washed off the window much too fast for any of it to be left. There might be some of it in the very corners of the window, near the cylindrical end of the vehicle. It really did diminish the visibility through the window. It was not brown and splotchy as it was after impact. This I am sure was a result of the water affecting it and cooling it too rapidly. The view through the window was changed considerably by the reentry phenomenon.

I guess I should mention that I armed Recovery right at 15,000. The main chute I would estimate popped at about 10,500 maybe 10,600 and -- darn right fellows -- it was just as pretty as everyone of you have described it. It sort of puts the cap on the whole thing. I did prepare for landing, but I did not hook up the survival raft to the suit. Again I feel that this is one of those things you just don't see very easily, and if you don't see very easily, you are not going to take care of it. I had a lot of

trouble with the water tube -- trying to get it stowed. Almost anything on those consoles, be it the left or the right console, are very difficult to work with. And I guess I just said, "I'll take my chances on whether I need the survival pack or not."

On landing, the spacecraft went way down in the water, I thought. I felt as if I were horizonal, and I was sitting there swearing a blue streak at not having that pressure regulator handle in there to lock that "bear" up. And, by gosh, if we ever launch another one without it, I'm going to be overridden, that's for sure. The handle would have made me feel so much better, and I had plenty of time to set it up and lock it. I even thought about wanting it at about five or six thousand feet as I went through my preparation for landing.

I did not during the flight at any time lower the leg supports. I don't know why. Probably again because there was only one set of the darn things available and that was in the actual capsule. I used them at the centrifuge in Philadelphia, but I never really used them at any other time. At egress on the carrier itself is when I first thought about them, and I moved them out of the way to get my legs out of the couch, or out of the spacecraft itself, with more ease. The spacecraft seemed to take a long time to right itself, but I was prepared for it to take a long time to right itself and was just sitting there swearing rather strong oaths about the fact that I couldn't guarantee the capsule was going to stay dry. And when the capsule finally started to right itself, it was a very, very pleasant feeling, and at that point I knew I could stay in the spacecraft forever, if necessary. The suit inlet temperature was 75 to 76, and the highest it got right up to egress was 78, and this won't be recorded anywhere except by me. I know I said it countless times. I gave readouts on everything I could read.

(At this point the reel of tape ran out. The recorder was reloaded and the Astronaut continued.) I'm not sure where the tape ended. I'll go over the effects of after-impact. I may just be reiterating them.

I was very much concerned with the capsule attitudes. I punched off the Main Chute with the Main Chute Disconnect Fuse, and it worked, obviously, or I would have had to go to the Emergency, which I didn't punch off. Truly, what I should say is, put to the Number 1 Fuse Switch position -- for the technicians. I went to the Recovery Aids-Manual and it seemed again time was going on forever before the capsule began to right itself.

I believe we might do this again sometime, and that is in training, let the spacecraft with an astronaut in it be put over the

side with the heat shield down, and let the heat shield deploy. Let him experience this horrible attitude, because it is something that will prey on you. You wonder if you're going to go under or not and stay under. I didn't see any water coming in and I sure was scanning the inside of the spacecraft looking for it.

The window was completely covered, I could see the green dye, so I knew that my Recovery Aids had functioned properly, that the whole circuit had made up, and when the Recovery Aids light, which was Red, of course, at impact, went to Green, I knew I had a switch make-up. Then when it went out, I knew that the whip antenna had deployed and I could see it actually deployed under water. Rather thrilling to see that. So it meant that I was over on my side for at least 30 seconds, and I could see that old pole sticking out there and wondering if I'd ever pick up a fish on the end of it. In fact, that thought went through my mind after thinking about the Blue (fish) we got back at the Cape the day before.

Then the capsule finally started to right itself very slowly and I was sitting there pitching like mad; in fact, I didn't have my Pressure Regulator handle in there -- the one that was stolen away for 1.2 pounds weight saving. And I said on the other tape, it may not have come through, but if another capsule flies without that thing in there, it is over my dead body. Somebody's really made a convert out of me. I don't see how they can dispute my feeling at this time. It had better be in there. Although again, no water did come in, but that feeling of assurance that it can't come in is worth it. For 1.2 pounds I think you can sacrifice something for our benefit. As the capsule righted itself, I knew that we had finished everything we needed to. I read out all the data I could read out and cross-checked. I had beautuful communications with Cap Com in Hawaii. Flag plot, which was probably the nearest thing other than Swiss 1, the recovery helicopter, was really down in the mud. He was very weak, but legible.

I was surprised, very surprised, that he did not acknowledge the TWX, that I thought had gone out, stating that I wanted the pick-up exactly as we did perform it. And I talked to Captain Rankin, the commanding officer of the Kearsarge, this morning and he, too, knew from everyone here that this was my philosophy. I had expressed this at Houston at the controllers briefing and they all knew it. And by gosh, two days before launch, we have a crisis at the Cape because everyone else didn't listen in to my philosophies back on Labor Day Weekend at Houston. This shows no fault on my part of communicating, it just shows that people want to change their minds toward the end and we've got to resist this. I believe if I did anything right on this flight, that it was to hold to the line that I established back in July.

Now the closing remarks that I would like to make on Sigma 7 are: I definitely fell in love with Capsule 16, and this is the first vehicle in my history of flight that finally replaced the F8F as the one on the top of the list. Capsule 16, the crew that prepared her and the flight itself, truly is the high point in my life.

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