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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

APOLLO 10  
LUNAR MODULE (LM)  
ONBOARD VOICE  
TRANSCRIPTION  
(U)

RECORDED ON THE LUNAR  
MODULE ONBOARD RECORDER  
DATA STORAGE  
EQUIPMENT ASSEMBLY  
(DSEA)

June 1969

GROUP 4

DOWNGRADED AT 3 YEAR INTERVALS  
DECLASSIFIED AFTER 12 YEARS

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#### INTRODUCTION

This document is a transcript of the Apollo 10 flightcrew communications recorded on the lunar module (LM) data storage equipment assembly (DSEA). After the multiplexed voice communications and mission elapsed time had been recorded onboard the LM on a single track of the tape, the tape cassettes were transferred to the command module for the return to earth. The cassettes were forwarded to NASA Manned Spacecraft Center, Houston, where mission elapsed time was converted to ground elapsed time for this document. Transcription of these tapes was managed by David M. Goldenbaum, Test Division, Apollo Spacecraft Program Office, to whom inquiries concerning this document should be referred.

The Apollo 10 lunar-orbital mission was flown May 18 to May 26, 1969. The command and service module (CSM) was code named "Charlie Brown," and the lunar module was called "Snoopy."

The communicators in the text are identified as follows:

CDR	Commander	Thomas P. Stafford
CMP	Command module pilot	John W. Young
LMP	Lunar module pilot	Eugene A. Cernan
SC	Unidentifiable crewmember	
CC	Capsule communicator (CAP COMM)	

In the text, a series of three dots (...) designates those portions of the communications which could not be transcribed because of garbling. One dash (-) indicates a speaker's pause or a self-interruption. Two dashes (--) indicate an interruption by another speaker or a point at which a recording was abruptly terminated.

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Day 4 - Page 1  
Tape 10-03601

DAY 4

- 03 22 35 25 LMP      Hello, Houston, Houston. This is Snoopy, how do you read? Over.
- 03 22 35 31 CC      Hello there, Snoopy. This is Houston. Reading you now, but quite a bit of noise in the background. Over.
- 03 22 35 37 LMP      Okay. How do you read me now, Jack?
- 03 22 35 43 CC      Okay, Snoop. I don't hear the noise, but you're way down in the mud.
- 03 22 35 47 LMP      Okay, I'll try and talk louder. The noise is because I was on ICS PTT DOWN VOICE BACKUP, and you had a hot mike in here. I'll bring you up to date. You might get your activation and checkout list out and wait 1 second. I'll tell you where we are. We are at activation page 20 --
- 03 22 36 12 CC      Okay, Snoopy. We got - we got --
- 03 22 36 18 LMP      Tom, are you done with ECS second?
- 03 22 36 20 CDR      ... Push.
- 03 22 36 25 LMP      Okay, I'm yelling as loud as I can. We are on page 29, on page 29. I just finished the - the LGC self-test, the spacecraft is all GO. I found nothing wrong with it. Tom is in here suited. He's up through page 29. I'm ready to do the S-band T/R power amplifier checks, and then I will do the steerable test. And I will go out and get suited while Tom continues. Are you with me?
- 03 22 37 02 CC      That's affirmative, Snoopy. We are reading you.
- 03 22 37 07 LMP      Okay, I'm presently on high voltage taps, and I'm ready to go S-BAND TRANSMITTER/RECEIVER SECONDARY, and POWER AMPLIFIER SECONDARY. Are you ready?

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Day 4 - Page 2  
Tape 10-03601

~~CONFIDENTIAL~~

03 22 37 18 CC Stand by 1. Snoopy, this is Houston. Go ahead.

03 22 37 20 CDR Hey, John, I think I've got your helmet here.

03 22 37 26 LMP Okay. Go ahead on --

03 22 37 27 CDR Hey, John --

03 22 37 28 LMP -- and I'll wait 60 seconds.

03 22 37 29 CDR John, don't I have your helmet? I don't want the cover on it. How about giving me one of those other helmets.

03 22 38 16 LMP Hello, Houston, Houston, this is Snoopy. How do you read on SECONDARY? Over.

03 22 38 26 CC Snoopy, this is Houston. We have a lot of noise in the background; hearing you very weakly.

03 22 38 30 CDR You're loud and clear to us.

03 22 38 33 LMP Okay, I'm reading you loud and clear. I'll go back to PRIMARY at this time.

03 22 38 40 CC Roger. Hear you're going back to PRIMARY.

03 22 38 47 LMP Tom, are you checking these things off? How far along are you?

03 22 38 51 CDR I'm squared - I'm waiting for - to get John on VHF A SIMPLEX down there on the list.

03 22 38 56 LMP Are you done with the suit fan check?

03 22 38 58 CDR Oh, yes, that shit's all finished. I'm all finished, babe. I'm down to VHF A. Okay.

03 22 39 10 CDR Go. Coming to you, John.

03 22 39 13 LMP Hello, Houston, this is Snoopy. I'm ready to do the S-band steerable antenna check.

03 22 39 31 LMP Hello, Houston, this is Snoopy, I'm ready to do the S-band steerable check.

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Day 4 - Page 3  
Tape 10-03601

- 03 22 39 40 CMP Houston, this is Charlie Brown. Snoopy is ready to do the steerable S-band antenna check. Over.
- 03 22 39 53 CMP Houston, Houston, Charlie Brown. Over.
- 03 22 39 56 CC Snoopy, this is Houston. Request you try turning your RANGING switch OFF. Over.
- 03 22 40 05 CMP Roger. They want you to try turning your RANGING switch OFF, Gene-o.
- 03 22 40 08 LMP Okay. Houston, this is Snoopy with the RANGING switch OFF. How do you read?
- 03 22 40 18 CC Okay. Gene, we're still hearing you very weakly, and a lot of background noise. Over.
- 03 22 40 23 LMP I don't doubt about the background noise. We got it in here, but I can't do anything except eat these mikes from here on out.
- 03 22 40 42 LMP Houston, this is Snoopy. I'm ready to go with the steerable test, if you're ready.
- 03 22 40 56 CC Hello, Snoopy. This is Houston. Go ahead with the steerable check. Over.
- 03 22 41 01 LMP Okay. Hey, John, are you in the attitude as prescribed?
- 03 22 41 04 CMP Yes, just about.
- 03 22 41 06 LMP Okay.
- 03 22 41 15 CC Charlie, this is Houston. We're still reading Snoopy very weak with a lot of background noise. You may have to relay some.
- 03 22 41 22 CMP Roger.
- 03 22 42 20 CMP Okay, Snoopy. We're at the attitude.
- 03 22 42 23 LMP Okay, and I should have good high-gain lock. Hello, Houston, this is Snoopy. How do you read on high gain?

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Day 4 - Page 4  
Tape 10-03601

~~CONFIDENTIAL~~

- 03 22 42 32 CC Oh, that's much better now, Snoop.
- 03 22 42 34 LMP Okay, I don't know if that's any sign. That was a piece of cake. I hope it works that way.
- 03 22 42 42 CC You're coming in loud and clear, Snoopy.
- 03 22 42 50 LMP Okay, Jack. Things are going, so far, real well up in here. I'm about ready to go off the loop here, go back and get suited up, and we'd like to stay ahead of the game if we can. All my voltages look real good. Just to bring you up to date, I'm reading 30.2 on the COMMANDER's BUS, and 30.2 on the SYSTEMS ENGINEER's BUS. INVERTER number 2 is in the high side of the green. BATTERY number 6 is reading 37, and BATTERY number 5 is reading 37.
- 03 22 43 26 CC Roger. We copy, Gene.
- 03 22 43 28 LMP And our glycol temperature started out at about 70 or 75 and it's come down very slowly, is now within the green band. I guess it's about 50 - 48 degrees right now. Our SH pressure looks good, within the nominal limits. And our ambient pressure looks good, and our ascent helium pressures look good also.
- 03 22 43 55 CC Roger, Snoopy. We copy.
- 03 22 43 58 LMP Okay, Jack. Next time I see you, I'll be dressed for the occasion.
- 03 22 44 05 CC Roger. We'll be looking forward to it, and we'd also like to keep ahead a little bit.
- 03 22 44 09 LMP Okay, babe, I'm going back to suit up.
- 03 23 06 59 CDR You want to get this thing out of the way? You want to get this out of the way first?
- 03 23 07 03 LMP I got to do a P52 right now, babe.
- 03 23 07 07 CDR Okay, okay, whatever you - Let me talk to them. Hello, Houston, this is Snoopy. I'm standing up here in the hatch. Do you want us to do a P52 right now or do you want us to start working on the hatch to get that out of the way? Over.

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Day 4 - Page 5  
Tape 10-03601

03 23 07 31 CDR Yes. We'll both check this bear up here, John.  
03 23 07 53 LMP Hello, Houston, Houston. This is the LMP back in Snoopy.  
03 23 07 59 CC Roger. We read you loud and clear, Gene-o.  
03 23 08 02 LMP Okay, Jack, I'm getting on my hoses here, and I'll be with you in a second.  
03 23 08 36 LMP ...  
03 23 08 38 CDR Is that the way it's supposed to be?  
03 23 08 40 LMP I think that's right. You got your ... ?  
03 23 08 43 CDR I'm sorry. It looks good to me.  
03 23 08 55 CDR I'm sorry, Gene-o.  
03 23 09 22 CDR I'm sorry. Turn the ... in and lock.  
03 23 09 50 LMP Are you done up there?  
03 23 09 51 CDR No.  
03 23 09 52 LMP Huh?  
03 23 09 53 CDR No. I got up to the --  
03 23 09 55 LMP Go ahead.  
03 23 09 56 CDR Keep that on.  
03 23 09 59 LMP Who are you talking to?  
03 23 10 01 CDR John. I got the docked alignment in but they wanted a P52 in.  
03 23 10 07 LMP Did you look at that hatch real good, babe?  
03 23 10 10 CDR I'm not ready to close it yet.  
03 23 10 12 LMP No, but did you look at the seal real good?

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Day 4 - Page 6  
Tape 10-03601

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03 23 10 14 CDR Yes. I wiped it off with a rag, and I'm going to rewipe it.

03 23 10 27 LMP Okay, Tom, how far are you - did you - do you - are you still on OMNI's or something?

03 23 10 32 CDR Oh, yes. We still have 30 minutes left for contact with them.

03 23 10 36 LMP Oh, okay. We're right here then, huh?

03 23 10 40 CDR Yes, I've already gone - I've got the E-memory up out of the way, and I've gone ahead and got the rate-gyro check out of the way. All that stuff is done now.

03 23 10 44 LMP T\_Ephem - this is all done?

03 23 10 45 CDR Yes. Keep going. I got all that stuff done. All this is done. All that.

03 23 10 59 LMP You got the alignment stuff in, too?

03 23 11 01 CDR Yes. It's done.

03 23 11 04 LMP How far did you go down here?

03 23 11 06 CDR I got that done but they said we have to do it again since he didn't have a fine align. Okay, so we'll have to make another one.

03 23 11 16 CMP Aha! Today it picks up the LM.

03 23 11 18 LMP What did he say?

03 23 11 20 CDR Today it picks up the LM.

03 23 11 21 LMP What picks up the LM?

03 23 11 24 CDR Do we have any tape? Something to wedge -

03 23 11 28 LMP No, not in here.

03 23 11 32 CDR They told those people to leave that out?

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Day 4 - Page 7  
Tape 10-03601

03 23 11 38 LMP      Hello, Houston, this is Snoopy. I'm going to go ahead with the ascent battery activation and checkout at this time. Over.

03 23 11 49 CC      Roger. We copy, Snoop.

03 23 12 00 CDR      I'm going to turn the suit flow off and try to get these hooked up a little better.

03 23 12 31 CDR      That's the ECS probably, where you got it.

03 23 12 37 LMP      I just want the ascent batteries, Tom.

03 23 12 48 LMP      Houston, bus voltage on ascent batteries alone looks like it's about 30 volts apiece.

03 23 12 58 CC      Roger. We copy, Snoop.

03 23 14 18 LMP      I itch.

03 23 14 19 CMP      Houston. You got those gyro torquing angles? Over.

03 23 14 28 CC      We're copying them down. Stand by.

03 23 14 43 LMP      Tom.

03 23 14 44 CDR      What?

03 23 14 45 LMP      Tom.

03 23 14 46 CDR      What?

03 23 14 48 LMP      Are you going to copy something down? Go ahead.

03 23 14 50 CDR      What do you need?

03 23 14 54 LMP      I want you to take this - see this chain? Just push it way down under my underwear. Just push it way down.

03 23 15 11 LMP      Way down. Just push it down. Okay? Okay.

03 23 15 14 CC      ...

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Day 4 - Page 8  
Tape 10-03601

~~CONFIDENTIAL~~

03 23 15 15 CDR For Snoopy.

03 23 15 16 LMP It's down there now. I just wanted to make sure - just push down under that underwear. Okay.

03 23 15 19 CC Okay. For Charlie Brown: this is VHF AM A SIMPLEX basic check. Your VHF AM A switch in SIMPLEX, VHF AM B in OFF. And for Snoopy: VHF TRANSMITTER A to VOICE, VHF RECEIVER A to ON, and on the commander's audio center, your VHF A TRANSMIT/RECEIVE to T/R.

03 23 15 56 LMP Okay for Snoopy. That was VHF A TRANSMIT, VOICE, RECEIVER, ON, and what was the last one?

03 23 16 06 CC VHF RECEIVER A to ON, and on the commander's audio side, the VHF A T/R to T/R, and check all circuit breakers IN.

03 23 16 18 LMP Tom, you got - commander, are you on T/R?

03 23 16 22 CDR Yes, A, T/R, B is RECEIVE.

03 23 16 28 CMP Roger. That was the setup I have here, Jack.

03 23 16 33 CDR Okay, we got them. Hello, Charlie Brown, Snoopy, how do you read on VHF A SIMPLEX.

03 23 16 44 CMP I read you same as before, Tom, which is unreadable.

03 23 16 47 CDR Well, you try him.

03 23 16 48 LMP John, do you read me any better?

03 23 16 54 CMP Negative.

03 23 16 55 CDR We've got problems.

03 23 16 56 CMP I can hear you through the tunnel.

03 23 17 00 LMP Okay, but you don't read me any better? Okay.

03 23 17 04 LMP Tom, check all your circuit breakers over there, Tom.

03 23 17 06 CDR I've got them IN. I've got them IN.

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Day 4 - Page 9  
Tape 10-03601

03 23 17 17 CC Okay, Snoopy and Charlie Brown, this is Houston. We're ready for you to do step 7 on your coarse align procedure.

03 23 17 25 CDR Okay, John, how do read now? We may have to go back to B.

03 23 17 33 LMP Wait a minute. Let me --

03 23 17 34 CDR We can't freak around --

03 23 17 35 CMP We're going to have to go back to - Okay. Go ahead, Tom.

03 23 17 41 CDR Okay, John. On VERB 06 - VERB 06, NOUN 20, and I'll count you down, okay?

03 23 17 53 LMP Can he read you, I wonder?

03 23 17 55 CDR No.

03 23 17 56 CMP Hey, Tom, are you on SIMPLEX A or B?

03 23 18 01 CDR John, let's don't screw with it; let's go in to B, and we'll get this stuff out of the way.

03 23 18 04 LMP Go SIMPLEX B, tell him.

03 23 18 06 CDR SIMPLEX B, babe.

03 23 18 11 CC Charlie, this is Houston. He wants to go to SIMPLEX B.

03 23 18 23 CMP Okay. How do you read now?

03 23 18 25 CDR John, I'm reading you loud and clear. How do you read me? Over.

03 23 18 31 CMP Now, I don't read you.

03 23 18 32 CDR Ah, shit!

03 23 18 34 LMP John, do you read me on SIMPLEX B?

03 23 18 36 CMP Yes. Loud and clear.

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Day 4 - Page 10  
Tape 10-03601

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03 23 18 37 LMP Okay, put your VHF --  
03 23 18 38 CDR Got it. Got it. Hey, John, we got it now. Let's go ahead to VERB 06, NOUN 20, and tell me when you're ready, and I'll count you down. Over.  
03 23 18 52 CMP Okay. Go.  
03 23 18 53 CDR Okay. 3, 2, 1.  
03 23 18 57 CDR MARK.  
03 23 18 58 CMP Okay. Plus 13552, plus 19371, plus 00132.  
03 23 19 14 CDR Okay, I've got all those. Plus 13552, plus 19371, plus 00132. Over.  
03 23 19 22 CMP Check.  
03 23 19 40 CDR Okay, Houston, this is Snoopy. Ready to copy my angles? Over.  
03 23 19 46 CC Go ahead, Snoop.  
03 23 19 47 CDR Okay my angles at 06 20: plus 012. My first register plus 1635<sup>4</sup>, plus 01299, plus 35901, and I assume that you copied John's.  
03 23 20 04 LMP 06, 06, Tom.  
03 23 20 06 CDR Oh, pardon us, 35906 on the last register.  
03 23 20 10 LMP Why don't you have them read them back?  
03 23 20 15 CDR He'll read them back. He should be able to read that.  
03 23 20 18 CC Okay, Snoopy, we copied John. Then on yours we got plus 1635<sup>4</sup>, plus 01299, plus 35906.  
03 23 20 26 CDR That's correct. Thank you.  
03 23 20 31 LMP And Houston, this is Snoopy. The ascent batteries look good; the backup and normal feed is good and my ED voltage is 37 on A and 37 on B.

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Day 4 - Page 11  
Tape 10-03601

- 03 23 20 45 CC Roger. We copy. 37 on ED's.
- 03 23 20 48 CDR Okay. We're ready for the probe and drogue.
- 03 23 20 54 LMP Yes.
- 03 23 21 07 CDR Charlie Brown, Snoopy. Our next step here - we got to have the hatch closed, so I'll stand by to help you with the probe and drogue when you're ready, babe.
- 03 23 21 16 CMP Roger.
- 03 23 22 21 CDR Here come the probe. Push there a little more. Okay. You got all three latches, John. No, they came out. They keep - they keep coming out. Now, it looks like you got them.
- 03 23 24 44 LMP Houston, this is Snoopy. How about giving me the next LOS and next AOS time, please?
- 03 23 24 51 CC Okay, Snoopy. The next LOS will be at 95:40 and your next AOS will be at 96:27. And I have some LM gyro torque angles for you.
- 03 23 25 11 LMP Stand by half a second.
- 03 23 25 42 LMP Okay, go ahead with the LM gyro torque angles.
- 03 23 25 49 CC Okay, LM torque angle: X, minus 00730; Y, minus 00700; Z, plus 00570.
- 03 23 26 06 LMP Okay. I got X, minus 00730; Y is minus 00700; and Z is plus 00570. Is that correct?
- 03 23 26 17 CC That's affirmative. You've got them right. There's one more thing we can try on our VHF situation. We may have the corona built up on our VHF A transmitter, so VHF A transmitter switch OFF for several seconds and then back to VOICE. Over.
- 03 23 26 35 LMP I don't think that will work, Jack. When we just tried it again, it had been in the OFF position, and I put it to VOICE. We'll give it a try here in a minute though. I was suiting up while this - this COMM problem started. Is it a VHF A SIMPLEX mode?

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Day 4 - Page 10

Tape 10-03601

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03 23 26 55 CDR Yes.

03 23 27 00 CC That's affirmative. Unable to transmit Snoopy to Charlie Brown on VHF A.

03 23 27 06 IMP Okay. That sort of blows the ranging capability, doesn't it?

03 23 27 33 IMP That hatch good and clean, babe?

03 23 27 35 CDR Yes. I've been cleaning it.

03 23 28 05 CDR Okay.

03 23 28 12 IMP Houston, this is Snoopy. While they're closing off the probe and drogue and hatch, I'll copy some of those update - burn update times, if you got them.

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Day 4 - Page 13  
Tape 10-03601

03 23 28 27 CDR Okay, John. Those latches are holding good.

03 23 28 31 CC Stand by 1 please.

03 23 28 50 CC Okay, Snoopy. We have the burn times. They're nominal burn times; they'll change a little bit either way. Separation is 098:47:16. DOI, 099:46:02. Phasing 100:58 --

03 23 29 06 LMP Wait a minute, Jack. Wait a minute. Wait a minute. I can only copy them down one at a time. I want to copy them right in the book. Now go on with DOI.

03 23 29 20 CC Roger, 099:46:02. Over.

03 23 29 27 LMP Okay. Go on with phasing.

03 23 29 33 CC Okay. Phasing is at 100:58:25.

03 23 29 44 LMP Okay, insertion.

03 23 29 50 CC Insertion is 102:54:37.

03 23 29 58 LMP Okay, and, I guess that's all we need right now, huh?

03 23 30 02 CC Charlie Brown, this is Houston -- Your roll jets to DISABLE, please.

03 23 30 11 CMP All rolls - wait - Wait a minute. Okay, we'll disable the roll jets. Can we maneuver to a landmarking tracking attitude with just the probe holding? We haven't released the capture latches yet, Jack.

03 23 30 28 CC Roger. Stand by.

03 23 30 44 CDR Looks like we're in pretty good shape ahead of time.

03 23 30 47 LMP So far.

03 23 30 48 CDR I'll get those things torqued in.

03 23 30 51 LMP I got those numbers for you. I'll wait and let you do it.

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Day 4 - Page 14  
Tape 10-03601

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- 03 23 30 52 CDR Yes, just - no hurry on it.
- 03 23 31 06 LMP What's he doing?
- 03 23 31 08 CDR He's working around up there doing something. I don't know what.
- 03 23 31 15 LMP Listen to that antenna, will you?
- 03 23 31 17 CDR Just as long as it works, about 10 hours.
- 03 23 32 07 CMP Houston, this is Charlie Brown. Over.
- 03 23 32 13 CC Go ahead, Charlie.
- 03 23 32 17 CMP Roger. What's the answer to that one?
- 03 23 32 22 CC Okay. The answer to it is that, as soon as the tunnel is vented, you can use your roll jets. Over.
- 03 23 32 31 CMP Roger. Why don't we just maneuver to attitude first, then, and then preload the probe, then release the latches.
- 03 23 32 41 CDR Be fine. While he's getting - Why don't we go ahead and torque this in?
- 03 23 32 57 CC Charlie, this is Houston. Stand by 1 on rolling to the landmark track attitude. We'd like to update the LGC clock. Over. And we'll give you a GO when you can maneuver to the attitude.
- 03 23 33 11 CMP Roger. I'll go in there - I'll go in there and release the latches, then.
- 03 23 33 19 CDR Well, we better get our helmets on right.
- 03 23 33 21 LMP He's going to release the latches. Yes, wait a minute. Tell him that.
- 03 23 33 27 CDR Hey, John. Hold up. We'll get our helmets and gloves on here, and you can release them then.
- 03 23 33 39 CC Snoopy, Houston. We'd like for you to put your UPDATA LINK switch to DATA, please.

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Day 4 - Page 15  
Tape 10-03601

03 23 33 47 LMP Okay, it is in DATA.  
03 23 33 51 CMP Hey, Gene, you guys all put your helmets and gloves on; I'll release your latches.  
03 23 33 54 CDR We're doing --  
03 23 33 55 LMP I'll give you a call when we get them on, John, before you release them.  
03 23 34 08 LMP How does that lock back there, Tom?  
03 23 34 09 CDR What?  
03 23 34 10 LMP My helmet.  
03 23 34 11 CDR Oh, yes. It's tilted too much. Just a minute. Oh - no - Let me - got it.  
03 23 34 21 LMP Squeeze it down around the back. Is that squeezed?  
03 23 34 24 CDR Yes. This freaking Velcro in this - both of these machines is horrible!  
03 23 34 35 LMP The Velcro is - is miserable.  
03 23 35 03 CDR And this ECS system isn't much better than what we squawked at in the altitude chamber. Soon as I start puffing I start breathing those - Gene-o, you want to give me one quick - push here?  
03 23 35 28 LMP You're not in a - in that RECEIVE position --  
03 23 35 30 CDR Ah, shit! Always try to leave it. Here we go. Go.  
03 23 36 14 LMP Okay, Charlie Brown, we've got helmets and gloves on. You can open the latches.  
03 23 36 22 CDR Okay. I've got the CABIN GAS RETURN to EGRESS --  
03 23 36 24 LMP Don't we want to close that thing, Tom?  
03 23 36 29 CDR Yes. Tell him I'm going to close the hatch now.  
03 23 36 34 LMP Charlie Brown, this is Snoop. Do you read?

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Day 4 - Page 16  
Tape 10-03601

~~CONFIDENTIAL~~

03 23 36 37 CMP Roger. Just a second.  
03 23 36 39 LMP Okay, and we're closing our hatch at this time.  
03 23 36 41 CDR That's about as clean as you can get it.  
03 23 36 44 LMP Push up on it. There you go.  
03 23 36 47 CDR Is that it?  
03 23 36 51 LMP That's it, babe.  
03 23 36 52 CDR Sure went in easy.  
03 23 36 54 LMP When this goes to AUTO, let's make sure that we pull that thing down, after our check.  
03 23 37 01 CDR Make sure what?  
03 23 37 02 LMP When we go to AUTO on that --  
03 23 37 04 CMP I'll disable the roll jets here.  
03 23 37 11 LMP Tom, put these up there where they belong now.  
03 23 37 13 CDR Yes. I'll put my bag over on the - You want to take your bag out of the way?  
03 23 37 23 LMP Yes.  
03 23 37 35 CDR I guess we should really go to AUTO here.  
03 23 37 39 CMP ...  
03 23 37 41 LMP Wait a minute. Let's see what it -  
03 23 37 42 CMP ...  
03 23 37 46 CDR We've got to go to AUTO. We don't - -  
03 23 37 47 LMP Wait, wait. Let's -  
03 23 37 49 CMP ...  
03 23 37 51 LMP Let's see what it says here.

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Day 4 - Page 17  
Tape 10-03601

- 03 23 37 52 CDR When he vents the tunnel, he's going to suck us down.
- 03 23 37 53 LMP Stand by 1. OVERHEAD DUMP valve to AUTO, Tom.
- 03 23 37 57 CDR Sure. Yes. Got to put that latch in there.
- 03 23 38 01 LMP PRESSURE REGULATOR A and B, CABIN.
- 03 23 38 04 CDR Okay. CABIN.
- 03 23 38 08 LMP SUIT GAS DIVERTER valve, PUSH, CABIN.
- 03 23 38 18 CDR PUSH, CABIN. Okay, there's CABIN, CABIN - got an eye on CABIN --
- 03 23 38 23 LMP Yes, I think - pull -
- 03 23 38 25 CDR There. Okay. I've got the CABIN GAS RETURN, see, in case that thing blew out - that was an open into our suit loop - the CABIN GAS RETURN. So we're okay. CABIN, CABIN, everything is sealed up. CABIN GAS RETURN is AUTO and SUIT CIRCUIT RELIEF is AUTO.
- 03 23 38 44 LMP Houston, this is Snoop. I read 5800 on both OPS's this morning when I came in.
- 03 23 38 55 CC That's what we have, 5800.
- 03 23 39 28 LMP Tom, will these things snap back there? They will. They ought to be snapped.
- 03 23 39 31 CDR What's that?
- 03 23 39 32 LMP I'll try and do it.
- 03 23 39 38 CDR Do we have those gyro torquing angles?
- 03 23 39 41 LMP Yes.
- 03 23 39 58 LMP Right here, Tom.
- 03 23 40 01 CDR Okay, wait a minute.
- 03 23 40 03 LMP Let me snap these things down out of the way.
- 03 23 40 13 LMP Roger. Thank you.

~~CONFIDENTIAL~~

Day 4 - Page 18  
Tape 10-03601

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03 23 40 53 LMP Did you get those numbers, Tom?  
03 23 40 54 CDR 00730, right?  
03 23 41 05 LMP They can take the Velcro that's on these space-craft and - I don't know what the hell they can do with them, but they can give it back. Ain't worth a damn.  
03 23 41 37 CDR Does the suit circuit flow hot and cold?  
03 23 41 45 LMP Yes. These god-dang things - we got to snap them after we get the helmets and gloves off. This Velcro is about as useless as a - god-dang!  
03 23 42 03 CDR It's all set. You want to - Okay. Is that a 3 or a 5?  
03 23 42 15 LMP Minus 00730.  
03 23 42 17 CDR Okay, I got the rest of them.  
03 23 42 20 LMP Minus 00700 and plus 00570.  
03 23 42 24 CDR Okay.  
03 23 43 37 LMP Charlie Brown, this is Snoop. How are you doing?  
03 23 43 39 CMP Roger. I've got them all unlatched and I'm reading the instructions to make sure that they all ...  
03 23 43 45 LMP Okay, give us a call when you get ready to - you know, vent that tunnel down there; and we'll watch our pressure.  
03 23 43 52 CMP Roger.  
03 23 43 54 CDR Look how long VERB 82 takes you, babe.  
03 23 44 07 CDR Would you believe that? What do we have next?  
03 23 44 13 LMP The integrity check, as soon as John breaks away.  
03 23 44 17 CDR Okay.  
03 23 44 23 LMP As soon as he vents the cabin, that is.

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Day 4 - Page 19  
Tape 10-03601

03 23 44 35 LMP Did you tell them VERB --  
03 23 44 36 CMP ... they all released, there, and they look good.  
03 23 44 39 CDR I called a VERB --  
03 23 44 40 CMP ...  
03 23 44 44 LMP Okay.  
03 23 45 05 CDR Want to do a VERB 96?  
03 23 45 06 LMP No, let it go for a while. See what happens.  
03 23 45 16 CDR Looks like it's hung up in a loop.  
03 23 45 23 LMP Try VERB 96.  
03 23 45 35 CDR We did get a state vector update on the whole works,  
                      didn't we?  
03 23 45 37 LMP I don't know. --  
03 23 45 38 CDR Yes.  
03 23 45 39 LMP -- did we?  
03 23 45 40 CDR Yes.  
03 23 45 41 LMP I guess we did.  
03 23 45 45 CDR PROCEED. I know we uplinked the time.  
03 23 46 01 LMP Maybe we didn't get a state vector, babe, because  
                      we don't really get one until later on back here.  
03 23 46 07 CDR Okay. We'll just hold off.  
03 23 46 09 LMP I don't think we did. Is the platform aligned?  
03 23 46 15 CDR Oh, yes, we're all squared away. Aligned and fine  
                      aligned. The next thing we have to do is go through  
                      the pressure integrity check. We're 10 minutes  
                      ahead on that one. Let's go ahead and - We can do  
                      that soon as he vents the tunnel.  
03 23 46 47 CDR Hey, we float all over the place with these hoses.

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- 03 23 46 50 LMP Yes.
- 03 23 46 52 CDR I'll try to -
- 03 23 47 22 LMP Might just as well take the window shades down, I guess.
- 03 23 47 25 CDR Mmm-hmm. Get a panoramic view.
- 03 23 47 45 CDR That Velcro will barely hold a pencil.
- 03 23 47 48 LMP That Velcro is so crappy!
- 03 23 48 11 CMP ... Snoopy, the hatch is installed. I'm ready to vent the tunnel. Over.
- 03 23 48 16 LMP Okay, we're watching it. Go ahead, John.
- 03 23 48 53 CDR Let's see. For cooling, you want the hoses hooked up backwards, don't you?
- 03 23 48 57 LMP Without your helmet.
- 03 23 48 58 CDR Yes. I've got them hooked up backwards. That won't hurt anything for the suit integrity check.
- 03 23 49 04 LMP Yes, I wouldn't do that, babe. I don't know what it'll do, but I wouldn't do that. Well, I guess you can. I guess it shouldn't hurt.
- 03 23 49 11 CDR It'll only strip the flow. I'll wait until he gets the tunnel all vented, then I'll change them.
- 03 23 49 20 LMP I'm not even sure I've got flow.
- 03 23 49 24 CDR You can barely feel it, can't you? Are you looking out?
- 03 23 49 33 LMP I'm looking at - at the cabin pressure.
- 03 23 49 37 CDR Are you looking out your window?
- 03 23 49 40 LMP Yes.
- 03 23 49 56 CMP Okay, you guys, give me a second or 2 to get a ... out of here.

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Day 4 - Page 21  
Tape 10-03601

03 23 50 00 LMP Okay.  
03 23 51 41 CDR Whew! Here come da Sun.  
03 23 51 18 LMP There ain't no question, is there?  
03 23 51 19 CDR No.  
03 23 51 30 CDR This is a worthless son of a bitch.  
03 23 51 48 CMP Okay, going to vent.  
03 23 51 50 LMP Okay. Go slow.  
03 23 51 58 LMP Tom, I've got steam all over my window.  
03 23 52 00 CDR You want the heater on?  
03 23 52 02 LMP No, it'll dry off.  
03 23 52 07 CDR See any scratches?  
03 23 52 12 LMP No.  
03 23 52 48 CMP Okay, have you got your DUMP valve in AUTO? Over.  
03 23 52 51 CDR Yes.  
03 23 52 53 LMP That's affirmative. It's in AUTO.  
03 23 52 55 CMP Roger. I looked through the tunnel then, and nothing's down there.  
03 23 53 16 LMP We're holding pressure here.  
03 23 53 22 CMP ... my LM/command module DELTA-P gage is changing.  
03 23 53 31 CDR Is there a tunnel DELTA-P?  
03 23 53 33 LMP Yes, what about - Isn't there a tunnel DELTA-P position on there?  
03 23 53 44 CMP Yes, there is. If this is what it takes, it's going to take a month to get it out this way.  
03 23 53 46 CDR It's supposed to take quite awhile.

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- 03 23 53 55 LMP I hope we're having the same pressure as you are.  
We don't want that one to decrease.
- 03 23 54 09 CDR I remember Dave Scott said it takes quite awhile.
- 03 23 54 14 CMP Hell, it must take awhile.
- 03 23 54 15 CDR Yes. Look, if there's any problem, hell, go ahead  
and maneuver, John.
- 03 23 54 22 CMP Alright.
- 03 23 54 26 CDR I'll bet there's insulation all in that thing that  
vents it, too.
- 03 23 54 30 LMP Probably.
- 03 23 56 03 CMP We've either got a hatch leak from somewhere, or  
it's not venting.
- 03 23 56 08 CDR Let's recheck that.
- 03 23 56 09 LMP Well, we're not losing pressure, John, that I can  
see.
- 03 23 56 14 CDR ... NO-GO.
- 03 23 56 23 CDR You want to go up there and go to CLOSE on that  
valve, just to make sure it's closed?
- 03 23 56 27 LMP If you want to try it, go ahead. Maybe I could  
do it.
- 03 23 56 32 CDR Can you reach it? Yes. You can do it.
- 03 23 56 36 LMP There's a lot of crap in there though - see?
- 03 23 56 38 CDR Yes. John, we're going to go to CLOSE on this valve,  
just to lock it closed. Okay?
- 03 23 56 45 CMP Roger. ...
- 03 23 56 50 LMP I tried to clean all that crap out of there, but  
I wouldn't be a bit surprised. Let's see, we -  
We should be losing pressure, because we don't have

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Day 4 - Page 23  
Tape 10-03601

an AUTO REPRESS until we get down to about 4.4 or 4.6 and we're already at 4.95.

- 03 23 57 07 CMP Same as right now. Reading about 0.1.
- 03 23 57 14 CDR That's 0.1 DELTA-P?
- 03 23 58 13 CDR Is it coming down at all, John?
- 03 23 58 18 CMP Not coming down at all.
- 03 23 58 20 CDR Hell, that's a NO-GO for rendezvous if we can't get that tunnel vented.
- 03 23 58 30 CMP Well, babe, I'm putting it on VENT.
- 03 23 58 32 CDR Was our gage - Is our pressure going down?
- 03 23 58 35 LMP No. We're venting into it and - -
- 03 23 58 41 CDR Vent seal - I checked the seal.
- 03 23 58 43 LMP Look at all this crap in here. I tried to clean out that thing yesterday.
- 03 23 58 51 CDR Do you hear air flowing?
- 03 23 58 56 LMP You can't hear through here, though.
- 03 23 59 17 CDR I wonder, if we'd overpressurize here a little bit, if that would put us at CLOSED.
- 03 23 59 26 LMP Let me try something. I'll try and build up a little bit.
- 03 23 59 30 CDR John, we're going to try to overpressurize here - just a little bit, not much. Hey, John, I've got an idea. It's kind of outville.
- 03 23 59 41 CMP Yes.
- 03 23 59 44 CDR If you could dump your cabin pressure down say to 4 or 5.
- 03 23 59 47 LMP No, let me build ours up, Tom.

~~CONFIDENTIAL~~

Day 4 - Page 24  
Tape 10-03601

~~CONFIDENTIAL~~

03 23 59 49 CDR

All right, we're going to go build ours up and see if that will help us see if there's seal, here.

03 23 59 53 LMP

Tell him, don't do anything until we help - build ours up.

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~~CONFIDENTIAL~~

Day 5 - Page 25  
Tape 10-03601

DAY 5

- 04 00 00 07 LMP      Alright, that's building up our - that's what I want to do.
- 04 00 00 14 CDR      Okay, that should have it. That's plenty. Okay, our cabin pressure's up to 5.4.
- 04 00 00 20 CMP      Okay.
- 04 00 00 21 CDR      Look at this stuff in here! That should be enough from DELTA-P on that whole area to see if that's sealed. Now try to vent it.
- 04 00 00 32 CMP      Okay. I've got it in VENT.
- 04 00 01 15 CMP      I put it in LM VENT for a while. Maybe that will blow anything out of that hole if there's something in there.
- 04 00 01 20 CDR      Okay. We've hooked ours up to 5, oh, 3 to 5.4 DELTA-P.
- 04 00 01 40 LMP      We can probably continue, Tom.
- 04 00 01 44 CDR      Yes.
- 04 00 01 46 LMP      Let's go ahead.
- 04 00 01 49 CDR      Okay.
- 04 00 01 50 CMP      What time is it getting to be? Are we behind?
- 04 00 01 52 CDR      It's 96 hours.
- 04 00 01 55 CMP      Oh, we're getting behind.
- 04 00 01 56 CDR      Yes. Except we have about a 20-minute pad on all the stuff.
- 04 00 01 59 CMP      Yes.
- 04 00 02 01 LMP      Okay, let's go on, Tom. SUIT GAS DIVERTER VALVE, PULL/EGRESS.
- 04 00 02 05 CDR      Okay. Go.
- 04 00 02 07 LMP      CABIN GAS RETURN, EGRESS.
- 04 00 02 10 CDR      Go.

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04 00 02 11 LMP SUIT CIRCUIT RELIEF, CLOSED.  
04 00 02 13 CDR Go.  
04 00 02 14 CMP I've got an idea.  
04 00 02 17 CDR Go ahead, John.  
04 00 02 18 CMP I'm going to maneuver over to the attitude in press  
...  
04 00 02 24 LMP PRESSURE REG A, CLOSED.  
04 00 02 27 CDR I want to get this loose here a little bit. PRESS  
REG A, CLOSED.  
04 00 02 41 LMP Okay. CLOSED?  
04 00 02 42 CDR CLOSED.  
04 00 02 43 LMP Okay, PRESSURE REG B, build the suit pressure up  
to - Wait a minute - to 8.85, and then we'll  
monitor for a decay.  
04 00 02 50 CDR Okay, coming up.  
04 00 03 02 CDR Starting up.  
04 00 03 25 CDR Yes. If that isn't brown, I don't know what is.  
04 00 03 28 LMP That is. Yes.  
04 00 03 45 CMP Hey, I'm sorry, you guys. I didn't have no control  
of that.  
04 00 03 49 CDR What's that?  
04 00 03 51 LMP I thought we were really wheeling around there  
when I saw us move.  
04 00 03 58 CDR How we doing? We're 8.  
04 00 04 00 LMP Stand by.  
04 00 04 01 CDR Go. Close it.  
04 00 04 04 LMP You can close it.  
04 00 04 05 CDR Go.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 27  
Tape 10-03601

04 00 04 06 LMP Okay. Monitor it for 1 minute.  
04 00 04 08 CDR Okay.  
04 00 04 22 CDR Looks good.  
04 00 04 25 LMP I've got a minute going over here.  
04 00 04 38 LMP You closed PRESSURE REG B, didn't you?  
04 00 04 39 CDR Yes.  
04 00 04 44 LMP What's your decay doing?  
04 00 04 46 CDR I'm down to 3.35 --  
04 00 04 48 LMP Yes, I'm already decayed 0.15.  
04 00 05 07 CDR How much did you get on it?  
04 00 05 10 LMP Okay, Tom, there was a decay of 0.2.  
04 00 05 12 CDR Yes. Okay.  
04 00 05 18 LMP Hey, leave it that way. Was CO CANISTER SELECT, SECONDARY?  
04 00 05 21 CDR Okay, ready?  
04 00 05 23 LMP Can you reach it?  
04 00 05 24 CDR Okay.  
04 00 05 25 LMP SECONDARY?  
04 00 05 26 CDR Yes.  
04 00 05 29 LMP Monitor cuff gage --  
04 00 05 30 CDR Man! That son of a bitch went down.  
04 00 05 33 LMP Monitor cuff gage for 1 --  
04 00 05 34 CDR Okay. See, it had to fill up that volume back there.  
04 00 05 36 LMP Yes, okay. Monitor it for 1 minute here.

~~CONFIDENTIAL~~

Day 5 - Page 28  
Tape 10-03601

~~CONFIDENTIAL~~

04 00 05 38 CDR Okay.  
04 00 06 33 LMP Okay, that's good.  
04 00 06 35 CDR Okay.  
04 00 06 36 LMP CO<sub>2</sub> CANISTER SELECT, PRIMARY?  
04 00 06 40 CDR Okay. Got it.  
04 00 06 46 LMP SUIT CIRCUIT RELIEF VALVE, AUTO?  
04 00 06 49 CDR Okay.  
04 00 06 51 LMP CABIN PRESS REG A and B CABIN.  
04 00 06 57 CDR Okay, CABIN.  
04 00 06 58 LMP CABIN GAS RETURN, AUTO.  
04 00 07 03 CDR Check.  
04 00 07 06 LMP SUIT GAS DIVERTER VALVE, PUSH/CABIN.  
04 00 07 12 CDR Oh. Whew!  
04 00 07 15 LMP You push it?  
04 00 07 16 CDR Yes.  
04 00 07 19 LMP You got to blow your nose on that one.  
04 00 07 21 CDR Yes.  
04 00 07 22 LMP Okay, CABIN FAN CONTROL, CLOSED.  
04 00 07 27 CDR You want to turn that son of a bitch on?  
04 00 07 32 LMP Make sure it's the control, Tom.  
04 00 07 33 CDR Okay. Okay. Check.  
04 00 07 36 LMP Okay, verify CSM tunnel hatch PRESSURE EQUALIZATION and the TUNNEL VENT valves CLOSED, and the tunnel vented. I guess we got to wait on this one, huh?

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 29  
Tape 10-03601

- 04 00 07 42 CDR Well, no, you don't. All this does is just check the cabin DEPRESS - Oh, yes, we do, because pressure will flow back in through here. This is as far as we can go.
- 04 00 07 57 LMP We don't have to if that's closed.
- 04 00 07 59 CDR No, but, see - The way this son of a bitch is built, this thing will just leak out and let air leak past. It's a flimsy ... --
- 04 00 08 05 LMP That's right.
- 04 00 08 11 CDR John, how are you doing over there?
- 04 00 08 13 CMP Roger, I'm coming around to attitude, but I still can't see any vent.
- 04 00 08 18 CDR The only thing I can think of - We've built our pressure up here, but it still won't vent any. We've got to wait until MSFN contact. We've got a decision to make here. If it won't vent, either you can do it by dumping your cabin all the way - and that decision's going to be up to you - or else we'll just call the rendezvous off. It doesn't matter one way or the other. The main thing is to play it safe. Over.
- 04 00 08 42 CMP I don't know that - tunnel venting or not venting is a call-off for the rendezvous.
- 04 00 08 47 LMP I don't either, Tom.
- 04 00 08 49 CDR If you release - if you release that tunnel presurizer, we're going off of here like a goddamn springboard, babe. We've got 5000 pounds of force on that tunnel, when we release that latch.
- 04 00 09 01 CMP Well, you ain't going anywhere until you get to the end of the latch ...
- 04 00 09 05 LMP By that time it will be vented.
- 04 00 09 08 CDR Yes.
- 04 00 09 11 LMP Let's see what we can do besides this. I'm going to turn the AGS on, Tom.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

- 04 00 09 20 CDR Go ahead. Keep going.
- 04 00 09 21 CMP ... keep you advised ...
- 04 00 09 28 CDR Yes.
- 04 00 09 29 CMP I don't know if they want to do that to the probe or not, though.
- 04 00 09 32 CDR That's what I was wondering what's going to happen to the probe.
- 04 00 09 34 LMP Stand by for a MASTER ALARM.
- 04 00 09 36 CDR Okay.
- 04 00 09 53 LMP Another MASTER ALARM.
- 04 00 09 56 CDR Okay.
- 04 00 10 38 CMP I'll bet you anything what's happened is that Mylar's gotten up in the --
- 04 00 10 46 CDR I'll bet the same thing. The Mylar's in that vent hole.
- 04 00 11 21 LMP Have you done the rate gyro check?
- 04 00 11 23 CDR Yes, we're out of the way. I've already done that. I could go ahead and deploy the landing gear.
- 04 00 11 31 LMP I'd wait on that one. That's so quick.
- 04 00 11 33 CDR Yes.
- 04 00 11 47 CMP Hey, man, even if I vent my cabin, that ain't going to depressurize your tunnel.
- 04 00 11 52 CDR If - if you would open the PRESSURE EQUALIZATION valve on your hatch, and vent that, that would do it.
- 04 00 12 02 LMP We could do it --
- 04 00 12 04 CMP ... with all that Mylar in there.

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~~CONFIDENTIAL~~

Day 5 - Page 31  
Tape 10-03601

04 00 12 06 LMP      We could do it, Tom - from this end --  
04 00 12 08 CDR      How?  
04 00 12 10 LMP      We could open --  
04 00 12 11 CDR      We could depressurize from this end --  
04 00 12 13 LMP      We could depressurize from this end. We've got  
                          to do that, anyway, for the - for our - our  
                          regulator check.  
04 00 12 21 CDR      We could depressurize from this end.  
04 00 12 24 LMP      Not all the way.  
04 00 12 26 CMP      That sounds like bullshit to me, Tom. Let's wait  
                          and see ...  
04 00 12 41 CDR      We've got plenty of  $O_2$  in the rapid REPRESS cap-  
                          ability. It would probably be better for us to  
                          depressurize from this end, John.  
04 00 13 33 CDR      When do we acquire MSFN again?  
04 00 13 38 LMP      96:27.  
04 00 13 44 CMP      Still reading zero, Tom.  
04 00 13 48 CDR      In other words, you can't vent that thing at all.  
04 00 14 35 LMP      As far as you're concerned, have we got a good  
                          platform now?  
04 00 14 37 CDR      Yes. Beautiful.  
04 00 15 01 LMP      Darn it.  
04 00 16 50 SC        (Cough)  
04 00 17 07 CDR      I think it probably would be best for us to do it.  
04 00 17 11 LMP      We could go down part way anyway, then build it up  
                          and then come down and do our regulator check.  
04 00 17 15 CDR      Yes.

~~CONFIDENTIAL~~

Day 5 - Page 32  
Tape 10-03601

~~CONFIDENTIAL~~

04 00 17 20 LMP      We've got nothing to lose. If that thing gets clogged again - and doesn't hold pressure -

04 00 17 37 CDR      Looks like it's holding good now. And our DELTA-P's above his.

04 00 18 01 LMP      Why don't you take some pictures while you're there?

04 00 18 18 CDR      Son of a bitch! This freaking purse keeps falling out. Didn't these people fit this stuff - they put it together. This is as useless as tits on a boar hog! Okay. What's our basic for color on the lunar surface? 5.6 at 250?

04 00 18 48 LMP      f:4, Tom.

04 00 18 49 CDR      That's black and white. That's black and white.

04 00 18 53 LMP      Oh, color? Okay, wait a minute. I'll get it to you. I have it right here.

04 00 19 10 LMP      What do you want, color?

04 00 19 11 CDR      Color, lunar sur --

04 00 19 12 LMP      f:8 at 250th.

04 00 19 26 CDR      Well, isn't that nice. Each one of these magazines you got to crank like that. And how do you get it with your gloves on? Beautiful. Absolutely beautiful.

04 00 19 43 LMP      I thought they were all supposed to be ready to go the minute you put them in there.

04 00 20 00 CDR      It doesn't work. Come on now. You son of a bitch!

04 00 20 13 CMP      ... I ... mine.

04 00 20 23 LMP      Still no vent, huh?

04 00 20 25 CMP      Yes, you still in CABIN DUMP at 54?

04 00 20 30 LMP      Yes. When we pumped it up, it stayed there. We could even go a little higher.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 33  
Tape 10-03601

04 00 20 52 CMP

It could be leaking from here, but I checked my a - I checked my a - vent valve. I closed it and looked to see if it was sealed or not. The ... I don't know what the heck it is, you guys. We get AOS here in a couple of minutes, and then we can find out, huh?

04 00 21 19 LMP

We're sitting, crossing our fingers right now.

04 00 21 24 CDR

Well, this back doesn't work; that's nice.

04 00 21 25 LMP

At all?

04 00 21 26 CDR

No.

04 00 21 27 LMP

Sure.

04 00 21 28 CDR

Well, take it out now ... The camera works. She just don't work. ...

04 00 21 49 CMP

I believe you could drop your ... maybe you could just drop it to like 2-1/2 or something like that, that would be good enough.

04 00 21 56 LMP

That's what we were thinking of. Let's wait now until we talk to MSFN, I guess.

04 00 23 08 CDR

Hey, it won't work with the backs, Gene-o. It works by itself, but it won't work with the backs.

04 00 23 45 LMP

John, what - what angle are you at so I can try and cranked them and turned them.

04 00 23 56 CDR

(Laughter) Won't work, Gene-o. Just beautiful.

04 00 24 01 LMP

Without the back, huh?

04 00 24 03 CDR

And both of them - I've turned them, and cranked them and cranked them and turned them.

04 00 24 07 LMP

Both - both magazines! You got to be kidding.

04 00 24 11 CDR

I'm not kidding.

04 00 24 12 LMP

There's one more magazine there. Something's got to be wrong.

~~CONFIDENTIAL~~

Day 5 - Page 34  
Tape 10-03601

~~CONFIDENTIAL~~

04 00 24 16 CDR You're right, babe. Something's got to be wrong.  
We're all squared away. It works fine without  
the back. I've turned it.

04 00 24 25 LMP Let's see it once.

04 00 24 28 CDR Have at it. It shows you the direction to rotate.

04 00 24 54 CDR It just doesn't work. No, it was - the lenses  
were on good, but I checked - it works beautiful  
without the back. Beautiful without the back.

04 00 25 17 LMP Give me the screen for it.

04 00 25 48 CDR I've done everything. You can tell when it works  
without it.

04 00 25 53 LMP Did you try a different back?

04 00 25 55 CDR That makes the second back.

04 00 25 59 LMP Let me see. Try the third back.

04 00 26 09 CDR ... third back yet.

04 00 26 12 LMP Oh, I guess it's in here.

04 00 26 21 CDR Roll it.

04 00 26 23 LMP ... anything to it. What is that, back and white?

04 00 26 25 CDR Yes. See.

04 00 26 39 CDR It works good now. Now to get the color to work.

04 00 27 06 LMP John, are you at any - What angles are you at?  
You --

04 00 27 11 CMP I'm at 300 degrees.

04 00 27 20 LMP You'll have better contact, because we'll be in  
OMNI; so you go ahead and tell them, and tell  
them - maybe we could vent down here, and get  
that thing vented, and then build our pressure  
back up.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 35  
Tape 10-03601

04 00 27 31 CMP

Roger. Roger, I can't - we can't get the tunnel to vent. Over. We've pinned down Charlie Brown. Over. I've checked the vent valve, and - Roger, I'll say it again. We cannot get the tunnel to vent. Over.

04 00 28 14 CMP

That's correct. We've checked the inflow valve. I've checked the inflow valve, and I've checked the vent valve, and Tom and Gene have checked their AUTO valve ..., and they've built up pressure inside the vehicle, and it doesn't appear to be moving into the tunnel, so I don't know what their problem is. Tom thinks some of that insulation got lodged in the vent line.

04 00 29 03 CMP

Houston, Charlie Brown. Do you read? Over.

04 00 29 10 CC

Roger, we read you 5 by. ... Charlie Brown, do you copy? ... Roger. 2.5 ...

04 00 29 15 CMP

We can barely read you now.

04 00 29 17 CC

What's your problem there? ...

04 00 29 22 CDR

Houston, this is Snoopy. How do you read?

04 00 29 29 CC

Snoopy, this is Houston. We read you about 2 by.

04 00 29 32 CDR

Okay. John's already described the problem, and we recommend that from what we can see up here, we're sure that Mylar insulation has plugged up his vent line to vent the tunnel. We can vent it through the LM and go hard suit through here and repressurize this spacecraft. And we would recommend that action, rather than having the CSM depressurize. Over.

04 00 30 10 CC

Snoopy, Houston. You're unreadable. We copied a few words about the Mylar insulation and that the tunnel will not vent. Otherwise, that's all we can copy. Over.

04 00 30 19 LMP

Hey, let me talk to him. ...

04 00 30 20 CDR

Sure.

04 00 30 21 LMP

Houston, how do you read Snoopy now?

~~CONFIDENTIAL~~

Day 5 - Page 36  
Tape 10-03601

~~CONFIDENTIAL~~

04 00 30 28 CC You're about 2 by, still, Gene.

04 00 30 31 LMP Okay, if we have to we would like to go ahead, and try and vent the tunnel through the LM. We will depressurize the LM, fire away, and then try to vent the tunnel part way, and then build the LM back up. How does that sound?

04 00 30 47 CC Roger. Stand by.

04 00 30 59 CDR ... this to work. You have to keep turning and --

04 00 31 02 LMP Yes, that's what I did, just turn the mother.

04 00 31 26 CDR Shit, now I can't -

04 00 31 28 LMP Tom, we ought to try and get a - We're waiting for ... landmark tracking, so we can't get a state vector. I can't go ahead with any more AGS work.

04 00 32 03 LMP ... angles momentarily, Tom.

04 00 32 05 CDR Yes.

04 00 32 31 CC Hello, Charlie Brown; Houston. If you maneuver to a 000 roll, 0 $\frac{1}{4}$  pitch, and yaw 000, and get into HIGH GAIN, your angles are good in the flight plan. Snoop, your angles are good as listed in the flight plan at 97 hours. Over.

04 00 32 49 LMP Snoopy. Roger. Understand.

04 00 32 52 CMP What did they say, Gene-o?

04 00 32 55 LMP They said if you maneuver to those angles, your high-gain angles are good as in the flight plan, and ours are good at 97 hours.

04 00 33 07 CC Roger - -

04 00 33 08 CMP - ... angles.

04 00 33 09 CC - - 193 and yaw 64 degrees on the high-gain antenna - -

04 00 33 13 CMP Our flight plan says OMNI antenna C.

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Day 5 - Page 37  
Tape 10-03601

- 04 00 33 17 LMP      ... Houston, repeat up to me where you want Charlie Brown to maneuver to; he can't read you.
- 04 00 33 25 CDR      In the angles.
- 04 00 33 28 CC      Roger, Snoop. We want Charlie Brown to maneuver to 000 roll, pitch 014, yaw 000. It's listed in the flight plan at 96 hours and 40 minutes. Over. Skip the landmark tracking.
- 04 00 34 04 CDR      Yes, I asked you what angles. What do you want for Snoopy and Charlie?
- 04 00 34 08 LMP      Got them already, Tom.
- 04 00 34 32 LMP      Charlie Brown, Snoop, let us know when you get there.
- 04 00 34 41 CMP      We're on our way.
- 04 00 34 43 LMP      Okey doke. This way we can get high gain from them; get our state vector update, and continue on. We can't do much without that state vector.
- 04 00 34 55 CC      Roger, Snoop. We copied about - We see Charlie Brown maneuvering to high-gain attitude. Stand by on the tunnel vent. Over. We're coming up with a procedure for you.
- 04 00 35 07 LMP      Okay, great! Thank you.
- 04 00 35 56 LMP      ..., Tom, IM time is going to be about 360. right? 6 times 6, 36, 360 and roughly 1) - about 400, right?
- 04 00 36 08 CDR      Yes. How come you're feeding on a - back through feed loop? Are you in VOX?
- 04 00 36 18 LMP      No, we got a hot S-band mike when we're in ICS PTT and DOWN VOICE BACKUP.
- 04 00 36 23 CDR      Okay.
- 04 00 36 24 LMP      I just left it there, right now.
- 04 00 36 26 CDR      Alright. So the ground is reading us full time, when when we transfer.

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Day 5 - Page 38  
Tape 10-03601

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04 00 36 30 LMP Right in this mode, they are, yes.  
04 00 36 32 CDR Okay.  
04 00 36 40 CMP Okay, Gene-o. We'll have to move it up a little here. I'll pitch a little faster.  
04 00 36 46 LMP Okay, babe.  
04 00 36 56 CMP Okay, that's OFF, and we'll check it.  
04 00 37 24 CC Snoopy, Houston.  
04 00 37 25 CDR Go ahead, Houston, Snoopy. Over.  
04 00 37 30 CC Roger, Houston. You're coming in about 3 by ...  
04 00 37 40 CDR DOWN VOICE BACKUP.  
04 00 37 42 LMP Say again there, Houston --  
04 00 37 46 CDR DOWN VOICE BACKUP ranging OFF.  
04 00 37 50 LMP Houston, how are you reading OMNI now?  
04 00 37 52 CC Roger. And in DOWN VOICE BACKUP master, if you turn the ranging OFF, will probably improve the voice quality some. Over.  
04 00 38 00 LMP Okay, Charlie. I've got the ranging OFF.  
04 00 38 06 CC Roger, you're a little bit better, Gene-o. Charlie Brown, I understand you're calling. Go ahead. Over.  
04 00 38 19 CMP Okay, Gene-o. We got 25 degrees to go.  
04 00 38 24 LMP Okay, John. Understand. 25 degrees to go.  
04 00 38 31 CDR Hello, Houston, this is Snoopy, how soon on the solution on this tunnel? Over.  
04 00 38 43 CMP I don't think they're reading us, Tom.  
04 00 39 19 CDR Okay, that I could reach.

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Day 5 - Page 39  
Tape 10-03601

04 00 39 34 CDR Looks like he's about there.

04 00 39 48 CDR Hello, Houston, this is Snoopy. Do you read? Over.

04 00 39 54 LMP Tom, I'll have my high gain in a minute.

04 00 39 56 CC Go ahead, Snoop.

04 00 39 58 CDR Okay, Charlie. Look, as far as we can see, it still appears to us like all this Mylar that's been floating around in the spacecraft has probably got into that vent line. The only solution that we see about it ... - to vent the tunnel, is to take it out through the LM and take us down. If John would try to do it, it would suck that Mylar right back into his valve - tunnel valve there, which is no good. We'd have a rough time in the command module; but we could do something; we could live with the LM for a while. That's about all we can see; and as far as we understand about the probe, it's probably not a good idea to release that probe with all that pressure on it. Over.

04 00 40 41 CC Roger, 10. Correction. Roger, Snoop. We're aware of that. We'll probably --

04 00 40 46 CMP Houston, Charlie Brown on the high gain. How do you read?

04 00 40 48 CC -- about releasing the probe without doing a hatch integrity check. We're a little concerned about that. If you'll stand by a couple of minutes, we'll come up with a procedure for venting the tunnel. Over.

04 00 41 02 CDR Okay.

04 00 41 04 CMP Houston, Charlie Brown on the high gain. How do you read?

04 00 41 10 CC ... you're coming in about 3 by, John.

04 00 41 14 CMP I ... read you loud and clear now.

04 00 41 20 LMP Houston, how's Snoopy on high gain?

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04 00 41 22 CC ...  
04 00 41 23 IMP How's Snoopy on high gain?  
04 00 41 24 CC You're 5 by, Snoop. Stand by.  
04 00 41 30 LMP Standing by, babe.  
04 00 41 38 CDR ... You can have these feedback loops.  
04 00 41 41 LMP You can hear it coming down and going back up again.  
04 00 42 18 CDR ... descent O<sub>2</sub>.  
04 00 43 52 CMP Okay, Snoopy, you want to do another LM drift check now?  
04 00 43 58 CDR Let's get ahead of them, while they're still figuring out what their recommendations are. John, on my mark, let's do a VERB 06, NOUN 20. We'll try to keep ahead of it where we can.  
04 00 44 09 CMP Roger, go ahead.  
04 00 44 13 CDR Counting down on VERB 06, NOUN 20, 3, 2, 1 -  
04 00 44 18 CDR MARK it.  
04 00 44 20 CMP Roger. Plus two balls 167, plus 01380, plus three balls 94.  
04 00 44 36 CDR 00167, 01380, 00094. Over.  
04 00 44 42 CMP Got it.  
04 00 44 43 CDR Okay.  
04 00 45 05 CDR Okay, Houston, my readings for 06 20 is plus 30186, plus 19360, plus 35913. Over.  
04 00 45 23 CC Roger, we copy. Snoop, cap - Snoop, Houston. We'd like to uplink a - Got a load for us if you'll give us P00 and data. And we'll have some word on the tunnel procedure momentarily. Over.  
04 00 45 43 IMP ... Tom.

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Day 5 - Page 41  
Tape 10-03601

04 00 45 48 CDR Yes. Go. P00. We're in P00 and data; you got it.

04 00 46 06 LMP Are we doing the drift check now?

04 00 47 06 CMP Houston, this is Charlie Brown. I never did get that DAP load. You got one for me? Over.

04 00 47 14 CC Roger, we got it here for you, Charlie Brown, if you're ready to copy. CSM weight is 36 688: gimbal trim: pitch, minus 0.73; yaw, plus 0.82; LM weight 31 117. Over.

04 00 47 43 CMP Roger. CSM weight 36 688; minus 73, plus 82; LM weight 31 117. How do you want that DAP set up today to balance these quads?

04 00 48 07 CC ...

04 00 48 10 CMP Say again. Over.

04 00 48 15 CC Roger. Use a B/D roll.

04 00 48 17 CMP Roger. Use B/D.

04 00 48 22 LMP Houston, Snoop. Are you done?

04 00 48 28 LMP Never mind, I can see you're not. Have you got our DAP load on page 45?

04 00 48 38 CC Affirmative. Coming up on you now. CSM weight 36 688; LM weight 31 117. Over.

04 00 48 52 LMP John, LM is 31 117, CSM is 36 688 and understand the 501 and 547 are still good.

04 00 49 06 CC Affirmative. ...

04 00 49 08 LMP Okay, as soon as we get our load, --

04 00 49 10 CC ...

04 00 49 13 LMP -- Okay, we're going to proceed, as soon as we get the computer back, to updating the AGS and go through the gimbal check until we hear from you.

~~CONFIDENTIAL~~

Day 5 - Page 42  
Tape 10-0360)

~~CONFIDENTIAL~~

04 00 49 24 CC Roger. We concur.

04 00 49 32 CC Snoop, Houston. We got just one more load to go and then we'll have it for you. Over.

04 00 49 37 LMP Okay.

04 00 50 13 LMP Charlie Brown, Snoop.

04 00 50 16 CMP Go ahead. Over.

04 00 50 17 LMP On VHF A, was your SQUELCH all the way OFF?

04 00 50 20 CMP That's affirmative.

04 00 50 21 LMP Okay.

04 00 50 25 CMP I had the SQUELCH up and down when you guys were transmitting; I couldn't do any good either way.

04 00 50 30 LMP Okay.

04 00 52 34 CDR Gene-o, I'm --

04 00 52 35 LMP Yes.

04 00 52 36 CDR -- I'm right over Diamondback and Sidewinder.

04 00 52 38 LMP Are you really?

04 00 52 39 CDR Right over! --

04 00 52 40 CC Hello, Snoop, Houston. We are through with the load. The computer is yours. Charlie Brown and Snoop, if you're ready to copy, we have a pro --

04 00 52 48 LMP Copy, and I'll work on the AGS.

04 00 52 49 CC -- vent. Over.

04 00 52 50 CMP Roger. Go ahead.

04 00 52 58 CC Roger, Snoop. On activation 38, we want you to -- to vent the tunnel using the normal regulator check with the following exceptions. Are you ready to copy? Over.

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Day 5 - Page 43  
Tape 10-03601

- 04 00 53 15 CDR Go ahead. Are we still hot? Go ahead.
- 04 00 53 21 LMP It's not hot, Tom.
- 04 00 53 23 CC Okay. We assume you've gone through the regulator check, so we're going to shorten this procedure. In step 2 - step 2 on activation 38 --
- 04 00 53 35 LMP Tell them we have it.
- 04 00 53 36 CC -- CABIN DUMP valve. We want that OPEN. CABIN REPRESS to CLOSE. Activation, page 39, step 3; the forward CABIN DUMP valve, OPEN, then AUTO at 3.5 psi. Now, that will give us 1.5 DELTA-P in the tunnel and at this time, CMP should be monitoring the LM/CM DELTA-P. Now, all we're concerned about is the hatch integrity check for the command module using this procedure. We don't have to take the tunnel all the way down. Now we will have to eliminate the RCS hot fire, the yaw thruster firing, and we'll get that out of the way after undocking. Over.
- 04 00 54 29 CDR Okay. I think we got it Charlie. On page 38, step 2, that's verify OVERHEAD CABIN DUMP valve to OPEN instead of AUTO. CABIN REPRESS to CLOSE on step 3; OPEN and AUTO at 3.5; and we'll restrict the yaw firing thrusters; you're concerned about the command module hatch integrity check, and at thrust, you want to assume that when he releases the probe that the 3.5 psi will not hurt the probe. Over.
- 04 00 55 02 CC That's affirmative. We've run that through the experts, Tom, and it will not hurt the probe or the drogue. In repressurizing, don't forget to put the OVERHEAD DUMP valve - OVERHEAD DUMP valve back to AUTO when you REPRESS. Over.
- 04 00 55 17 CDR ... Yes. We know all about that, Charlie. Okay, we're ready to go through it - we're ready to go --
- 04 00 55 24 CC ... the tunnel back up again --
- 04 00 55 27 CDR ... we're ready to go ahead through it right now, when John's ready.

~~CONFIDENTIAL~~

Day 5 - Page 44  
Tape 10-03601

~~CONFIDENTIAL~~

04 00 55 32 CMP Okay, let me get up here in the tunnel there, Tom.  
04 00 55 35 CC We'd like you to stay - Okay, troops, now we'd like you to stay at about 3.5, for a couple of minutes so we can get a hatch integrity check in the command module. Over.  
04 00 55 50 CDR Let's start there, Gene-o.  
04 00 55 52 LMP Okay.  
04 00 55 53 CMP Okay. Go ahead, Tom. What position you want me to be on the tunnel? Do you want me on CM DELTA-P?  
04 00 56 02 CDR I'm going ... to get ...  
04 00 56 04 CMP Okay. Go ahead, Tom.  
04 00 56 07 LMP On what page?  
04 00 56 08 CDR Right here. Read it off.  
04 00 56 11 LMP We didn't do that regulator check, though.  
04 00 56 13 CDR No. we haven't done it; we're only going down to 3.5. Okay.  
04 00 56 17 LMP CABIN GAS RETURN, EGRESS.  
04 00 56 19 CMP ...  
04 00 56 21 LMP ... starting it off right now, John, I - I'll give you a hack when we're going down. CABIN GAS RETURN, EGRESS.  
04 00 56 27 CDR CABIN GAS RETURN, EGRESS.  
04 00 56 30 CC Snoop, Houston. It'd give a warm feeling if you could talk us through this.  
04 00 56 34 LMP ... CABIN GAS RETURN, EGRESS.  
04 00 56 37 CDR Okay, let me go back to - back to --  
04 00 56 39 LMP How do you read me VOX, Houston?

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Day 5 - Page 45  
Tape 10-03601

04 00 56 43 CDR -- Did your suit start to flutter? Okay, ... ready.

04 00 56 49 LMP CABIN GAS - CABIN GAS RETURN - Wait a minute, wait a minute. Start here, babe, or back here?

04 00 56 54 CDR No, we've already got - we've already got through all that.

04 00 57 00 LMP Okay, Houston, starting at 96:05, step number 2. Is that correct?

04 00 57 08 CC ...

04 00 57 14 LMP Both PRESS REG's A and B to EGRESS.

04 00 57 16 CDR I've got an EGRESS, let's go.

04 00 57 17 LMP Roger, they're EGRESS. CABIN GAS RETURN, EGRESS.

04 00 57 19 CDR Okay.

04 00 57 24 LMP Stand by, OVERHEAD CABIN DUMP valve, OPEN.

04 00 57 29 CDR Stand by,

04 00 57 36 LMP OPEN. Okay, CABIN REPRESS, CLOSED.

04 00 57 41 CDR Okay.

04 00 57 44 LMP Got it CLOSED?

04 00 57 45 CDR Yes.

04 00 57 46 LMP PRESS REG B, EGRESS.

04 00 57 49 CDR EGRESS.

04 00 57 50 LMP ... B - Bravo. Okay?

04 00 57 52 CDR Go.

04 00 57 55 LMP Okay, FORWARD CABIN valve OPEN and at AUTO at 3.5.

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Day 5 - Page 46  
Tape 10-03601

~~CONFIDENTIAL~~

04 00 58 00 CDR Okay, it's ... --  
04 00 58 01 LMP Why don't you get that, Tom, and I'll tell you when.  
04 00 58 03 CDR Okay, and I've got PRESS REG A, CLOSE; EGRESS, too. And this should be PULL to EGRESS, right?  
04 00 58 10 CMP That's right.  
04 00 58 11 LMP I don't know. What'd I tell you? Wait a minute.  
04 00 58 12 CDR You didn't have --  
04 00 58 13 CC ... right now.  
04 00 58 18 LMP Houston, where is the SUIT GAS DIVERTER valve on this? It's in EGRESS, that should be right.  
04 00 58 27 CC SUIT GAS DIVERTER valve should be in EGRESS.  
04 00 58 30 LMP That's what we figured. Okay.  
04 00 58 31 CDR Okay.  
04 00 58 32 LMP And just to verify we got a PRESS REG A in EGRESS; and PRESS REG B in EGRESS. Is that correct?  
04 00 58 39 CDR Yes. That's right.  
04 00 58 44 LMP Okay, we're going to start dumping the cabin down to 3.5.  
04 00 58 50 LMP Do it slowly, babe. Okay, there's 5.  
04 00 58 54 CDR Okay.  
04 00 58 55 CMP I have a ...  
04 00 58 57 LMP 4.8. 4.5. 4.2.  
04 00 59 02 CMP ... want a 1 psi.  
04 00 59 04 LMP 4.0. 3.8. Okay, our suits are holding 3.5. Stop it, Tom. We're down to 3.5 and our suits are about 4.2.

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Day 5 - Page 47  
Tape 10-03601

04 00 59 19 CMP At 1.5 psi.

04 00 59 21 CC Roger, Snoop. We copy. 3.5 psi. And we copy Charlie Brown, 1.5 psi. Now hold - let's hold for a couple of minutes to get a hatch integrity check. Charlie Brown, watch your cabin pressure. Over.

04 00 59 32 CMP Yes, I'm watching that.

04 00 59 40 LMP ... like spring in Chicago in here. There's snow all over the place.

04 00 59 48 CC Roger.

04 01 00 05 LMP Tom, I'm going ahead with the AGS bit while I can.

04 01 00 08 CDR Good. Okay.

04 01 00 32 CMP Yes, let's start official, here.

04 01 00 35 CDR It's starting to build up. I'm going to close it. Yes, our pressure started to build up which meant the tunnel pressure's built --

04 01 00 46 CMP ...

04 01 00 48 CDR -- it started to go up to 4.

04 01 00 51 CMP Oh, no.

04 01 00 55 LMP Houston, did you read Snoopy? Our pressure went from 3.5 up to 4. And then Tom just closed the OVERHEAD DUMF valve.

04 01 01 03 CMP Okay, mine's holding at 1 right now.

04 01 01 06 CC Roger.

04 01 01 08 CMP That's because we ...

04 01 01 15 CC Charlie Brown and Snoop, . . . . . CABIN GAS RETURN to CABIN. Over.

04 01 01 28 LMP Roger. CABIN GAS RETURN to CABIN.

~~CONFIDENTIAL~~

Day 5 - Page 48  
Tape 10-03601

~~CONFIDENTIAL~~

04 01 01 35 CC The ... repressurizing now and we'd like to be sure that --

04 01 01 38 CDR CABIN GAS --

04 01 01 39 CC - - - -

04 01 01 40 CDR To AUTO.

04 01 01 41 CC -- Over.

04 01 01 45 LMP Okay.

04 01 01 46 CDR CABIN GAS RETURN to AUTO.

04 01 01 47 LMP CABIN GAS RETURN to AUTO is what you want, isn't it?

04 01 01 54 CC ... affirmative.

04 01 01 57 LMP And we're ready to REPRESS, I guess, at this point.

04 01 02 04 CC That's GO.

04 01 02 06 CDR Okay, ... get this out of the way.

04 01 02 16 CDR Okay.

04 01 02 29 CDR We've got 5; that's good enough. We've got 5.

04 01 02 38 LMP Okay, Houston, we're up to 5.

04 01 02 49 CDR FORWARD CABIN DUMP valve, OPEN in AUTO; it's AUTO. PRESS REG B, CLOSE.

04 01 02 55 LMP We had a procedure for it. Wait a minute. Do you have a procedure for us for an integrity check?

04 01 03 01 CDR ... ...

04 01 03 07 CDR We're all staying --

04 01 03 08 LMP Okay, you're going to pass us a procedure for a hatch integrity check?

04 01 03 13 CDR ... good enough.

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Day 5 - Page 49  
Tape 10-0360J

04 01 03 15 CC ... - -  
04 01 03 16 CDR That's right.  
04 01 03 18 CC ... that's alright.  
04 01 03 19 CDR That's right. Yes, we're okay.  
04 01 03 22 CC Okay. Fine. You can press on. Over.  
04 01 03 26 CDR Okay.  
04 01 03 29 LMP Tom, we ought to do that regulator check, huh?  
04 01 03 35 CDR ... The tunnel's just vented down there -  
04 01 03 43 LMP Screw the damn thing. Let's go on - -  
04 01 03 45 CDR Yes, let's go on. Well, I think, we - what we - our functions - I'm going to put - let's put this final configuration for undocking, okay?  
04 01 04 00 CC Snoopy, Charlie Brown, only thing is reminder PRESS REG's A and B back to CABIN. Over.  
04 01 04 06 CDR That's right. We're getting them, Charlie.  
04 01 04 12 CMP Okay, we're maneuvering back to attitude at this time, Tom. We're going to be a little more rigorous, now.  
04 01 04 23 CDR ... some flow in here; ready?  
04 01 04 26 LMP Okay. PRESS REG A and B, CABIN.  
04 01 04 28 CDR Yes, they're CABIN; the REPRESS is AUTO. All set.  
04 01 04 38 LMP ... take my helmet and gloves off.  
04 01 04 39 CDR Yes.  
04 01 04 47 CDR ...  
04 01 04 48 CC Charlie Brown, Houston. Two things for you: we'd like another readout on the LM/CM DELTA-P, and also disable all roll jets. Over. Until we can get undocked.

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Day 5 - Page 50  
Tape 10-03601

~~CONFIDENTIAL~~

04 01 05 00 CMP Roger. All roll jets coming OFF, and LM/CM DELTA-P is 0.9.

04 01 05 10 LMP Houston, this is Snoop. I gave the AGS an update and an alignment, and then when I checked VERB 83, my local vertical angle, it was off by about 20 degrees, so I'm going through the procedure again.

04 01 05 26 CC Roger, and we have a K-vector update for you. Over.

04 01 05 33 LMP Okay, fire it.

04 01 05 38 CC Roger. 090 00 03 00.

04 01 05 45 LMP 090 00 03 00?

04 01 05 52 CC Affirmative.

04 01 06 15 CC Snoopy, Charlie Brown, this is Houston. We'd like to - we got a little problem with your gyro platform as it appears, and X gyro torquing angle is a little large. We'd like you to repeat the drift check. Over.

04 01 06 32 LMP ... and you want us to repeat the drift check.  
Roger, give us a second here.

04 01 06 37 CDR Shit!

04 01 06 40 CC Roger. That's on page 43.

04 01 06 46 LMP ... I load in the K-factor, I just load it in VERB - in 90, don't I?

04 01 06 49 CDR Yes. Yes, ... hot voice.

04 01 06 53 LMP I load it in 47.

04 01 06 58 CDR Yes. No problem. We haven't been doing it that way, but ..., we've just been going and just making the AGS monitor with that, so - yes. Six of one and half a dozen of the other. It doesn't matter.

04 01 07 15 CC Charlie Brown, Houston. We'd like one more read-out of the LM/CM DELTA-P. Over.

04 01 07 21 CMP Roger. Okay, it's 0.8.

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Day 5 - Page 51  
Tape 10-03001

- 04 01 07 39 CC Roger.
- 04 01 07 54 LMP They want you to do the drift check again, Tom, after this starts flashing.
- 04 01 07 56 CDR Yes, yes.
- 04 01 08 04 CC Snoop, Houston. We copy you entered the K-factor wrong. We need 90 hours and 3 seconds, not 30 seconds. Over.
- 04 01 08 14 LMP Okay, 90 hours and 3 seconds. My mistake.
- 04 01 08 29 LMP Better let that run its course. Why don't you start on the - on the DPS - DAP throttle tests? You can do that - -
- 04 01 08 35 CDR Well, I've got to get this fine aligned; then I'll -
- 04 01 08 36 LMP Okay, okay.
- 04 01 08 37 CDR ...
- 04 01 08 39 CC Charlie Brown and Snoop, we have 30 minutes - 30 minutes to LOS. If we don't get the RCS hot fire in, we're still GO for undocking; you can do that on the back side. Over.
- 04 01 08 55 CDR Okay. What's - what's the latest time for undocking now, Charlie?
- 04 01 09 03 CC Stand by.
- 04 01 09 13 CDR ...
- 04 01 09 25 LMP You go ahead and get that drift.
- 04 01 09 27 CMP ... be flashing a ... and I'll need that to ... - -
- 04 01 09 37 CC Snoop, Houston. Undocking time is 98:22; it's about an hour and 4 minutes. Over.
- 04 01 09 46 CDR Right. 98:22:00.
- 04 01 09 50 CMP ...
- 04 01 09 54 CDR This thing's operating so slow, I can't - -

~~CONFIDENTIAL~~

Day 5 - Page 52  
Tape 10-03601

~~CONFIDENTIAL~~

04 01 09 56 CMP Yes, I know, it really is. Okay.

04 01 10 03 CDR Charlie Brown, Snoop. We're ready to do another one of those drift checks. Let me know when you have VERB 06, NOUN 20; I'll give you a mark when they ENTER. Over.

04 01 10 13 CMP Now. Over.

04 01 10 14 CDR Roger. 3, 2, 1 -

04 01 10 18 CDR MARK.

04 01 10 19 CDR VERB 06, NOUN 20.

04 01 10 20 CMP ... plus 00393, plus 01300, plus 0428.

04 01 10 33 CDR Okay, copied you. 00393, 01300, and 0428 - we need one more number.

04 01 10 44 CMP 00428.

04 01 10 46 CDR Okay, got it.

04 01 10 58 CDR Which one?

04 01 11 07 CDR Okay.

04 01 11 08 CC Houston. Let me read you the angles that we got and see if they confirm. You ready to copy?

04 01 11 17 CC Roger. For the CSM, it's plus 00393, plus 01300, plus 00428. For the LM, plus 29959, plus 19285, plus 35578. Over.

04 01 11 39 CDR Houston, Snoopy. Those are correct. Over.

04 01 12 04 CC Snoop, Houston. Somebody cut in on us here on the loop. Did you copy those angles?

04 01 12 09 CDR Yes, I copied them and they were correct. Go ahead and go through the DAP throttle set here.

04 01 12 17 LMP Tom, circuit breaker STAB/CONTROL DEFA POWER, CLOSED.

04 01 12 20 CDR Go.

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Day 5 - Page 53  
Tape 10-03601

04 01 12 22 IMP MODE CONTROL, AUTO:  
04 01 12 23 CMP Hello, Houston, Charlie Brown here ....  
04 01 12 31 IMP Verify GUIDANCE CONTROL, PGNS.  
04 01 12 32 CMP Roger. What about not rolling to this 180 degrees roll here until we get undocked? Would that be alright?  
04 01 12 40 IMP THROTTLE CONTROL, MANUAL. MANUAL THROTTLE, COMMANDER. TTCA, COMMANDER; THROTTLE, and MIN. Way down, now. Remember that.  
04 01 12 51 CDR Yes, got it.  
04 01 12 58 CMP I don't know how I'm going to roll with the roll jets disabled.  
04 01 13 05 CC Roger, we copy, John. Stand by. We're running this one around the room. And I've got a SEP pad if you're not busy.  
04 01 13 14 CDR Proceed. ...  
04 01 13 18 CMP Go ahead, over.  
04 01 13 23 CC Roger. SEP. It's RCS/G&N and it's NA down to NOUN 33. We got 098:471600, NA down to the pitch angle, 014 degrees. Over.  
04 01 13 46 CDR PROCEED.  
04 01 13 47 CMP Roger, 098:47:1600 --  
04 01 13 49 CDR What's our trim?  
04 01 13 52 CMP 14 degrees pitch.  
04 01 13 57 CC Good readback, Charlie Brown.  
04 01 14 05 CDR And we go ENGINE ARM, DESCENT, and we do not PROCEED. Okay, we did VERB 34, ENTER.  
04 01 14 24 CDR Okay, Houston, this is Snoopy. TTCA coming up to 40 percent. Now soft stop. Now MAX throttle. Now MIN, and it looks good.

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Day 5 - Page 54  
Tape 10-03601

~~CONFIDENTIAL~~

04 01 14 45 CC Roger. We copy. And Charlie Brown, we noticed when you went through your DAF load, you did not update your gimbal trim. They're quite a bit off. Over.

04 01 15 00 CMP Okay, I'll fix them.

04 01 15 03 LMP Houston, Snoopy. How's that for a K-factor time? Okay, if it's a good K-factor time, it's going in.

04 01 15 33 LMP Okay, Tom, you got ENGINE ARM, OFF?

04 01 15 35 CDR Yes.

04 01 15 36 LMP Breaker STAB/CONTROL DECA POWER, OPEN?

04 01 15 37 CDR Yes.

04 01 15 38 LMP THROTTLE CONTROL, AUTO.

04 01 15 39 CDR Yes.

04 01 15 40 LMP TTCA, JETS.

04 01 15 41 CDR Go.

04 01 15 42 LMP MODE CONTROL: PGNS, OFF.

04 01 15 44 CDR Yes.

04 01 15 45 CMP ...

04 01 15 49 LMP I'm down to page 47. I did everything up here, Tom.

04 01 15 53 CDR Okay.

04 01 16 02 LMP I got all those RCS pressure verification ...

04 01 16 10 CDR Are we, are we still on hot mike?

04 01 16 12 LMP No.

04 01 16 15 CDR Okay, let's go through it.

04 01 16 16 LMP Okay, MASTER ARM, ON. Do you have it on? Right here.

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Day 5 - Page 55  
Tape 10-03061

04 01 16 20 CDR Okay, MASTER ARM, ON. Got the STAGE SEQUENCE light.

04 01 16 24 LMP Okay, MASTER ARM, ON: HELIUM PRESSURE, RCS, FIRE, and I'll -- Stand by, baby.

04 01 16 33 CDR Ready?

04 01 16 34 LMP Go. Powee! There's - helium pressure came down slightly. Hey, we're GO on that pressuriza - -

04 01 16 46 CDR Turn it OFF, MASTER ARM, OFF.

04 01 16 49 LMP Okay, recycle. Let me recycle these valves. See what happens, those damn things go when you do it.

04 01 16 59 CDR Okay. It looks like we got all the Parker valves squared away.

04 01 17 15 LMP Yes. I know it. Okay. Verify MASTER ARM, OFF.

04 01 17 17 CDR Go.

04 01 17 18 LMP And RCS REG's A and B warning lights are OFF.

04 01 17 20 CDR Go. DESCENT REG.

04 01 17 31 CMP ...

04 01 17 35 LMP Verify the pressures and temperatures on the RCS and they're all go. And Houston, this is Snoopy. Our helium pressure on both RCS REG's is 2900 psi. T.P., let me start out with the -- Okay, STAB/CONTROL: ATTITUDE DIRECT CONTROL, CLOSED on your side. GUIDANCE CONTROL PGNS, that's go. DEAD BAND, MAX.

04 01 18 17 CDR GO.

04 01 18 18 LMP X-TRANSLATION, 4 JETS.

04 01 18 20 CDR GO.

04 01 18 21 LMP MODE CONTROL: PGNS, ATTITUDE HOLD.

04 01 18 25 CDR GO.

04 01 18 26 LMP ATTITUDE CONTROL, three, PULSE.

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Day 5 - Page 56  
Tape 10-03601

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04 01 18 31 CDR GO.  
04 01 18 32 LMP ACA/4-JET (COMMANDER), DISABLE. TTCA is ENABLED.  
04 01 18 39 CDR GO.  
04 01 18 48 LMP Okay, Charlie Brown, this is Snoopy. We're calling for you to be in a MIN DEAD BAND, ATTITUDE HOLD. Okay, we're going to start your RCS checks. We'll give you a hack when we go hot fire.  
04 01 19 36 CDR Roger and we will not yaw.  
04 01 19 43 CC And, Charlie Brown, you can have your computer back. We're through with your load; and we're with you, Snoop, on the hot fire.  
04 01 19 48 CDR Okay, Charlie ...  
04 01 19 58 LMP Okay. These are all cold fire. Cross stop, roll right.  
04 01 20 06 CDR God damn!  
04 01 20 09 LMP Let me recycle those.  
04 01 20 14 CDR Damn caution and warning system.  
04 01 20 16 LMP Okay, try rolling right, again.  
04 01 20 21 CDR There's another one. Freak.  
04 01 20 23 LMP That's no good. Roll left.  
04 01 20 32 LMP Houston, are you reading these numbers?  
04 01 20 38 CC Roger. We're reading them.  
04 01 20 46 LMP Pitch up. Pitch down. Yaw right; this is cold fire. Yaw left. Okay, John, you can go to wide deadband ATTITUDE HOLD. Houston, what do you make out of that?  
04 01 21 17 CDR I want to make - I want to - ...  
04 01 21 22 CC Stand by. I think we're okay. Stand by.  
04 01 21 55 CDR You want to put your helmet and gloves on for this?

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04 01 22 12 LMP Houston, we'll stand by for your GO until we proceed further.

04 01 22 19 CC Roger. Stand by. And, Charlie Brown, we show you in the DAP MIN deadband. Over.

04 01 22 34 LMP Charlie Brown, you can go to wide deadband for us, now, ATTITUDE HOLD.

04 01 22 58 LMP ... docking ...

04 01 23 00 CDR Yes, that'll be okay.

04 01 23 02 LMP I haven't even begun the day yet.

04 01 23 03 CDR Yes (laughter). You want to be on hot mike?

04 01 23 11 LMP Make any difference?

04 01 23 34 CDR Look at those.

04 01 23 36 LMP They'll go out when you can push the valves - push the breakers in.

04 01 23 47 CDR We can't wait around for them to --

04 01 23 49 LMP Let's - let's continue.

04 01 23 50 CC Snoopy, we're GO with those numbers on the cold fire. Go ahead with the MIN ... impulse, step 5.

04 01 23 56 CDR Okay, real good, we'll go ahead. That's the first time we'd - we had seen numbers that hadn't gone to the full range. I just wanted to check with you. With our own analysis, we were GO, but we wanted to give you a check. Okay, we'll go ahead.

04 01 24 05 LMP GUIDANCE CONTROL: AGS-MODE CONTROL: AGS, ATTITUDE HOLD.

04 01 24 10 CDR Go.

04 01 24 13 LMP ATTITUDE CONTROL, three, MODE CONTROL. Your COMMANDER is 4 JET, ENABLE. Now, when you hit hard over here, it's going to be a hot fire.

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04 01 24 25 CDR Yes.

04 01 24 26 CC Charlie Brown, we'd like you in wide deadband.  
Over.

04 01 24 30 CMP Stand by.

04 01 24 44 LMP John, let us know when you're getting wide,  
because some of these are going to be hot fire.

04 01 24 56 CMP Okay, we're in wide.

04 01 24 58 CDR Okay.

04 01 24 59 LMP Okay, we're going to proceed, and we'll let you  
know when we hot fire here.

04 01 25 02 CDR Okay.

04 01 25 05 LMP Okay, Tom, we don't want any yaw. Is that  
right?

04 01 25 07 CDR That's right.

04 01 25 08 LMP Okay, roll right, and John, you'll get a pulse  
of hot fire. Let's go. Pulse it.

04 01 25 14 CMP Good.

04 01 25 18 LMP Left ... pitch up ... pitch down.

04 01 25 26 CDR Okay, thrusters seem nice and crisp, seem real  
good.

04 01 25 29 LMP Okay, you want to - to yaw right and left without  
going to the - to the hard stops?

04 01 25 35 CDR Yes.

04 01 25 40 LMP Let's go. Okay. ATTITUDE CONTROL, three, PULSE.  
Okay, get your four TTCA breakers in and I'll get  
mine in.

04 01 25 52 CMP You want me to recycle the ... here?

04 01 25 54 LMP All in?

04 01 25 55 CDR Yes.

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04 01 26 02 LMP Okay, CWEA, OPEN, then CLOSE. Okay, lights are OFF; all the flags are OFF. This is a hot fire in AGS. Commanders - TfCA; okay, ready to do it?

04 01 26 21 CDR Yes.

04 01 26 27 LMP Okay, up, down, right, left, and then fore and aft. John, you ready for a hot fire? Okay, up.

04 01 26 38 CDR Go.

04 01 26 39 LMP Up. Down. Left. Right.

04 01 26 43 CDR Go.

04 01 26 44 LMP Forward. Aft I guess they all fired, babe.

04 01 26 50 CDR They all fired, Houston, but we didn't get it on the DSKY because I made a real short pulse.

04 01 26 54 LMP You wouldn't get them anyway. This is AGS, babe. We weren't - -

04 01 26 56 CDR Yes, right. Yes.

04 01 27 01 CC Roger, Snoop. We copy. Charlie Brown, we'd like to go to EMAG's ATT 1 rate 2, so we can get some attitude hold. Over.

04 01 27 13 CDR Okay.

04 01 27 15 LMP GUIDANCE CONTROL, PGNS?

04 01 27 17 CDR Yes.

04 01 27 18 LMP Okay, now we'll see them on here. You better tell them we're going to hot fire again. John, we're going to hot fire again. You ready?

04 01 27 31 CMP Go ahead.

04 01 27 32 LMP Okay, go up.

04 01 27 34 CDR It fired.

04 01 27 38 LMP Down. You got to fire long, and I don't think we want to.

~~CONFIDENTIAL~~

Day 5 - Page 60  
Tape 10-03601

~~CONFIDENTIAL~~

04 01 27 43 CDR No.  
04 01 27 44 LMP Right.  
04 01 27 46 CDR Yes.  
04 01 27 47 LMP Left. Forward. Aft.  
04 01 27 52 CDR Did we get a - We got to hit it E, 6, ENTER ...  
04 01 27 56 LMP Son of a bitch, yes, I do. We never got a - Hit a E 6 E. ENTER 6. Okay, now try the right and let, fore and aft again. Okay, we got this and we got this, but you've got to hold them longer, and - we don't want to hold them longer.  
04 01 28 26 CDR Yes, I don't want to waste any --  
04 01 28 27 LMP Why don't you tell them that?  
04 01 28 28 CDR Okay, Houston. You - As you probably read, the DSKY didn't go, but I didn't - I made just short pulses, and I didn't want to waste any fuel here and hold it that long with this condition that we have in the tunnel, so they fired, and they fired real crisp, so I think we're in good shape. Okay.  
04 01 28 45 LMP X-TRANSLATION, 2 JETS.  
04 01 28 46 CC Roger. We copy, Snoop. Stand by for our GO.  
04 01 28 52 CDR Want to go AGS?  
04 01 28 54 LMP GUIDANCE CONTROL, AGS.  
04 01 28 55 CDR Go.  
04 01 28 58 LMP Okay, we go right into rendezvous radar self-test.  
04 01 29 01 CDR Okay. Okay, Charlie Brown, Snoop. Verify that RCS THRUSTER B-3, OFF, and your RADAR TRANSPONDER, OFF.  
04 01 29 11 CMP Roger, the RADAR TRANSPONDER; HEATER and B-3 is OFF.

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Day 5 - Page 61  
Tape 10-03601

04 01 29 15 CDR Roger. Okay, RENDEZVOUS RADAR, RELEASE.

04 01 29 20 CC And Snoop, Charlie Brown, you're GO for undocking. We had one indication that the - On your hot fire that jet B-3 down, we had a TTC stuck on, but if you don't hear anything, we're GO.

04 01 29 36 CDR Sounds good here.

04 01 29 38 LMP CROSSPOINT 3, both, HI MULTIPLY.

04 01 29 40 CDR Go.

04 01 29 43 LMP We're proceeding with the rendezvous radar self-test. RATE/ERR MONITOR, both, RENDEZVOUS RADAR.

04 01 29 47 CDR Yes.

04 01 29 49 LMP ATTITUDE MONITOR, both, PGNS.

04 01 29 51 CDR Go.

04 01 29 53 LMP MODE SELECT, LANDING RADAR.

04 01 29 56 CDR RENDEZVOUS RADAR, isn't it?

04 01 29 57 LMP LANDING RADAR.

04 01 29 58 CDR LANDING RADAR, right. Go.

04 01 30 00 LMP ... RANGE RATE - RANGE RATE MONITOR, RANGE RATE.

04 01 30 04 CDR Yes.

04 01 30 05 LMP SHAFT/UNION, ±50°.

~~CONFIDENTIAL~~

Day 5 - Page 62  
Tape 10-03601

~~CONFIDENTIAL~~

04 01 30 09 CDR Yes.  
04 01 30 10 LMP RENDEZVOUS RADAR, SLEW.  
04 01 30 13 CDR Go.  
04 01 30 14 LMP Put it to SLEW position. Okay?  
04 01 30 16 CDR I am.  
04 01 30 17 LMP TEMPERATURE MONITOR, RENDEZVOUS RADAR, plus 10 to 145.  
04 01 30 19 CDR Go.  
04 01 30 21 LMP Circuit breaker AC BUS A - RENDEZVOUS RADAR, CLOSE.  
04 01 30 24 CDR Go.  
04 01 30 25 LMP And RANGE/RANGE RATE, ALTITUDE/ALTITUDE RATE.  
04 01 30 27 CDR Go.  
04 01 30 29 LMP Now wait 30 seconds.  
04 01 30 30 CC ... got some words for you on your torquing angles  
you might want. Over.  
04 01 30 37 CDR Stand by.  
04 01 30 44 CC Roger, Gene-o. Looks like we got a constant bias  
in your yaw in your platforms. On our two drift  
checks, we get a bias of - a torquing angle of  
minus 03.540, and it appears to be a constant bias,  
because it's been the same between the two different  
drift checks. We're GO with that constant bias.  
We'd like Charlie Brown to look through the - his  
rendezvous window and see if we have a constant  
slippage, maybe, in the - in our docking attitude,  
and you can tell that by looking at the docking  
target. Over.  
04 01 31 23 CMP Roger, Charlie.  
04 01 31 35 LMP Charlie, give me a hock when we get close to LOS  
so I can get off the high gain, will you?  
04 01 31 38 CC Okay. We got 8 minutes.  
04 01 31 40 LMP I'll stay with you. If you pick me up at about  
2 or 3 minutes, I'll go off.

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04 01 31 45 CDR Okay.  
04 01 31 47 LMP Okay. PGNS RENDEZVOUS RADAR circuit breaker,  
CLOSED.  
04 01 31 49 CMP You just yawed off. You yaw to my left about -  
I'd say 2 degrees or so.  
04 01 32 04 CDR Okay. Go.  
04 01 32 05 CC Okay. Fine. We get a 3-degree bias, so that's  
it. Be advised that you're drifting off in yaw,  
Charlie Brown. You might want to watch your  
attitude.  
04 01 32 13 CMP Roger.  
04 01 32 14 CDR Okay. Go.  
04 01 32 15 LMP Okay. FLIGHT DISPLAYS: RANGE/RANGE RATE, ALTI-  
TUDE/ALTITUDE RATE, CLOSED.  
04 01 32 20 CDR Okay.  
04 01 32 23 LMP RANGE RATE --  
04 01 32 24 CDR I got it.  
04 01 32 27 LMP -- and ALTITUDE/ALTITUDE RATE. Okay. Slew  
antenna left to mode 1 region.  
04 01 32 31 CDR Okay. Should be coming out of mode 2.  
04 01 32 45 CDR Go ahead.  
04 01 32 53 LMP Slew up, down, left, and right. Then go to LOW  
mode and SHAFT/TRUNNION,  $\pm 5^\circ$ , and do the same  
thing.  
04 01 33 06 CDR Looks good. Go.  
04 01 33 08 LMP RENDEZVOUS RADAR, AUTO TRACK; caution light,  
master alarm, RADAR TEST, RENDEZVOUS RADAR;  
range tape drives and cross-pointers.  
04 01 33 20 CDR Yes.

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04 01 33 21 LMP FDAO needles vary between limits. After 12 seconds, range tape drives, NO TRACK, radar caution lights, off. Leave it where it is.

04 01 33 27 CDR Roger.

04 01 33 28 LMP Okay, those lights are off.

04 01 33 31 CDR Go.

04 01 33 32 LMP TEST MONITOR, AGC.

04 01 33 34 CDR Go. 1.55.

04 01 33 38 LMP TRANSMITTER POWER.

04 01 33 39 CDR 3, 4, 5.

04 01 33 44 LMP SHAFT ERROR.

04 01 33 46 CDR ... between 2.05 and 3 - 2.95.

04 01 33 52 LMP Okay.

04 01 33 55 CDR TRUNNION is the same. 2 to 2.95.

04 01 34 02 LMP AGC. AGC. AGC. AGC.

04 01 34 35 LMP RENDEZVOUS RADAR, LGC.

04 01 34 39 CDR Go.

04 01 34 40 LMP Wait 10 seconds.

04 01 34 55 CMP Snoopy, Charlie Brown.

04 01 34 57 CDR Go ahead, John.

04 01 34 58 CMP Roger. The EVA preparation is complete.

04 01 35 01 CDR Okay. Good show.

04 01 35 03 CC Charlie Brown, Houston. We're concerned about this yaw bias in the LM and apparent slippage of the docking ring. We'd like you to disable and keep disabled all roll jets until after undocking. Over. And undocking attitude - we will

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~~CONFIDENTIAL~~

Day 5 - Page 65  
Tape 10-03601

not maneuver to the undocking attitude. Just hold what we've got. Over.

04 01 35 28 CMP Roger. I'll ... mine.  
04 01 35 37 CDR ...  
04 01 35 38 CC And, Snoop, we got 3 minutes 50 seconds to LOS. Over.  
04 01 35 44 CDR Roger. 3:50 to LOS.  
04 01 35 50 CC And we'll see both Snoop and Charlie Brown at 98:25.  
04 01 35 55 CDR Alrighty. Real fine, Charlie.  
04 01 36 00 LMP What's the tape meter say, Tom?  
04 01 36 02 CDR Tape meter says 195.5. And the range rate is reading 479.  
04 01 36 17 CC Okay, Charlie Brown and Snoop. 3 minutes - going over the hill. You're GO for undocking and we'll see you around the other side.  
04 01 36 23 CDR Roger.  
04 01 36 26 CMP Roger.  
04 01 36 39 CDR Wow!  
04 01 36 49 CDR Okay, Gene-o.  
04 01 36 50 LMP Okay. You got all those?  
04 01 36 53 CDR Yes. Next thing is VERB 34, isn't it?  
04 01 37 01 LMP RADAR TEST, OFF?  
04 01 37 02 CDR RADAR TEST, OFF.  
04 01 37 03 LMP NO TRACK light, ON.  
04 01 37 04 CDR Yes.  
04 01 37 05 LMP CROSSPOINTER, CENTER?

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04 01 37 07 CDR Right.  
04 01 37 25 CDR Okay.  
04 01 37 27 CMP Roger.  
04 01 37 32 CDR Okay. There it went out. Next one, VERB 41,  
NOUN 72.  
04 01 37 42 CDR There.  
04 01 37 47 CMP Up rate?  
04 01 37 48 CDR No, no. You want to designate it DOWN, babe.  
04 01 37 53 CDR There you go. There you go. Plus - plus 283.  
There you - there - there it goes - right where  
it should be.  
04 01 38 22 LMP Okay, babe. There it is. Pull your - -  
04 01 38 25 CDR Pull the RENDEZVOUS - -  
04 01 38 26 LMP - - pull your RENDEZVOUS RADAR breaker, OPEN.  
04 01 38 29 CDR Okay. Go.  
04 01 38 31 LMP AC BUS, RENDEZVOUS RADAR, OPEN.  
04 01 38 33 CDR Go.  
04 01 38 35 LMP VERB 44, ENTER.  
04 01 38 41 CDR 97:34.  
04 01 38 45 LMP Oh, my golly.  
04 01 38 47 CDR Go to the AGS CAL. Okay. What can I do for  
you?  
04 01 38 55 LMP I don't know. John, are you going to be maneu-  
vering, or are you fixed now?  
04 01 38 59 CDR No, he's fixed.  
04 01 39 02 CMP Okay. I've stopped maneuvering.

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- 04 01 39 03 LMP Okay. I'll go into the AGS CAL, and I'll tell you when you have to disable thrusters. Okay?
- 04 01 39 08 CMP Roger.
- 04 01 39 13 CDR While Gene-o's going through this, according to what we had originally, John, I think you're fairly near the undocking attitude that we originally had, aren't you?
- 04 01 39 21 CMP Yes.
- 04 01 39 22 CDR It won't take much in stationkeeping to work it out. I hope those cats know what they're talking about - about putting that lobe on the probe when it extends - I think they probably are, because as soon as that starts to crack, that pressure should vent.
- 04 01 39 36 CMP Yes, I know. We're almost at the undocking attitude, except we should be rolled 180.
- 04 01 39 44 CDR Okay. Okay. Now, are you going to roll over 180 after we undock, then?
- 04 01 39 50 CMP No. When I get - The first thing I do when I undock is roll back right side up. So I'm okay.
- 04 01 39 56 CDR We must be okay like we are, huh?
- 04 01 39 58 CMP No, you'll have to figure out what the heck you're going to do. I'll be danged if I know.
- 04 01 40 02 CDR Well, look, babe, I'm just going to stay right in front of you.
- 04 01 40 06 CMP Okay.
- 04 01 40 08 CDR And if I'm right side up, the heck with it. I'll just go around like that. Don't worry about us. We don't want to waste any fuel. And if you just hold your attitude, when you release us, all I'm going to do is yaw right and pitch - I'll yaw right and then pitch up. We should be face to face, then.

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04 01 40 32 CMP Okay. We've got a small right roll going. Now, I don't know where we'll be when we get there.

04 01 40 38 CDR Okay.

04 01 40 42 LMP Okay, John. I'm at the - I'm at the point where I got to - my AGS calibration to do so - you've got to maneuver - you know, to that place where you're less than 0.1 degree per second - and we got those --

04 01 40 54 CDR He can't.

04 01 40 55 LMP You can't do it, huh?

04 01 40 56 CDR No.

04 01 40 58 CDR No, they told me not to do it.

04 01 40 59 CDR No. Our tunnel ring is slipping right now, so we can't do it, so we'll just have to skip.

04 01 41 08 LMP Find out where we are now, Tom, and that thing anyway - I'll just do it anyway. Going out to 1620.

04 01 41 20 CDR See, he's drifting.

04 01 41 36 LMP We can't do an AGS CAL test, huh?

04 01 41 38 CDR That's right. That little old Mylar just might screw up a few things around here.

04 01 41 50 CDR Okay. The only thing I've got left on my side is DPS pressurization and checkout.

04 01 41 55 LMP Well, shoot, if I can't do this, there ain't much sense in worrying about it.

04 01 41 58 CDR No.

04 01 42 01 LMP Okay, let's pressurize the damn DPS.

04 01 42 03 CDR Okay, John, we're going to go pressurize the descent stage, here. Okay.

04 01 42 09 LMP Let me check these. Press - temperature is GO.

04 01 42 23 LMP Oxidizer is barely GO, but that's alright.

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Day 5 - Page 69  
Tape 10-03601

04 01 42 31 LMP No, it isn't, it has plenty. Go.  
04 01 42 59 LMP DESCENT HELIUM REG 1, gray.  
04 01 43 00 CDR Go.  
04 01 43 01 LMP 2 is barber pole.  
04 01 43 02 CDR Yes.  
04 01 43 03 LMP Come and OPEN my ED LOGIC, Tom.  
04 01 43 06 CDR Okay.  
04 01 43 09 LMP MASTER ARM, ON.  
04 01 43 12 CDR MASTER ARM is coming ON.  
04 01 43 21 LMP Okay. DESCENT PROPELLANT ISOLATION VALVE, FIRE.  
04 01 43 25 CDR Stand by.  
04 01 43 27 CDR I heard something, didn't you?  
04 01 43 28 LMP Yes, I heard something. HELIUM PRESSURE/DESCENT START, FIRE.  
04 01 43 34 LMP Hey, wait a minute.  
04 01 43 36 CDR Yes.  
04 01 43 39 CDR Okay. MASTER ARM, OFF.  
04 01 43 43 CMP ... thrusters?  
04 01 43 45 CDR Nope. Tell me when it's pressurized.  
04 01 43 47 LMP We're pressurizing --  
04 01 43 48 CDR Okay.  
04 01 43 49 LMP -- the DPS, John.  
04 01 43 50 CDR MASTER ARM coming OFF.  
04 01 43 55 LMP God dang, that MASTER ARM, OFF. My LOGIC is going CLOSED.

~~CONFIDENTIAL~~

Day 5 - Page 70  
Tape 10-03601

~~CONFIDENTIAL~~

04 01 44 07 LMP PROPELLANT TEMPERATURE MONITOR. Okay, that's GO.  
HELIUM MONITOR, 440.

04 01 44 27 CMP ...

04 01 44 31 LMP You want to deploy our landing gear?

04 01 44 33 CDR Alright --

04 01 44 34 LMP Do it.

04 01 44 35 CDR Let's do it.

04 01 44 38 LMP John, we're ready to deploy our landing gear.

04 01 44 41 CMP Roger, ...

04 01 44 43 LMP Okay, Tom, circuit breaker (11), ED LANDING GEAR FLAG, CLOSED, and your LOGIC POWER, OPEN.

04 01 44 49 CDR Okay.

04 01 44 52 LMP MASTER ARM, ON. I can't catch it, it's dark anyway, so --

04 01 44 58 CDR It's - to heck with it. Let's keep on.

04 01 44 59 LMP Go ahead.

04 01 45 00 CDR Okay. Ready?

04 01 45 03 LMP Wait a minute. LANDING GEAR DEPLOY, FIRE.

04 01 45 08 CDR Okay, your B is CLOSED, A is OPEN, right?

04 01 45 09 LMP Yes. Stand by.

04 01 45 12 CDR The gear is coming down, John.

04 01 45 19 CDR Looks like we've got four in the green, babe.

04 01 45 21 LMP I don't know how we know it, but -

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Day 5 - Page 71  
Tal 10-03601

04 01 45 27 LMP LOGIC POWER, CLOSED?

04 01 45 32 CDR Yes. Fire the gear again.

04 01 45 35 LMP LANDING GEAR DEPLOY, FIRE, again.

04 01 45 36 CDR Yes.

04 01 45 37 LMP Did you do it?

04 01 45 38 CDR Yes. MASTER ARM, OFF.

04 01 45 40 LMP MASTER ARM, OFF. LANDING GEAR FLAG, OPEN?

04 01 45 44 CDR Yes.

04 01 46 04 LMP Can't get an AGS gyro drift check, I guess. Not when we're moving like that.

04 01 46 09 CDR No. I'm going to go ahead - we undock at 98:22, right?

04 01 46 29 LMP 98:22, yes.

04 01 46 32 CDR Is there anything else we need in this activation?

04 01 47 12 LMP How about setting up my ORB rate here in a minute.

04 01 47 14 CDR Yes.

04 01 47 15 LMP Wait until this update gets in.

04 01 48.01 CDR Oh, shoot!

04 01 48 10 CMP Hey, listen, you guys, I think that thing is off about 3 degrees. Maybe it must be steerable. I can't really - It looks okay.

04 01 48 17 CDR I think we are in good shape holding here, John. How's the tunnel pressure?

04 01 48 28 CMP I still have 810.

04 01 48 30 CDR Okay, it looks like it's holding. It looks like these things should lock in pretty good again. Right? When we - the solar - -

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Day 5 - Page 72  
Tape 10-03601

~~CONFIDENTIAL~~

04 01 48 38 CMP Yes.  
04 01 48 39 CDR ... solar corona.  
04 01 48 40 LMP What did that do to our alignment?  
04 01 48 53 CDR Have to pick it up again. Look at the solar corona there, Gene-o. It's a whitish yellow.  
04 01 49 07 LMP Yes.  
04 01 49 08 CDR John, I got the solar corona out here and the sun is going to be coming up shortly.  
04 01 49 13 CMP Roger.  
04 01 49 16 LMP Where you looking? Let's see.  
04 01 49 17 CDR Right through there. Can you look out my window?  
04 01 49 20 LMP Yes.  
04 01 49 23 CDR Just at the rims, and some of the mountain peaks are starting to get lighted. Beautiful view.  
04 01 49 29 LMP Watch it when it pops. It'll really hit you. Boy, that is beautiful, isn't it?  
04 01 49 33 CDR Here come da sun.  
04 01 49 35 LMP Some of those peaks are lighted.  
04 01 49 37 CDR Yes.  
04 01 49 46 CDR Here it comes. Watch out. Boom.  
04 01 49 48 LMP Wow. Man, I tell you. When it comes, it comes.  
04 01 49 53 CDR Why don't I go ahead and put mine back here, Gene-o?  
04 01 50 25 CDR You got the final there. Let's verify these circuit breakers.  
04 01 50 34 LMP Okay.

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Day 5 - Page 73  
Tape 10-03601

04 01 50 37 CDR We got about 31 minutes to undocking, John. We'll undock early so we can get squared away.

04 01 50 41 LMP How about setting up my 8-ball, Tom, as soon as I verify it here.

04 01 50 45 CDR Yes.

04 01 50 51 CMP Set it to what, Gene-o?

04 01 50 56 LMP Sorry, John, I didn't hear you. What did you say?

04 01 50 58 CMP ... where you want me to set up?

04 01 51 00 LMP Where you want him set up? I don't know. Tom asked you something. I'm not sure what it was.

04 01 51 04 CDR Tell him to stand by.

04 01 51 05 LMP Stand by a minute.

04 01 51 21 CDR Gene, I'm set up and ready for the undocking, babe.

04 01 51 43 CDR I'm going to put this back in the data file.

04 01 51 56 CDR ...

04 01 52 02 LMP Got your BALANCE LOAD and CROSS TIES both closed, huh? Your BUS TIE, rather.

04 01 52 06 CDR Yes.

04 01 52 10 LMP Your BUS TIE isn't CLOSED, is it?

04 01 52 12 CDR Yes.

04 01 52 13 LMP Okay.

04 01 52 14 CDR No. My BUS TIE isn't. I'm sorry.

04 01 52 15 LMP Leave those - leave those closed.

04 01 52 42 CDR I've got to have some water. I'm thirsty as hell.

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Day 5 - Page 74  
Tape 10-03601

~~CONFIDENTIAL~~

04 01 52 50 LMP I didn't get a very good agreement on this at all. Look at that. I never have.  
04 01 53 00 LMP I never did get agreement.  
04 01 53 06 CMP Hey, can you guys fix that yaw thing?  
04 01 53 11 LMP How are we going to fix it?  
04 01 53 13 CDR John, no problem. See, we'll just keep what we've got, and then as soon as we go into night-time and align we'll be in good shape. Okay?  
04 01 53 20 CMP Okay. Boy, I'm sure sorry. I don't know what the heck did that.  
04 01 53 33 CDR Probably what got to us is this doggone insulation.  
04 01 53 53 LMP That AGS is bad, babe. I don't like that. That's - that's - That's 40 degrees. How about setting up my ORB rate ball, babe?  
04 01 54 00 CDR Okay.  
04 01 54 13 CDR How is it?  
04 01 54 15 LMP That's the best we've got, right there.  
04 01 54 20 CMP Hey, I don't like it ...  
04 01 54 26 CDR Shit. We're drifting like mad.  
04 01 54 27 CMP Shoot, yes.  
04 01 54 31 LMP I guess we'll just have to wait and see on that one, babe. I don't know. We'll try it again. Let's go through our normal procedures, and if we get lost, we'll go back to VHF B SIMPLEX.  
04 01 54 41 CMP Okay.  
04 01 54 51 CDR José.  
04 01 54 53 CMP I don't know. Wait a minute.

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~~CONFIDENTIAL~~

Day 5 - Page 75  
Tape 10-03601

04 01 54 54 CDR What - How far are you going to have to maneuver? If I - Once we get squared away, all you have to do is maneuver in roll. It doesn't hurt us a bit. Are you going to have to maneuver much in pitch and yaw?

04 01 55 05 CMP About 10 degrees.

04 01 55 07 CDR Ah, hell. That won't hurt us a bit. You want to undock 10 minutes early? And get squared away? Or 5 minutes - 5 minutes should do it.

04 01 55 16 CMP I think we should.

04 01 55 18 CDR It's up to you. I'm sorry. I inadvertently hit the stick.

04 01 55 35 LMP You have VERB 76 in now.

04 01 55 39 CDR Oh, you put it in.

04 01 55 40 LMP Huh?

04 01 55 41 CDR You put it in, huh?

04 01 55 42 LMP I sure don't like that angle.

04 01 55 49 CDR (Cough)

04 01 56 10 LMP Okay, Tom, let's just verify these last few things except helmets and gloves, huh?

04 01 56 13 CDR Okay.

04 01 56 15 LMP Mission timer set?

04 01 55 16 CDR Yes.

04 01 56 17 LMP Event timer set?

04 01 56 18 CDR Yes.

04 01 56 19 LMP Overhead hatch locked?

04 01 56 20 CDR Yes.

04 01 56 21 LMP OVERHEAD CABIN RELIEF DUMP valve, AUTO?

~~CONFIDENTIAL~~

Day 5 - Page 76  
Tape 10-03601

~~CONFIDENTIAL~~

04 01 56 24 CDR Let's leave it closed. We don't want any --  
04 01 56 26 LMP Okay. Well, put that lock in so it doesn't go to the OPEN position.  
04 01 56 39 LMP That one right there is AUTO.  
04 01 56 43 CDR Yes.  
04 01 56 45 LMP REG's A and B, CABIN?  
04 01 56 46 CDR Yes.  
04 01 57 00 LMP GUIDANCE CONTROL, AGS?  
04 01 57 02 CDR Yes.  
04 01 57 03 LMP MODE SELECT, LANDING RADAR?  
04 01 57 05 CDR Yes.  
04 01 57 06 LMP RANGE/ALTITUDE MONITOR, RANGE RATE?  
04 01 57 08 CDR Go.  
04 01 57 09 LMP RATE/ERROR MONITOR, LANDING RADAR/COMPUTER?  
04 01 57 13 CDR Yes.  
04 01 57 14 LMP (CDR), RENDEZVOUS RADAR?  
04 01 57 16 CDR Right.  
04 01 57 17 LMP ATTITUDE MONITOR COMMANDER PGNS, and (LMP), AGS?  
04 01 57 19 CDR Go.  
04 01 57 21 LMP RATE SCALE, 5 degrees?  
04 01 57 24 CDR Right.  
04 01 57 25 LMP X-TRANSLATION, 2 JETS?  
04 01 57 27 CDR Yes.  
04 01 57 28 LMP BALANCE COUPLING, ON?

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Day 5 - Page 77  
Tape 10-03601

04 01 57 31 CDR Yes.

04 01 57 32 LMP DEADBAND, MAX; ATTITUDE CONTROL, three, PULSE; MODE CONTROL, both, ATTITUDE HOLD: You just turned AGS off, huh?

04 01 57 38 CDR Yes. I don't want to hit the stick.

04 01 57 41 LMP Okay. Turn these off for now, huh?

04 01 57 47 CDR Yes.

04 01 57 49 LMP Are you in jets over there?

04 01 57 50 CDR I'm in jets.

04 01 57 52 LMP When you go to throttle, you've really got to go hard. RENDEZVOUS RADAR, SLEW?

04 01 58 02 CDR Yes.

04 01 58 03 LMP ACA/4 JET, ENABLE, okay. You want to put your AOT heater on before we undock.

04 01 58 12 CDR Yes.

04 01 58 13 LMP You can see our track light.

04 01 58 18 CDR Yes.

04 01 58 26 LMP Helmets and gloves.

04 01 58 27 CDR (Cough) Oh, man, is that bright.

04 01 58 46 LMP Tom, why don't you keep this over there somewhere.

04 01 58 51 CDR Okay. I wish I had some tape.

04 01 59 26 CDR I can't stay down without a restraint, can you?

04 01 59 29 LMP What?

04 01 59 30 CDR I can't stay down, here, can you?

04 01 59 31 LMP You see our landing gear out there?

04 01 59 40 CDR I can't - I'm not going to look out --

~~CONFIDENTIAL~~

Day 5 - Page 78  
Tape 10-03601

~~CONFIDENTIAL~~

04 01 59 41 LMP Hey, I can damn near see one.  
04 01 59 42 CDR You're in the shadows. I can't. Can you set up at f:11?  
04 01 59 47 LMP f:8.  
04 01 59 52 CDR Your f is f:8, huh? Oh, got this thing all knocked around. That's what I had.  
04 02 00 08 CDR ... go ahead and put my helmet and gloves on.  
04 02 00 28 LMP There was something else I just wanted to do, and I don't remember what it was.  
04 02 00 51 CDR Give me a hand here, and I'll get this out of the way.  
04 02 01 09 LMP All in?  
04 02 01 10 CDR Yes. Tunnel lock.  
04 02 01 14 CMP Okay. ... undock at 98:22?  
04 02 01 17 CDR Right. 98:22, and I'll give you a hack at 20 minutes to go. You've got 20 minutes and 30 seconds.  
04 02 01 23 CMP Okay.  
04 02 01 35 LMP Put your AOT breaker in, Tom.  
04 02 01 37 CDR Okay. I've already got my AOT heater breaker in.  
04 02 01 40 LMP Huh?  
04 02 01 42 CDR You want the AOT breaker in? You got it?  
04 02 01 47 LMP Looking right back at the command module, right now.  
04 02 01 48 CDR 3, 2, 1, -  
04 02 01 57 CDR MARK.  
04 02 01 58 CDR 20 minutes to go.

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~~CONFIDENTIAL~~

Day 5 - Page 79  
Tape 10-03601

04 02 02 01 CMP You want to go 5 minutes early?

04 02 02 03 CDR At least 5 minutes early, in case we have to go to some attitude. Okay?

04 02 02 07 CMP Okay.

04 02 04 01 LMP Hey, John, while you're sitting there, do you want to try VHF A SIMPLEX again?

04 02 04 07 CMP Roger. Let's do it.

04 02 04 09 LMP Okay.

04 02 04 10 CMP Going to VHF A SIMPLEX now.

04 02 04 22 CMP Snoopy, Charlie Brown, how do you read?

04 02 04 24 CDR Beautiful.

04 02 04 25 LMP Roger, I'm reading you loud and clear. How me?

04 02 04 28 CMP I read you the same.

04 02 04 31 CDR You're coming in great, John.

04 02 04 34 LMP Okay, John, let's try VHF - let's try the DUPLEX ranging mode except I won't give you ranging; I'll just give you voice.

04 02 04 42 CMP Okay. Let's go to DUPLEX at D, okay?

04 02 04 46 LMP Okay. John, how do you read us?

04 02 04 53 CMP Read you loud and clear, Gene-o.

04 02 04 55 LMP Okay, this is the mode we're going to operate in except my transmit switch will be in VOICE/RANGING instead of VOICE, so maybe we're in.

04 02 05 02 CMP Yes, I ...

04 02 05 05 LMP I don't know.

04 02 05 07 CDR That could be what they were talking about on this corona buildup.

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04 02 05 12 LMP Hey, John, let's go to VHF SIMPLEX data. That's where we should be now. Let's go back there.  
04 02 05 19 CMP Okay, I've already done that.  
04 02 05 24 LMP Are you in A T/R and B RECEIVE, Tom?  
04 02 05 27 CDR On A T/R and B RECEIVE.  
04 02 05 29 LMP John, how do you read us?  
04 02 05 31 CMP It's loud and clear.  
04 02 05 32 LMP Okay, let's stay here.  
04 02 05 35 CDR John, you're so loud in these earplugs I have my volume down to 2. You're really booming through.  
04 02 05 43 CMP Good.  
04 02 05 53 LMP We ought to be in for 6 exciting hours.  
04 02 05 57 CDR It should be interesting.  
04 02 06 00 CMP Man, I hope that docking thing don't have anything to do with ... working or not working.  
04 02 06 08 CDR Yes.  
04 02 06 09 LMP How's DELTA-P these days?  
04 02 06 14 CMP The tunnel? 0.8, just what it was a couple or 3 minutes to go. It's still solid.  
04 02 06 27 CDR Those three capture latches do a pretty good job.  
04 02 06 30 CMP Yes, they do.  
04 02 06 33 CDR John, I think 5 minutes should be enough for us to get squared away, right?  
04 02 06 38 CMP Yes, I hope so.  
04 02 06 40 CDR Or do you want to do it more than 5 minutes early, babe?  
04 02 06 41 CMP I'd kind of like to.

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~~CONFIDENTIAL~~

Day 5 - Page 81  
Tape 10-03601

04 02 06 42 CDR Okay, do you want - you say when, 8 or 10.  
04 02 06 48 CMP Okay, I'll make it, I'll vote for 10.  
04 02 06 51 CDR Okay, we're with you, we've got plenty of field.  
04 02 06 54 LMP Okay, let me start putting my helmet and gloves on, then.  
04 02 06 56 CDR We've got this 15 mark; we'll undock in 5 more minutes.  
04 02 07 00 CMP Roger.  
04 02 07 09 LMP How's that look?  
04 02 07 10 CDR Gene-o, yes, Gene-o, you're getting it.  
04 02 07 31 CDR That sun could really be a bitch in a few more minutes. John, will you stand by to take over and vice versa? John, what do you think about the sun? Do you think that's going to be hurting you, babe?  
04 02 07 49 CMP Yes. There ain't nothing I can do about it.  
04 02 07 51 CDR Let us know if you lose us in the - in the bright glint.  
04 02 07 55 CMP Okay, I want to turn that thing off if it's going to get in the sun, okay? I want to turn that whole thing off if it gets the sun on it, okay?  
04 02 08 04 CDR Yes, don't turn it on until we make sure that there's no sun on it.  
04 02 08 05 CMP Okay.  
04 02 08 07 CDR Just leave it covered up right now. Did you stick some tape over the end of it?  
04 02 08 15 CMP Gene-o did.  
04 02 08 17 CDR Well, okay, just before you take it off make sure you don't turn the other settings. We're all set on the others.  
04 02 08 30 CMP The only thing I do is go to TV, right?

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Day 5 - Page 82  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 02 08 33 CDR All you do is go to - take the lens cap off and go to TV. You may have to turn the horizontal adjust on your monitor a little bit. You usually do.
- 04 02 08 42 CMP Okay.
- 04 02 08 46 CDR Okay, 3 minutes to undocking.
- 04 02 08 49 CMP Roger.
- 04 02 08 51 CDR Do you want to use the Hasselblad.
- 04 02 08 53 LMP John, what have you got for an AOS, coming around the horn? About 23? John, what do you have for AOS, about 23?
- 04 02 09 11 CMP Say again.
- 04 02 09 12 LMP What do you have for AOS, about 98:23?
- 04 02 09 18 CMP Yes, he said he'd pick us up at 98:25.
- 04 02 09 26 CDR Okay, 2 minutes, coming around to undocking. 02:30, pardon me.
- 04 02 09 32 LMP That sun is treacherous. Could you push way down and snap in, Tom?
- 04 02 09 56 CDR There. Well, maybe I wasn't pushing hard enough.
- 04 02 10 05 CDR Okay, when we undock ... I'm going to yaw right 120 and pitch up 90. Are you going to make any maneuvers at all after undock until I get around?
- 04 02 10 13 CMP Roger, now that's going to be different for you. I can see you're in a different attitude than you used to be.
- 04 02 10 20 CDR I still need to yaw right 120, don't I? I've got to let them match up with your X-axis.
- 04 02 10 29 CMP Yes, you've - you've - I don't know; I don't think it's - it's not 120. I'll tell you what. Is that what you want to do? Match up with my X-axis and then pitch up?

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~~CONFIDENTIAL~~

Day 5 - Page 83  
Tape 10-03601

04 02 10 40 CDR I need to match up with your X-axis and then pitch up to my Z.

04 02 10 42 CMP Roger. Why don't you let me maneuver to 0, 0, 0 and then tell you.

04 02 10 48 CDR Okay. I thought we weren't ... osed to maneuver.

04 02 10 51 CMP Not until after we undock, is what I'm saying.

04 02 10 55 CDR Okay. We've got 1 minute to go, babe.

04 02 11 01 CMP Roger. ... coming in.

04 02 11 05 CDR Roger.

04 02 11 16 CDR We'll go out for about 40 seconds and then kill our rates - our opening rates, okay?

04 02 11 21 CMP Okay.

04 02 11 30 CDR 30 seconds, John.

04 02 11 49 CDR 8, 7, 6, 5, 4, 3, 2, 1 -

04 02 11 57 CDR Go.

04 02 11 58 CDR Now that wasn't bad, just a little more DELTA-V. We opened quite a bit. It's faster than the simulator, babe. Halt. I'm thrusting up to kill it.

04 02 12 25 CDR We're still opening.

04 02 12 31 LMP Read us, John?

04 02 12 33 CDR Do you read us? Oh, shoe.

04 02 12 38 CMP I read you.

04 02 12 39 LMP Great.

04 02 12 40 CDR Okay, now you want me to yaw right? Go ahead and start this -

04 02 12 50 CMP It already is extended all the way.

04 02 12 53 CDR Okay. I'm starting to yaw right, babe.

~~CONFIDENTIAL~~

Day 5 - Page 84  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 02 13 00 CMP Yaw ... roll to 180 myself.
- 04 02 13 06 LMP Get the Hasselblad, Tom; I'll catch him when we come around.
- 04 02 13 08 CDR Okay, I've already got the thing out of it.
- 04 02 13 27 CDR We're in a completely different attitude from where we were. Completely different! I know what you mean about a completely different attitude. John, we're opening a little bit; can you thrust towards me?
- 04 02 14 00 CDR Oh, shit, look at that.
- 04 02 14 09 CDR Is that going to be your SEP attitude, John?
- 04 02 14 13 CMP Negative.
- 04 02 14 17 CDR Okay, I'm going to have to roll around here and try to keep out of gimbal lock to stay with you.
- 04 02 14 24 CMP Okay, I'm going to my SEP attitude now.
- 04 02 14 27 CDR What is it going to be?
- 04 02 14 28 CMP 014.
- 04 02 14 30 CDR I can't tell what - anything like that over here.
- 04 02 14 34 CMP Okay, it's just the same one that we had in the simulator.
- 04 02 14 37 CDR Are you going to it now?
- 04 02 14 38 CMP ... do it.
- 04 02 14 44 CDR This is wild, Gene-o. We've never seen anything like this before.
- 04 02 14 52 CMP Pitch up. I'm drifting out your front window.
- 04 02 15 31 CDR Yes, I know, about the attitude we're going to be now.
- 04 02 15 35 LMP The same attitude, Tom, as on your book there for undocking.

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~~CONFIDENTIAL~~

Day 5 - Page 85  
Tape 10-03601

04 02 16 00 LMP Got him out there?  
04 02 16 01 CDR Yes.  
04 02 16 02 LMP Oh, beautiful. I can't see him from here, but if I can't -  
04 02 16 11 CDR I'm trying to match you, John. Should I be upside down to you, babe?  
04 02 16 15 LMP No, this is good.  
04 02 16 16 CMP Yes, you should be, but that's alright.  
04 02 16 22 CDR Okay, can you close with your plus X, and we'll look at that probe.  
04 02 16 26 LMP Don't tell me this damned thing isn't working again. God damn it!  
04 02 16 27 CDR You can take off your helmets and gloves.  
04 02 16 35 CDR Are you in your SEP attitude yet, babe?  
04 02 16 40 CMP Just about.

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Day 5 - Page 86  
Tape 10-03601

~~CONFIDENTIAL~~

04 02 16 50 CDR You need to translate a little laterally for me.  
04 02 17 00 CMP Okay, I'm coming - coming forward.  
04 02 17 07 CDR Okay. Did you get it?  
04 02 17 12 LMP They say f:8, but he's awful bright out there.  
04 02 17 13 CDR Yes.  
04 02 17 24 CDR You're out a little bit too far. I'll try to thrust in a little bit, but I - it really offsets me in pitch, as you can see. Can you thrust toward me?  
04 02 17 35 CMP Roger, I'm thrusting towards you.  
04 02 17 39 CDR Man, that fuel is going down like mad, too.  
04 02 17 59 CDR I'll take care of the up and down, John.  
04 02 18 21 LMP Take some at f:8 and f - oh, you're putting that up there. Taking you, John, babe, you're a weird-looking mach...  
04 02 18 44 CDR (Cough)  
04 02 19 01 CDR How's the landing gear look, José, down and lock. (Cough)  
04 02 19 06 CMP Yes.  
04 02 19 07 LMP I'm going to take my helmet and gloves off, Tom.  
04 02 19 11 CDR Yes. We're going to take our helmets and gloves off.  
04 02 19 14 CMP Roger.  
04 02 19 16 CDR I'm drifting out laterally to you. Can you make one little thrust correction? Everytime I do that it really costs me.  
04 02 19 23 CMP Okay, I'll get to you.  
04 02 19 26 CDR Okay. I'll take care of the up and down. That's real easy. (Cough)

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Day 5 - Page 87  
Tape 10-03601

04 02 19 58 LMP Tom, reset your - -  
04 02 20 11 LMP John, you're the first vehicle photographed by another around the moon. How does that grab you?  
04 02 20 16 CMP That grabs me good.  
04 02 20 49 CDR Can you come in a little ways here just slowly.  
04 02 20 52 CMP Okay.  
04 02 21 14 CDR Gene-o, something is wrong with our alignment. We're going -  
04 02 21 23 LMP It's ORB rate, Tom.  
04 02 21 24 CDR Yes. Okay, right now we're going - right now I'm going BEF, right? You're going SEF, right?  
04 02 21 44 CDR Yes, but we're not upside down.  
04 02 22 05 LMP Tom, that will be BEF...  
04 02 22 06 CDR Yes, but we're - that shows we're upside down.  
04 02 22 10 LMP I know, but that's wrong. ORB rate needle 100 -  
04 02 22 20 CMP ...  
04 02 22 23 LMP Okay, babe.  
04 02 22 24 CDR That's good.  
04 02 22 25 LMP That's great! That's better, we're facing up in the air, that's BEF.  
04 02 22 30 CDR Yes. There we go.  
04 02 22 33 LMP That's BEF.  
04 02 22 34 CDR There we go. I believe that.  
04 02 22 58 LMP Okay, ... ?  
04 02 23 13 CMP Okay.

~~CONFIDENTIAL~~

Day 5 - Page 88  
Tape 10-03601

~~CONFIDENTIAL~~

04 02 23 27 LMP It would be good if John could get a picture of us against the lunar surface right like this, you know it?  
04 02 23 30 CDR Yes.  
04 02 23 31 CMP Okay, I'm at the SEP attitude, Tom.  
04 02 23 33 CDR You're now at the SEP attitude, huh?  
04 02 23 36 CMP Now, I'm in SEP attitude. I can't see you.  
04 02 23 40 CDR I'm going to translate up. You need to translate left a little bit.  
04 02 23 46 CMP You mean right, don't you?  
04 02 23 48 CDR Okay, it will be to your - right.  
04 02 23 52 CMP Okay, I can't see you and I don't know whether I am even closing on you or not.  
04 02 24 02 CMP Now I've got you.  
04 02 24 27 CDR I'll take care of the up and down.  
04 02 24 30 CMP Okay, I'll get rid of - I'll get the left and right, then.  
04 02 24 33 CDR Okay.  
04 02 24 34 CMP It's calmed down a lot, babe.  
04 02 24 36 CDR Good.  
04 02 24 38 LMP Can you take a picture of it?  
04 02 24 44 CMP Yes, if I could see it, I could.  
04 02 24 55 CDR That's good.  
04 02 25 31 CDR Now we're getting in pretty good shape, babe. You really make a beautiful background against the moon down there, John.  
04 02 25 41 LMP I'll tell you, John, these pictures of you against that moon ought to be fantastic.

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~~CONFIDENTIAL~~

Day 5 - Page 89  
Tape 10-03601

04 02 25 56 LMP We got some ice on our -- on our urine dump area over there - under your head.

04 02 26 06 CDR If you get a chance, I think we're pretty well stabilized now, you can go ahead and flip on the TV and take off the cover.

04 02 26 14 CMP Roger.

04 02 26 16 LMP We ought to have a MSGN about now.

04 02 26 26 CDR There goes your antenna.

04 02 26 27 LMP Your antenna is going to RFACQ, babe.

04 02 26 40 CMP Okay, Houston, Charlie Brown on the high gain. How do you read? Over.

04 02 26 58 CDR Houston -

04 02 27 00 CMP Houston, Charlie Brown on the high gain. How do you read? Over.

04 02 27 04 LMP Yes, we got him right away, Tom.

04 02 27 10 CC Hello, Snoop, how you doing?

04 02 27 14 LMP Snoop on high gain. How are you reading us?

04 02 27 19 CC 5 by. How me?

04 02 27 21 LMP Reading you loud and clear. We're about 30 or 40 feet away from him; been stationkeeping for about 5 or 10 minutes here.

04 02 27 31 CC Roger. Could you give us P00 in data. We've got a load for you. Are you ready to copy the pad?

04 02 27 37 LMP I sure am. Let me give you P00 in data.

04 02 27 48 LMP Ready to copy.

04 02 27 52 CC Roger, Gene-o. It's DOI - first pad. And we've got three pads for you, starting with DOI. I'll read them all -- go through all of them and then you can read them back, okay?

~~CONFIDENTIAL~~

Day 5 - Page 90  
Tape 10-03601

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04 02 28 02 LMP Okay, go ahead.

04 02 28 03 CC DOI: 099:46:0089, minus 0069.9, plus all balls,  
minus 0013.8; DELTA-V<sub>R</sub> 0071.3, 0:27, three balls,  
275, minus 0069.8, plus all balls, minus 0014.4;  
COAS star is Scorpi Delta, minus 023, minus 146.  
CSI time 103:45:34; TPI time --

04 02 28 24 CMP Okay, Gene-o, are you reading anything he says?

04 02 28 25 CC -- 105:21:01, with an N equal to 1. Phasing  
pad is next, if you're ready to copy. Over.

04 02 29 37 LMP I'm ready to copy. Go ahead with phasing.

04 02 29 40 CMP Okay, Houston, here's a picture of the LM if you  
want to take a look at it on TV.

04 02 29 46 CC 00 56 25 20 - 10 - Go ahead.

04 02 29 52 LMP Hey, John's not reading you. While I'm copying  
this he said he's got a picture of the LM if you  
want to look at it on TV.

04 02 30 07 CC We have it, Gene-o. We're ready to continue  
with NOUN 81 if you're ready.

04 02 30 12 LMP Ready to copy. Go ahead.

04 02 30 18 CC Plus 01666, plus all balls, minus 0059<sub>b</sub> 01769,  
040, three balls 255. NOUN 86 is plus 01675,  
plus all balls, minus 00568. COAS star is Libra  
Alpha; that's Libra Alpha, plus 00<sub>b</sub>, minus 119.  
Okay -

04 02 31 17 LMP AOT breaker in, Tom?

04 02 31 18 CC Your 100-degree east time is --

04 02 31 21 CDR AOT breaker is in.

04 02 31 22 CC -- 33:31. Your phasing DELTA is minus 5 sec-  
onds, 05 seconds. Site 2 time is 10:30. Over.

04 02 31 47 LMP Okay, Charlie, I got everything except DELTA-V<sub>X</sub>  
on NOUN 81.

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Day 5 - Page 91  
Tape 10-03601

04 02 31 55 CC Roger, DELTA-V<sub>X</sub> on NOUN 81 is plus 01666. And I've got a PDI abort pad if you'll just stand by. Over.

04 02 32 06 LMP I'm waiting for you.

04 02 32 10 CC Roger. Let me try to raise Charlie Brown. Charlie Brown, Houston. Over.

04 02 32 16 CMP Roger, go ahead. Go ahead, Houston.

04 02 32 24 CC Charlie Brown, Houston. Over.

04 02 32 26 CMP Go ahead, Houston. Over.

04 02 32 28 CDR This is Snoop, he's reading you loud and clear.

04 02 32 35 CC Roger. He's copying the pad then; we're not reading him at all, Snoop, and I'm ready with a PDI abort pad if you're ready to copy. Over.

04 02 32 43 LMP Okay, PDI abort, go ahead.

04 02 32 48 CC 100:43:4550, plus 00931, plus all balls, plus three balls 1.1, 00931. Burn time is 022, three balls, 283, plus 00931, plus 00000, plus three balls 22. NA on the rest of the pad. Thrust profile is 15 seconds at 10 percent and in manually throttled to full thrust until completion. CSI time, 101 ...

04 02 34 16 LMP Okay, Charlie, here they - Thank you, here they come at you. DOI is 099:46:0089, minus 00699, plus all balls, minus 00138, 00713, 027, three balls, 275. NOUN 86 is minus 00698, plus all balls, minus 00144, Scorpi Delta, minus 023 and minus 146. Phasing is 100:58:2520. Are you with me?

04 02 35 00 CDR Go

04 02 35 01 LMP Okay, I'll back up and I'll give you CSI time and TPI for DOI. CSI is 103:45:34. TPI is 105:21:01 with an N equal 1. Phasing is 100:58:2520, plus 01666, plus all balls, minus 00594, 01769, 040, 000255, plus 01675, plus all balls, minus 00568. Libra Alpha is the star;

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it's plus 004 and minus 119. And 100 degrees east is 33 plus 31. Phasing DELTA is minus 5 seconds. Site 2 is 10 plus 30. Are you with me?

- 04 02 35 55 CC ...
- 04 02 36 00 LMP Okay, PDI abort is 100:43:4550, plus 00931, plus all balls, plus 00011, 00931, 022, 000283, plus 00931, plus all balls, plus 00022. The star's NA. It's 15 seconds at 10 percent and then manual to full thrust. PSI is 101:44:25. TPI is 103:22:25 with an N equal 1.
- 04 02 36 35 CMP Houston, this is Charlie Brown --
- 04 02 36 36 CC Thank you, Snoop. Over.
- 04 02 36 40 CMP Houston, this is Charlie Brown. Over.
- 04 02 36 46 CDR Houston, this is Snoop. Charlie Brown is trying to call you.
- 04 02 36 50 CMP You guys give me the DELTA-V's and times for the ...
- 04 02 36 54 CC Roger, Snoop. We don't read him. Charlie Brown, verify your S-BAND switch is in T/R. Over.
- 04 02 37 00 LMP John, is your S-BAND in T/R, and I'll give you anything you need; just ask. Go ahead.
- 04 02 37 04 CMP DELTA-V's and the times for DOI and phasing.
- 04 02 37 09 CDR DELTA-V's and times.
- 04 02 37 10 LMP Okay, the time of DOI, Charlie Brown, is 099:46:0089, minus 00699, plus all zeros, minus 00138, that's NOUN 81 for DOI.
- 04 02 37 36 CMP Roger.
- 04 02 37 37 LMP Okay, phasing is 100:58:2520. NOUN 81 is plus 01666, plus all balls, and minus 00591.
- 04 02 37 59 CMP I got you.

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Day 5 - Page 93  
Tape 10-03601

04 02 38 00 LMP And verify your T/R switch is in S-BAND T/R,  
John.

04 02 38 03 CMP Roger, I'm in S-BAND T/R.

04 02 38 06 LMP Okay.

04 02 38 08 CMP I hear them loud and clear.

04 02 38 10 CC Snoopy, Houston. I'm breaking in. It's a  
ground problem with the C - with the CSM. We're  
losing his - We got the downlink to Goldstone,  
but we're not getting it here in the MCC.

04 02 38 21 CMP Shoot, I could have told him that.

04 02 38 23 LMP Okay.

04 02 38 25 CDR Well, I'll tell you, this COMM has got to be  
fixed within the next couple of hours, Charlie,  
so tell them to get with it!

04 02 38 34 CC Roger.

04 02 38 36 CDR Everything else is going good here.

04 02 38 50 CDR How long to John's SEP maneuver?

04 02 38 54 LMP It's at 47:16. Houston, this is Snoopy. Is  
that 69.2 by 57.5 good?

04 02 39 10 CC Stand by.

04 02 39 20 CC Snoop, Houston, we aren't with you on the 69.2.  
Say again.

04 02 39 24 LMP I'm reading VERB 82 out of the DSKY, 69.9 -  
62.9 by 57.5.

04 02 39 42 CC Snoop, Houston. FIDO's checking. Stand by.

04 02 39 47 LMP The reason I asked is I saw --

04 02 39 48 CC GO on the apogee and perigee.

04 02 39 52 LMP Okay.

~~CONFIDENTIAL~~

Day 5 - Page 94  
Tape 10-03601

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04 02 40 24 CDR Looks like we're pretty steady out here on the stationkeeping, John, once we got squared away on our attitudes.

04 02 40 34 CMP Okay, Tom, I've got 6 minutes and 30 seconds to SEP. 6 minutes and 30.

04 02 40 39 CDR Okay.

04 02 40 50 CDR Give me a mark at 6.

04 02 40 53 CC ... Houston. We got a beautiful picture out there of you.

04 02 40 57 CMP Roger. I'll mark in 6 minutes.

04 02 41 00 CDR Okay, we're counting down.

04 02 41 04 CMP No, that wasn't 6 minutes.

04 02 41 08 CDR What was it, José?

04 02 41 10 CMP Okay. I have 5 seconds to 6 minutes.

04 02 41 15 CDR Okay.

04 02 41 17 CMP Okay, 6 minutes and counting down to SEP.

04 02 41 21 CDR Okay.

04 02 41 27 CC Charlie Brown, Houston, reading you 5-by now. Over.

04 02 41 30 CMP Roger, I've got 5 minutes and 35 seconds to SEP. 34, 33, 32.

04 02 41 39 CC We're right with you.

04 02 41 41 LMP Hey, John, this is Snoopy, with that drift you saw, how do you expect our platform to be? How close to good alignment?

04 02 41 56 CC Roger. We expect very small torquing in all angles. Over.

04 02 42 00 LMP Good to hear it, thank you.

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Day 5 - Page 95  
Tape 10-03601

04 02 42 04 CDR I hope we can get back on the nominal after that insulation kind of goofed us up, Charlie, but everything is looking good here.

04 02 42 13 LMP Time to get my AOT breaker in?

04 02 42 15 CDR Yes.

04 02 42 16 CC Snoopy, one question on the tracking light ...

04 02 42 20 CDR Stand by. John, there's a tracking light for you.

04 02 42 25 CMP Yes, please turn it off.

04 02 42 28 CDR It works.

04 02 42 33 CC Thank you, we saw it.

04 02 42 42 CDR Man, it's just beautiful.

04 02 42 50 CDR John, why don't you toss on your tracking light for a minute?

04 02 43 01 CDR Oh, don't tell me this film is jammed again.  
(laughter)

04 02 43 07 LMP What's wrong?

04 02 43 08 CDR Oh, this bastard.

04 02 43 11 LMP It should stay on about 4 times. Can you see it?

04 02 43 15 CDR We got it.

04 02 43 16 CMP I don't think you can see it.

04 02 43 19 CDR I saw one reflection here; we're okay.

04 02 43 40 LMP AOT is dirty as hell, I'll tell you.

04 02 43 44 CDR I can't get this going. We're going to have to wind film here.

04 02 43 49 LMP What are you going to do? I'd sure like to get him while he moves away. Where is he?

04 02 43 53 CDR Yes.

~~CONFIDENTIAL~~

Day 5 - Page 96  
Tape 10-03601

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04 02 44 16 CDR Boy, that - Hasselblad!

04 02 44 32 LMP That thing failed three or four times already.  
Failed to work; let me put it that way. Does  
it work yet?

04 02 44 42 CDR No.

04 02 44 43 LMP Let me play with the son of a bitch.

04 02 44 44 CDR Go ahead. Got 2 minutes.

04 02 44 49 CDR John, looks like about 02:30 coming up to SEP,  
babe.

04 02 44 54 CMP Roger. ...

04 02 44 57 LMP God-danged thing has failed about four times!

04 02 45 00 CDR See if you can pass on to our support di-  
vision, that this Hasselblad film pack has  
failed about three or four times on us.  
We're getting some pictures, though.

04 02 45 12 CC We copy.

04 02 45 16 CDR The basic camera is good; it's just the  
packing of the film in the magazine.

04 02 45 24 LMP Where'd the slide go; I'll take it off.

04 02 45 31 LMP Sun of a bitch! That's inexcusable. Get  
out here a million miles from nowhere, and the  
god-dang film packs won't work.

04 02 45 41 CDR Suppose John's taking - there it is.

04 02 45 47 LMP No, that's - God-dang it, Tom, I can't get  
the damned thing to work!

04 02 46 06 CMP Okay, Houston, coming up on 2 minutes -

04 02 46 09 LMP I can't get the son of a bitch to work. God -

04 02 46 15 CDR Is this black and white? Try the black and  
white.

~~CONFIDENTIAL~~

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Day 5 - Page 97  
Tape 10-03601

04 02 46 25 LMP Give me the black and white. Give me the black and white.

04 02 46 28 CMP You'll never know how big this thing gets when there ain't nobody in here but one guy.

04 02 46 34 CDR (Laughter)

04 02 46 37 LMP You'll never know how small it looks, when you're as far away as we are.

04 02 46 40 CDR (Laughter)

04 02 46 44 LMP Take him with that. It's not set right. Check the setting, Tom. I didn't set it.

04 02 47 06 LMP Here's another black and white right here, in case that one doesn't work.

04 02 47 08 CDR This one is working good now.

04 02 47 10 LMP I don't know what the hell is wrong with that damned thing.

04 02 47 15 CDR We got them.

04 02 47 17 CMP ... SEPARATION!

04 02 47 23 CDR Okay, we can see your thrusters firing there, John, and you're moving away.

04 02 47 28 CMP Okay. Got a 5.3 on the DSKY and 5.0 on EMS and I'm - on zero on the EMS. I'd be inclined to believe EMS today.

04 02 47 45 CC Roger, Charlie Brown.

04 02 47 49 CDR Okay, José, say adios, and we'll see you back in about 6 hours.

04 02 47 59 CMP Roger.

04 02 48 07 LMP See you, John.

04 02 48 10 CMP Roger.

04 02 48 11 LMP Have a good time while we're gone, babe.

~~CONFIDENTIAL~~

Day 5 - Page 98  
Tape 10-03601

~~CONFIDENTIAL~~

04 02 48 14 CDR Don't get lonesome out there, John.  
04 02 48 18 LMP And don't accept any TEI updates.  
04 02 48 19 CDR (Laughter)  
04 02 48 25 CMP Don't you worry, Gene. Until you get back, I ain't - I ain't copying any more pads.  
04 02 48 29 CDR (Laughter)  
04 02 48 44 CMP Houston, this is Charlie Brown. Over.  
04 02 48 45 LMP Get some good black and whites of that.  
04 02 48 47 CDR Yes.  
04 02 48 48 CC Go ahead, Charlie Brown.  
04 02 48 51 CMP Roger. While we were - -  
04 02 48 52 CDR You got the camera?  
04 02 48 53 CMP - - waiting to come over the hill, we checked out VHF and we're right now on VHF AM A and RECEIVE ONLY B data.  
04 02 49 03 CDR You seen the Hasselblad. Shit!  
04 02 49 08 CC Beautiful. Sounds good. - -  
04 02 49 10 CDR Do you have the Hasselblad?  
04 02 49 11 LMP No, babe, you were just taking pictures with it.  
04 02 49 15 CMP And, don't ask me to tell you what the dickens the trouble was.  
04 02 49 21 LMP Houston, one other interesting little fact. I could never get my AGS local vertical angle and VERB 83 to agree until after we undocked.  
04 02 49 34 CC Roger. We copy that, Snoop, and so long.  
04 02 49 43 LMP Charlie, keep giving me about a 3- or 5-minute hack before LOS all the time today, will you? Because this S-band's working so well I don't want to break it.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 99  
Tape 10-03601

04 02 49 54 CC ... will do. Over.

04 02 50 07 CMP Okay there, Snoopy babe, let's check out this duplex ranging, okay?

04 02 50 13 LMP Okay, I'll go to duplex ranging on your mark, and we will be quiet and wait for your call.

04 02 50 18 CMP Roger. We're going to duplex ranging on my mark.

04 02 50 21 CMP MARK.

04 02 50 24 LMP Okay, Tom, let's -

04 02 50 26 CDR There he is right over the - right over -

04 02 50 32 LMP Make sure you're not talking.

04 02 50 33 CDR Yes.

04 02 50 44 CMP -- I'll give you - I'm going to range in RESET right now.

04 02 51 00 CDR RENDEZVOUS RADAR IN?

04 02 51 04 CMP How about that?

04 02 51 05 LMP Got it, John?

04 02 51 06 CMP ... 440 feet, 540.

04 02 51 14 LMP Okay, babe, do you hear me right now? I just want to check out whether we're hot on ICS. Do you hear me?

04 02 51 21 CMP Roger. I hear you.

04 02 51 22 LMP Okay, we are hot on ICS in this mode; so how's the background noise?

04 02 51 29 CMP I don't hear any background noise, just you.

04 02 51 32 LMP Okay, well, we may just operate this way then.

04 02 51 45 CDR John, if you get a chance, you can turn on the radar transponder, and we'll correlate the VHF ranging with it.

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- 04 02 51 51      CMP      Roger. My transponder is on. Transponder is on and TEST switch is in OPERATE.
- 04 02 52 02      CDR      I should be getting a radar signal here, and I sure don't.
- 04 02 52 11      LMP      You are in that stowed position?
- 04 02 52 15      CDR      Yes, I know. I pulled it up.
- 04 02 52 24      LMP      Houston, how soon will you have our new uplink on the CSM state vector up?
- 04 02 52 33      CC      Stand by. We'll have it in a moment.
- 04 02 52 36      CDR      ...
- 04 02 53 10      CDR      Man, this is serious.
- 04 02 53 11      CC      Snoopy, Houston. We're ready to load ... Over.
- 04 02 53 18      LMP      We're in data. You've got it.
- 04 02 53 25      CDR      It's going to be upside down, but -
- 04 02 53 36      LMP      We should be counting down to - to DOI, Tom.
- 04 02 53 41      CDR      John, have you got any signal strength on your transponder there? I've got your locked bore-sight on, and I don't get any rendezvous radar signal strength.
- 04 02 53 49      CMP      Okay. Am I below you or above you?
- 04 02 53 52      CDR      No, you're right at me. Okay. Pitch up maybe a little bit.
- 04 02 53 56      CMP      Roger.
- 04 02 54 00      LMP      You get those breakers IN, huh?
- 04 02 54 01      CDR      Yes, AC RENDEZVOUS RADAR.
- 04 02 54 03      LMP      Put that AOT LAMP breaker IN for me, will you?
- 04 02 54 04      CDR      It's already in.
- 04 02 54 05      LMP      Now, right here.

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Day 5 - Page 101  
Tape 10-0360]

04 02 54 06 CDR Where?  
04 02 54 07 LMP What you --  
04 02 54 08 CDR Oh. I got two of them. Either one of them does it.  
04 02 54 09 LMP Oh, okay.  
04 02 54 13 CDR Pitch up a little more now. I still - okay, I'm looking right at - I'm boresighted on your transponder, and I don't get any AGC strength.  
04 02 54 21 CMP Okay, Tom, I checked it out this morning, and AGC was good.  
04 02 54 28 LMP Look at the needles, babe.  
04 02 54 31 CMP I got 2.6 volts on SYSTEMS switch - SYSTEMS TEST 1-A; SYSTEM TEST B, I got 2.1 volts. Okay? And on C, I got 0.4 volt and I guess that was unlocked.  
04 02 54 51 LMP Oh, come on radar. Work, baby.  
04 02 54 56 CDR Houston, if you have us on telemetry, I can't get the AGC signal here and we're only about 1000 feet away.  
04 02 55 08 CC Roger, Snoop. We've been copying your problems. We're working them down here, and we've got your load in. The computer is yours again. Stand by on the radar.  
04 02 55 35 CDR TRANSMITTER POWER, SHAFT ERROR, TRUNNION ERROR. ... What's that? Real good AUTO TRACK.  
04 02 55 43 LMP We got - we're just bouncing around there, babe.  
04 02 55 53 LMP Come on, baby, lock on!  
04 02 55 55 CDR Nothing.  
04 02 56 01 LMP Are the breakers in over there?  
04 02 56 02 CDR Yes, I got AC ROLL --  
04 02 56 03 LMP It passed the radar self-test.

~~CONFIDENTIAL~~

Day 5 - Page 102  
Tape 10-03601

~~CONFIDENTIAL~~

04 02 56 06 CDR Houston, we had a real good radar self test.  
Everything worked. I'm getting transmitting power that's reading 3.2. We get the shaft error, the trunnion error on the AGC; I've got the needles boresighted and centered, but I get no AGC.

04 02 56 26 CC Roger, we copy. Your PGNS needles are moving?

04 02 56 30 CDR I can SLEW UP and DOWN in HIGH RATE and LOW RATE, everything. I've got him boresighted there.

04 02 56 40 CC ... Stand by.

04 02 56 44 CMP Houston, I'll run through the self test again, if you think that will help any, from this end.

04 02 56 52 CDR Go down and look at it again; you might give it another try, John.

04 02 56 55 CMP Okay.

04 02 56 56 CDR Because this is a NO-GO for DOI.

04 02 57 01 LMP Oh, come on, baby; doggone it!

04 02 57 05 CDR You're boresighted right there, and the needles are centered, and nothing!

04 02 57 11 CDR My AC RENDEZVOUS RADAR BUS A breaker is IN, and my PGNS RENDEZVOUS RADAR is IN.

04 02 57 18 CC Break, break, Snoop, this is - correction - Charlie Brown, this is Houston. ... in a TRANSPONDER position on the SYSTEMS TEST before you get the proper readouts. Over.

04 02 57 28 CMP Roger, I'm in that TRANSPONDER position.

04 02 57 34 CC Okay.

04 02 57 36 CMP Okay. I'm reading --

04 02 57 38 CDR What happened?

04 02 57 39 CMP -- Test A is --

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Day 5 - Page 103  
Tape 10-03601

04 02 57 40 CDR What did you do?  
04 02 57 41 CMP -- reading zero, right now.  
04 02 57 42 LMP ...  
04 02 57 43 CDR Okay. I didn't get a fire then.  
04 02 57 48 CMP Test B is reading zero. It's also reading zero, but it was working alright a few minutes ago.  
04 02 58 01 CC Roger.  
04 02 58 02 CMP When I did the original self test.  
04 02 58 07 CC Roger. Stand by.  
04 02 58 24 LMP ... on it, babe.  
04 02 58 25 CDR Sounds like his TRANSPONDER may be OUT.  
04 02 58 28 LMP It sure does.  
04 02 58 29 CMP Yes. This thing is reading zero. Let me check the circuit breakers.  
04 02 58 47 CMP Okay. RENDEZVOUS TRANSPONDER BUS circuit breaker is IN.  
04 02 58 59 CC Roger. How about trying to recycle the power switch, Charlie Brown.  
04 02 59 07 LMP God-darn it, Tom. That's --  
04 02 59 09 CMP Hey, that did it, you guys, it's on!  
04 02 59 11 CDR And I got signal strength, old buddy!  
04 02 59 13 LMP -- babe, that's great!  
04 02 59 15 CMP Well, what do you know about that!  
04 02 59 17 CDR I got 3.2 on my AG --  
04 02 59 21 CMP We've got so much AGC, I don't know what to do with it.

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Day 5 - Page 104  
Tape 10-03601.

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04 02 59 26 LMP Stick this in your pocket. Babe, that makes --  
04 02 59 28 CDR (Laughter)  
04 02 59 29 LMP John, I could kiss you!  
04 02 59 33 CMP It was Charlie's idea to recycle the switch.  
That would never have occurred to me.  
04 02 59 38 CDR Okay. We're locked on pretty good --  
04 02 59 41 CC It was Ed's idea that --  
04 02 59 48 CDR Okay. I'm reading opening at 3.5 feet per  
second.  
04 02 59 51 CC ... we're ready to go with your load. If you'll  
give us - if you'll give us POO and ACCEPT,  
Charlie Brown.  
04 02 59 57 LMP Okay. Okay.  
04 03 00 17 LMP Let's do this.  
04 03 00 21 CDR No, that thing --  
04 03 00 22 LMP VERB 63.  
04 03 00 25 CDR Okay.  
04 03 00 27 CMP ... verify those things right there.  
04 03 00 28 CDR Yes. Beautiful.  
04 03 00 30 LMP Oh, boy, I tell you - How's this look, Tom? I'm  
saying he's opening at what, 4.3?  
04 03 00 41 CDR Yes.  
04 03 00 43 LMP And he's a half mile.  
04 03 00 46 CDR ... Oh!  
04 03 00 48 CMP ... got for range?

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Day 5 - Page 105  
Tape 10-03601

04 03 00 50 CDR Roger. We've got 2500 feet. We're going to get you some raw data here, John. And, my optical boresight is absolutely fantastic. It's right with the needles.

04 03 01 00 CMP It's got 0.37 miles. This is going to be very interesting. It keeps jumping.

04 03 01 10 LMP This thing takes a long time, Tom.

04 03 01 13 CDR Yes.

04 03 01 22 CDR You need to go to LGC? No, you can't until you get VERB -

04 03 01 26 CMP 0.4 miles.

04 03 01 28 CDR That looks real good on my tape, here.

04 03 01 37 LMP Okay, go ahead.

04 03 01 41 CMP Houston, Charlie Brown. The reason I believed the EMS over the CMC was I had 0.3 foot per second of PIPA bias before I started the maneuver. Over. Here comes the lunar sunset.

04 03 01 57 CDR Okay, John. We're out here in earthshine.

04 03 01 59 CC ... we copy. Over.

04 03 02 00 CDR How about turning on your flashing light, José. Well, you got a nice - looks like the old Gemini-Agena, would you believe?

04 03 02 09 LMP Have you got our light, John?

04 03 02 13 CMP Roger.

04 03 02 14 LMP We are reading 0.46 miles at 3 feet per second.

04 03 02 22 LMP And the AGS is right with us.

04 03 02 36 LMP John, whenever you're satisfied with the ranging, I'd like to go ahead and start in on a P52 here.

04 03 02 43 CMP Oh, Roger. You can go start on a P52. I saw your tracking light there briefly, but I haven't seen it since.

~~CONFIDENTIAL~~

Day 5 - Page 106  
Tape 10-03601

~~CONFIDENTIAL~~

04 03 02 50 IMP I just turned it on. It's still on. Let me turn the docking light on.

04 03 03 01 CC Charlie Brown, Houston. CMC is yours.

04 03 03 04 CMP Roger. Thank you.

04 03 03 08 CDR John, do you see the tracking light now? It's on.

04 03 03 11 CMP Can you guys see it flashing?

04 03 03 12 CDR No.

04 03 03 13 IMP No.

04 03 03 24 CDR Oh, shit. Okay. You want to -

04 03 03 33 LMP Okay, John. I'm ready when you are to go to VHF A SIMPLEX and DATA.

04 03 03 42 CMP Okay. On your mark, SIMPLEX and DATA.

04 03 03 45 IMP And I'll wait for you to give us a call.

04 03 03 49 CMP Okay, SIMPLEX, DATA.

04 03 03 50 LMP Mark it.

04 03 03 58 CMP Snoopy, Charlie Brown. How do you read?

04 03 04 01 CDR You're loud and clear, John.

04 03 04 04 LMP How us, John?

04 03 04 06 CMP You're the same.

04 03 04 07 LMP Okay. We're going to terminate our radar track here to go on a P52.

04 03 04 26 IMP You had that sitting back here, Tom, like --

04 03 04 28 CDR Yes.

04 03 04 29 LMP -- leaning into this thing.

04 03 04 30 CDR I'll go to IGC.

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Day 5 - Page 107  
Tape 10-03601

04 03 04 32 LMP      Oh, I thought you were. Okay, I'm sorry. You should be in IGC before we do this.

04 03 04 38 CDR      I can slew it out of the way . . . - -

04 03 04 41 LMP      That's alright. Leave it there. See whether it does it.

04 03 04 47 CDR      Nothing's done. Huh uh.

04 03 04 50 LMP      Okay. Plus 00000, ENTER.

04 03 05 01 CDR      There it goes.

04 03 05 19 LMP      Okay, pull your breakers, Tom.

04 03 05 21 CDR      Okay, RENDEZVOUS RADAR there. Okay.

04 03 05 28 LMP      Okay, AOT LAMP breakers, CLOSED?

04 03 05 31 CDR      Yes. Are we out of contact with MSFN?

04 03 05 35 LMP      No, we've still got them. They're going to call us before we lose them.

04 03 05 37 CDR      Okay.

04 03 05 47 CDR      Charlie Brown, Snoop. You can go ahead and kill the tube anytime you want to, and put the cover over it.

04 03 05 52 CMP      Say again. Over.

04 03 05 54 CDR      Roger. You can go ahead and kill the - TV and put the cover over the tube.

04 03 05 59 CMP      Have already.

04 03 06 01 CDR      Roger.

04 03 06 03 LMP      What kind of deal is that?

04 03 06 13 CDR      Are you in the forward position?

04 03 06 14 LMP      I'm in the forward position.

04 03 06 15 CDR      Okay, let's see what -

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Day 5 - Page 108  
Tape 10-03601

~~CONFIDENTIAL~~

04 03 06 21 LMP How's it look to you?  
04 03 06 22 CDR ... 190 degrees roll, 40 - yaw to an AUTO maneuver.  
04 03 06 27 IMP Yes.  
04 03 06 33 CDR Okay, let's watch it real close. Okay, go. Flashing 50 ... shows a 190 roll, which is good. Pitch is 41. It's going to take you around quite a ways and - Do you want to do it?  
04 03 06 51 IMP Go ahead.  
04 03 06 52 CDR Okay, ready. ... the DAP's all set? Did you get the DAP set after undocking?  
04 03 07 00 LMP Yes, I set it after - I set it after --  
04 03 07 04 CDR For 2-I?  
04 03 07 05 LMP I set it, yes, 21002. Check it.  
04 03 07 10 CMP I follow your tracking light now. Are you able to do a P52 with that light on?  
04 03 07 15 IMP I think so, John; I'm going to try it.  
04 03 07 17 CMP That's beautiful. Can you see mine?  
04 03 07 19 CDR Yes, John, you're absolutely great.

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Day 5 - Page 109  
Tape 10-03601

- 04 03 07 23 CDR Your maneuver - Yes, it's flashing about every second. It's just beautiful.
- 04 03 07 27 LMP Okay, let's maneuver.
- 04 03 07 29 CDR Okay, we're going to AUTO maneuver to acquire a star.
- 04 03 07 33 LMP Keep looking out the window to help me find this mother.
- 04 03 07 38 CDR Son of a bitch. I've got a picture.
- 04 03 07 41 LMP This reticle is terrible; it's got a - it's not smooth. It goes from very bright to dim.
- 04 03 07 49 CDR We ought to turn some of these lights down.
- 04 03 07 51 LMP I got you in the sextant, John, in my telescope. Right now, you're passing through it.
- 04 03 07 55 CMP Roger.
- 04 03 08 02 LMP I tell you, that's black out there, isn't it?
- 04 03 08 05 CDR Here comes Scorpio. That's what you head in. Stand by.
- 04 03 08 08 CMP ... color to describe that.
- 04 03 08 09 CDR Here it comes. Here it comes, babe; it's going to stop us. Watch it.
- 04 03 08 23 LMP I'm not night-adapted yet, that's my problem.
- 04 03 08 35 LMP There it is, there it is.
- 04 03 08 38 CDR Stop!
- 04 03 08 39 LMP There it is - beautiful, beautiful, beautiful!
- 04 03 08 43 CDR And there's the earth.
- 04 03 08 44 LMP Give me PGNS pulse, babe.

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Day 5 - Page 110  
Tape 10-03601

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04 03 08 46 CDR Okay, you are in ATTITUDE HOLD --  
04 03 08 47 IMP Beautiful, good alignment.  
04 03 08 49 CDR ...  
04 03 08 52 CMP Gene-o, go to OMNI. Your high gain ...  
04 03 08 57 CDR Okay, tell me how far it's off.  
04 03 09 13 CMP I tell you, I've got a beautiful sight ...  
04 03 09 31 CDR Is it locked out?  
04 03 09 32 IMP ... breakers here.  
04 03 09 37 LMP Here it goes.  
04 03 09 38 CDR Okay.  
04 03 09 39 CMP Roger. They want the aft antenna there, Snoopy, babe.  
04 03 09 42 LMP Tell Houston I've ... S-band antenna breaker out ... side.  
04 03 09 49 CDR Do you want your -- ?  
04 03 09 50 LMP Oh, Tom, get a picture of that - the world.  
04 03 09 52 CDR I don't have any color!  
04 03 09 54 IMP There's the world.  
04 03 09 56 CDR We don't have any color.  
04 03 09 59 LMF John, we just saw the world and is it fantastic!  
04 03 10 02 CDR You want ...  
04 03 10 03 CMP ... I can see it myself. Hey, did you hear they want the aft antenna?  
04 03 10 07 IMP I'll give it to them.

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Day 5 - Page 111  
Tape 10-03601

04 03 10 08 CDR      Roger.  
04 03 10 10 CDR      You blew your breaker?  
04 03 10 12 LMP      ... It's alright now though. I've put it back in.  
04 03 10 18 CDR      ... fuel, baby. You want to ENTER to mark X and  
                          mark Y yet? Hey, how about telling me how far it's  
                          off.  
04 03 10 33 LMP      Tom, it's drifting. Give me it so I can mark,  
                          quick. ENTER. PROCEED. 5<sup>th</sup>.  
04 03 10 57 CDR      Okay. Got one. Mark Y.  
04 03 11 27 CDR      ... You got one pair.  
04 03 11 45 LMP      X up next.  
04 03 11 46 CDR      X. Okay.  
04 03 12 09 CDR      That makes two ... Mark either one.  
04 03 12 20 CDR      Okay, mark Y.  
04 03 12 57 LMP      ... is next, isn't it?  
04 03 12 58 CDR      Yes.  
04 03 13 15 CDR      ... That makes three. Mark either one.  
04 03 13 24 CDR      Okay. X is next.  
04 03 13 34 LMP      ... better than in the simulator ... mark because,  
                          I'll tell you, they're right on it.  
04 03 14 01 CDR      Okay. That makes four pairs - four sets; mark  
                          one more on each one.  
04 03 14 42 LMP      Turn the outside lights off, Tom.  
04 03 14 43 CDR      Okay.  
04 03 14 51 LMP      COAS ... Altitude ... Can you turn them down some  
                          more?

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Day 5 - Page 11?  
Tape 10-03601

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04 03 15 01 CDR What? Which ones?  
04 03 15 02 LMP My side panel lights up there.  
04 03 15 09 CDR Okay. Mark Y.  
04 03 15 44 CDR Okay, you got them. Proceed.  
04 03 15 47 LMP How about Acrux?  
04 03 15 48 CDR Okay.  
04 03 15 49 LMP ...  
04 03 16 00 CDR Yes.  
04 03 16 03 LMP Acrux.  
04 03 16 04 CDR Now let's see what angle it wants. It may take us - What's that saying?  
04 03 16 06 LMP 212.  
04 03 16 07 CDR 212. Okay, we're okay; go.  
04 03 16 09 LMP ...  
04 03 16 10 CDR Looks alright. Proceed.  
04 03 16 26 LMP Turn all the lights down a little bit, Tom, will you?  
04 03 16 28 CDR I got them. Something's wrong here. This damn thing won't -  
04 03 16 31 LMP You've got your ... in probably.  
04 03 16 33 CDR I don't have any of them on.  
04 03 16 35 LMP All these integral lights are what are killing me.  
04 03 16 41 CDR There. That really goes "boom, boom," doesn't it?  
04 03 16 44 LMP ...

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Day 5 - Page 113  
Tape 10-03601

04 03 16 46 CDR Can you tell me how far it's off, for evaluation of our platform align? How far is the other one off?

04 03 16 56 LMP ... done enough alignment to do the mission right now, Tom. I'd say ... degrees on ...

04 03 17 01 CDR Which one? Proceed.

04 03 17 09 LMP They are both the same. Let me get ... on that.

04 03 17 18 LMP ... on ...?

04 03 17 21 CDR I'm not sure.

04 03 17 22 LMP I'm not sure either, but ... get the AOT, it isn't more than ...

04 03 17 27 CDR ...

04 03 17 29 LMP ... about ... - -

04 03 17 31 CDR 10 star widths?

04 03 17 33 LMP ... which is practically as good as, you know, you can get an alignment on this ...

04 03 17 59 LMP ...

04 03 18 35 LMP Ready to mark ...?

04 03 18 36 CDR Yes.

04 03 18 46 LMP ... knew where Acrux was.

04 03 19 24 CDR You mark yet?

04 03 19 26 LMP Ready to mark Y?

04 03 19 31 CDR Yes.

04 03 19 32 LMP ... Y.

04 03 19 49 LMP That antenna banging the stops blew the S-band antenna breaker over here, so it will do it.

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Day 5 - Page 114  
Tape 10-03601

~~CONFIDENTIAL~~

04 03 20 07 LMP Ready to mark Y?  
04 03 20 09 CDR Go.  
04 03 20 13 LMP Okay, ... I'm going to mark ...  
04 03 20 16 CDR Go.  
04 03 20 17 LMP Still ready to mark Y?  
04 03 20 18 CDR Still ready to mark.  
04 03 20 39 LMP There it is.  
04 03 20 41 CDR Okay. Okay, ..., right?  
04 03 20 44 LMP ... four right now. ... second.  
04 03 20 50 CDR Okay.  
04 03 20 51 CMP Houston, this is Charlie Brown. What time is LOS?  
Over.  
04 03 20 57 CC ...  
04 03 21 09 LMP Two more stars to mark. ... That should be 54,  
there.  
04 03 21 13 CDR Yes.  
04 03 21 14 CMP Roger. Could you give me the LOS in GET?  
04 03 21 32 CMP Roger. Thank you, Houston.  
04 03 21 35 LMP Mark Y and we'll see what happens.  
04 03 21 36 CDR Yes.  
04 03 21 57 CC ...  
04 03 22 08 CDR Go to Y.  
04 03 22 09 LMP Ready to mark Y?  
04 03 22 13 CC ...

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Day 5 - Page 115  
Tape 10-03601

04 03 22 15 CDR Okay, proceed.  
04 03 22 19 CDR That's good enough.  
04 03 22 20 LMP That's good, Tom. Those are good marks. Are you ready?  
04 03 22 24 CDR Okay. 00, four balls 9. Okay. Go; proceed --  
04 03 22 29 CMP Roger.  
04 03 22 30 CDR -- Okay, minus 662, minus 1 -  
04 03 22 36 CMP Hey, Snoopy, how's your P52 going?  
04 03 22 39 LMP Just about done with it. Stand by 1.  
04 03 22 43 CDR Proceed; go.  
04 03 22 49 LMP Now, we want to doublecheck with ... make sure.  
04 03 23 00 LMP And to save gas I'm going to call up -  
04 03 23 03 CDR Call up Acrux again.  
04 03 23 04 LMP ...  
04 03 23 15 CDR Okay. Okay. AUTO. Go ahead; we've got 22 minutes to DOI. That does it.  
04 03 23 35 LMP We are drifting in around in the deadband, but if you trim it up, it'll go right through center ...  
04 03 23 43 CDR I got you.  
04 03 23 44 LMP That's about half again as close as we came in before. ... but it's drifted down. Watch.  
04 03 23 47 CDR I got you. That's damn close. Boy, it's right in there.  
04 03 23 52 LMP Yes, ...  
04 03 23 55 CMP Hey, Snoopy, this is Charlie Brown. Over. Is Gene-o keying his mike all the time? Sometimes I hear him, and sometimes I don't. Maybe that feed-through problem is as bad as they thought.

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Day 5 - Page 116  
Tape 10-03601

~~CONFIDENTIAL~~

04 03 24 03 LMP      No, I'm not, I'm not. No.  
04 03 24 07 LMP      Okay, you can give me integral lights back. Here.  
04 03 24 12 CDR      Let's get --  
04 03 24 13 CMP      ... problem isn't as bad as they thought.  
04 03 24 14 CDR      -- Let's get the DOI attitude first and then do  
                          the landing radar check, babe.  
04 03 24 20 CDR      Let's check P30 and P40.  
04 03 24 23 LMP      AUTO BUS LAMP breaker, OPEN?  
04 03 24 25 CDR      Yes.  
04 03 24 27 LMP      Okay. Okay, I've gone through P30 one time.  
04 03 24 36 CDR      We been through it one time?  
04 03 24 37 LMP      Yes, I looked at it once.  
04 03 24 39 CDR      Let's go maneuver to the at - What was it? What  
                          did they give for roll, pitch, and yaw angles?  
                          \*\*\*  
04 03 24 44 LMP      Okay. Roll is 0 and - and pitch is 275.  
04 03 24 51 CDR      Roll is 0 and pitch is 275, huh?  
04 03 24 54 LMP      Yes.  
04 03 25 00 LMP      Look at that earth.  
04 03 25 20 CDR      ...  
04 03 25 22 LMP      What happened to this pressure? Fuel pressure?  
04 03 25 32 CDR      Shit!  
04 03 25 33 LMP      Hello. Houston, Houston, this is Snoopy, over.  
04 03 25 42 CMP      Houston, Snoop's calling you.

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Day 5 - Page 117  
Tape 10-03601

- 04 03 25 5<sup>4</sup> LMP Hey, John, ask them if they've been monitoring our descent fuel pressure. Our gage went to zero somewhere during the P52.
- 04 03 26 02 CMP Roger. Did you hear that, Houston? They say, have you been monitoring their descent fuel - you've been monitoring their descent stage fuel pressure. Their gage went to zero during the P52 burn.
- 04 03 26 19 CDR P52.
- 04 03 26 20 CMP The alignment. Okay. Snoopy, this is Charlie Brown. Houston doesn't have any data from you, right now.
- 04 03 26 3<sup>4</sup> LMP Okay, maybe I can try and get them some.
- 04 03 26 56 LMP Houston, you're looking at high gain right now, or you will be in a second. How about checking it. It's out on descent 1 and descent 2.
- 04 03 27 07 CDR We can hear some gurgling.
- 04 03 27 12 LMP Hold this attitude a second, Tom, so I can verify that mother.
- 04 03 27 14 CDR I'm near gimbal lock, I don't want to --
- 04 03 27 15 LMP Okay. Charlie Brown, this is Snoopy. Will you tell them they're looking at high gain, to verify their transducer?
- 04 03 27 27 CMP Yes, sir. Houston, Charlie Brown. Snoopy is calling you and he says that you have high gain. And they are looking at you right now with it.
- 04 03 27 39 IMP Houston, go --
- 04 03 27 44 CC Roger. We got the data, Snoopy, and your descent pressure looks fine. Over.
- 04 03 27 47 LMP Okay, I figured it was a gage because I got descent 1 and descent 2, both, out.

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Day 5 - Page 118  
Tape 10-03601

~~CONFIDENTIAL~~

04 03 27 54 CMP Descent 1 and 2, both, out?

04 03 27 56 CC We got data, Snoopy, and the descent pressure looks fine. Over.

04 03 28 00 IMP Okay, and you are giving me a GO on descent pressure, is that correct?

04 03 28 05 CC That's correct.

04 03 28 10 CMP They said both descent pressures look good there, Snoop.

04 03 28 13 IMP Okay, I can read them, John. That's what I wanted to hear from them.

04 03 28 21 CMP I don't kind of - I don't know exactly what kind of a - -

04 03 28 23 CC Snoop, Houston. Could you - Snoop, Houston. Could you give us your P52 results. Over.

04 03 28 36 LMP Roger. Stand by.

04 03 28 38 CDR Okay. The stars were 33 and 25. Star angle difference was four balls 9. Gyro torquing angles are minus 668, minus 195, minus 055. Over.

04 03 29 01 CC We copy, Snoop. Out.

04 03 29 05 CDR Roger, and the initial acquisition of the star for the docked IMU align looked pretty good.

04 03 29 12 LMP Hey, Tom, you want to get my LANDING RADAR circuit breaker CLOSED?

04 02 29 16 CDR Okay.

04 03 29 19 IMP Houston, this is Snoopy. When is AOS? Or LOS rather.

04 03 29 26 CC Roger. We're coming up on LOS for you at 99:37 - Correction, 99:38. We'll see you AOS at 100:26. Over.

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~~CONFIDENTIAL~~

Day 5 - Page 119  
Tape 10-03601

- 04 03 29 39 CMP Hey, Tom, what was your biggest gyro torquing angle? Over.
- 04 03 29 43 IMP I got them, Charlie.
- 04 03 29 45 CDR Roger. Biggest gyro torquing angle was register 1, minus 668.
- 04 03 29 54 LMP Okay, Tom.
- 04 03 29 55 CMP Is that 0.66?
- 04 03 29 57 CDR That was two balls 668, two balls 195, and three balls 55; all minus.
- 04 03 30 06 CMP Roger.
- 04 03 30 09 LMP Have you got that LANDING RADAR breaker IN, babe?
- 04 03 30 10 CDR Yes.
- 04 03 30 11 LMP Okay. MODE SELECT, LANDING RADAR.
- 04 03 30 15 IMP RADAR TEST, LANDING?
- 04 03 30 18 CDR Yes.
- 04 03 30 31 LMP Reading 38.
- 04 03 30 32 CC Snoopy, Houston. We got some word on your Hasselblad problem - on the magazine problem. We'd like you to reset the magazine flag so that the red just disappears and no further. If this doesn't work consistently, then change magazines. Over.
- 04 03 30 52 CDR Well, that didn't work consistently, and that's why we changed magazines. Over.
- 04 03 31 01 CC Roger. We copy. Out.
- 04 03 31 43 LMP Houston, if you're satisfied with the descent -
- 04 03 31 50 CC Snoop, Houston. You are GO for DOI. Recommend you check on CB(16) DISPLAY ENGINE OVERRIDE breaker. It might recover your descent monitoring capability. Over.

~~CONFIDENTIAL~~

Day 5 - Page 120  
Tape 10-03601

~~CONFIDENTIAL~~

04 03 32 05 CDR

Roger. ... And, if - DESCENT ENGINE OVERRIDE - Understood. Right there. Next one.

04 03 32 19 LMP

No, that's not going to do anything. There's no breakers out there that'd hurt that, Charlie. I'm going, - as long as you're satisfied, I'm going OMNI at this time.

04 03 32 35 CC

Roger. We copy. Got 4 minutes.

04 03 32 37 LMP

Okay, I did - when I went in that P52, and I slammed the S-band into the stop's, I did pop my S-BAND ANTENNA breaker under COM4 on panel 16.

04 03 32 51 CC

Roger. We copy.

04 03 32 53 CDR

Okay.

04 03 33 00 LMP

Okay, Tom. We got to hustle through this, babe. LANDING ANTENNA, AUTO?

04 03 33 07 CDR

Yes. Go.

04 03 33 14 LMP

Okay, VERB 60, and we'll wait. Might want to start getting your helmet and gloves on.

04 03 33 18 CDR

Yes.

04 03 33 32 LMP

Are you at the attitude, babe?

04 03 33 34 CDR

Yes, 275.

04 03 33 35 IMP

Okay, I guess we'll - that's right. You want to check the back of mine, Tom?

04 03 33 44 CDR

The what? There you go.

04 03 35 56 CMP

Snoopy, Houston wonders if you're reading him. I guess you're not, or you would answer him.

04 03 36 05 CC

Charlie Brown, Houston. No sweat.

04 03 36 10 CMP

Okay. Snoopy, Charlie Brown. Do you read? Over.

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Day 5 - Page 121  
Tape 10-03601

04 03 36 15 CDR Roger, John, we can read you loud and clear.  
04 03 36 19 CMP Alright. We need to keep at least one channel of communications open at all the time.  
04 03 36 31 CDR Yes. I think that's a very prudent idea.  
04 03 36 36 CMP Somehow.  
04 03 36 47 CC Charlie Brown, Houston. 45 seconds to LOS. You're still go for DOI.  
04 03 36 53 CMP Roger. What is my P20 doing? Could anybody tell me?  
04 03 37 03 CC Stand by.  
04 03 37 05 CDR Okay. How are we doing? Ready?  
04 03 37 14 LMP Houston, and LANDING ANTENNA test is complete.  
04 03 37 17 CC Charlie Brown --  
04 03 37 19 CDR Where do you want to leave this? In HOVER?  
04 03 37 21 CMP Go ahead.  
04 03 37 24 CDR You want to leave this in HOVER? The landing --  
04 03 37 28 LMP Yes, that's where it's supposed --  
04 03 37 30 CDR To be in HOVER.  
04 03 37 31 LMP Well, wait a minute. It goes to - Tom, read through - I don't know. I - I thought I got it. Let me go through --  
04 03 37 39 CDR You're on VOX.  
04 03 37 42 LMP I - I'm not on VOX.  
04 03 37 43 CDR You're on - Are you on DOWN-VOICE BACKUP?  
04 03 37 46 LMP I go to talk to you, babe. I'm in a helmet.

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Day 5 - Page 122  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 03 37 47 CDR Okay, but you were coming - you were transmitting to the ground, and everybody.
- 04 03 38 00 LMP Doublecheck that with your - -
- 04 03 38 01 CDR No. I know what we need for the - for the - -
- 04 03 38 03 LMP We've lost contact with the ground. Doublecheck that.
- 04 03 38 05 CDR Okay. We've got the 7 minutes. I know what I need for the a - Okay, I'm going to go ahead, and go up to throttle.
- 04 03 38 52 CDR Whoops!
- 04 03 38 59 LMP Probably got to wait until it runs its course. Call them up again, Tom.
- 04 03 39 03 CDR What's that? VERB 47?
- 04 03 39 04 LMP Yes, 47.
- 04 03 39 08 CDR ... Ready.
- 04 03 39 09 LMP No, let me - Okay, now go ahead. Go ahead.
- 04 03 39 16 CDR Okay, PROCEED. We got to get in the P40 right away. Take a look at that attitude again.
- 04 03 39 28 LMP ORB rate, I should be looking at 090.
- 04 03 39 30 CDR You're coming up to it. You can - -
- 04 03 39 31 LMP ... looking about 285 right side up. Are you correct?
- 04 03 39 34 CDR Yes, yes. We're okay. Now the main thing is - What altitude should that landing radar be in? The last one is AUTO. There is AUTO?
- 04 03 39 49 LMP LANDING ANTENNA DESCENT for 10 seconds. LANDING ANTENNA, AUTO.
- 04 03 39 53 CDR Okay, that's the last one. Okay. It's AUTO.

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~~CONFIDENTIAL~~

Day 5 - Page 123  
Tape 10-03601

04 03 39 59 LMP It's AUTO for this burn. It's HOVER for the phasing burn, Tom.

04 03 40 02 CDR Yes.

04 03 40 09 LMP Okay. Let's start going through the 4-minute check.

04 03 40 13 CDR Okay. I got to call P40 as soon as this bear gets - -

04 03 40 15 LMP I know it. ENGINE - ENGINE GIMBAL, ENABLE?

04 03 40 20 CDR ENGINE GIMBAL, ENABLE. Yes.

04 03 40 21 LMP THROTTLE, MIN?

04 03 40 22 CDR THROTTLE is MIN.

04 03 40 23 LMP THROTTLE CONTROL - THROTTLE CONTROL, AUTO.

04 03 40 26 CDR Yes.

04 03 40 27 LMP MANUAL THROTTLE, COMMANDER.

04 03 40 29 CDR Go.

04 03 40 30 LMP BALANCE COUPLE, ON.

04 03 40 32 CDR BALANCE COUPLE, ON.

04 03 40 33 LMP DESCENT COMMAND ENGINE OVERRIDE, OFF.

04 03 40 35 CDR Go.

04 03 40 36 LMP ENGINE STOP buttons, RESET.

04 03 40 38 CDR Go.

04 03 40 40 LMP ABORT/ABORT pushbutton stage, RESET.

04 03 40 41 CDR Yes.

04 03 40 45 LMP TEMP MONITOR, LANDING RADAR - screw it! Come on God dang this son of a bitch!

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Day 5 - Page 124  
Tape 10-03601

~~CONFIDENTIAL~~

04 03 40 49 CDR Did you get that VERB 79 or did we do that?  
04 03 40 53 LMP It takes so long to do this.  
04 03 40 55 CDR We're down to 5 minutes.  
04 03 40 56 LMP Well, we'll be alright.  
04 03 40 58 CDR We ought to do that before 7 minutes anymore.  
04 03 41 09 CDR Hey, on rendezvous - that could screw us real bad.  
Get to an AUTO maneuver.  
04 03 41 13 LMP Okay, it - it'll be off in a minute.  
04 03 41 22 CDR Snoopy, Charlie Brown. Over.  
04 03 41 26 LMP Go ahead.  
04 03 41 27 CDR Shit.  
04 03 41 28 CDR Roger.  
04 03 41 29 CDR Shit! Gene-o, look at that son of a bitch. We're  
gonna be - -  
04 03 41 35 LMP It'll - it'll do it, Tom. Yes, John, we do?  
04 03 41 39 CDR It's taken us 3 minutes. PROCEED. Okay.  
04 03 41 53 LMP 0686 - You can give it to me. Real quick.  
04 03 41 59 CDR Okay. Minus 69.90.  
04 03 42 03 LMP Okay. Go.  
04 03 42 04 CDR Minus 14.1. KEY RELEASE. PROCEED. AUTO MANEUVER.  
04 03 42 16 LMP AGS or PGNS and everything squared away?  
04 03 42 18 CDR Yes. Hey, from now on, let's do that at 8 minutes  
or 9 minutes; that's just cutting it too short.  
04 03 42 32 LMP I agree, that takes a long time.

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~~CONFIDENTIAL~~

Day 5 - Page 125  
Tape 10-03601

04 03 42 34 CDR Just too damn long. Throttle up after 15 seconds.

04 03 43 15 LMP Son of a bitch, babe, I don't like the way this AGS is loading. It ain't loading right.

04 03 43 24 CDR Okay. 2 minutes. I'm going to the final thing on my PGNS. 02:34. Let's pick up the checklist. Screw the AGS --

04 03 43 33 LMP I don't like the way the AGS loaded, babe, at all.

04 03 43 34 CDR Screw the AGS.

04 03 43 40 LMP Okay.

04 03 43 41 CDR Got to have my MASTER ARM, ON.

04 03 43 42 LMP Okay. 1 minute.

04 03 43 44 CDR 2 minutes.

04 03 43 45 LMP Okay. Can't get it, babe. The AGS is no good.

04 03 44 07 CDR ... it's 01:53; let it go. Just make the PGNS burn. 01:45, let's go.

04 03 44 19 LMP Okay. STAB/CONTROL, DECA POWER, CLOSED?

04 03 44 20 CDR Yes.

04 03 44 25 LMP Okay. And EPS INVERTER NUMBER 1, CLOSED?

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Day 5 - Page 126  
Tape 10-03601

~~CONFIDENTIAL~~

04 03 44 27 CDR Go.  
04 03 44 33 LMP MASTER ARM, ON?  
04 03 44 34 CDR Got it.  
04 03 44 37 LMP Go to VOX so John can hear us. So he'll know we're burning. John, do you read us?  
04 03 44 41 LMP The AGS is NO-GO on this one, babe. Talking to Tom.  
04 03 44 47 LMP 35 seconds. ENGINE ARM to DESCENT.  
04 03 45 11 CDR Go.  
04 03 45 12 LMP I can barely read you.  
04 03 45 13 CDR ... any better.  
04 03 45 26 LMP Just shout into the - into the VOX. Blanks at 35 seconds.  
04 03 45 33 CDR I'll back this up with the start button.  
04 03 45 35 LMP Okay, I'll hit PROCEED, and I'll start the clock.  
04 03 45 45 CDR Hit a PROCEED.  
04 03 45 46 LMP There's a 99!  
04 03 45 47 CDR We're burning, John. 6.  
04 03 46 05 LMP Stand by, babe.  
04 03 46 06 CDR 9, 11, 12 ... counting down --  
04 03 46 15 LMP Nice and smooth, 9 seconds, 8 seconds, 4, 3, 2, -  
04 03 46 25 LMP MARK.  
04 03 46 26 LMP Okay, let's see what we got. Okay, ... on the residuals.  
04 03 46 32 CDR Beautiful.

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~~CONFIDENTIAL~~

Day 5 - Page 127  
Tape 10-03601

04 03 46 33 LMP Okay. Minus 0.1 - minus 0.1, minus 0.3, and minus 0.5. The burn's over, John. That's affirm. We're on your mark.

04 03 47 57 LMP You got your - -

04 03 47 58 CDR VOX?

04 03 47 59 LMP - - ENGINE ARM, OFF.

04 03 48 13 CDR VOX.

04 03 48 14 LMP ENGINE ARM, OFF, MASTER ARM, OFF?

04 03 48 19 CDR VOX.

04 03 48 21 LMP MASTER ARM, OFF? Got your RENDEZVOUS RADAR AC breaker, CLOSED? Pitch down to where you're looking at a 180 right about there, Tom. You ought to be having them. There's - there's - you're coming up on them right now.

04 03 48 52 CMP Okay. Had you at 3.81 miles; you were doing 73 feet a second.

04 03 49 01 LMP Okay. Great, John.

04 03 49 06 LMP Close that. There we go.

04 03 49 08 CDR Okay.

04 03 49 23 LMP You got all your radar breakers in, babe? Goddamn MASTER ALARM.

04 03 49 32 CDR Beautiful burn.

04 03 49 35 CMP You sure look pretty through the ...

04 03 49 41 CDR Are we in VOX?

04 03 49 43 LMP Well, it's up to you whether you're on VOX or not. No, you're hot to John in this mode, in VHF ranging.

04 03 49 47 CDR ... where?

04 03 50 02 LMP John, what's your four-minute mark? Do you have it?

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Day 5 - Page 128  
Tape 10-03601

~~CONFIDENTIAL~~

04 03 50 14      CMP      Okay, at 4.82 miles I have you at 70 feet a second.

04 03 50 18      CDR      Roger.

04 03 50 19      LMP      Okay. Fine.

04 03 50 20      CDR      We're reading ... here.

04 03 50 48      LMP      We never did call up VERB 82. We ought to call that up.

04 03 50 51      CDR      Yes. We got plenty of time now. That DPS did good, didn't it. Just beautiful.

04 03 51 20      IMP      I hope so, babe, because we're going down.

04 03 51 23      CDR      Says what? The 60.5 by 6.8? No that's - pardon me, that -

04 03 51 33      LMP      I guess you could pull that LANDING RADAR breaker, too, if you - if you can.

04 03 51 36      CDR      Pulled.

04 03 51 46      LMP      That sun is wild.

04 03 52 04      CDR      You know what really gets to you? The basic vehicles are just beautiful, but these little things are just completely - get to you. Just like the ... breathing this stuff - -

04 03 52 13      CMP      As it looks now, you guys are slowed to 65 feet a second. Does that sound about right? It sounds right to me.

04 03 52 21      LMP      Yes, that sounds right, John.

04 03 52 44      CDR      Shit! Here we go.

04 03 52 45      LMP      It looks like a little bit of an overburn to me.

04 03 52 48      CDR      Shit! That'll take us a little lower.

04 03 52 49      IMP      Did you get - you've got the LANDING breaker, huh?

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Day 5 - Page 129  
Tape 10-03401

04 03 52 52 CDR Yes.  
04 03 52 53 LMP Huh?  
04 03 52 54 CDR The DSKY finally read minus 0.1.  
04 03 52 56 LMP I - I recorded that.  
04 03 53 11 CDR Okay. Gene-o, give me the time to the phasing burn, and I'll SYNC the clock.  
04 03 53 15 LMP Okay. ... by a half.  
04 03 53 28 LMP Phasing burn time - You might want to write this - Here's the phasing dope. You can be looking - looking at that. I want to - oh, you reset that clock. Okay.  
04 03 53 37 CDR I'm sorry.  
04 03 53 38 LMP That's alright.  
04 03 53 41 CDR Call it. Then get a VERB 82.  
04 03 53 47 LMP God damn that MASTER ALARM.  
04 03 53 53 CDR We've got over an hour to go to phasing.  
04 03 53 56 LMP How'd SHc pressure do?  
04 03 53 59 LMP Good.  
04 03 54 00 CDR Looks good.  
04 03 54 03 LMP SHc came down.  
04 03 54 02 CDR Beautiful.  
04 03 54 25 LMP Hello, Charlie Brown. This is Snoopy. Do you read?  
04 03 54 30 CMP Yes. Go ahead.  
04 03 54 31 LMP Man, we is getting down among them.  
04 03 55 07 LMP You got that clock counting now?

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Day 5 - Page 130  
Tape 10-03601

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04 03 55 08 CDR No, it's over an hour. The phasing burn is at 100:58:25.

04 03 55 14 LMP Yes. I've got that updated in here. 100:58:25. You might want to start getting your clock set up. I'm going to see if there are some addresses I didn't leave out in this god-dang AGS up here.

04 03 55 25 CDR Okay. We'll get all this stuff off here.

04 03 55 34 LMP Okay, Tom. I've got to get out those books and find out when the hell --

04 03 55 37 CDR Did you ever call VERB 82?

04 03 55 38 LMP I called it. We're in a 69 - Charlie Brown, we're in a 69.2 - or 61.2 by 9.2.

04 03 55 45 CMP Roger.

04 03 55 57 LMP How'd the DPS look to you?

04 03 55 59 CDR Beautiful. It throttled up to 20 percent. Thrust chamber pressure went to 20 percent, but the throttle profile looked good.

04 03 56 06 LMP I've got some updates on there I've got to copy down, Tom.

04 03 56 11 CDR Go ahead.

04 03 56 15 LMP The first one is - What does it say on there?

04 03 56 19 CMP I show you in a 61.2 by 9.22.

04 03 56 23 LMP Beautiful!

04 03 56 24 CDR Beautiful, John. Beautiful.

04 03 56 26 LMP I've got to copy this thing right here. 100 degrees East at 33 31.

04 03 56 42 CMP ... are you guys ... down in there?

04 03 56 46 CDR I can tell, José. We're just going to be hot to get the clearance around the other side for a final approach, but we're coming down, baby.

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Day 5 - Page 131  
Tape 10-03601

04 03 57 19 LMP These are 10-minute hacks? Or 90-minute - They've got to be 10-minute hacks, not 10-second hacks.  
04 03 57 23 CDR Yes, yes, yes.  
04 03 57 26 LMP Alright. Take that.  
04 03 57 35 CDR Tell you what let's do. Let's go ahead and load the phasing burn in unless we have an update for it. He hasn't given us an update, has he?  
04 03 57 47 LMP No, call up 30 and let's load it in.  
04 03 57 54 CDR Okay. So what's the time of it? I'll take it, Gene-o.  
04 03 58 00 LMP Shit.  
04 03 58 09 LMP You got it right here, babe?  
04 03 58 11 CDR Yes. Plus -  
04 03 58 13 LMP 100:58:25.20.  
04 03 58 18 CDR Okay. PROCEED.  
04 03 58 45 CMP Holy smoke!  
04 03 58 46 LMP What?  
04 03 58 48 CMP ... down below the horizon.  
04 03 58 50 LMP Yes. I believe it.  
04 03 59 34 CDR How much has that changed?  
04 03 59 36 LMP 5 seconds.  
04 03 59 38 CDR It's going to put us in a 191.8 by 11.6.  
04 03 59 56 LMP Okay.  
04 04 00 11 LMP Oh, shit!  
04 04 00 13 CMP ... tracking you guys.

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Day 5 - Page 132  
Tape 10-03601

~~CONFIDENTIAL~~

04 04 00 14 CDR Okay, John.  
04 04 00 24 CMP ... fantastic!  
04 04 00 28 LMP Oh, God! It'd be worthwhile to take some pictures right here.  
04 04 00 38 CMP I can see the whole LM.  
04 04 01 10 CDR Whoa, we're dropping down, Gene-o.  
04 04 01 12 LMP You bet your life we're dropping down.  
04 04 01 54 LMP The landing site is at 10 30, Tom.  
04 04 01 58 CDR 10 30.  
04 04 02 02 LMP You went P - through P30, huh?  
04 04 02 04 CDR Yes. We're all loaded.  
04 04 02 07 LMP Good.  
04 04 02 08 CDR Phasing at 47; we pitch down 90 degrees.  
04 04 02 12 LMP Right with it.  
04 04 02 14 CDR To PDI.  
04 04 02 24 LMP Okay. At minus 40, yaw left 180. Right?  
04 04 02 28 CDR Minus 47, we pitch down 90. And at 42 we yaw left 180.  
04 04 02 36 CDR Beautiful. Look at those babes.  
04 04 02 38 LMP Okay, that's 40 --  
04 04 02 40 CDR Where's my Hasselblad again? (Laughter)  
04 04 02 42 LMP Take them, babe, while you're coming down here.  
04 04 02 44 CDR This Velcro doesn't hold anything.  
04 04 02 48 CDR Aw, shit!

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Day 5 - Page 133  
Tape 10-03601

04 04 02 49 LMP What's the problem?

04 04 02 52 CDR Everything I turn around, the Velcro won't hold the Hasselblad.

04 04 02 56 LMP Well, babe, you can't - It's not in there?

04 04 02 58 CDR Now I got it made. Do you have it over there?

04 04 03 01 LMP No, you were shooting John.

04 04 03 03 CDR Yes.

04 04 03 04 LMP Freaker isn't worth a tinker's damn. Never - no telling where it is now, babe. Got to find that before we go over that landing site. Look down on the deck.

04 04 03 22 CDR No. Oh, here it is. Way back here. Got it.

04 04 03 33 LMP Got it.

They can take this damn Velcro and give it back to - whoever thought they invented this kind of Velcro.

04 04 03 49 CDR Okay. Coming down here we should be on black and white - f:4 at 250.

04 04 03 53 LMP That's right.

04 04 03 54 CDR f:4 at 250?

04 04 03 56 LMP f:4 at 250th.

04 04 04 20 CDR You know, this place is starting to look at home.

04 04 04 22 LMP Yes.

04 04 04 56 CDR What are you taking, 6?

04 04 04 57 LMP Huh? I'm taking these at 6, and then I'm going to - I got to pick up this landing site at 33 minutes - 34 minutes - when you roll back again.

04 04 05 18 CDR Some of those little bitty bears have black stuff in them.

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Day 5 - Page 134  
Tape 10-03601

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04 04 05 41 LMP John, are you still reading us?  
04 04 05 46 CMP Loud and clear.  
04 04 05 47 LMP Okay. I just - you know, when I don't hear from you, I begin to wonder.  
04 04 05 59 LMP I tell you, babe, we is getting down among them.  
04 04 06 16 CMP Yes. I guess you're about straight under me now - 14 miles.  
04 04 06 23 LMP I know why the AGS didn't work. That was my fault, babe. I didn't set it up for external DELTA-V, but we got a good perig - out of it - 8.6.  
04 04 06 31 CDR Rendezvous - -  
04 04 06 32 LMP That was my fault.  
04 04 06 33 CDR Oh, shit. Good. Well -  
04 04 06 53 CDR There's what I call Jack's crater. Nice little volcano that I shot yesterday. It really stands out.  
04 04 07 12 CDR Do I get a VERB - Okay, we're straight. I want to PROCEED out of here and get a VERB 82 - VERB 83.  
04 04 07 20 LMP Good idea.  
04 04 07 22 CDR MARK.  
04 04 07 34 LMP Do you know the hell where we really are, Tom?  
04 04 07 38 CDR No, I've got no idea, babe, right now.  
04 04 07 43 LMP Hey, I don't mean that way. What's this big - coming up on 50 minutes. I don't know what that big mother is there, but you're going to pitch around here anyway at 47, aren't you?  
04 04 07 53 CDR Yes.  
04 04 07 56 CDR There's 329. That's pretty close. Where's Hermann's site. Is this Gene-o's?

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Day 5 - Page 135  
Tape 10-03601

- 04 04 08 13 CDR Man, that's the prettiest volcanism I've seen.
- 04 04 08 18 LMP Here's crater 9, right here, I'll bet.
- 04 04 08 19 CDR Yes.
- 04 04 08 28 LMP Right here.
- 04 04 08 22 CDR Yes, we're coming up to crater 9. José, we're coming up to crater 9, I think. We'll be going right across it.
- 04 04 08 28 CMP Roger.
- 04 04 08 31 LMP Maybe you could tell us better where we are, babe?
- 04 04 08 34 CMP We're going right across old number 9. Sure are.
- 04 04 08 42 CDR Things are starting to move faster, John.
- 04 04 08 48 LMP Hey, Tom, all our - everything's looking good here, so far.
- 04 04 08 52 CDR You know, instead of going there and yawing over to 180, let's take some strips here. See, instead of phasing? Yaw left.
- 04 04 09 04 LMP Yes, and I would --
- 04 04 09 05 CDR Screw it! We're just going to stay here and take photo stripping instead of - John - Okay. Instead of yawing left and yawing right, I'm just going to stay here and just take some - I think it would be more interesting for the whole thing just to take strip maps here.
- 04 04 09 20 CMP I think you're right.
- 04 04 09 24 LMP I'll buy that.
- 04 04 09 25 CDR How about that, Gene-o?
- 04 04 09 29 LMP The important film we want to get is down below, babe.
- 04 04 09 38 CMP ... be coming upside down..

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Day 5 - Page 136  
Tape 10-03601

~~CONFIDENTIAL~~

04 04 09 40 CDR Yes.  
04 04 09 49 CDR Man, look at those craters!  
04 04 10 00 LMP Tom, give me that when you get a chance.  
04 04 10 01 CDR You got it, babe.  
04 04 10 17 CDR Look at that big one.  
04 04 10 19 LMP That's what I'm looking at.  
04 04 10 20 CDR My monoculars.  
04 04 10 25 LMP Hey, when I can't see the horizon, Tom, I get to  
feeling like we're in a dive bombing run.  
04 04 10 29 CDR Yes.  
04 04 10 35 LMP Okay. At 47 minutes - Okay, you're going to stay  
in this attitude. That's fine.  
04 04 10 45 LMP Did you ever call up VERB 83?  
04 04 10 47 CDR Yes. You're all set.  
04 04 10 48 LMP I wanted to check it against the AGS. Let me look  
at it again.  
04 04 10 59 CDR Hey - there are some huge boulders.  
04 04 11 01 LMP You've got some.  
04 04 11 03 CDR You damn right.  
04 04 11 04 CDR Look at those bastards down in that crater.  
04 04 11 07 LMP Right here.  
04 04 11 08 CDR Yes, that big deep one, right down below here.  
04 04 11 09 LMP Let me look at it. Let me look at that - let me  
look at this one here. I - I just took a picture  
of it.  
04 04 11 20 CDR That old one right down below us there.

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Day 5 - Page 137  
Tape 10-03601

04 04 11 22 LMP      Oh, you bet your ass there's some huge boulders  
                          down there.

04 04 11 32 CDR      Tremendous boulders.

04 04 11 34 LMP      Man, there are, Tom.

~~CONFIDENTIAL~~

Day 5 - Page 138  
Tape 10-0360]

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- 04 04 11 36 CDR Hey, John, with that monocular you can really see some boulders now, babe.
- 04 04 11 40 LMP You know, the surface around that looks fairly good though.
- 04 04 11 42 CDR Yes.
- 04 04 11 43 LMP Here you go. Want this back?
- 04 04 11 45 CDR You want the Hasselblad?
- 04 04 11 46 LMP Yes, I'll take pictures of it.
- 04 04 11 54 LMP Wish I could have got right down in that - right down in among those boulders. I tell you there's some boulders down there, babe. Are we yaw a little - yes, just a little bit. Look at this cliff here, Tom, right in front of us.
- 04 04 12 12 CDR Yes. There's a cliff there that's at least 2 or 3 thousand feet tall.
- 04 04 12 14 LMP Oh, hell, yes. At least - -
- 04 04 12 18 CMP Hey, you guys are really out there now.
- 04 04 12 21 CDR Oh, you know it, babe.
- 04 04 12 26 LMP Holy smoley, John. It's incredible.
- 04 04 12 33 CMP ...
- 04 04 12 34 LMP If you thought we were close at 60 miles.
- 04 04 12 38 CMP .... Does the terrain seem to be any different color down close?
- 04 04 12 47 LMP No, I don't think so.
- 04 04 12 48 CDR With the monocular you can see some stuff.
- 04 04 12 50 LMP But I tell you, there's some good size boulders on the sides of these craters. Some of them are very obviously impact, but then there's some others that look - they got to be - they got to be volcanic.

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Day 5 - Page 139  
Tape 10-03601

04 04 13 20 LMP Time back at 113:21.  
04 04 13 27 IMP John, do you know where we are? What we're over?  
04 04 13 30 CMP No, ... I gave it to the AUTO optics and it screwed up. I have no idea.  
04 04 13 35 LMP Oh, okay. Because I'm going to tell you when I think we're about over Neper because we've got to photograph that area coming down.  
04 04 13 41 CMP Okay.  
04 04 13 43 LMP Want this over there?  
04 04 13 45 CDR Yes.  
04 04 13 46 LMP (Cough) Give me that thing.  
04 04 13 47 CDR You've got it.  
04 04 13 56 CDR Look at that bear. Here's an old one. Hey here's - Gene-o - there's --  
04 04 14 01 LMP What are you looking at?  
04 04 14 02 CDR Son of a bitch. I don't know.  
04 04 14 03 LMP Holy Smoley! Hey, look at that black thing in the bottom. Let me see what it is.  
04 04 14 04 CDR Look at all those black things! Hey, John, I got something that's really standing out here - like - oh gee, can you ever see it! The monocular, Gene-o, the monocular.  
04 04 14 10 CMP What are they?  
04 04 14 16 IMP Alright. That's a fantastic crater. I don't know where that is --  
04 04 14 21 CDR Let me look at it. Oops - let me look at it.  
04 04 14 32 LMP They're boulders, John. Gigantic. We're looking straight down.  
04 04 14 43 CDR Gee, I'm really getting vertigo here.

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Day 5 - Page 140  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 04 14 46 LMP Yes. It's like - like that rendezvous from above, Tom, when we were looking straight down at the mother.
- 04 04 14 52 CDR I nearly lost him - I lost him in the light. I need to slant up some more.
- 04 04 14 59 LMP Okay. We're coming up on 43 minutes.
- 04 04 15 15 LMP Are you in ORB RATE? No, you're in INERTIAL, aren't you?
- 04 04 15 18 CDR I'm INERTIAL. Need to be pitched up more.
- 04 04 15 22 LMP Your ball isn't moving. Is it?
- 04 04 15 24 CDR Yes, it is. Sure it is.
- 04 04 15 25 LMP Okay.
- 04 04 15 28 CDR Your's is moving, isn't it?
- 04 04 15 30 LMP Yes. We want to be seeing 180 upside down when we come into Neper here.
- 04 04 15 37 CDR I pitched over too far. What I wanted to see, I didn't get.
- 04 04 16 01 LMP This camera is getting red hot.
- 04 04 16 09 LMP Okay, babe. At 34 minutes, we want to be pitched up because we will be approaching into the Neper area where we want to get this - see Neper here's at 34 minutes we'll be right in here. We want to start looking - be seeing Neper coming over the horizon.
- 04 04 16 20 CDR Yes. (Cough)
- 04 04 16 33 CDR Look at that. ... volcanic as the dickens. Let me have the Hasselblad.
- 04 04 16 41 LMP Let me see that a minute.
- 04 04 16 42 CDR You've got it.
- 04 04 16 44 LMP Yes. There are a lot of - a lot of things got to be volcanic, babe.

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Day 5 - Page 141  
Tape 10-0360]

- 04 04 16 59 LMP And there is boulders down in those holes. Look at that new one.
- 04 04 17 08 LMP Now that's all black in the bottom.
- 04 04 17 12 CDR Yes. That's black.
- 04 04 17 19 LMP That little - that little crater with the fresh - You know everything being fresh, it appears to me that the top of the soil - soil are bleached by the Sun.
- 04 04 17 27 CDR Yes.
- 04 04 17 32 LMP There's one.
- 04 04 17 35 LMP There is fresh, and look at the boulders on the side of that one.
- 04 04 17 41 CDR You got it - got it.
- 04 04 17 50 LMP Give me that camera, babe.
- 04 04 17 51 CDR Okay, I got some - - Here.
- 04 04 17 53 LMP Okay.
- 04 04 17 54 CDR Here. Where is the monocular?
- 04 04 17 55 LMP There it is.
- 04 04 18 00 LMP 250 right here would have gotten something.
- 04 04 18 12 CDR Oh, look at those boulders!
- 04 04 18 14 LMP Aren't they fantastic?
- 04 04 18 22 LMP 40 minutes, babe. At 34, we ought to start coming into the Neper area.
- 04 04 18 34 LMP Now look at that one. The way those cliffs are so sheer- there's black underneath them, and when these fresh craters come out, there's - it's all white soil.
- 04 04 18 44 CDR Yes. Here's one that's coming right there.
- 04 04 18 51 CDR Oh, beautiful!

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- 04 04 18 53 CDR It's black. It was a landslide, and there's a boulder so damn big you can't believe it.
- 04 04 18 57 LMP Let me see. Trade you. Here.
- 04 04 19 06 LMP There's a little crater on the rim of this one, and there's boulders laying half way down.
- 04 04 19 14 CDR We can see where a volcanism started, and it rolled out there.
- 04 04 19 24 LMP I - I've got to say, there's a lot of impact craters around here though. God dang.
- 04 04 19 29 CDR Yes, there are.
- 04 04 19 30 LMP A lot of impact craters. You know this planet must have been beat to death at one time.
- 04 04 19 37 CDR Oh, you know it.
- 04 04 19 41 LMP Must have been beat to death. Okay, Tom, we're coming down to 34 minutes, and that's where we're going to start picking up - Neper ought to be coming over the horizon at 29:31. We ought to be right over Neper.
- 04 04 19 54 CDR Okay. LANDING RADAR - LANDING RADAR circuit breaker CLOSED at 22 minutes.
- 04 04 19 59 LMP Okay. We're ahead of time. We don't - we're in good shape right now.
- 04 04 20 09 LMP There's boulders in every one of those little - little craters and on - on the ridges.
- 04 04 20 13 CDR Yes, that's on the new craters - even a few of the old ones have them right down at the bottom.
- 04 04 20 19 LMP And the boulders are black. They're black - -
- 04 04 20 21 CDR They look like they're - -
- 04 04 20 23 LMP - - and yet the stuff that comes out of the new craters is white.

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Day 5 - Page 143  
Tape 10-03601

04 04 20 26 CDR White, but there's some black around them.

04 04 20 27 LMP Yes. There are pretty sharp cliffs. Some of these seem to be wind-blown down, but there's some awful sharp cliffs. What a place! You know, it almost looks like this is a painting. Someone took a painting of something.

04 04 20 41 CDR Yes.

04 04 20 46 LMP John, this is really a great speed at which to go over the ground, I'll tell you.

04 04 20 50 CMP ...

04 04 20 59 CDR Oh. Here's one that tossed boulders out of it.

04 04 21 01 LMP You've got it.

04 04 21 02 CDR Yes. It tossed boulders right out of the stuff.

04 04 21 05 LMP Look at that mother.

04 04 21 06 CDR See it. Right there. You can see it.

04 04 21 07 LMP Yes. Yes.

04 04 21 08 CDR This little one right here tossed boulders right out of the son of a gun. There's still a bunch in there.

04 04 21 53 LMP Okay. Neper's got to be coming up there pretty soon. We're at 36.

04 04 22 03 LMP This is where ... wants to do their altitude - around here.

04 04 22 11 CDR Yes. You could track. You can track here - no problems.

04 04 22 17 LMP I'm just going to keep - But we're going so slow, I'm going to stay at 6 frames a second, Tom.

04 04 22 21 CDR Yes. Oh, beautiful. Hey, I could even see a boulder for at least 20 miles ahead. In that one crater on your left, Gene-o.

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Day 5 - Page 144  
Tape 10-03601

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- 04 04 22 33 LMP Yes. Yes. Oh, look at that one, way up. Let me take a look.
- 04 04 22 36 CDR Yes. It's got a big black one right down in the bottom of it.
- 04 04 22 38 LMP Yes, I can - you're right!
- 04 04 22 40 CDR Talk about a boulder. That thing is big enough to - to crush a couple of houses.
- 04 04 22 44 LMP They're laying all down the side and there's no - there is no little rim crater on it, either. They're just laying on the side.
- 04 04 22 50 CDR Shoot a picture of that one - that white one coming up right in front of you.
- 04 04 22 52 LMP Okay.
- 04 04 22 53 CDR You can see - -
- 04 04 22 54 LMP Here you go.
- 04 04 22 55 CDR - - where the white ran down.
- 04 04 23 03 LMP We got to be coming somewhere near where Neper is going to be up there, pretty soon, and the Smythe Sea.
- 04 04 23 14 LMP Look at that! I don't know why I was fascinated with boulders, but son of a gun - Those black things stand out. Give me the monocular on that one.
- 04 04 23 21 CDR ... - -
- 04 04 23 22 LMP Tom, look at the boulder on the edge of that one, but son of a gun - Those black things stand out. Give me the monocular on that one.
- 04 04 23 43 LMP At first I thought it was shadow on it, but it sure isn't, cause we're looking - coming right through the -
- 04 04 23 56 LMP Okay. At 33:31 we're going to come up on 269 and 192 and Jansky.
- 04 04 24 03 CMP Houston, Charlie Brown. Over.

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Day 5 -- Page 145  
Tape 10-03601

04 04 24 15 CDR I need to get local vertical.  
04 04 24 16 CMP Houston, Charlie Brown. Over.  
04 04 24 26 CMP Houston, Charlie Brown.  
04 04 24 33 LMP Leave 64 run for a minute, Tom. Can you pitch us up a little bit to get a better view of the - -  
04 04 24 39 CMP Houston, this is Charlie Brown. Over.  
04 04 24 41 LMP - - better view of the -  
04 04 24 47 CMP Houston, Houston, Charlie Brown. How do you read on high gain? Over. I'm all locked up on them, Tom, but I just don't read them.  
04 04 24 59 LMP Okay. We're not locked up yet, John.  
04 04 25 09 CMP Roger. Read you loud and clear. Snoopy was GO for DOI. It was a good burn; he's in a 61.2 by 9.2 right now. Nominal burn. He'll fill you in when he gets to you. But - -  
04 04 25 30 LMP Look at that - look at the earth! Look at the earth!  
04 04 25 31 CDR Oh gee! Look at the earth, John! Get it. Get it. Ah, yes. My God! I can't believe it! It's just - -  
04 04 25 43 CMP - - he was doing 65 feet per second. At 3.8 miles - -  
04 04 25 47 LMP That's beautiful.  
04 04 25 48 CDR And that color film didn't work! That makes me so mad!  
04 04 25 52 LMP John, we just had earthrise. Fantastic. Golly, John! Tom, get that if you can.  
04 04 25 58 CDR I don't have any color film on this son of a bitch.  
04 04 26 01 LMP Try it once more, maybe it'll work.  
04 04 26 03 CMP ... mumbling about the boulders and things right now. They just saw carthrise. They say they are looking up at the horizon now. ...

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Day 5 - Page 146  
Tape 10-03601

~~CONFIDENTIAL~~

04 04 26 28 CDR You're panning that, aren't you, Gene-o?

04 04 26 30 LMP Yes.

04 04 26 31 CDR Be sure to open it up for the earth.

04 04 26 33 LMP Open it up?

04 04 26 35 CDR Oh, yes. Earth on that color is f:ll at 250, babe.

04 04 26 38 LMP You mean, wider?

04 04 26 39 CDR Well, f:ll at 250 is the earth. f:ll at 250.

04 04 26 47 LMP Hello, Houston. Houston, this is Snoopy.

04 04 26 52 CC Roger, Snoop. Go ahead.

04 04 26 54 LMP We is GO and we is down among them, Charlie.

04 04 27 00 CC Roger. I hear you weaving your way up the freeway.  
Can you give me a postburn report? Over..

04 04 27 06 LMP Yes. As soon as I get my breath.

04 04 27 12 CDR It doesn't work.

04 04 27 14 LMP Okay. Our residual - our burn was on time. Our residuals were minus 0.1, minus 0.3, and minus 0.5. And that was the residuals from the DPS burn. We did not use - we did not null anything out. We're in a 61.2 by 9.2, and the AGS has us at an 8.6.

04 04 27 36 CC Roger, Snoopy. We copy all the residuals, and it looks like we are all GO. Your DPS is looking good, and it's GO. Over.

04 04 27 44 LMP Oh, Charlie. We just saw earthrise and it's got to be magnificent.

04 04 27 50 CDR Yes, you can also tell Jack Schmitt --

04 04 27 52 CC Roger. We copy.

04 04 27 53 CDR -- that there's enough boulders around here to fill up Galveston Bay, too.

04 04 28 01 CC He's copying, Tom.

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Day 5 - Page 147  
Tape 10-03601

- 04 04 28 06 LMP      The only trouble is - We're stripping lots of film for him. The spacecraft is looking good and there are no problems, Charlie, except it would be nice to be around here more often.
- 04 04 28 19 CC      Roger. We copy. All your systems are looking good to us. Did you get your DPS pressure back? Over.
- 04 04 28 26 CDR      Negative.
- 04 04 28 27 LMP      That's a negative, but the DPS burn was smoothed out very smoo -- very well when we throttled up.
- 04 04 28 36 CC      Roger. We got a good - good pressures here, and the DPS is GO for phasing.
- 04 04 28 42 CDR      Roger, Charlie.
- 04 04 28 44 LMP      Can you imagine, no color film in that thing? Huh? Yes. I ought to hit someone over the head with that -
- 04 04 28 54 CDR      Oops. Okay. LANDING RADAR TEST coming up.
- 04 04 28 58 LMP      Okay. At 28 - at 28 - not yet, babe.
- 04 04 29 03 CDR      Well, I want to get it early.
- 04 04 29 16 CDR      I need - Have you got them locked on? I need a VERB 83.
- 04 04 29 20 LMP      You need a VERB 83?
- 04 04 29 21 CDR      Yes. Go call POO and then get us a VERB 83.
- 04 04 29 30 LMP      Let me run through - through 30 real quick.
- 04 04 29 36 CDR      Okay.
- 04 04 29 48 CC      Snoop, Houston. There will be no update on the phasing pad. Everything is looking really good.
- 04 04 29 54 CDR      Okay, good. We'll be picking up our LANDING RADAR TEST and taking pictures here and it's a fantastic sight. You do have different shades of browns and grays here. And right in the volcanisms, there is also pure white near the edge, and the bottom is

~~CONFIDENTIAL~~

Day 5 - Page 148  
Tape 10-03601

~~CONFIDENTIAL~~

black. And we see some large boulders that are black to blackish gray.

- 04 04 30 24 CC Roger, Snoopy. We copy.
- 04 04 30 30 CDR Have we got it? What time?
- 04 04 30 32 LMP Okay, just wanted to check it. Go ahead.
- 04 04 30 37 CDR ... PROCEED.
- 04 04 30 38 LMP Call your VERB 83.
- 04 04 31 11 LMP There you are, Tom.
- 04 04 31 14 CDR Here are some more boulders.
- 04 04 31 24 LMP Okay. We've got 10 minutes to go before we get to Taruntius G and H.
- 04 04 31 29 CDR What's our elevation now?
- 04 04 31 36 CC Charlie Brown, Houston. Can you see them down there among the boulders? Over.
- 04 04 31 40 CMP I saw them about 1 $\frac{1}{4}$  miles. But then I turned this thing over to CMC to let it do an AUTO maneuver and it lost them.
- 04 04 31 54 CC Roger.
- 04 04 31 55 CMP I was tracking them just manually. I don't see them anymore. I'm going to let it update it with a little radar - a little range, and see if that brings it in.
- 04 04 32 09 CC Roger, Charlie Brown. We copy. Out.
- 04 04 32 10 LMP Okay, go into HOVER.
- 04 04 32 12 CDR Didn't go into HOVER.
- 04 04 32 14 LMP A little early, but let's get it in.
- 04 04 32 29 LMP Should be reading about 42 000 feet when she actually locks on.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 149  
Tape 10-03601

- 04 04 32 37 CDR      Hello, Houston. This is Snoop. It looks like this landing radar is doing real good.
- 04 04 32 45 CC      Roger, Snoop. We roger that. Over.
- 04 04 32 50 CDR      Looks like we may already have a lock-on here, even early.
- 04 04 33 04 LMP      Okay, babe. Coming on at 25 minutes --
- 04 04 33 08 CDR      And straight up ahead, you can see we're going to go from the highlands over into the mare area. It's a beautiful sight. Just like you're crossing over into a blackish-gray sea.
- 04 04 33 21 LMP      There goes the landing radar.

~~CONFIDENTIAL~~

Day 5 - Page 150  
Tape 10-03601

~~CONFIDENTIAL~~

04 04 33 25 CDR Landing radar looks like it's locked on solid.  
04 04 33 33 CC Roger, Snoop. Over.  
04 04 33 36 LMP I don't believe this thing's failed, do you?  
04 04 33 39 CDR You out of film?  
04 04 33 47 CDR ... that circuit breaker blew.  
04 04 33 50 LMP You've got to be kidding.  
04 04 34 39 LMP Okay, T.P. 23 minutes, I'm going to - 22:30, I'm going to connect the ascent batteries. You got your lan - PGNS LANDING RADAR breaker CLOSED, for sure?  
04 04 34 48 CDR Oh, yes, baby.  
04 04 34 49 LMP Okay.  
04 04 34 55 LMP Houston. I've got the ascent batteries connected at this time.  
04 04 35 02 CC Roger. We see that. Thanks, Snoop. Over.  
04 04 35 05 LMP I didn't realize there were so many things to do in such a short time. Give me that thing, Tom, if you can?  
04 04 35 11 CDR Okay.  
04 04 35 22 CC Snoop, Houston. Your ascent batteries look good. Out.  
04 04 35 26 CDR Roger.  
04 04 35 30 LMP Charlie, we're now about where the horizon is - almost, you know, level - at times seems a little bit high. We're coming into - to a mare area 22 minutes before - before phasing right now. The craters, the new craters, seem to throw out a very, very light, light, almost whitish gray by comparison to the dirtier-color whites and grays and browns. Right over the rim - there appears to be almost every fresh crater, there's visible boulders both down in it, on the sides and on the rim.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 151  
Tape 10-03601

- 04 04 36 04 CDR Also, Charlie, it looks like we're getting so close, all we have to do is put the tailhook down and we're there.
- 04 04 36 20 CC Hey, Snoop. Air Force guys don't talk that way.
- 04 04 36 24 CDR Well, I did fly an F4 that had one on it one time, even though it was an Air Force bird. Okay, we're coming right over to the edge of the maria. And it really smoothes out here, comparatively speaking.
- 04 04 36 37 LMP You should be starting to see Langrenus over there, T.P.
- 04 04 36 39 CDR Yes.
- 04 04 36 41 LMP 21 minutes.
- 04 04 36 44 CC Roger, Snoop. We have you; you should be at Taruntius very soon.
- 04 04 36 49 CDR Roger.
- 04 04 36 50 CMP Okay, Houston. I've got them in the optics now. They're fantastic.
- 04 04 36 56 CC Hey! Great show, Charlie Brown.
- 04 04 37 05 LMP Okay. We're at - I don't believe we're quite up to Taruntius yet. We're in - we're in the Foaming Sea - We're past the Sea of Waves and in the Foaming Sea. And the maria gets markedly smooth and flat. There's small craters - a lot of small craters down in it, but the basic surface is extremely smooth. And it appears that the craters go down into it, rather than - than the rims come up out of it.
- 04 04 37 30 CDR You can tell that this area is definitely lower than that highland area, just as a whole general area.
- 04 04 37 35 LMP Okay. I think right over the horizon, we've probably got Taruntius H and Taruntius G coming up. See them, Tom?
- 04 04 37 42 CDR Yes, we've got them, Cernan --

~~CONFIDENTIAL~~

Day 5 - Page 152  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 04 37 43 CC Okay, Snoop. Could you comment on expected surface washout? Could you comment on that? Over.
- 04 04 37 53 LMP Yes. When you look straight down, there's a definite three-dimensional effect where you can't really tell the depth of craters like we could in the past. And in some cases, you're not even sure whether - whether there is depth to them except that they look a little familiar. It's a little bit brighter and the whole area is a little bit hazier and glarier. It looks like we're right over a subsolar point about now.
- 04 04 38 28 CMP Boy! Are they down there among them!
- 04 04 38 34 CC Roger. Bet it looks like they're really hauling the mail.
- 04 04 38 36 CDR What - what did you do?
- 04 04 38 37 LMP Huh? Didn't do anything.
- 04 04 38 38 CDR Oh, sorry.
- 04 04 38 41 LMP Surprisingly - surprisingly enough, Charlie, it really doesn't look like we're moving too fast down here. It's a very nice, pleasant pace.
- 04 04 38 48 CC Roger.
- 04 04 38 49 CDR In fact, it's exactly like when - tell Deke it's like you went out and practiced the other morning in Florida; as far as the relative bearing rate, it's about the same.
- 04 04 39 03 CC Copy. Out.
- 04 04 39 04 LMP Seems like we're coming up on my side on Taruntius G and I believe Tom's got Taruntius H right there on his side. Things come out of the horizon differently; they seem to come over the horizon and be much closer to you down here than up there at 60 miles.
- 04 04 39 19 CDR Shit, look at the boulders.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 153  
Tape 10-03601

- 04 04 39 22 LMP And the craters in this area are craters are - are dug out of the surface and not craters that are throwing back from the surface with high rims. They're very low, flat rims.
- 04 04 39 43 CC Snoop, you're dropping out. Your voice faded out. We're standing by.
- 04 04 39 52 LMP Roger. Looks like we might be on the verge of loss of lock, here; I don't know.
- 04 04 40 05 LMP Tom, I think you've either got Messier B or Secchi up there on your left in front of you. See it?
- 04 04 40 11 CDR Yes.
- 04 04 40 32 CDR Houston, Snoopy. From this altitude, the maria still looks fairly smooth as far as overall approach characteristics coming into it.
- 04 04 40 55 LMP We're coming into Apollo Ridge.
- 04 04 40 58 CDR Yes.
- 04 04 40 59 LMP Okay. There's Secchi on my right.
- 04 04 41 04 LMP Hey, Houston. If you're reading, there's Secchi on my right. We're coming into Apollo Ridge and here's the first of the - here's Apollo Rille, right in front of my window. It's very, very easily distinguishable at this point, and it appears to be a couple of hundred feet deep.
- 04 04 41 22 CDR It's rounded.
- 04 04 41 44 LMP Houston, I'm on OMNI. I'm not sure whether you're reading, but we're over the Apollo Ridge. I just had Secchi on my right - Apollo Rille appears to be a couple of hundred feet deep, but very smooth at the bottom. We should have the Smokey Basin right out of Tom's window, on the left.
- 04 04 42 02 CDR Yes.
- 04 04 42 06 LMP Are you reading, Houston?

~~CONFIDENTIAL~~

Day 5 - Page 154  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 04 42 21 LMP Hello, John. Are you reading?
- 04 04 42 23 CMP Loud and clear there, Gene-o.
- 04 04 42 24 LMP Okay. I'm on OMNI, and we got good signal strength. I don't know whether they're listening, but we're over Apollo Ridge and we're just passing Smokey Basin.
- 04 04 42 33 CC Charlie Brown, Houston. If you read, have Snoopy tweak up the high gain. We're not reading him at all. Over.
- 04 04 42 40 CMP Roger.
- 04 04 42 42 CMP Charlie - Snoopy, Houston wants you to tweak up the high gain; they are not reading you.
- 04 04 42 50 CDR We're coming into Marilyn now.
- 04 04 43 05 CMP Snoop, this is Charlie Brown. Over.
- 04 04 43 07 LMP Hey, they should have it now. Okay. We just passed Mount Marilyn. We're losing high-gain lock. We can't hold them.
- 04 04 43 17 CMP Houston, Snoopy said they can't hold you on high gain.
- 04 04 43 25 CDR Boulders all over the place. Okay. You got it?
- 04 04 43 35 LMP Houston, we're on OMNI and we just passed Mount Marilyn. As a matter of fact, there's Weatherford Crater, I believe, right in here.
- 04 04 43 42 CDR Yes. Where we ought --
- 04 04 43 43 LMP What's the time, babe? We're at 14:40. Okay. And here's - we just - there's Saint Theresa Ridge, right there. We're right over it.
- 04 04 43 58 LMP Okay, T.P., and we're coming up to Bear Mountain - is right ahead of us - and you should have Maskelyne A. Do you have a big crater, Maskelyne A,

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~~CONFIDENTIAL~~

Day 5 - Page 155  
Tape 10-03601

right there, right on the edge our - right in front of you, down straight in front of you, on the left?

- 04 04 44 13 CDR Could they have - -
- 04 04 44 14 LMP And Lonesome Mesa, right here.
- 04 04 44 15 CDR Is this Maskelyne A, here?
- 04 04 44 16 LMP Houston, I don't know whether you're reading us, but this is the best we can do.
- 04 04 44 21 CMP They're still transmitting to you, Houston - but - they're reading you, Snoopy, and they're standing by.
- 04 04 44 33 LMP Okay, we're abeam of - we're abeam of Site 1. Tom, give me that a minute. Let me see if I can take a couple of pictures.
- 04 04 44 42 CDR And I've got Censorinus A out here. Hey, let me - I've got Censorinus A right here, bigger than shit.
- 04 04 44 48 LMP Hey, and I tell you, we are low! We are close, babe! This is, like, it! And it really looks pretty smooth down there, surprisingly enough.
- 04 04 44 58 CDR Censorinus A has huge boulders all around the rim of it, falling on the inside and outside.
- 04 04 45 04 LMP Okay. I've got Maskelyne right here, off my right side. We're coming up on Boot Hill, which is very easy to distinguish, and Maskelyne. And I see the craters that are going to lead us right into the - right into the landing site.
- 04 04 45 17 LMP (Cough) We've got Duke Island on the left just past Boot Hill, and we're coming up - I've got Wash Basin, just off my right arm. Very easily distinguishable.
- 04 04 45 33 LMP Tom ought to have Sidewinder Rille coming up on the left - Tom, give me that ... - -
- 04 04 45 36 CDR Here it comes.

~~CONFIDENTIAL~~

Day 5 - Page 156  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 04 45 37 IMP -- Maskelyne.
- 04 04 45 38 CDR What time do we pitch over, 11:40?
- 04 04 45 43 IMP Yes.
- 04 04 45 56 IMP Okay. I've got Diamondback. Diamondback Rille is very easy to see. These rilles look like they may be as much as a couple of hundred feet deep and very smooth. The surface actually looks very smooth, like a - like a very wet clay but - but smooth, with the exception of the bigger craters.
- 04 04 46 15 IMP Ch, Tom. Let me get a picture of these rilles. Diamondback.
- 04 04 46 18 CDR Here. Sidewinder Rille is rounded on the edges. It is flat under, and smooth in the bottom. The ridges are definitely round; it doesn't look like the sides are upturned. Okay. I've got Moltke up there on the left. We're coming into the site.
- 04 04 46 32 IMP Okay. The best description I can give you of these rilles is of a dry - a dry - -
- 04 04 46 39 CDR ...
- 04 04 46 40 IMP -- a dry river out in - out in New Mexico or Arizona someplace.
- 04 04 46 44 CDR Hold it, go VOX. Okay. Here we are coming up on the site. ... Moltke on the left - -
- 04 04 46 55 IMP Maskelyne G.
- 04 04 46 57 CDR -- there's plenty of holes there, but there are a few smooth areas.
- 04 04 47 09 IMP The ... . Okay, we just went over crater number 12. ... landing site, Tom's got Moltke right out his left - right. Take a picture of that, babe.
- 04 04 47 34 CDR Okay.
- 04 04 47 35 IMP ... almost like you could reach out and touch Moltke, and we're going just about right over the

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~~CONFIDENTIAL~~

Day 5 - Tape 157  
Tape 10-03601

landing site right this moment, and it's - A lot of - a lot of rounded-off craters, a few fresh ones, but basically, it looks pretty smooth, like gummy grayish sand.

- 04 04 47 51 CDR Okay. My camera ... took so many pictures. There's still lots of small craters down there, but I'd say you have about 30 percent of the area that looks free. About 30 percent. So if you've got hover time, you can probably make it.
- 04 04 48 03 LMP ... I am, John, I'm in DOWN VOICE BACKUP.
- 04 04 48 12 CMP ... He's in DOWN VOICE BACKUP.
- 04 04 48 13 CDR Okay.
- 04 04 48 14 LMP We're just going over the landing site right now, and we should be coming up on Ritter - Sabine and Ritter and then Schmitt.
- 04 04 48 25 CDR Okay, here is US 1. US 1 has got a rounded side and it looks like the whole thing is slumped down an even amount, like it is a huge ...
- 04 04 48 33 LMP Man, that must be - Tom, that must be seven - that must be a thousand feet wide.
- 04 04 48 39 CDR Yes. US 1 is a good - oh, about a good mile - a thousand feet to a mile wide - even a couple thousand feet to a mile wide. And the whole thing is slumped down. And the ... is still pretty pock-marked with craters, but it looks like you could be able to set down there.
- 04 04 48 56 CDR We're going to phasing attitude.
- 04 04 48 58 LMP Okay.
- 04 04 49 04 CMP Okay.
- 04 04 49 05 LMP Goddam film pack failed. I'm so fed up with this stuff failing.
- 04 04 49 10 CDR Hey, Gene-o, what's the phasing attitude?

~~CONFIDENTIAL~~

Day 5 - Page 158  
Tape 10-03601

~~CONFIDENTIAL~~

04 04 49 11 LMP Okay.  
04 04 49 13 CMP Go ahead. Over.  
04 04 49 15 IMP Okay. Let me --  
04 04 49 17 CMP ... I read you loud and clear ...  
04 04 49 24 LMP ... this right now, Tom.  
04 04 49 55 IMP ... you know, this goddam film pack failed on me?  
04 04 49 58 CDR My Hasselblad just failed!  
04 04 50 02 LMP Oh, I tell you, babe, that's something. Okay.  
04 04 50 05 CDR Ooh, look at that.  
04 04 50 08 IMP ... I don't have anymore -  
04 04 50 11 CDR ... what happened to my control system?  
04 04 50 13 LMP I don't know. Why?  
04 04 50 19 CC Snoop, Houston. We're reading you about 3 by now  
... the burn. Over.  
04 04 50 27 CDR Roger. We're going to phasing attitude.  
04 04 50 32 CC Roger. And you're GO for the burn.  
04 04 50 34 CDR Yes, and you can't imagine the position we can see  
these things, pitched way down like this. Looks  
like we're not very far above them. It's fantastic.  
04 04 50 47 LMP (Cough) Okay, babe. You might try and get your  
helmet and gloves on. I went through P30; we're  
all good there again.  
04 04 51 18 LMP What's your attitude, babe? Oh, it's getting dark.  
I thought we were pointing up in the air.  
04 04 51 26 CDR ... hurry up and get this burn.  
04 04 51 42 CDR Son of a - ~~CONFIDENTIAL~~  
04 04 51 53 LMP We is been down among them, babe.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 159  
Tape 10-03601

04 04 52 04 CDR We got to start doing that earlier.  
04 04 52 07 LMP Tom, you read me?  
04 04 52 09 CDR I'm reading you. You read me?  
04 04 52 10 LMP Yes.  
04 04 52 13 CDR Okay. Help -  
04 04 52 19 LMP Okay, you can go into 40.  
04 04 52 20 CDR Okay.  
04 04 52 34 CDR It's okay. VERB 06, NOUN - minus 16710 and minus --  
04 04 52 45 LMP Plus 167 --  
04 04 52 46 CDR Plus 167.10 --  
04 04 52 48 LMP Okay.  
04 04 52 49 CDR -- minus 58.0.  
04 04 52 50 LMP Okay..  
04 04 52 51 CDR PROCEED. Yes, we'll do an AUTO maneuver.  
04 04 52 57 LMP VERB 70 - Okay, you should have called VERB 78 in there, babe.  
04 04 53 02 CDR Okay.  
04 04 53 43 CDR Okay, 4-minute check --  
04 04 53 45 LMP Tom, the AGS is good for a takeover. The AGS is good for a takeover.  
04 04 53 54 CDR Okay.  
04 04 53 56 LMP Okay, let me open and close this breaker. Okay? Okay, T.P., we've got to get something out of this burn. ENGINE GIMBAL ENABLE.  
04 04 54 08 CDR ENGINE GIMBAL ENABLE.

~~CONFIDENTIAL~~

Day 5 - Page 160  
Tape 10-03601

~~CONFIDENTIAL~~

04 04 54 09 LMP THROTTLE, MIN.  
04 04 54 10 CDR THROTTLE's coming to MIN.  
04 04 54 12 LMP THROTTLE CONTROL, AUTO.  
04 04 54 16 CDR THROTTLE CONTROL is AUTO.  
04 04 54 18 LMP MANUAL THROTTLE, COMMANDER.  
04 04 54 19 CDR Go.  
04 04 54 21 LMP BALANCE COUPLE, ON.  
04 04 54 22 CDR Go.  
04 04 54 25 LMP DESCENT ENGINE OVERRIDE COMMAND, OFF.  
04 04 54 27 CDR Go.  
04 04 54 29 LMP Engine pushbuttons all reset.  
04 04 54 31 CDR Yes.  
04 04 54 34 LMP Abort pushbuttons all reset. Okay, STAB/CONTROL:  
DECA POWER, CLOSED; and AELD, CLOSED.  
04 04 54 42 CDR Okay. STAB/CONTROL: DECA POWER, CLOSED and  
AELD, CLOSED.  
04 04 54 46 LMP Okay, EPS INVERTER number 2, CLOSED.  
04 04 54 49 CDR That's over there.  
04 04 54 51 LMP No, it isn't --  
04 04 54 52 CDR EPS INVERTER number --  
04 04 54 53 LMP -- INVERTER number 1, CLOSED. I'm sorry.  
04 04 54 55 CDR Okay.  
04 04 54 56 LMP You got it?  
04 04 54 57 CDR Yes.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~ Day 5 - Page 161  
Tape 10-03601

04 04 54 58 LMP Okay, DESCENT ENGINE OVERRIDE coming CLOSED. AELD coming CLOSED. ABORT STAGE coming CLOSED.

04 04 55 11 LMP Okay, Tom, DELTA-V to go is less than 5, we'll RCS it to zero, 3 MAX. If DELTA-V to go is less than 25 but greater than 5, we've got to stage in RCS to zero.

04 04 55 23 CDR Yes.

04 04 55 24 LMP If DELTA-V to go is greater than 25, we got to stage and APS it to zero. Okay?

04 04 55 28 CDR Right.

04 04 55 29 LMP Now if we have to go to AGS - APS, I've got the staging procedures and everything right here.

04 04 55 34 CDR Yes.

04 04 55 35 LMP After - after burning - if we stage, we'll stage it, burn it at AGS, and go.

04 04 55 39 CDR Okay.

04 04 55 40 LMP If we burn the ascent engine, we'll burn it in AGS.

04 04 55 44 CDR 2 minutes.

04 04 55 46 LMP Have you got your radar -

04 04 55 48 CDR Landing radar is still on.

04 04 55 50 LMP You ought to pull that breaker.

04 04 55 51 CDR No, it stays on until after this. We do a VERB 79 afterwards.

04 04 55 58 LMP Alright.

04 04 56 11 CDR 2 minutes. From final PROCEED. We're there. ENTER. Okay, 01:46 to go. Alright, phasing is 176 feet per second. Okay. 01:30, Gene-o.

04 04 57 10 LMP Okay, babe, 01:14 to go.

~~CONFIDENTIAL~~

Day 5 - Page 162  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 04 57 13 CDR Yes. We'll go on VOX so you can read it.
- 04 04 57 24 LMP How do you read? ... cut out, but I assume it's loud and clear. Okay, Tom, coming up on - 35 seconds. ENGINE ARM, DESCENT. DEAD BAND MIN. You're in AGS. A-okay. On AUTO on the AGS; there's your AGS needle. Attitude's looking good.
- 04 04 57 50 CDR DSKY blanks; hit the PROCEED at 5 seconds.
- 04 04 57 55 LMP Okay, babe, the AGS is looking good. There's your AGS attitude --
- 04 04 57 58 CDR We'll trim the --
- 04 04 57 59 LMP You're in good shape.
- 04 04 58 03 CDR Standing by to start it.
- 04 04 58 04 LMP Okay. And I'll trim out the burn.
- 04 04 58 05 CDR Okay, here we go for 26 seconds.
- 04 04 58 09 LMP Burn time is --
- 04 04 58 11 CDR 40.
- 04 04 58 12 LMP -- 40 seconds.
- 04 04 58 13 CDR Okay, stand by to proceed.
- 04 04 58 14 LMP Okay, I'm ready.
- 04 04 58 15 CDR ... ullage
- 04 04 58 20 LMP Flashing 99.
- 04 04 58 21 CDR PROCEED.
- 04 04 58 22 LMP 99, PROCEED. There's ullage.
- 04 04 58 26 CDR Okay, throttle's up. That's okay. Let it go. We're burning. Okay.
- 04 04 58 34 LMP We're burning, John, we're burning!

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 163  
Tape 10-03601

04 04 58 37 CDR Go to throttle up.  
04 04 58 41 LMP Watch the GIMBAL light. Forget about it, babe.  
ENGINE GIMBAL light, but everything's good.  
04 04 58 47 CDR We're still burning.  
04 04 58 48 LMP Still burning, 149 to go.  
04 04 58 50 CDR 26. Ohhh.  
04 04 58 51 LMP Okay, throttling up. 127 to go.  
04 04 58 57 CDR How's the attitude?  
04 04 58 58 LMP 107 to go.  
04 04 58 59 CDR Good.  
04 04 59 00 LMP 86 to go. 40 to go. 20 to go -  
04 04 59 04 CDR Oh, brother.  
04 04 59 05 LMP SHUTDOWN!  
04 04 59 09 CDR Got the power off.  
04 04 59 11 LMP Okay, Tom, there's 1.5 feet per second. Let me null  
it out. Let's go to AGS, ATTITUDE HOLD.  
04 04 59 15 CDR Okay. Okay, we'll go to AGS -  
04 04 59 19 LMP AGS, ATTITUDE HOLD.  
04 04 59 21 CDR Okay. Go. Hold it. Something's wrong here.  
04 04 59 29 LMP We're MIN DEADBAND. That's good. Let it go right  
here. That's good.

~~CONFIDENTIAL~~

Day 5 - Page 164  
Tape 10-03601

~~CONFIDENTIAL~~

04 04 59 38 IMP Let me get those.  
04 04 59 39 CDR I'm going to wide deadband.  
04 04 59 43 LMP ... two, minus point - plus 0.2, minus 0.5, and minus 0.9. The burn's good, John.  
04 04 59 57 CC ...  
04 04 59 59 LMP Roger.  
04 05 00 00 CDR It looked real good, and the burn was steady. We had the DESCENT QUANTITY light on twice; we had the ENGINE GIMBAL light on, the master warning and all those good things, but we just passed right on. Over.  
04 05 00 09 LMP Okay. VERB 82, ENTER. Okay, Tommy. Okay, Houston. We're in a 190.8 by 11.8.  
04 05 00 30 LMP Okay, Tom, verify your ENGINE ARM, OFF.  
04 05 00 33 CDR Yes, ENGINE ARM, OFF.  
04 05 00 34 LMP PROP QUANTITY, OFF.  
04 05 00 35 CDR PROP QUANTITY coming OFF.  
04 05 00 38 LMP Okay, babe, you can - Let me take my helmet and gloves off.  
04 05 00 42 CDR Let me get the DECA GIMBAL open. Let's get a VERB 79.  
04 05 00 44 LMP I got it.  
04 05 00 46 CDR Good. And I'll get the landing radar.  
04 05 00 49 CC Snoop, Houston. We missed the VERB 79.  
04 05 00 53 CDR Roger. It just went in.  
04 05 00 57 CC Okay. We got it. Thanks, Tom.  
04 05 01 00 CDR How's the pressure doing? Oh, I guess it's just does.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 165  
Tape 10-03601

- 04 05 01 03 CC Hey, Snoop; Houston. The COMM is really great and we got all our data now. During the good part, though, boy, you were way down in the mud, but everything is copacetic now.
- 04 05 01 12 LMP Charlie, I - I fought with the S-band antenna to get it for you, but it's the best I could do and I got you the strongest strength OMNI when we were down there. And then after we passed, I gave S-band another try and we came in good because I thought you'd want to see the burn.
- 04 05 01 29 CC We appreciate it. Thanks much, Snoop. It looked great.
- 04 05 01 32 CDR And, Houston, this is Snoopy. You'd like to know that we've taken so many pictures that both cameras have failed on us. Over.
- 04 05 01 43 LMP Okay, Tom, we want to do some tracking. You got your - you got this yaw maneuver, put your RENDEZVOUS RADAR breaker IN.
- 04 05 01 49 CDR Yes. Okay. Okay.
- 04 05 01 57 LMP You got your RENDEZVOUS breaker IN?
- 04 05 01 58 CDR Yes.
- 04 05 02 00 LMP Okay. And you go to - go to 120 upside down. And you're probably in - Oh, you're in inertial now, aren't you?
- 04 05 02 06 CDR Yes, that's where I am.
- 04 05 02 15 LMP And here's where the AGS thinks it is, Tom. The AGS needles - AGS needles give you a hack on where it is. Yaw 180 and pitch down 90 and ... Okay, Tom. Clean up your breaker panel. PGNS, LANDING RADAR, OPENED?
- 04 05 02 36 CDR Yes.
- 04 05 02 37 LMP STAB/CONTROL: DECA POWER, OPEN?
- 04 05 02 38 CDR Yes.
- 04 05 02 39 CDR AELD, OPEN?

~~CONFIDENTIAL~~

Day 5 - Page 166  
Tape 10-03601

~~CONFIDENTIAL~~

04 05 02 40 CDR Yes.

04 05 02 41 LMP INVERTER number 1, OPEN?

04 05 02 42 CDR Yes.

04 05 02 43 LMP Okay, my DESCENT ENGINE OVERRIDE is coming OPEN. My AELD is coming OPEN. My ABORT STAGE is coming OPEN. And I'm going to disconnect the batteries; stand by. That one's above?

04 05 02 59 CDR Yes.

04 05 03 04 LMP Pretty good bird, you know it?

04 05 03 05 CDR Yes.

04 05 03 06 LMP Okay, how about RCS? What have we got, quantity-wise? 92 and 82.

04 05 03 10 CDR Yes, we've been hosing it out. These - these needles aren't nulled. They get all that tracking down there and - -

04 05 03 15 LMP Fine, that's no problem, babe. Piece of cake. Waiting for - to get to that attitude and we'll pick up P20 ...

04 05 03 22 CDR Yes.

04 05 03 39 LMP Looking at 120 upside down.

04 05 04 00 CC Charlie Brown, Houston. We have a backup insertion pad if you are ready to copy. Over.

04 05 04 10 LMP ... manual.

04 05 04 11 CDR We're not near it there.

04 05 04 12 CC ... backup insertions: SPS, G&N, NA down to NOUN 33. NOUN 33 is 102:58:01.00, plus 01700 - -

04 05 04 35 CDR ... you didn't give me AGS.

04 05 04 37 LMP I gave you AGS - AGS needles right here, Tom.

04 05 04 39 CDR Yes. Okay.

~~CONFIDENTIAL~~

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Day 5 - Page 167  
Tape 10-03601

04 05 04 41 CC -- zero, zero --  
04 05 04 42 CDR Good. Leave them there.  
04 05 04 43 CC -- 10 --  
04 05 04 44 LMP ... the AGS thinks it is.  
04 05 04 46 CC -- 180 --  
04 05 04 48 CDR Yes. Put it back there so I can --  
04 05 04 49 LMP Okay. As long as you don't go to MODE CONTROL,  
you're alright. You can leave it in there.  
04 05 04 51 CDR Oh, yes. Not about to.  
04 05 04 56 CC -- and the DELTA-V<sub>c</sub> is 01718. Rest of the pad  
is NA. Your ullage is four jet, 10 seconds. Got  
a CSI time: a 103:44:00, TPI time 105:33:00 --  
04 05 05 26 LMP That's exactly what we called for.  
04 05 05 27 CC -- with an N equal to 1. Over.  
04 05 05 28 CDR There he is.  
04 05 05 29 LMP Okay. See if you can get them --  
04 05 05 32 CDR I got him in the reflector.

~~CONFIDENTIAL~~

Day 5 - Page 168  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 05 05 34 LMP Just get the signals. You got your radar breaker in?
- 04 05 05 36 CDR I've got the AC.
- 04 05 05 38 CMP SPS, G&N: not applicable, down to time of burn:  
102:58:0100, plus --
- 04 05 05 51 LMP See if you can get him.
- 04 05 05 52 CMP -- 01700, plus all balls, minus 0710, 180, 262,  
002, <sub>c</sub> DELTA-V 07 - 01718 --
- 04 05 06 03 LMP Yes, it's on AGS on your ball, babe.
- 04 05 06 04 CMP -- jets, 10 seconds. CSI: 103:44:00,  
TPI 105:33:00, N equals --
- 04 05 06 16 LMP There it goes.
- 04 05 06 17 CMP -- one.
- 04 05 06 20 CC Good readback, Charlie Brown.
- 04 05 06 30 LMP As soon as you get him, go to LGC and we'll --
- 04 05 06 40 CDR Okay.
- 04 05 06 41 CC Charlie Brown --
- 04 05 06 42 LMP Here it comes.
- 04 05 06 43 CC -- Houston. Confirm <sub>c</sub> DELTA-V and NOUN 81:  
minus .00710.
- 04 05 06 52 LMP Want to try and let P20 do it? Let's let P20  
try it. Go to LGC.
- 04 05 06 58 CDR Okay. Hang on. This thing should be boresighted  
in.
- 04 05 07 01 CMP Minus two balls, 710.
- 04 05 07 02 LMP That's enough. Why don't you try and let P20 try it?
- 04 05 07 05 CC Okay. Fine. You have been breaking up a little  
bit, John. We missed one of those zeros.

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~~CONFIDENTIAL~~

Day 5 - Page 169  
Tape 10-03601

04 05 07 09 CDR José, are you pitched up?  
04 05 07 16 CMP That's affirmative ...  
04 05 07 18 CDR Yes, he didn't pitch up ...  
04 05 07 20 CMP I'm on pitch stop. I'm in tracking attitude right now.  
04 05 07 21 LMP Why don't you go to LGC, and let him try it, babe? Go ahead.  
04 05 07 45 CDR Hey, John. You may have to go down and reset that rendezvous radar transponder. Over.  
04 05 07 57 LMP There it comes. Hold it, John. We're getting it.  
04 05 08 00 CDR (Coughing)  
04 05 08 16 LMP You alright?  
04 05 08 17 CDR Yes. I got some insulation.  
04 05 08 23 LMP Okay, there's an update, babe. It's alright.  
04 05 08 31 CDR You want to try --  
04 05 08 32 LMP Holy smoley. Look at that.  
04 05 08 35 CDR Wh-oh.  
04 05 08 36 LMP Holy shit!  
04 05 08 40 CDR Hello, Houston; Snoopy.  
04 05 08 45 CC Go ahead, Snoopy. Over.  
04 05 08 47 CDR Would you take a look at 0649 and see what we got there?  
04 05 08 54 CC Roger. We're looking at it. Stand by.  
04 05 08 56 LMP The first one, the first one was a small number, .0.4 and zero.  
04 05 09 02 CDR Did we put it - No, not - Don't let that son of a bitch update the vector. We've got a VERB 95 in it.

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Day 5 - Page 170  
Tape 10-0360

~~CONFIDENTIAL~~

04 05 09 06 CC Roger. Copy. 0.4 and zero on the first. It looks like big numbers now.

04 05 09 12 LMP It's updating his state vector anyway.

04 05 09 15 CC Snoop, Houston. While we're looking at this, would you - are you ready to copy an insertion pad? Over.

04 05 09 21 LMP That's affirm. I am, and I'd also like to give - you give me an update on AOS and sunrise.

04 05 09 31 CC Roger. Stand by. Your insertion pad: T<sub>ig</sub> 102:55:01.40, minus 01832, plus all balls, minus 01235. DELTA-V<sub>R</sub> is 02209, 015, minus - Correction, roll 180, 233, minus 01818, plus all balls, minus 01255, rest of the pad is NA. Standing by for your readback.

04 05 10 39 LMP Okay. You got any word on that NOUN 49? We're losing some tracking time we'd like to try out.

04 05 10 56 CC Roger. Stand by. We want you to reject that mark with the big numbers, and stand by on the others.

04 05 12 06 LMP No, not VERB 49, babe.

04 05 12 10 CDR Oh.

04 05 12 11 LMP God damn! I don't know what that did.

04 05 12 12 CDR I'm sorry ...

04 05 12 13 CC -- 101:37 --

04 05 12 19 LMP See what that did.

04 05 12 20 CC Sunrise time of 101:40. Over.

04 05 12 24 LMP Okay, I got it. I don't know what - It'll be right here. It's right here.

04 05 12 30 CC And, how's the P20 doing? Is it taking good marks?

04 05 12 34 CDR "Start crew-defined maneuver." We don't have any. We don't have any --

04 05 12 36 LMP Yes. It looks like it is --

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~~CONFIDENTIAL~~

Day 5 - Page 171  
Tape 10-03601

04 05 12 37 CDR We're okay --  
04 05 12 38 LMP We just got our second mark and - wait a minute.  
04 05 12 39 CDR It doesn't mean a thing.  
04 05 12 42 LMP Yes. It looked good. It's 0.3 foot per second.  
04 05 12 46 CDR That's the AUTO maneuver. We're okay.  
04 05 12 53 LMP And I'll read the pad back if you'd like. Houston,  
are you ready for the pad?  
04 05 13 10 CC Roger. Go.  
04 05 13 11 LMP Okay. Insertion is 102:55:0140, minus 01832, plus  
all balls, minus 01235, 02209, 015, 180 233, minus  
01818, plus all balls, minus 01255, and that's it.  
04 05 13 38 CC Okay. That was a good readback.  
04 05 13 46 CDR I want to do some Z-axis tracking.  
04 05 13 50 LMP Instead of 82.5 down, your attitude is going to be  
changed, Tom. We're 123.5 down.  
04 05 13 56 CDR Okay. See how the Z-axis tracks now.  
04 05 14 03 CC Snoop, Houston. We're satisfied --  
04 05 14 05 LMP What happened?  
04 05 14 06 CC -- with the way the rendezvous radar is updating  
the state vector in P20 now. Over.  
04 05 14 10 CDR Z-axis --  
04 05 14 11 LMP Okay, Charlie. Thank you.  
04 05 14 17 CDR That's Z-axis track.  
04 05 14 22 LMP It's like moving a garbage can around.  
04 05 14 51 CDR Houston, Apollo 10. The Z-axis track - it now  
looks real good and real solid.  
04 05 15 01 CC Roger, Snoop. It looks good to us. Your range is  
coming right in there.

~~CONFIDENTIAL~~

Day 5 - Page 172  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 05 15 04 CDR Roger.
- 04 05 15 18 LMP I'm only going to take one more mark, Tom, and then go into a P52.
- 04 05 15 21 CDR Okay. Let's see what it is. NOUN 49, ENTER. See what we get there. Beautiful.
- 04 05 15 26 LMP That's good. Find out where that last mark is, so we can terminate, and go into - I'll get one more, and get out of there.
- 04 05 15 37 CMP Okay. I'm tracking you guys optically. You're really looking good.
- 04 05 15 44 LMP Have you got our flashing lights, John?
- 04 05 15 46 CMP Yes. It's beautiful.
- 04 05 15 55 LMP Houston, just for information, every time we lose track with the S-band antenna, and it happens to bang into the stops, it pops the S-band antenna circuit breaker on 16. It's done that about three times. But it appears to recover alright - -
- 04 05 16 10 CC Roger. Snoop, Houston. That a normal - -
- 04 05 16 15 LMP - - and I'm going OMNI antennas at this time.
- 04 05 16 20 CC Roger. We copy on the OMNI's, and that's a normal indication on the steerable: when it goes into the stops it will pop that breaker.
- 04 05 16 35 LMP DOWN VOICE BACKUP. That's OFF; that's OFF. Okay, you got a hot mike, Tom.
- 04 05 16 41 CDR Okay.
- 04 05 16 44 LMP Okay, let's go on a VERB 41, NOUN 72, ENTER. Plus 00000, ENTER, plus 28300, ENTER. Tell me whether it's going.
- 04 05 17 04 CDR Radar is driving. Looks good.
- 04 05 17 14 LMP Alright. Pull your breakers.
- 04 05 17 15 CDR Alright. RENDEZVOUS RADAR, DC, PGNS, OPEN. RENDEZVOUS RADAR, AC BUS A, OPEN.

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~~CONFIDENTIAL~~

Day 5 - Page 173  
Tape 10-03601

- 04 05 17 27 LMP Got your AOT LAMP breaker CLOSED?
- 04 05 17 30 CDR AOT LAMP, CLOSED. GO.
- 04 05 17 43 LMP And we call for Acrux at this point.
- 04 05 17 47 CDR Okay. Let me look at it. We're really using the fuel up on these maneuvers.
- 04 05 17 57 LMP What's that look like to you?
- 04 05 17 59 CDR Okay. Roll is 211. That isn't bad. Pitch - that's okay. Go to it? AUTO. Proceed.
- 04 05 18 12 LMP Boy, it doesn't waste any time, does it?
- 04 05 18 14 CDR This thing feels like a big garbage can.
- 04 05 18 16 LMP I tell you, it really does. Like it's banging against your head.
- 04 05 18 22 LMP Okay, I've got a reticle. That's a start.
- 04 05 18 33 CDR Oh, there's the earth.
- 04 05 18 35 LMP (Cough) You got the earth again?
- 04 05 18 36 CDR Right there. Beautiful.
- 04 05 18 39 LMP Oh, magnificent, Charlie, or Joe, or Tom. (Laugh) God dang, that's unbelievable, isn't it?
- 04 05 18 46 CDR Yes.
- 04 05 18 47 LMP Looks like it's hanging out there on a string where you could touch it. Where the hell are we going?
- 04 05 18 52 CDR Go to Acrux. When you're there, you're there.
- 04 05 18 58 LMP Oh, man, are we there! This alignment's so good, it's - it's pathetic.
- 04 05 19 01 CDR Okay. You ready? We're going to go to --
- 04 05 19 04 LMP Yes, that's good. Don't even trim it.
- 04 05 19 06 CDR Okay, I'm going to go to PGNS and PULSE.

~~CONFIDENTIAL~~

Day 5 - Page 174  
Tape 10-03601

~~CONFIDENTIAL~~

04 05 19 08 LMP Yes.  
04 05 19 12 CDR ...  
04 05 19 13 LMP PNGS and PULSE.  
04 05 19 14 CDR I'm going to see what --  
04 05 19 16 CMP Did you guys turn off your tracking lights?  
04 05 19 17 LMP No. Tell him we've maneuvered.  
04 05 19 21 CMP ...  
04 05 19 23 CDR We've just maneuvered to start tracking Acrux.  
Over.  
04 05 19 26 CMP Okay.  
04 05 19 30 LMP The reticle on this thing is really bad. It won't  
stay at --  
04 05 20 00 CC Snoop, Houston. We read you about 3 by. Over.  
04 05 20 03 CDR Roger, Houston. This is Snoopy. We're starting  
to mark on Acrux now for our P52. Over.  
04 05 20 12 LMP There's a Y, Tom.  
04 05 20 13 CC We copy --  
04 05 20 14 CDR Yes.  
04 05 20 15 CC -- in the P52. Over.  
04 05 20 17 CDR Roger.  
04 05 20 53 LMP Okay.  
04 05 20 54 CDR Okay.  
04 05 21 17 CDR The batteries went dead.  
04 05 21 20 LMP The batteries what?  
04 05 21 21 CDR On the Hasselblad went dead.  
04 05 21 23 LMP I had a film pack that jammed!

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 175  
Tape 10-03601

04 05 21 24 CDR Then the batteries went dead (laughter). Oh, well.  
04 05 21 40 LMP Ready to mark what? Y?  
04 05 21 41 CDR MARK Y.  
04 05 22 02 LMP Mark Y again?  
04 05 22 04 CDR MARK Y.  
04 05 22 36 LMP Mark Y again?  
04 05 22 37 CDR MARK Y.  
04 05 22 42 LMP Boy, no wonder John's going blind.  
04 05 23 32 LMP Either one?  
04 05 23 34 CDR Either one.  
04 05 24 07 CC Snoopy, Houston. To improve the COMM, we'd like  
you to go to S-BAND VOICE, and S-BAND ranging OFF.  
Over.  
04 05 24 16 CDR Roger. S-BAND VOICE, S-BAND ranging OFF. Over.  
04 05 24 23 LMP Don't try it now.  
04 05 24 24 CDR Okay.  
04 05 24 25 CC And, Charlie Brown, Houston. When you lose the  
high gain, then go to OMNI Delta. Over.  
04 05 24 28 LMP That's what it calls for, right here.  
04 05 24 42 LMP How does that look to you? We're still in AGS by  
the way, babe.  
04 05 24 48 CDR It looks okay.  
04 05 24 49 LMP Okay. Ready?  
04 05 24 50 CDR Ready? Go.  
04 05 24 54 LMP It's going to go this way.  
04 05 24 55 CDR Yes.

~~CONFIDENTIAL~~

Day 5 -- Page 176  
Tape 10-03601

~~CONFIDENTIAL~~

04 05 25 16 LMP There it is, bigger than love.  
04 05 25 18 CDR Coming in, too.  
04 05 25 22 LMP Tom, that alignment we had: you know where the star is? The alignment we had is under the cross-hairs.  
04 05 25 27 CDR Is that right?  
04 05 25 28 LMP Under the crosshairs. That alignment we had was so good.  
04 05 25 47 LMP They might want to change the antennas since we moved. I don't know.  
04 05 25 54 CC ...  
04 05 26 00 CDR Hello, Houston, this is Snoopy. How are you reading now?  
04 05 26 05 CC Roger, Tom. You're about 3 by now. A little bit better. Over.  
04 05 26 09 CDR Roger, Charlie. I'm reading you loud and clear, here. Over.  
04 05 26 15 CC Roger. We - we have low bit rate, that's all, Snoop. When you get through your P52, we'd like your torquing angles.  
04 05 26 23 CDR Roger. And on the first AUTO maneuver to the star, Houston, to Acrux, it put the reticle right on the very center of the star, there. So it looks like our first alignment was beautiful.  
04 05 26 40 CC Roger, Snoop. We copy. Over.  
04 05 26 43 CDR And we're now marking on Antares.  
04 05 26 49 CC Roger, Snoop. Out.  
04 05 27 06 LMP You know, John could really be going blind by the time he finishes this flight, after doing all this stuff.  
04 05 27 11 CDR Yes.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 177  
Tape 10-03601

04 05 27 33 LMP      Mark either, Tom?  
04 05 27 34 CDR      Either one.  
04 05 28 22 CMP      Did you guys see that mark I just bought?  
04 05 28 32 CDR      Hello, Charlie Brown. Snoopy. Were you calling?  
04 05 28 34 CMP      No, I was talking to Houston.  
04 05 28 38 CC      Charlie Brown, Houston. Go ahead. Reading you about 3 by. Over.  
04 05 28 46 CMP      Roger. Did you see that mark I just bought? With the big DELTA-V and everything? Did you all read the data?  
04 05 28 58 CC      Charlie Brown, Houston. Say again. You're unreadable.  
04 05 29 03 CMP      Roger. I say again. Do you all read what I'm doing?  
04 05 29 07 CC      Roger. We see you're in P20. Over.  
04 05 29 12 CDR      Program alarm. Too many marks? Good, five.  
04 05 29 19 LMP      I probably marked on the same thing twice. What's that say?  
04 05 29 32 CMP      Roger. I just bought a rather large optics mark and it brought it back up in the scope here.  
04 05 29 34 CDR      More than five marks. Well, I figured you were marking like mad, here.  
04 05 29 37 LMP      Okay, I guess maybe that's right.  
04 05 29 39 CDR      I got to RESET. KEY RELEASE.  
04 05 29 42 LMP      Okay. And PROCEED.  
04 05 29 43 CDR      PROCEED.  
04 05 29 44 CDR      Beautiful.  
04 05 29 46 LMP      Okay, you want to write those down, or you want me to?  
04 05 29 50 CDR

~~CONFIDENTIAL~~

Day 5 - Page 178  
Tape 10-03601

~~CONFIDENTIAL~~

04 05 29 51 IMP Houston, the star-angle difference is four balls  
2. Houston, are you reading?

04 05 30 03 CC Roger. Go ahead. Four balls 2 on the star-angle  
difference. How about the torquing angles?

04 05 30 09 LMP Okay, minus 00169, plus 00050, plus three balls 66.

04 05 30 25 CC Roger. We copy, Snoop. Out.

04 05 30 30 IMP Oh, hell. Let's do a real quick check here.

04 05 30 36 CDR What do you want? You want to check the COAS?

04 05 30 40 LMP Yes. Do you want to check the COAS?

04 05 30 41 CDR Check the COAS, position 5.

04 05 30 46 LMP What star have you got out in front of you?

04 05 30 47 CDR I've got the earth. Go get An - what about Antares?  
What did you just mark on? Antares?

04 05 30 54 IMP Yes. I just marked on Antares.

04 05 30 55 CMP What kind of rate you got, Tom? About 200 miles?

04 05 30 56 CDR Let's take it up to it. Ready?

04 05 31 03 LMP Cram it! Did I do that right?

04 05 31 06 CDR No, no, no.

04 05 31 07 LMP Why no, no, no?

04 05 31 08 CDR Call 52 again.

04 05 31 09 CC ... Over.

04 05 31 10 LMP Give it approximate range.

04 05 31 12 CC Charlie Brown, Houston - Charlie Brown, Houston.  
We are satisfied with your P20. Your NAV's looking  
good to us. Over.

04 05 31 19 CMP Roger. It looks good to me, too.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 179  
Tape 10-03601

04 05 31 24 CC And, John, you are barely readable, about 2 by.  
Stand by. We might have an antenna problem.

04 05 31 31 CMP Roger. We got one. I'll go to OMNI D.

04 05 31 36 LMP Where'd that angle come from?

04 05 31 40 CDR Forget it, ignore it, ignore it.

04 05 31 41 LMP It shouldn't be in there; I'll try to zero it.

04 05 31 43 CDR Zero it.

04 05 31 48 CC Charlie Brown, Houston -

04 05 31 50 CMP Houston. Charlie Brown. How do you read?

04 05 31 53 CDR AUTO.

04 05 31 54 CC Your COMM is pretty bad. Did you copy, Charlie Brown?

04 05 31 57 LMP Ready?

04 05 31 58 CC We are looking up your tailpipe; the COMM is pretty bad.

04 05 31 59 CDR Yes.

04 05 32 03 CMP Houston. This is Charlie Brown. OMNI D. How do you read?

04 05 32 05 CC ...

04 05 32 15 CC Charlie Brown. Houston. Go ahead.

04 05 32 26 LMP You got it?

04 05 32 27 CDR Yes. ... Hold on now, let's do 1.

04 05 32 33 LMP There it is, babe - oh, beautiful. How's it look?

04 05 32 38 CDR A quarter of a degree down.

04 05 32 39 LMP Why don't you just write it on there?

04 05 32 45 CC Charlie Brown, Houston. We'll have IOS at 101:36 --

~~CONFIDENTIAL~~

Day 5 - Page 180  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 05 32 50 CDR Oh, I'll make it a third.
- 04 05 32 51 CC -- over the hill at 102:22. And Snoop, LOS for you 101 - Correction, 101:37. AOS, 102:25. Over.
- 04 05 33 04 LMP If you're satisfied, terminate it.
- 04 05 33 06 CDR Go - go back to P00.
- 04 05 33 11 LMP Call it again, just right over it. Okay, Tom. Let's go to the attitude to find track, and we've got to track now again. At --
- 04 05 33 25 LMP It's Snoopy, Roger, we got that.
- 04 05 33 29 LMP We want to try and get a number of marks here. At minus 129, and how far are we now? The burn is at 102:55, so we're at 120, so we want to go find it.
- 04 05 33 43 CC Roger, Charlie Brown and Snoop. As you are going over the hill, all systems are GO. We're all GO here on the ground, and it's looking great. Over.
- 04 05 33 51 LMP Thank you, Charlie. Snoopy's GO here. Our P52 is complete. We're going to go pick up P20 again. Okay, Tom, if you want to find out where it is - Want to go to the target? I've got the AGS needles for you.
- 04 05 34 10 CDR Yes, let's go to AGS.
- 04 05 34 12 LMP Okay.
- 04 05 34 14 CDR I'm in the -
- 04 05 34 18 LMP You want this in AGS?
- 04 05 34 20 CDR No, I want it DAP first.
- 04 05 34 22 LMP Okay, now you can find out where it is. There's where it is.
- 04 05 34 24 CDR Okay, I'll go. Okay, I'm in DIRECT. I'll go down to here.
- 04 05 34 34 LMP Now on the ORB rate ball at this time. What time is it, Tom; 101:34 and it's normally been 101:24? I guess we're about 150 miles from John, huh?

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 181  
Tape 10-03601

- 04 05 34 57 CDR Yes. Hey, where's the -
- 04 05 35 02 LMP Hey, Charlie Brown, this is Snoop. I guess we're about 150 miles from you.
- 04 05 35 08 CMP Roger.
- 04 05 35 10 LMP And our P52 is complete. We're coming over to start tracking on you.
- 04 05 35 18 CMP Yes. I show at 179.22 ...
- 04 05 35 21 LMP Sounds right.
- 04 05 35 23 CC Charlie Brown, this is Houston. Did you get your AOS/LOS times? Over.
- 04 05 35 48 CDR Whew! How about some foodsville?
- 04 05 35 52 LMP I guess so, babe. I just - I'm so sick and tired of these god-dang magazines failing. You know it?
- 04 05 36 04 CDR Where's the food bag?
- 04 05 36 06 LMP It's up in that two-man food bag.
- 04 05 36 08 CDR I want to watch this come in.
- 04 05 36 13 LMP All we got left is a roll of interior film.
- 04 05 36 17 CDR Everything else is gone?
- 04 05 36 19 LMP I'll have to check. I can't get the damn thing to work at all.
- 04 05 36 44 CDR Okay, I guess we ought to talk for the record. What we observed as we came across the mare area into the landing site, the basic area looked fairly smooth - -
- 04 05 36 51 LMP Actually it looked amazingly smooth, Tom, I thought.
- 04 05 36 54 CDR It looked amazingly smooth, and it looks like we have plenty of landing surface down - -
- 04 05 36 59 LMP I think you can land down there in and among those holes.

~~CONFIDENTIAL~~

Day 5 - Page 182  
Tape 10-03601

~~CONFIDENTIAL~~

04 05 37 00 CDR Yes.  
04 05 37 29 LMP This works after you jam that contact home, but you don't have time to jam a god-dang contact home.  
04 05 37 50 CDR I can't hold my - the hose is floating up, you know it?  
04 05 37 57 LMP Boy, chicken again. And that water's good now.  
04 05 38 01 CDR Got bubbles?  
04 05 38 03 LMP No. Yes, there is.  
04 05 38 20 LMP Let's see, we've got to get some tracking on this guy. We're late now.  
04 05 38 24 CDR Yes. Shit.  
04 05 38 41 CDR That's the trouble with these darn air vents.  
04 05 38 46 LMP 05 55 02 - 42 ...  
04 05 39 24 LMP What do we have in the way of 70-millimeter film? Jack was saying we could strip the back side of that area --  
04 05 39 34 CDR The Hassel --  
04 05 39 36 LMP -- on top, the Hasselblad.  
04 05 39 37 CDR -- the Hasselblad went dead, babe!  
04 05 39 39 LMP The whole Hasselblad?  
04 05 39 40 CDR Just as I was - That's what I was bitching about, the Hasselblad burned out as I hit the landing site! That's why I was so freaking mad.  
04 05 39 50 LMP Are you kidding?  
04 05 39 52 CDR I'm not kidding. It's dead!  
04 05 39 53 LMP It doesn't work at all?  
04 05 39 56 CDR No.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 183  
Tape 10-03601

- 04 05 40 04 LMP On one of my magazines you have to ja - Look at, even now, you got to jam it in. Look it. Mike goes out - there it goes.
- 04 05 40 18 LMP I'm so sick and tired of film that doesn't - that doesn't check out working beforehand.
- 04 05 40 39 LMP Boy, that ascent engine is going to be a kick in the - in the ass.
- 04 05 41 14 CDR There. Are you ready for it?
- 04 05 41 18 LMP Wait a minute. Okay, now I am. Go ahead. Do I put it in PNGS AUTO and let the Z axis track?
- 04 05 41 27 CDR Yes. Let me get near it, so it doesn't -
- 04 05 41 48 CDR What is it?
- 04 05 41 50 LMP Put it in AUTO TRACK, Tom, and we'll call up 20 again.
- 04 05 42 12 LMP It's been looking right at it, I guess, huh?
- 04 05 42 56 LMP Son of a gun, it did it again.
- 04 05 43 49 CDR Oh, sh - Reject that there.
- 04 05 44 04 CDR How about some fruit cocktail? Does that sound good?
- 04 05 44 09 LMP I'd love some.
- 04 05 44 23 LMP There's - there's a mark, Tom.
- 04 05 44 28 CMP Are you guys looking directly at me? Over.
- 04 05 44 30 LMP That's affirm. We're tracking on you now, John.
- 04 05 44 34 CMP Roger. I'm checking my lights.
- 04 05 44 42 LMP Tom, do I put it in Z-axis track here, or do you know?
- 04 05 44 45 CDR Go ahead, go ahead.
- 04 05 44 46 LMP Or do I take it out?

~~CONFIDENTIAL~~

Day 5 - Page 184  
Tape 10-03601

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04 05 44 47 CDR Go to PGNS and AUTO.  
04 05 44 49 LMP Okay. PGNS?  
04 05 44 50 CDR You can track him in Z-axis.  
04 05 45 06 LMP John, we're looking at 130 - almost 35 miles and 305 feet per second. Look at that.  
04 05 45 15 CDR Look at that fuel go.  
04 05 45 16 CMP I copy 1339 0276.  
04 05 45 20 LMP Oh, man, you're right on the noggin.  
04 05 45 23 CMP ...  
04 05 45 28 LMP We got - we got one horrendous update about the first mark, and then that's it, and everything is like 0.1 foot per second.  
04 05 45 37 CMP That's beautiful.  
04 05 45 43 LMP That Z-axis tracking puts you right on the old money. Have you got your flashing light on?  
04 05 45 51 CMP Yes, ...  
04 05 45 52 CDR I don't think he can see us.  
04 05 45 54 LMP I don't think we can see that far - There's a little reflected light, but I don't - I don't think we can see it. Let me see that God-dang Hasselblad. I'm so fed up with the God-dang --  
04 05 46 05 CDR You can't do a thing, babe. It's burned out. Absolutely, the batteries went dead. I took the batt--  
04 05 46 10 LMP Maybe it would work with the backup.  
04 05 46 11 CDR No, shit, it went dead, and I switched the batteries around --  
04 05 46 13 LMP You switched batteries?  
04 05 46 14 CDR You bet your life. I'm not going to hear you and the ground go u-n-n-h then u-n-n-gh.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 185  
Tape 10-03601

04 05 46 18 LMP Hey, John, would you believe that Tom's Hasselblad went completely out after all the Mickey Mouse of trying to get backs to work, and then my sequence camera has two tacks that you have to jam in, twist, and turn before they'll work, and when you're trying to do it in a hurry, there ain't any way.

04 05 47 00 CMP Look, sunshine.

04 05 47 01 LMP We're in darkness yet, sort of. Hey, yes, we're in darkness yet, John. We're coming up on sunrise.

04 05 47 28 LMP Tom, let's take what pictures we can with this sequence camera.

04 05 47 30 CDR Yes.

04 05 48 11 CDR You got it open wide?

04 05 48 14 LMP Yes, part way. Let me open it some more.

04 05 48 16 CDR It's awful dark down there.

04 05 49 17 LMP I felt like we could have got out and walked, you know it?

04 05 49 20 CDR Yes.

04 05 49 42 CDR Gee, I'm sure glad we had every bit of - of simulator time we've had.

04 05 49 48 LMP You bet. Okay. How does that look? 102:55. Okay, that's good.

04 05 50 13 LMP Ch, there's that central peak, babe --

04 05 50 14 CDR What one?

04 05 50 15 LMP I'm trying to figure out where we're coming in.

04 05 50 30 LMP How about minus 0183.2? That look good?

04 05 50 38 CDR Yes. It's retrograde and up.

04 05 50 46 LMP Okay. How's that look? Okay?

~~CONFIDENTIAL~~

Day 5 - Page 186  
Tape 10-03601

~~CONFIDENTIAL~~

04 05 50 55 CDR Yes. Leave about a 9 by 43 on the board.  
04 05 51 03 LMP 220.9 should be the total.  
04 05 51 12 LMP How come we're tracking him upside down?  
04 05 51 14 CDR That's why we ended up started. Proceed.  
04 05 51 20 LMP That's good. I don't have much film, babe. I want to take some of it coming back down.  
04 05 51 30 CDR Yes.  
04 05 51 31 LMP Oh, that's great, babe.  
04 05 51 54 LMP One more big burn, and then it's like Gemini.  
04 05 51 57 CDR Yes. Like in the old days, Gene-o.  
04 05 52 00 CMP You guys did good, man. You're just great!  
04 05 52 05 CDR What did he say?  
04 05 52 08 LMP John, just wait there for us.  
04 05 52 12 CMP That machine of yours is working pretty good too, ain't it?  
04 05 52 13 CDR Yes.  
04 05 52 14 LMP Sure is.  
04 05 52 15 CDR Hey, do you still - 46.2 by 103. That's good.  
04 05 52 19 CMP Say again. Over.  
04 05 52 21 CDR Okay. How did your VHF ranging work, John?  
04 05 52 23 CMP I have 130.5 by 3, by 2, by --  
04 05 52 26 LMP My God, look at that! That's great!  
04 05 52 28 CDR Beautiful. Beautiful.  
04 05 52 31 CMP That's incredible.  
04 05 52 32 CDR Yes.

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- 04 05 52 42 CDR John, you can't believe these thrusters in here.  
It sounds like somebody pounding on the side of  
a garbage can. The whole thing creaks and moans.
- 04 05 52 50 CMP It what?
- 04 05 52 52 LMP It's not a dull thud, like it is in the command  
module. It's like a big garbage can you're  
standing in the middle of and someone's banging  
on the lid.
- 04 05 53 00 CMP Oh, boy, ... that sounds real bad.
- 04 05 53 04 LMP Thank you, sir. I appreciate that.
- 04 05 53 07 CDR Here, we got to get some food, because it's going  
to get busy again.
- 04 05 53 11 CMP That's what it sounded like to me ... Man, this  
lunar surface is ... bunch of craters.
- 04 05 53 20 CDR Yes.
- 04 05 53 23 CMP ... I feel like I was there with you.
- 04 05 53 25 CDR Yes.
- 04 05 53 27 CMP I was getting a vicarious thrill by watching you  
guys do the ...
- 04 05 53 33 CDR Yes. We were right down there among them. Hey --
- 04 05 53 35 CMP I could see that.
- 04 05 53 36 CDR Hey, that new white crater - you know, Censorinus  
A, that Jack's interested in?
- 04 05 53 40 CMP Yes.
- 04 05 53 41 CDR That thing has big white and black boulders, both  
on the inside and outside, and I mean they are  
huge. I'd estimate it'd be 80 to 100 feet in  
diameter, those boulders.
- 04 05 53 52 CMP Did you give a description of DELTA-V's and  
times?
- 04 05 53 53 LMP No, but I will. You want them?

~~CONFIDENTIAL~~

Day 5 - Page 188  
Tape 10-03601

~~CONFIDENTIAL~~

04 05 53 59 CMP Yes.  
04 05 54 01 LMP 102:55:01.40.  
04 05 54 10 CMP Go ahead ...  
04 05 54 15 LMP Oh, DELTA-V, NOUN 81, is minus 0183.2.  
04 05 54 23 CMP Okay.  
04 05 54 24 LMP Plus all balls and minus 0123.5.  
04 05 54 34 CMP Roger. Mine is 183, plus 0.2, plus all balls,  
and minus 0122.5.  
04 05 54 42 LMP Right. Minus 123.5.  
04 05 54 47 CMP And 102:55:01.40.  
04 05 54 51 LMP That's it, John. Do you have the CSI time that  
they gave us originally?  
04 05 55 02 CMP Negative. Over. I need the CSI and CDH time;  
CSI and TPI time.  
04 05 55 10 LMP Okay. The original one was - CSI is 103:45:34.  
04 05 55 19 CMP Okay.  
04 05 55 20 LMP TPI is 105:21:01.  
04 05 55 27 CMP Okay.  
04 05 55 30 LMP Alright?  
04 05 55 32 CMP Got them.  
04 05 55 33 LMP How is our home up there?  
04 05 55 35 CMP It's too roomy for me.  
04 05 55 47 LMP Hey, Tom, we're - we're in fatsville on fuel so  
far. That's good.  
04 05 55 51 CDR Well, you have to go ...  
04 05 55 58 LMP What are you using for a garbage can? This  
thing right here?

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- 04 05 56 03 CDR That's a good place.
- 04 05 56 07 LMP Top - top row would be a good garbage can.
- 04 05 56 09 CDR Yes.
- 04 05 56 20 SC (Coughing)
- 04 05 56 30 LMP I told Jack that we were going to get a 70-millimeter filmstrip of this back here but, babe, there's no way. We don't - The whole damn 70-millimeter camera quit, and two 16-millimeter film packs may or may not work. One happens to be the interior film.
- 04 05 56 49 CMP I'm with you, babe. I tell you, I've been so busy I wouldn't know if there's any ... down there or not. I might as well be back in the simulator.
- 04 05 56 57 CDR It's about the same here.
- 04 05 56 59 LMP I think you're with us.
- 04 05 58 06 LMP That damn star - star is right smack in the center of that mother, babe. Right smack in the center. And your COAS came out good, huh?
- 04 05 58 15 CDR Yes. A third of a degree down.
- 04 05 58 18 LMP Boy. I tell you I was worried, when we didn't have radar to start this whole thing.
- 04 05 58 23 CMP Yes. Me, too. Boy, I ... really sound good. ... right in the ..., I'm sure.
- 04 05 58 35 LMP Probably is, John. We're reading 100 and oh - I guess - -
- 04 05 58 38 CDR/LMP 158 miles.
- 04 05 58 51 CDR How are our ascent batteries? We got plenty - Are they off the line? We've got plenty of them?
- 04 05 58 57 LMP They're back off. We've got 35 volts in them. 34 in one and 35 in the other.

~~CONFIDENTIAL~~

Day 5 - Page 190  
Tape 10-03601

~~CONFIDENTIAL~~

04 05 59 14 LMP Got one big thing to go - two big things - staging and insertion.

04 05 59 25 LMP I'll tell you one thing, John. I feel more at home standing up in here than I do laying down in there. I never did understand that.

04 05 59 32 CMP Roger, Gene.

04 05 59 47 LMP I believe you could really go down and land with this bear.

04 05 59 51 CMP I'm sure ...

04 05 59 57 LMP I think Tom and I were surprised. Weren't you, Tom? It is - it looks a lot smoother down there than I first thought.

04 06 00 40 LMP That pisses me off so much that that camera failed, Tom.

04 06 00 42 CDR Yes.

04 06 00 43 LMP You changed the batteries and everything in that. God! We ought to have someone's ass. And I know these film packs are not tried individually on the camera.

04 06 01 21 LMP I guess we is going to go nice and high. Hey, we just pegged our range-rate meter.

04 06 01 25 CDR Yes.

04 06 01 31 LMP That's where to stop, by the way.

04 06 01 34 CDR ... for your auxiliaries. Beautiful. Okay.

04 06 01 46 CMP ... That ain't bad.

04 06 01 51 CDR Okay. What do you want to do now?

04 06 01 53 LMP RENDEZVOUS RADAR breaker, OPEN?

04 06 01 55 CDR Okay.

04 06 01 57 LMP Yes, go to AUTO. RENDEZVOUS RADAR breaker, OPEN?

04 06 02 00 CDR Yes.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 191  
Tape 10-03601.

04 06 02 01 LMP AC BUS breaker, OPEN?  
04 06 02 02 CDR Yes.  
04 06 02 11 IMP Knock minus 40 minutes. I can't see that. I'll start - I'll connect the ascent batteries; start working on that.  
04 06 02 24 CDR ...  
04 06 02 37 LMP Sure be nice to know where the hell we are.  
04 06 03 20 CDR Want us to turn over?  
04 06 03 22 LMP Can you read that clock up there, Tom? Insertion minus what?  
04 06 03 27 CDR 51.  
04 06 03 28 LMP Huh?  
04 06 03 30 CDR 51.  
04 06 03 31 LMP 50.  
04 06 04 06 CMP Boy, if this thing isn't working like a charm!  
It's beautiful.  
04 06 04 33 IMP I'm glad to hear that.  
04 06 04 35 CDR ...  
04 06 04 36 CMP You know, it's ... You look like a bright star.  
04 06 04 42 LMP Where - where are we?  
04 06 04 43 CDR We're up above him. Until we roll.  
04 06 04 45 LMP Oh, we're up above you, that's right.  
04 06 04 47 CDR Yes.  
04 06 04 48 LMP We're up -  
04 06 04 49 CMP You're up above at 201 miles. Man, this is good visibility. I mean to tell you.

~~CONFIDENTIAL~~

Day 5 - Page 192  
Tape 10-03601

~~CONFIDENTIAL~~

04 06 05 02 CDR You want some grapejuice? You want some --  
04 06 05 06 LMP I know where we are. No, I don't want anymore, Tom.  
04 06 05 23 LMP I bet we could see him if - if - if we were looking a little while ago. No, I guess not.  
04 06 05 28 CDR No.  
04 06 05 37 LMP I know where we are, though, babe.  
04 06 05 40 CDR Great.  
04 06 05 41 LMP Right here.  
04 06 05 42 CDR Let me get this food squared away.  
04 06 05 46 LMP We're right here. I got these all picked out. This one, this one, this one; we're right here. And John, we're about going over the top of 297; that's at 150 East.  
04 06 06 02 CMP Roger. Gene-o, these things - these things don't operate like - out in frigging space like the simulator does.  
04 06 06 15 CDR Where are we at?  
04 06 06 18 LMP Where's that monocular, Tom?  
04 06 06 21 CDR Shoot!  
04 06 06 22 LMP God! I wish we had a camera.  
04 06 06 35 CDR Well, I don't know.  
04 06 06 38 LMP In your purse?  
04 06 06 41 CDR We went into the heat of battle trying to get that camera. Here.  
04 06 06 51 LMP Thank you, sir.  
04 06 07 11 CMP I tried ... you guys ... trunnion angle, now. This is just a beautiful day.  
04 06 07 18 CDR Well, we were saying -

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~~CONFIDENTIAL~~

Day 5 - Page 193  
Tape 10-03601

- 04 06 07 19 LMP Here's exactly where we are. Right here. Over on your side, you ought to have 14, Tom. Big, big, big crater.
- 04 06 07 31 CDR Got it.
- 04 06 07 32 LMP You got it?
- 04 06 07 33 CDR Yes.
- 04 06 07 36 LMP Yes, there it is, I see it from here.
- 04 06 07 50 CDR Hey, why don't we pitch around for it? Okay.
- 04 06 07 52 LMP And we don't have a God-danged 70-millimeter to shoot this with. That -
- 04 06 08 05 CDR Let's see, we want to be tracking him later on, don't we?
- 04 06 08 10 LMP Yes, at minus 36 minutes, we track him again, so we might just as well pitch down a little bit.
- 04 06 08 15 CDR Yes, we'll pitch down and -
- 04 06 08 18 LMP Roll over?
- 04 06 08 19 CDR Yes.
- 04 06 08 20 LMP (Coughing) Yes, that'd be better. Watch that roll on the 8-ball, though.
- 04 06 08 29 CDR Yes, yes.
- 04 06 08 39 CDR You want a brownie?
- 04 06 08 42 LMP God, you're just all full of good food today. Thank you.
- 04 06 08 51 CDR We've been busy, Gene-o. In darkness, time goes fast (laughter).
- 04 06 08 54 LMP I'm not sure whether water's better in here or not. Did you see this? I'm going to take that back and give it to Jack.
- 04 06 09 04 CDR Yes.

~~CONFIDENTIAL~~

Day 5 - Page 194  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 06 09 08      CMP      What did you guys do - pick up a rock?
- 04 06 09 10      LMP      No, this is Jack Lousma. I've got a United States Marine Corps big gold and blue and red emblem on my armrest.
- 04 06 10 08      CDR      We're coming straight down. There Jack's crater again. (Laughter)
- 04 06 10 35      CDR      Okay. You want to track José -
- 04 06 10 44      LMP      Won't take so long to bring it up, when we do it next time.
- 04 06 10 57      CDR      There's that one crater I shot so many times, that's got boulders on it? You see it? It's the little volcanic one, right there. See that rascal?
- 04 06 11 06      LMP      Yes. Now why don't you pitch up a skosh. Here, let me see if the - Oh, I was going to see the AGS to find out where you are, but -
- 04 06 11 17      CDR      Yes, go ahead.
- 04 06 11 20      LMP      I will. Wait a minute until I finish this.
- 04 06 11 21      CDR      I'm in mode - I'm in PULSE. Go ahead.
- 04 06 11 27      LMP      Okay.
- 04 06 11 32      CDR      AGS. Computer.
- 04 06 11 37      LMP      Yes, there you go. There's this big one right down here. XV.
- 04 06 11 59      LMP      You know, if your eyes were a photograph, it'd be great.
- 04 06 12 03      CDR      I'm going to lock on. There's our landing radar.
- 04 06 12 05      LMP      There's -
- 04 06 12 08      CDR      She's 50 degrees.
- 04 06 12 17      LMP      You really have to be careful with this film, when you don't have any left. There's the one Jack marked that he wants. I'll get it for him.

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~~CONFIDENTIAL~~

Day 5 - Page 195  
Tape 10-03601

04 06 12 43 CDR Hey, when do we fire the helium tanks? ...  
04 06 12 47 LMP Not yet, babe.  
04 06 12 53 CDR You want some more brownies?  
04 06 12 54 LMP No.  
04 06 12 56 CDR ... go hungry.  
04 06 13 02 LMP That music even sounds outer-spacey, doesn't it?  
You hear that? That whistling sound?  
04 06 13 06 CDR Yes.  
04 06 13 07 LMP Whooooooo. Say your --  
04 06 13 12 CMP Did you hear that whistling sound, too?  
04 06 13 14 LMP Yes. Sounds like - you know, outer-space-type  
music.  
04 06 13 18 CMP I wonder what it is.  
04 06 13 20 LMP Hey, Tom. Is your - is your insulation all burned  
off here, on the front side of your window over  
here? Right --  
04 06 13 27 CDR Yes.  
04 06 13 29 LMP Mine's all burned off. Isn't that weird - eerie,  
John?  
04 06 13 34 CMP Yes, I got it, too. ... and see who was outside.  
04 06 13 45 CDR You mark that set of features, Gene-o. I'm going  
to fix us some grapejuice. Okay?  
04 06 14 10 CMP Okay, man. I've got you 269 miles over the ...  
Man, that's ... that's just fabulous.  
04 06 14 21 LMP ... into LGC.  
04 06 14 24 CMP Roger. I'm ...

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04 06 14 37 LMP There's the one Jack wants a picture of, over there. I'll get that one for him with this camera. Yes, these pictures that Orbiter took are fantastic.

04 06 15 30 CDR Bet I'm locked on a side lobe.

04 06 16 50 LMP Yes, we sure is getting high.

04 06 16 54 CMP Yes. 286 miles. Oh, this radar is ... great.

04 06 17 02 CDR Yes. I got it.

04 06 17 05 CMP It's going to go right out to 310 miles. Just like we said.

04 06 17 07 LMP Is it really?

04 06 17 09 CMP Yes. I'll tell you when you get to 297. You don't - you don't know when AOS is ... do you?

04 06 17 22 LMP Yes, I've got it written down. AOS for us is 102:25. (Cough)

04 06 17 28 CMP It's 102:21 for me.

04 06 17 32 LMP Okay. 40 minutes, babe. I got to connect the ascent batteries.

04 06 17 38 CDR Okay.

04 06 17 47 LMP Okay. Stand by BAT's 1 and 3, HIGH VOLTAGE, OFF/RESET. BAT's 1 -

04 06 17 56 CDR 2.

04 06 17 58 LMP Boy, that sure is weird music.

04 06 18 01 CMP We're going to have to find out about that. Nobody will believe us.

04 06 18 07 LMP Yes. It's a whistling, you know, like an outer-space-type thing.

04 06 18 10 CMP Yes. ... VHF-A ...

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Day 5 - Page 197  
Tape 10-03601

04 06 18 16 LMP Yes. I wouldn't believe there's anyone out there.  
Okay, Tom, I'm going to call up P20.

04 06 18 26 LMP We want to pressurize our APS here. You got your  
RENDEZVOUS RADAR breakers all IN?

04 06 18 29 CDR Oh, yes. I'm locked on to him.

04 06 18 31 LMP Okay.

04 06 18 42 CDR There may be a side lobe.

04 06 19 01 CDR It's weird, isn't it?

04 06 19 03 LMP Isn't that weird?

04 06 19 11 CDR I think that's a side lobe.

04 06 19 15 LMP Is it? Huh?

04 06 19 17 CDR Yes.

04 06 20 02 LMP See what happens now.

04 06 20 28 LMP It ain't doing, babe. Why don't you go ahead  
and lock on by yourself again.

04 06 21 05 LMP Shit, why don't you find them? Well, let me -  
let me do it this way, see whether it will find  
them. We got to get going here, we got to pres-  
surize and everything.

04 06 21 14 CDR Yes, I know it.

04 06 21 34 CDR P20 doesn't work worth a darn.

04 06 21 40 LMP Tom, why don't you get them manually.

04 06 21 45 CDR Okay. Okay, let's go up to P00, huh?

04 06 21 50 LMP Pick them up manually.

04 06 21 51 CDR AGS.

04 06 22 13 CDR ... P20.

04 06 22 26 CDR That's where the AGS says he is, right?

~~CONFIDENTIAL~~

Day 5 - Page 198  
Tape 10-03601

~~CONFIDENTIAL~~

04 06 22 29 LMP That's where the AGS says he is.  
04 06 22 31 CDR You're DEADBAND, MIN?  
04 06 22 33 LMP Yes. The AGS is pretty good. Its state vector's updated.  
04 06 22 39 CDR Boy, this is - this is lots more sensitive than the simulator. DEADBAND, MIN? Okay.  
04 06 23 03 CDR Look at that! John, are you still in track attitude, babe?  
04 06 23 22 CDR I'll bet we don't even --  
04 06 23 24 LMP Hello, Charlie Brown; this is Snoopy. Do you read?  
04 06 23 33 LMP Hello, Charlie Brown; Snoopy. Do you read?  
04 06 23 41 CDR No track.  
04 06 23 44 LMP That's why this thing wouldn't track. Okay, let's pressurize, babe.  
04 06 23 47 CDR Okay, do you want to put your helmets and gloves on?  
04 06 23 50 LMP Monitor your ascent helium pressure propellant temperature.  
04 06 23 57 CDR Okay.  
04 06 23 58 LMP Okay, ASCENT HELIUM, REG 1 and 2, OPEN; talkback's gray.  
04 06 24 02 CDR Go.  
04 06 24 04 LMP ASCENT HELIUM SELECTS, BOTH.  
04 06 24 06 CDR BOTH.  
04 06 24 12 LMP MASTER ARM, ON.  
04 06 24 13 CDR MASTER ARM, ON.  
04 06 24 16 LMP HELIUM PRESSURE, FIRE.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 199  
Tape 10-03601

04 06 24 38 CDR Okay, MASTER ARM coming OFF ...  
04 06 24 40 LMP I bet you still - Why isn't that pressure going down? And that one coming up.  
04 06 24 47 CDR Hello, Charlie Brown; Snoopy.  
04 06 24 59 CDR We've got pressures. Don't we?  
04 06 25 02 LMP Yes, but I want to watch it go up; I guess it's going awful slow.  
04 06 25 25 CDR Oh, look out there. Oh, if I only had a camera! Get it! Camera!  
04 06 25 30 LMP Oh, shoot!  
04 06 25 35 CDR f:ll; f:ll. You got f:4 of those - those - Yes, now you've got f:ll, yes. Beautiful.  
04 06 25 53 CDR Hello, Charlie Brown; Snoopy.  
04 06 26 19 LMP Son of a bitch, where is he? Hello, John, do you read us?  
04 06 26 42 CDR Hello, Houston, this is --  
04 06 26 45 CC Houston. Go ahead, there.  
04 06 27 02 CDR I can't get radar lock. Hello --  
04 06 27 06 LMP We ought to be able to call them now.  
04 06 27 07 CDR Hello, Charlie Brown; Snoopy. Do you read?  
04 06 27 14 CDR Turning the MASTER ARM, OFF.  
04 06 27 19 CDR Hello, Houston. How do you read Snoopy?  
04 06 27 24 CC Roger, Snoopy. Read you 5 by. Over.  
04 06 27 26 CDR Roger. Would you ask Charlie Brown if he's still in track attitude. I can't get any lock on at this distance out here. Over.  
04 06 27 36 CC Roger. He had you - He broke lock at 320 miles on the VHF. Stand by. We'll ask him on his attitude.

~~CONFIDENTIAL~~

Day 5 - Page 200  
Tape 10-03601

~~CONFIDENTIAL~~

04 06 27 44 CDR Roger.

04 06 27 45 CC Charlie Brown, Houston. Are you still in tracking attitude?

04 06 27 48 CMP Roger, ...

04 06 27 50 CDR They got it.

04 06 27 51 CC Charlie Brown, Houston. Are you --

04 06 27 53 CMP I'm in attitude 180, which is where I'm --

04 06 27 56 CC Roger.

04 06 27 57 CMP -- supposed to be right now.

04 06 28 01 CC Roger, Charlie Brown. We copy. Snoop, Houston. He's in attitude as called for out in the flight plan, 180 pitch. We got your ascent, looks good; ascent batteries look good. Over.

04 06 28 16 CDR Roger, we have just pressurized the ascent tanks, and they look good.

04 06 28 20 LMP Tom, did - did we really - I'm not - I guess --

04 06 28 24 CC If you'll give us your computer, we need P00 and data. We have a state vector for you.

04 06 28 29 CDR Okay. Zero, zero.

04 06 28 34 LMP You've got it.

04 06 28 36 CDR That's it.

04 06 28 37 LMP We really hit ascent. God damn, that thing just didn't seem to - maybe it was so high to start with that it didn't -

04 06 28 43 CDR ... We couldn't get any lock on at all out here. We had him, and he just slowly faded out.

04 06 28 50 CC Hello, Charlie Brown, this is Houston. Charlie Brown, this is Houston. We show you loaded T<sub>ig</sub> incorrectly in P30. T<sub>ig</sub> is 102:55:01.40. Over.

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Day 5 - Page 201  
Tape 10-03601

- 04 06 29 10 LMP Look at that, Tom.
- 04 06 29 12 CC Correction, correction. Charlie Brown, that was my fault, T<sub>ig</sub> time is 102:58:01.00. Over.
- 04 06 29 25 LMP They changed? Oh, that's his T<sub>ig</sub> time.
- 04 06 29 42 CDR Okay, we got - 15 minutes from staging.
- 04 06 29 44 LMP Yes.
- 04 06 29 52 CDR Okay, I've got to - I got to knock off the rendezvous radar and go to - to staging attitude. Okay?
- 04 06 29 59 LMP Okay.
- 04 06 30 01 CMP Okay, how does that look to you?
- 04 06 30 03 CC Looks real fine, Charlie Brown.
- 04 06 30 13 CC Snoop, Houston. We got the load in. The computer's yours. Over.
- 04 06 30 17 CDR Roger, Houston. Thank you very much.
- 04 06 30 18 LMP Goddam this whole thing.
- 04 06 30 23 CDR And Houston, this is Snoopy. We've got about 14 minutes to staging. I'm going to go ahead and maneuver to staging attitude.
- 04 06 30 36 CC Roger. Snoop. We copy. Could you comment on your cameras? We might be able to help you out on those. Over.
- 04 06 30 42 CDR Roger. On the Hasselblad, it looks like the both batteries have gone dead. Over.
- 04 06 30 51 CC Copy both batteries dead on the Hasselblad. How about the sequence?
- 04 06 30 54 LMP I'll tell him in a minute. I'll tell in a --
- 04 06 30 57 CDR Okay. Okay, dump - We're on the ascent. I want to get over there, Gene-o.

~~CONFIDENTIAL~~

Day 5 - Page 202  
Tape 10-03601

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- 04 06 31 02 LMP Okay, on the sequence, I got two film packs, that you have to practically jam, wire, and step on to get them to make electrical contact so the camera will run. I've got one of them to run, and I'll try and get the other one to run.
- 04 06 31 19 CDR Okay.
- 04 06 31 20 CC We copy. Thanks a bunch. We'll work on it for you. Over.
- 04 06 31 23 LMP Yes, it's just hard to do that though; when you're coming across the landing site and you expect it to work.
- 04 06 31 28 CDR Okay, let's recheck 30 again.
- 04 06 31 32 LMP Okay, go ahead.
- 04 06 31 33 CDR And Snoopy's going to be maneuvering at this time.
- 04 06 31 41 CC Roger.
- 04 06 31 42 LMP Open your RENDEZVOUS RADAR breaker, Tom. PGNS and AC BUS.
- 04 06 31 44 CDR Yes, I've already got it open. Tried to get that MAX distance there locked on, but it just wouldn't - Oh, this time has gone fast, Gene-o.
- 04 06 32 00 LMP Yes, it has. Okay, let me - we're right on. Let's get our helmets and gloves on, and then we'll go - we'll do - go through the cabin.
- 04 06 32 40 LMP I'll get that out of your way.
- 04 06 33 24 CDR Give me a hand there. Push on that. That's got it.
- 04 06 33 35 LMP It's right here to receive it.
- 04 06 33 38 CDR Yes. Keep getting it -
- 04 06 33 57 LMP Okay, Tom. Let me - let me call these out.
- 04 06 34 01 CDR Yes.

~~CONFIDENTIAL~~

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Day 5 - Page 203  
Tape 10-03601

04 06 34 08 LMP Help you with - Okay, I've got all the ascent batteries on the line, and all the descent's OFF. Okay, T. P., I'm reading you. Okay, you ready?

04 06 34 27 CDR Okay.

04 06 34 28 LMP SUIT GAS DIVERTER valve, PULL-EGRESS.

04 06 34 30 CDR Go.

04 06 34 32 LMP CABIN REPRESS valve, CLOSED.

04 06 34 34 CDR Okay, stand by for another bang. Ready?

04 06 34 36 LMP Okay, I'm ready. Golly! Okay, DE - DESCENT O<sub>2</sub>, CLOSED.

04 06 34 43 CDR DESCENT O<sub>2</sub> is coming CLOSED.

04 06 34 45 LMP Okay, ASCENT O<sub>2</sub> number 1, OPEN.

04 06 34 51 CDR OPEN.

04 06 34 52 LMP Okay, REG's A and B to EGRESS.

04 06 34 55 CDR REG A to EGRESS. B to EGRESS.

04 06 34 58 LMP Okay, WATER TANK SELECT to ASCENT.

04 06 35 06 CDR Oops! I need to - What the hell's wrong here?

04 06 35 49 LMP Okay, I'll check the ASCENT BATTERIES. Oh, I want them DEADFACE, Tom.

04 06 35 56 CDR Okay.

04 06 35 57 LMP They are deadfaced. Okay, on your side. AC BUS A DECA GIMBAL, OPEN.

04 06 36 02 CDR DECA GIMBAL is OPEN.

04 06 36 03 LMP Flight DISPLAYS, THRUST, OPEN.

04 06 36 05 CDR Go.

04 06 36 06 LMP PROPULSION, DESCENT HELIUM REG/VENT, OPEN.

~~CONFIDENTIAL~~

Day 5 - Page 204  
Tape 10-03601

~~CONFIDENTIAL~~

04 06 36 08 CDR Go.  
04 06 36 09 LMP HEATERS, LANDING RADAR, OPEN.  
04 06 36 11 CDR Go.  
04 06 36 12 LMP STAB/CONTROL, DECA POWER, OPEN.  
04 06 36 14 CDR Go.  
04 06 36 15 LMP PGNS LANDING RADAR, OPEN.  
04 06 36 17 CDR Go.  
04 06 36 18 LMP Okay, let's take another look at those APS temperatures and pressures. Guess they look alright to me.  
04 06 36 25 CDR Okay.  
04 06 36 30 LMP Try those. Okay.  
04 06 36 31 CC Snoop, Houston. The APS looks good to us. Over.  
04 06 36 34 CDR Roger.  
04 06 36 35 LMP Roger, Roger, Houston. We're about 4 minutes and 23 seconds from staging. Okay, Tom, and flip it out of here. The clock's set, and we'll go in the -  
04 06 36 51 CC Snoop, Houston. Over.  
04 06 36 55 CDR Go ahead, Houston.  
04 06 36 57 CC Roger. We copy 8 minutes to staging. Over.  
04 06 37 02 CDR Roger. It's 8 minutes.  
04 06 37 03 CDR MARK.  
04 06 37 04 CDR Now 7:59, 58.  
04 06 37 06 LMP That's affirm. We're with you. That was my mistake. It's - it's 4 minutes or 14 minutes to - Check - we're 8 minutes to staging, 7:50.

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04 06 37 16 CC Copy. Out.

04 06 37 19 LMP Just like to think ahead.

04 06 37 30 LMP Okay, Tom. Staging attitude should be - you should be looking at 295 upside down. And I should be looking at about 270 upside down. And I'm going to call up VERB -

04 06 38 02 CDR Gene-o, I'll tell you, when that ascent engine fires, we'd better be strapped down.

04 06 38 08 LMP That mother may give us a kick.

04 06 38 10 CDR I think it will give you a kick.

04 06 38 46 LMP Okay, Tom, if you get a chance, reset my ORB rate ball, will you, coming down? AGS agrees with the PGNS on that one.

04 06 38 56 CDR Okay. What's -

04 06 38 57 LMP 39. I'm way off now.

04 06 38 58 CDR Okay.

04 06 39 00 LMP I'm about 290. . . .

04 06 39 06 CDR 240.

04 06 39 07 LMP Okay, there's 270. Coming up on 240. A little more. That's good. Right there. Stop it. Okay.

04 06 39 28 LMP Okay, 15:34, Tom. At 14 minutes, you get the MASTER ARM, ON, and we'll leave it ON, remember, right on through the insertion burn.

04 06 39 30 CDR Yes.

04 06 39 42 LMP And I'll set the DAP.

04 06 39 45 CDR Okay.

04 06 39 48 LMP Matter of fact, if you stay in AGS, I'll go ahead and set it now.

~~CONFIDENTIAL~~

Day 5 - Page 206  
Tape 10-03601

~~CONFIDENTIAL~~

04 06 39 52 CDR Okay.  
04 06 39 56 CDR Okay, I'll go -  
04 06 40 00 LMP Okay. We're in AGS. I'll set the DAP.  
04 06 40 02 CDR Okay.  
04 06 40 15 CC Snoop, Houston. We have you go for staging.  
Over.  
04 06 40 18 CDR Roger.  
04 06 40 20 LMP Roger. Do you have an update on the LM weight?  
04 06 40 29 CC Roger, Snoop. Your LM weight is 8290. Over.  
04 06 40 34 LMP Roger. Got 8290. Thank you. Hey, Tom, that's  
good enough for CSM weight. So, that's it,  
babe.  
04 06 40 55 CDR 4 minutes.  
04 06 40 56 LMP Okay.  
04 06 40 57 CDR You going to have that sequence camera mounted?  
04 06 40 59 LMP Yes.

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Day 5 - Page 207  
Tape 10-03601

04 06 41 03 CC Charlie Brown, Houston. We got you showing high gain now. Snoop's 3 minutes from staging. Over.

04 06 41 09 CDR Okay, let's go through our checklist.

04 06 41 13 LMP Okay, babe. We've gone through it right up to staging. We've gone through - you want to double-check these?

04 06 41 17 CDR Yes.

04 06 41 18 LMP CABIN GAS DIVERTER valve, pull EGRESS.

04 06 41 19 CDR Go.

04 06 41 20 LMP CABIN REPRESS, CLOSED.

04 06 41 21 CDR Go.

04 06 41 22 LMP DESCENT O<sub>2</sub>, CLOSED.

04 06 41 23 CDR Go.

04 06 41 24 LMP ASCENT number 1 O<sub>2</sub>, OPEN.

04 06 41 25 CDR Go.

04 06 41 26 LMP PRESSURE REGS, both EGRESS.

04 06 41 27 CDR Yes.

04 06 41 28 LMP WATER TANK, ASCENT.

04 06 41 29 CDR Go.

04 06 41 30 LMP ASCENT WATER, OPEN. I opened that.

04 06 41 31 CDR Yes.

04 06 41 32 LMP And DESCENT WATER's CLOSED. I closed that. I checked the voltages. We're deadfaced; we're on ascent batteries, and the voltage looks good here.

04 06 41 39 CDR Okay.

04 06 41 40 LMP You got your breakers pulled on that side?

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- 04 06 41 41 CDR Yes.
- 04 06 41 42 LMP Okay, at 14 minutes, put your MASTER ARM ON.
- 04 06 41 45 CDR Okay, MASTER ARM coming ON.
- 04 06 41 46 LMP X-TRANSLATION, 2 JETS.
- 04 06 41 48 CDR X-TRANSLATION, 2 JETS.
- 04 06 41 49 LMP GUIDANCE CONTROL, AGS.
- 04 06 41 51 CDR Okay, we're in AGS. We'll go to ATTITUDE HOLD.
- 04 06 41 54 LMP Okay, you're in ATTITUDE HOLD; DEADBAND, MIN; so for staging - Actually be up there, if you want.
- 04 06 41 58 CDR Yes, I think that would be better for stage.
- 04 06 42 00 LMP I think that would be better for stage; otherwise, you're going to be banging those thrusters all over the place. Now I should be looking at 270 upside down and you looking at 295 upside down. That's coming right in.
- 04 06 42 14 CDR We're a little bit out of plane, which won't hurt us for any separation.
- 04 06 42 17 LMP Okay, and that - the DAP is set. I'll call up P47 at 11 minutes.
- 04 06 42 22 CDR Okay.
- 04 06 43 02 LMP I'm going to take another look at the DAP, Tom.
- 04 06 43 04 CDR Okay.
- 04 06 43 06 LMP 12002. That's go. Okay. Call up 47 at 1 minute. Okay, Tom. I'll thrust aft 2 feet per second; I'll stop; I'll start thrusting forward, and you stage fire.
- 04 06 43 19 CDR Yes.
- 04 06 43 20 LMP Got your MASTER ARM ON?
- 04 06 43 21 CDR It's ON.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 209  
Tape 10-03601

04 06 43 22 LMP Okay. And you ought to go up to -  
04 06 43 29 CDR Okay.  
04 06 43 36 LMP My attitude looks good. I'm coming up on 270 upside down.  
04 06 43 41 CDR Okay.  
04 06 44 02 LMP And yours is looking good. Okay, I'm calling up NOUN 47.  
04 06 44 06 CDR Okay, go.  
04 06 44 08 LMP Okay, there it is.  
04 06 44 11 CDR Okay, your TTCA is --  
04 06 44 12 LMP Okay, that's that way and then that way. Right?  
04 06 44 16 CDR Yes. And I'll just take a little bit that way.  
04 06 44 17 LMP Yes, because we're going to be awful light.  
04 06 44 19 CDR Yes. We're going to - AGS is going to MODE CONTROL.  
04 06 44 24 LMP Okay. Get it out of there, babe. Okay, that's that last attitude.  
04 06 44 44 CDR Something's wrong here. Hold it, Gene--  
04 06 44 47 LMP Okay.  
04 06 44 50 CDR Going to try DEADBAND, MIN here.  
04 06 44 56 LMP Hear any? That's the time you want to go.  
04 06 44 58 CDR Something's wrong with that yaw rate gyro. Let's go in PGNS and ATTITUDE HOLD. Okay. ...  
04 06 45 04 LMP By the way, the DAP is set for a light vehicle.  
Okay, we'll do it --  
04 06 45 05 CDR Okay. Okay.  
04 06 45 06 LMP -- this way. Okay, you ready?

~~CONFIDENTIAL~~

Day 5 - Page 210  
Tape 10-03601

~~CONFIDENTIAL~~

04 06 45 07 CDR Okay, hold it. We're in - Okay, go.  
04 06 45 11 LMP Ready?  
04 06 45 12 CDR Thrust aft. Hold it. Thrust aft. Okay, ready?  
04 06 45 15 LMP Okay.  
04 06 45 16 CDR STAGE. Gimbal lock.  
04 06 45 19 LMP Son of a bitch.  
04 06 45 20 CDR Let's go to PGNS. God damn.  
04 06 45 25 LMP Okay, let's - let's make this burn on the AGS, babe.

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- 04 06 45 30 CDR We're in trouble.
- 04 06 45 34 LMP Make this - make this burn on the AGS. Got a good staging. Let's make it on the AGS.
- 04 06 45 46 CDR How are the AGS? Are we okay? I think we're okay, Gene-o. Proceed.
- 04 06 45 50 LMP Did you get into gimbal lock?
- 04 06 45 51 CDR Yes, but we got out of it.
- 04 06 45 55 LMP She didn't - she didn't go, huh?
- 04 06 45 56 CDR No. No, let's go.
- 04 06 46 01 LMP Got stage.
- 04 06 46 02 CDR Okay, what's our - ? Did you call POO?
- 04 06 46 10 LMP Yes. POO's up, babe.
- 04 06 46 12 CDR Okay, what's our attitude for staging? What's our angles?
- 04 06 46 16 LMP Okay, our angles? You didn't lock, huh?
- 04 06 46 18 CDR No.
- 04 06 46 20 LMP Okay, something's wrong with that gyro. Okay, roll is 180 and pitch is 233.
- 04 06 46 24 CDR Roll is 180 and pitch is what?
- 04 06 46 25 LMP 233. I better put my ball on INERTIAL just to check them out and verify them, too.
- 04 06 46 34 CDR Yes.
- 04 06 46 36 LMP I can't reach it, so if you can put mine, you can verify it on the AGS.
- 04 06 46 47 CC Snoop, Houston. We show you close to gimbal lock.
- 04 06 46 51 CDR Okay, something went wild there on that staging, and we're all set, we didn't lock it. We're going ahead to AUTO maneuver.
- 04 06 47 00 CDR What the hell happened?

~~CONFIDENTIAL~~

Day 5 - Page 212  
Tape 10-03601

~~CONFIDENTIAL~~

04 06 47 03 LMP Babe, I don't know. Let's put my AGS in INERTIAL - in INERTIAL, though, to verify that we're at the right attitude, babe.

04 06 47 12 CDR They look the same.

04 06 47 14 LMP Huh?

04 06 47 15 CDR They look the same.

04 06 47 16 LMP Put it - Okay, just so it's in INERTIAL.

04 06 47 19 CDR Okay.

04 06 47 20 LMP Okay, because in case we have to go to it, that's what we want.

04 06 47 21 CDR Okay, let's go again.

04 06 47 23 LMP Let's get that AGS.

04 06 47 24 CDR Ready?

04 06 47 25 LMP Wait a minute.

04 06 47 26 CDR We got to hurry.

04 06 47 29 LMP Try to get this damn thing - Sure the PGNS is good, huh? Wait until that thing blinks. Okay, babe.

04 06 47 40 CC Charlie Brown. Houston. They - staging - they had a wild gyration though, but they got it under control. Over.

04 06 47 52 LMP I'm in AGS INERTIAL, Tom?

04 06 47 53 CDR Yes.

04 06 47 54 LMP Okay, that's good.

04 06 47 55 CDR Roger.

04 06 47 56 LMP We've got a lot of time, 7 minutes. Well, I don't know what the hell that was, babe.

04 06 48 00 CDR Did you push it?

04 06 48 01 LMP Yes, it's all set.

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Day 5 - Page 213  
Tape 10-03601

- 04 06 48 02 CDR ...
- 04 06 48 03 LMP Okay, it'll be going here in a second. I just got --
- 04 06 48 04 CC Snoop, Houston. You're looking good for the insertion burn.
- 04 06 48 06 CDR Yes. Roger, Charlie. That was something we've never seen before. It was real good. We went to AGS and --
- 04 06 48 12 LMP The computer's yours, Tom.
- 04 06 48 15 CDR You want to go through P30 again?
- 04 06 48 17 LMP No, I went through P30. Go into P40.
- 04 06 48 19 CDR Go to. Oh, 232. Beautiful, beautiful.
- 04 06 48 34 CDR Okay, and let me tell you what happened real quick here as we come around with this insertion burn. I went to attitude deadband, started thrusting aft, and the thing just took off on us. So I could see we're coming up - and we come up to insertion, so I flipped - I got a hold of it and tried to avoid gimbal lock, and guess I did. Looks like we got a good insertion out of it anyway, and - I mean a good staging out of it. And we're all set to go for insertion here.
- 04 06 49 05 LMP Okay, Tom, call 06 86. Okay, the computer's yours.
- 04 06 49 25 CDR Are we going forwards or backwards? Oh, we're going -
- 04 06 49 28 LMP We're going backwards.
- 04 06 49 29 CDR Yes.
- 04 06 49 30 LMP That's the way we want to go.
- 04 06 49 31 CDR Yes, right, right, right. There's the ORB rate ball; we're in good shape.
- 04 06 49 32 LMP Okay, there was a moment there, Tom --
- 04 06 49 37 CDR (Laughter)

~~CONFIDENTIAL~~

Day 5 - Page 214  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 06 49 38 LMP -- Let's worry about it after we make this burn. I want to make sure the AGS is up for it.
- 04 06 49 43 CDR Okay, we're going to AUTO, and I'm going to pull - Let me call - let me call the DAP again.
- 04 06 49 51 LMP Okay.
- 04 06 49 54 CDR Going 20.
- 04 06 49 55 LMP We never did go into PGNS, so the DAP didn't do it to us.
- 04 06 49 57 CDR No.
- 04 06 49 58 CC Snoop, Houston. Stand by for a mark; 5 minutes to the burn.
- 04 06 50 00 LMP Okay, Charlie, we're with you. I think we got all our marbles.
- 04 06 50 07 CDR Okay, ready.
- 04 06 50 14 LMP We is sure coming down to that ground, I'll tell you.
- 04 06 50 17 CDR I wonder where that stage went?
- 04 06 50 18 LMP I don't know, but I hope we never find it again.
- 04 06 50 22 CDR Yes.
- 04 06 50 30 LMP Man, I'll tell you, that was wild, babe, and it wasn't the DAP, because you were in AGS. That was the AGS.
- 04 06 50 34 CDR I was in AGS - I was in AGS; MODE CONTROL, ATTITUDE HOLD. Right?
- 04 06 50 38 LMP Yes, wide deadband - -
- 04 06 50 39 CDR Wide deadband.
- 04 06 50 40 LMP -- ... we were going to stage. Okay, babe. I've got good AGS, and everything's locking good. I've got the attitude set, so if we have to switch, we'll be alright. Okay, 4 07, I'll monitor it

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Day 5 - Page 215  
Tape 10-03601

until the burn. We're at 4 minutes. Okay, 4 minutes. Boy that's hard to do with helmet and gloves on. HELIUM MONITOR to ASCENT, PRESSURE 1 and 2. Let's take --

- 04 06 50 51 CDR Okay.
- 04 06 50 52 LMP -- take another look at it; that's looking good. ENGINE STOP pushbuttons, all, RESET and the ABORT/ABORT STAGE, RESET. Okay?
- 04 06 51 07 CDR Yes.
- 04 06 51 08 LMP Push buttons, RESET?
- 04 06 51 10 CDR Go.
- 04 06 51 11 LMP AGS TRANSLATION?
- 04 06 51 12 CDR Yes.
- 04 06 51 13 LMP I mean X-TRANSLATION, 4 JETS?
- 04 06 51 15 CDR Yes.
- 04 06 51 16 LMP Okay, Tom. That's - If 170 is greater than our DELTA-V to go -
- 04 06 51 20 CMP Houston. I'm not reading them, so if they don't make it, you've got to tell me. Okay?
- 04 06 51 29 LMP Okay, Tom, if we've got less than 170 feet - if we've got more than 170 feet per second to go, we're RCS - we'll RCS maximum of 55 seconds, but we will RCS. If DELTA-V to go is greater than 170, we're RC - RCS back to our pad DELTA-V.
- 04 06 51 42 CDR Okay.
- 04 06 51 43 LMP Okay? Which is going to be right in P40 there.
- 04 06 51 49 CDR Okay. Your AGS are looking good?
- 04 06 51 50 LMP AGS is looking good.
- 04 06 51 52 CDR Okay.

~~CONFIDENTIAL~~

Day 5 - Page 216  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 06 51 56 LMP Okay, and our pad DELTA-V is 220.9. So, if we burn less than 170 feet per second - or if we don't get up to 170 feet per second to go, we'll want to burn it back to about - about 220. Okay?
- 04 06 52 09 CDR Yes.
- 04 06 52 10 LMP But let's get over 170 - let's get into that 170 feet per second region.
- 04 06 52 16 CDR Okay.
- 04 06 52 17 LMP Okay, push your INVERTER number 1 CLOSED - circuit breaker.
- 04 06 52 20 CDR Go.
- 04 06 52 21 LMP And at 1 minute, your STAB/CONTROL, AELD, CLOSED.
- 04 06 52 25 CDR Okay.
- 04 06 52 26 LMP Boy, I'll tell you, we is down among them again going backwards, you know that.
- 04 06 52 29 CDR Yes, I'm still trying -
- 04 06 52 30 LMP Look at that rille. That's got to be - that's got to be probably Diamondback right there.
- 04 06 52 34 CDR Yes.
- 04 06 52 36 LMP It's awful close to see that.
- 04 06 52 38 CDR Yes, let's keep watching this; we're at 2 minutes, babe.
- 04 06 52 40 LMP Okay, babe, coming up on 2 minutes.
- 04 06 52 42 CDR Got AELD coming CLOSED. Have you got yours CLOSED? There.
- 04 06 52 47 LMP Coming CLOSED.
- 04 06 53 12 LMP Okay, 2 minutes, babe. Give her a final trim.
- 04 06 53 15 CDR Okay. Okay, ready? ...

~~CONFIDENTIAL~~

04 06 53 21 LMP Okay, there it is. Okay, my AELD's coming CLOSED,  
Tom.

04 06 53 24 CDR Okay, mine's coming CLOSED.

04 06 53 26 LMP Okay, and verify your INVERTER number 1 breaker is  
CLOSED.

04 06 53 29 CDR Yes.

04 06 53 30 LMP Okay, at 35 seconds we want the ENGINE ARM to ARM.

04 06 53 33 CDR Yes.

04 06 53 37 LMP We're in PNGS; we're in AUTO.

04 06 53 39 CDR 4 JET, BALANCE COUPLE is ON. And stand by to --

04 06 53 44 LMP Coming right into the attitude, babe.

04 06 53 46 CDR Okay.

04 06 53 48 LMP Got ENGINE ARM yet to go. Coming up on 01:12.

04 06 53 50 CDR Okay.

04 06 53 54 LMP I'll hit 99 and I'll count you down.

04 06 53 56 CDR Okay.

04 06 54 00 LMP Burn time is 15 seconds, so it's going to go in a  
hurry.

04 06 54 05 CDR It's 220 total. Correct?

04 06 54 08 LMP 220 feet per second - 220.9.

04 06 54 10 CDR Okay.

04 06 54 13 LMP 50 seconds, 48. Baby, let's make this one.

04 06 54 29 CDR Okay, ASCENT ENGINE, ON.

04 06 54 30 LMP Okay, 35 seconds.

04 06 54 33 CDR ASCENT. MASTER ARM is ON.

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- 04 06 54 35 LMP      MASTER ARM is ON; engine ARM, ASCENT; AGS CONTROL in AUTO; DEADBAND, MIN; and we're set for this attitude on the burn; I'm counting down on 500.
- 04 06 54 40 CDR      Okay.
- 04 06 54 42 LMP      Okay baby.
- 04 06 54 47 CDR      2. Okay, 12. 10 -
- 04 06 54 53 LMP      8, 7, 6, 5, 99, 3, 2, 1 -
- 04 06 55 01 LMP      BURN.
- 04 06 55 02 CDR      Okay. Okay, it's burning down.
- 04 06 55 05 LMP      Burning? Okay. Got 60 to go; 34 to go; 100 to go; 78 to go, 50 to go; 20 to go; stand by, Tom.
- 04 06 55 17 CDR      Stop.
- 04 06 55 18 LMP      Okay, I'll null them out.
- 04 06 55 19 CDR      Okay. Beautiful --
- 04 06 55 20 LMP      Oh, beautiful, beautiful, beautiful.
- 04 06 55 22 CDR      Okay, null them out. Flip.
- 04 06 55 29 LMP      Okay. Let me get the - minus 0.3, plus 0.1 --
- 04 06 55 35 CDR      ... plus 0.1, plus 0.1 and - 001.3.
- 04 06 55 50 LMP      Baby, that - that made me feel better. Call up VERB 82 when you get a chance.
- 04 06 55 54 CDR      I will. Okay.
- 04 06 55 57 LMP      Okay, and there the AGS says we made a good burn. Go ahead.
- 04 06 56 01 CDR      Roger, Houston. We got it. Roger, the burn looked real good.
- 04 06 56 06 LMP      I'll tell you, we're down here where we can touch the top of some hills, though.

~~CONFIDENTIAL~~

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Day 5 - Page 219  
Tape 10-03601

04 06 56 21 CDR Okay, Char - Hello, Houston. This is Snoopy. It shows us in a 46.7 by 11.0. Over.

04 06 56 33 LMP Okay, Tom. ENGINE ARM, OFF?

04 06 56 34 CDR Yes.

04 06 56 36 LMP AELD breaker, OPEN?

04 06 56 37 CDR I already got --

04 06 56 38 LMP Okay, and mine's open. MASTER ARM, OFF?

04 06 56 39 CDR Yes.

04 06 56 40 LMP And INVERTERS number 2 - number 1 breaker, OPEN?

04 06 56 43 CDR Yes.

04 06 56 46 LMP Okay, and the RCS just for record: code 80 and 78.

04 06 56 52 CDR Alrighty. Did you notice that the wobble we got on that burn?

04 06 56 55 LMP Boy, I'll tell you, I thought we were wobbling all over the sky --

04 06 56 57 CDR (Laughter)

04 06 56 58 LMP -- I'm surprised those residuals ended up where they did. Okay. Yaw 180 and pitch down 90.

04 06 57 03 CDR Alrighty, let's go off VOX.

04 06 57 07 LMP Circuit breaker, RENDEZVOUS RADAR, CLOSED?

04 06 57 09 CDR Okay.

04 06 57 14 LMP Now wait 30 seconds.

04 06 57 15 CDR Okay, going to -

04 06 57 18 CC ... hear that - hear them talking when I keep keyed down here. Over.

04 06 57 26 CDR No, go the other way.

~~CONFIDENTIAL~~

Day 5 - Page 220  
Tape 10-03601

~~CONFIDENTIAL~~

04 06 57 30 CC ... down here and relay to you. Over. ...  
04 06 57 41 LMP Got your breakers closed?  
04 06 57 43 CDR Yes, I'll get the other one in a --  
04 06 57 44 LMP And I'm back on ORB rate, Tom?  
04 06 57 47 CDR Okay.  
04 06 57 48 LMP Put me back on ORB rate, will you?  
04 06 57 49 CDR I'll get it.  
04 06 57 50 LMP That son of a bitch was wild. We got to watch the AGS on CDH.  
04 06 57 52 CDR Oh, ho, ho!  
04 06 58 05 CC Charlie Brown, this is Houston. We recommend for your next maneuver that you load the DAP with a half a degree per second. We see 0.2 now. Over.  
04 06 58 32 LMP Let's go up and get him.  
04 06 58 34 CDR Yes, I'd still like to know what caused that.  
04 06 58 36 LMP I would too. We got your other breaker CLOSED, RENDEZVOUS RADAR?  
04 06 58 44 CDR Yes, I'll get it CLOSED.  
04 06 58 49 LMP I don't know what the hell that was, but - That's better.  
04 06 59 32 LMP Okay, Tom, you can pull your breakers.  
04 06 59 35 CDR ...  
04 06 59 36 LMP Your RENDEZVOUS breaker?  
04 06 59 37 CDR Okay. Ready to pull it?  
04 06 59 39 LMP Pull it.  
04 06 59 41 CDR Okay.  
04 06 59 43 LMP Okay, we'll make a quick alignment, here.

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04 06 59 46 CC ... We've got him at 46.7 by 11.0. Over.

04 06 59 49 LMP ALT LM breaker, CLOSED?

04 06 59 53 CDR Stand by. It's CLOSED.

04 07 00 02 CC Roger. We'll send you a TM vector in just a moment Charlie Brown. Charlie Brown, we've got your LM vector coming. Stand by.

04 07 00 09 CC Tom, set the elapsed timer down on - down to CSI. Here's CSI time because, remember, we got to get that backup mark at 30 minutes.

04 07 00 16 CDR Okay.

04 07 00 17 LMP And 103:45, we don't have a lot of time. Only got 15 minutes to make this alignment, so I'm going to make it only three marks.

04 07 00 24 CDR Okay.

04 07 00 34 LMP Okay, you can leave it GO, cause I'm going to call up the --

04 07 00 36 CDR 103:45?

04 07 00 39 LMP I don't know what it is here, babe.

04 07 00 42 CMP ... right now.

04 07 00 44 LMP You don't have to maneuver; I got to go get a star.

04 07 00 48 CDR Okay.

04 07 00 49 CC Charlie Brown. Stand by. Be a while.

04 07 00 52 CMP Okay, well, I can do realign in the meantime, then.

04 07 00 55 LMP Okay, Tom? Can I go get it?

04 07 00 58 CDR Okay, you're in what's - what's it? 351? - 35 - yes, it'll pitch you down quite a bit. You can go get it.

04 07 01 06 CC ... to you. Over.

~~CONFIDENTIAL~~

Day 5 - Page 222  
Tape 10-03601

~~CONFIDENTIAL~~

04 07 01 09 CMP Roger. We --  
04 07 01 10 CDR Okay, maneuver. Go.  
04 07 01 14 LMP Okay, and here's the time, if you can set that elapsed timer, because we got to get that back - that 30 minute Mark that we always miss.  
04 07 01 22 CDR 102:55.  
04 07 01 26 LMP That was the earth in there?  
04 07 01 29 CDR Where's CS - oh. Where's CSI, 103:45?  
04 07 01 36 LMP Right, right down here. Right down here on the left.  
04 07 01 39 CDR 103:45:34. ...  
04 07 01 53 CDR We're there.  
04 07 01 54 LMP Excellent.  
04 07 02 09 CMP Boy, Houston. That's outstanding. Wish we had done that ...  
04 07 02 21 LMP That's a light vehicle, Tom.  
04 07 02 23 CDR Yes, I know it.  
04 07 02 36 CMP Are you done with it?  
04 07 02 42 CDR Can't deny -  
04 07 03 14 LMP There ain't any question we don't have an ascent - or descent stage. How's the chamber pressure and everything holding?  
04 07 03 18 CC Charlie Brown, Houston. We're through with --  
04 07 03 21 CDR Chamber pressure?  
04 07 03 22 CC -- the computer. It's yours. Over.  
04 07 03 23 LMP You know. Yes, cabin chamber pressure.  
04 07 03 26 CDR Good.

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Day 5 - Page 223  
Tape 10-03601

04 07 03 41 LMP That's four sets, then PROCEED.  
04 07 03 48 CMP That's more like it.  
04 07 03 55 CDR We're all set. Counting down.  
04 07 03 57 LMP Let me see. Houston, we're going OMNI's during the P52, the rest of it.  
04 07 04 27 CMP They want you on aft OMNI's, Snoopy.  
04 07 04 32 LMP What'd he say?  
04 07 04 35 CMP Houston wants you on aft OMNI's, Gene.  
04 07 04 38 LMP Tell him that's where I am.  
04 07 04 41 CMP Okay. He's on aft OMNI's Houston. He's on aft OMNI's.  
04 07 04 46 CDR Hold it.  
04 07 04 47 CC Roger, we copy, Charlie Brown. Are you reading him now, Charlie Brown?  
04 07 04 49 CDR What star did you take?  
04 07 04 51 LMP Altair like we called for in the book.  
04 07 04 52 CMP Yes, I am. Thank you.  
04 07 04 53 CDR Good. Okay. Yes, it's looking good.  
04 07 04 57 LMP That's it right there.  
04 07 04 59 CDR Bang, bang.  
04 07 05 01 LMP Right on the money.  
04 07 05 19 LMP Boy, it's a light vehicle.  
04 07 05 39 LMP Boy!  
04 07 07 29 CDR Beautiful! Why don't you write that down? What were the starts, 40 and --  
04 07 07 38 LMP -- and 33.

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04 07 07 40 CDR I'll write those down. ...  
04 07 07 50 CDR Got it?  
04 07 07 51 LMP Yes, and let's make a star check on --  
04 07 07 52 CDR Let's PROCEED.  
04 07 07 53 LMP Go ahead.  
04 07 07 55 CDR We're not going to have much time.  
04 07 07 56 LMP No, I just want it right on the same star. On Altair.  
04 07 08 23 LMP Beautiful, Tom. Beautiful --  
04 07 08 25 CDR Okay. Let's get --  
04 07 08 26 LMP It's banging around in deadband.  
04 07 08 28 CDR Right on.  
04 07 08 35 LMP Okay, let's go check that mother. Okay, at minus 33 minutes, you want to be calling up - Okay, get your RENDEZVOUS RADAR breaker CLOSED.  
04 07 08 51 CDR AC RENDEZVOUS RADAR breaker, CLOSED. Okay, you want to give me - I don't know what the AGS thinks where we are.  
04 07 08 58 LMP Okay, right. Here's what the AGS thinks we're at, babe.  
04 07 09 05 CDR AGS - We're not moving.  
04 07 09 06 CC ... Houston. Over.  
04 07 09 07 LMP That's where we think we are.  
04 07 09 09 CDR Go ahead, Houston. This is Snoopy.  
04 07 09 13 CC Roger. We think we can help you psyche out your problem, there, at staging. It looked like the MODE CONTROL switch was in AUTO instead of ATT HOLD. Over.

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Day 5 - Page 225  
Tape 10-03601

04 07 09 23 CDR God damn! Okay - Okay, we'll try to re - recollect it. I thought we went right through our checklist, as prescribed, but you got telemetry. That'll sure help - -

04 07 09 36 LMP Okay. You got your RENDEZVOUS RADAR breakers closed Tom?

04 07 09 38 CDR Yes.

04 07 09 39 LMP Huh?

04 07 09 40 CDR Yes.

04 07 09 41 LMP That's where the AGS think it is.

04 07 09 43 CDR God - -

04 07 09 44 LMP Hello, Houston, the results of the AOT alignment. Do you read? Okay, plus four balls 4. GYRO torquing angles are 0 - plus 00311, plus 00121, and plus 00081, and the star check, put her right in the center again.

04 07 10 05 CC Roger. We copy.

04 07 10 06 CMP Snoopy, we're going to acquire - acquire you on VHF again.

04 07 10 11 LMP Okay, we'll be quiet, John.

04 07 10 24 CDR Okay. How did we have that in ATTITUDE HOLD?

04 07 10 30 LMP I thought we did, babe. Shh. Be quiet while he's talk - acquiring. He can hear us hot mike.

04 07 10 34 CDR Yes.

04 07 10 42 CC Snoop, Houston ...

04 07 11 01 CDR I'm ready. I got him here, Gene-o. Go to P20.

04 07 11 17 LMP You got him in SLEW? Okay.

04 07 11 25 CC Snoop, Houston. Over.

04 07 11 27 CDR Go ahead, Houston.

~~CONFIDENTIAL~~

Day 5 - Page 226  
Tape 10-03601

~~CONFIDENTIAL~~

04 07 11 31 CC

Roger, Tom. Would you like some further amplification on the staging problem? We think the error came at minus 14 minutes where we failed to call out the AGS MODE CONTROL switch into ATT HOLD. Over.

04 07 11 49 CDR

Okay.

04 07 11 53 LMP

Bitch it. It just won't acquire for us, Tom. Go into - go into - go into SLEW and track it again.

04 07 11 59 CDR

Roger.

04 07 12 01 CMP

Okay. I'm coming around you guys. I'm probably not pointed at you right this second.

04 07 12 05 CDR

Roger. I wondered what happened. We were locked on solid and then the radar slowly faded out. Now it's starting to come in, John, as you pitch up.

04 07 12 11 CMP

Okay.

04 07 12 13 CDR

Keep going. Our strength is building.

04 07 12 19 LMP

Minus 30 minutes, we need a range rate hack.

04 07 12 32 CDR

Okay. You ready to go now? AUTO? LGC? Ready?

04 07 12 38 LMP

Yes.

04 07 13 00 LMP/CDR

... There it goes.

04 07 13 03 CMP

Roger.

04 07 13 08 CDR

Okay, we've got a solid lock on that, John, in P20.

04 07 13 12 CMP

Would you believe this thing was giving you a range in half steps?

04 07 13 17 CDR

Yes.

04 07 13 28 LMP

Okay, we can expect that. Let's take it.

04 07 13 30 CDR

Okay.

04 07 13 31 LMP

We need that range rate at 30 minutes.

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~~CONFIDENTIAL~~

Day 5 - Page 227  
Tape 10-03601

04 07 13 34 CDR

No. Don't do it ... And, again, on our first mark, we see these large updates. We'll reject it and pick up on our second one. The range rate, huh? It's got to be 290 something.

04 07 13 54 CC

Hello, Snoop. Houston. We have a CSI update for you. Over.

04 07 14 00 CDR

Okay.

04 07 14 02 LMP

Go ahead with the update.

04 07 14 07 CC

Roger. It's P32 CSI: 103:45:54.60, 105 - -

04 07 14 19 LMP

Don't forget the range rate.

04 07 14 20 CDR

Got it.

04 07 14 21 CC

-- 0100, plus 0453, plus 000 106, plus 453, plus 000, plus 005. Standing by for your readback. Over.

04 07 14 48 LMP

Give me NOUN 81 again. I don't think I got enough numbers.

04 07 14 53 CC

Roger. NOUN 81 is plus 0453, plus 000. Over.

04 07 15 06 CDR

There we go. Good. PROCEED.

04 07 15 10 LMP

Okay, we'll take that.

04 07 15 11 CDR

Yes.

04 07 15 14 LMP

Stand by, Charlie, I'll give you a readback in a second. This is the CSI and TPI time we'll use. Is that correct?

04 07 15 33 LMP

How's the - how's that range look, Tom?

04 07 15 35 CDR

Beautiful.

04 07 15 36 LMP

How about 30 minutes.

04 07 15 37 CDR

Coming up.

04 07 15 38 CMP

What time did they give you, Gene?

04 07 15 40 CDR

Mark, 274.

~~CONFIDENTIAL~~

Day 5 - Page 228  
Tape 10-03601

~~CONFIDENTIAL~~

04 07 15 42 LMP What is it?  
04 07 15 43 CDR 274.  
04 07 15 45 LMP Okay.  
04 07 15 48 CDR And range is 193.  
04 07 15 51 LMP Okay, John, I got CSI T<sub>ig</sub> is 103:45:54. It really  
should be right now, because that's a new clock,  
right now.  
04 07 16 01 CDR Okay, 270.  
04 07 16 03 LMP 270.  
04 07 16 04 CDR And 192.  
04 07 16 05 CMP Roger. How about TPI time?  
04 07 16 07 LMP 105:21:0100.  
04 07 16 14 CMP Roger.  
04 07 16 55 CC Snoopy, Houston. You broke out on your readback  
after the NOUN 11. Over.  
04 07 17 04 LMP Roger. Stand by and I'll read it back. Let me  
get things going here, Charlie. I got it up good.  
I'll read it back in a minute.  
04 07 17 23 CC Charlie Brown, Houston. Over.  
04 07 17 29 LMP How can he hear me. I'm not - I'm not in VOX or  
anything. How could he hear me?  
04 07 17 34 CDR I'm going to Z-axis track.  
04 07 17 42 LMP How's it looking to you, Tom?  
04 07 17 43 CDR Pretty good.  
04 07 17 46 LMP Okay. Those are getting better. Check the signal  
strength against range. That's what --  
04 07 17 54 CDR Yes, 190? For 200, it's 188 and at 100 it's 22.  
We're right on.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 229  
Tape 10-03601

- 04 07 18 27 CC Charlie Brown, Houston. Over.
- 04 07 18 30 CMP Go ahead, Houston.
- 04 07 18 34 CC Roger, Charlie Brown. On - We think what happened on your P76 where you got those funny numbers, that you failed to do the final ENTER on the NOUN 84. Just a reminder to always do the final ENTER on the NOUN 84, and also when you get a chance, we'd like you to cycle the TUNNEL VENT valve to LM PRESS for 10 seconds to blow out that RTV or whatever's clogging it. Over.
- 04 07 19 00 CMP Roger. I tried that this morning ...
- 04 07 19 06 CC Roger - Roger. Did you try it after undocking? Over.
- 04 07 19 11 CMP Alright, I'll try it. I ain't got a chance right this minute.
- 04 07 19 22 CDR There we go.
- 04 07 19 23 LMP I just called for a recycle. Let's recycle.. Take our first cut at. Okay, Tom, did you get our clock count on - Well, we'll get it.
- 04 07 19 34 CDR Hello, Houston, this is Snoopy. Our updates are looking real good now with respect to DELTA-R and DELTA-V, and it looks like we're coming right up the pike with respect to range and range rate. Over.
- 04 07 19 48 CC Roger. We copy, Snoop. Over.
- 04 07 19 52 CDR Roger.
- 04 07 20 48 LMP Roger. Okay, Tom, at 20 minutes - I think our 20 minutes is really about 19:30, here. We're about - They changed times on us by - 45, 54, 45 - 20 seconds. So 20 seconds later. Okay? And you're saying we got a 45 foot per second CD - CSI.
- 04 07 21 11 CDR And we're going to use the interconnects.
- 04 07 21 15 LMP That may have been. I thought I looked at that son of a bitch, but God dang. Okay, there's

~~CONFIDENTIAL~~

Day 5 - Page 230  
Tape 10-03601

~~CONFIDENTIAL~~

NOUN 75, that says - That's beautiful. Hello,  
Houston. I guess you can read our DSKY on this  
first recycle after 5 marks.

04 07 21 38 CC Roger. We copy.

04 07 21 42 CDR Okay.

04 07 21 43 LMP NOUN 81 is 48.7, 0 and 0.

04 07 21 51 CDR NOUN -

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04 07 22 05 LMP Now let's get our clocks set.  
04 07 22 09 CDR Okay.  
04 07 22 13 LMP You got them by any chance, Tom?  
04 07 22 14 CDR No.  
04 07 22 15 LMP 190 - 180 miles, huh?  
04 07 22 17 CDR Yes.  
04 07 22 50 LMP Hello, Houston. That last alignment was based upon four sets of marks, rather than five, because of our time to get lockon and get that 30-minute backup range rate, so we only took four - four sets of marks on each star instead of five.  
04 07 23 10 CC Roger. Copy. That's okay, Snoop. Press on.  
04 07 23 17 CDR Roger.  
04 07 23 18 LMP No turning back now.  
04 07 23 21 CMP Go ahead. Over.  
04 07 23 23 CC Roger. We copy. Charlie Brown, Snoop, did you copy the NOUN 11 NOUN 37 info? Over.  
04 07 23 32 LMP Can you imagine this?  
04 07 23 34 CDR Beautiful. Look at that. Look at that.  
04 07 23 36 CMP I think I got it, Charlie --  
04 07 23 40 CDR Isn't that --  
04 07 23 41 CMP ... 103.5 ...  
04 07 23 46 CDR Don't knock - Don't knock out the window, Gene-o.  
04 07 23 50 LMP No, I ain't going to do that, babe.  
04 07 24 04 LMP Son of a bitch! Damn it!

~~CONFIDENTIAL~~

Day 5 - Page 232  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 07 24 43 LMP That's empty anyway.
- 04 07 25 21 LMP Boy, where's the day gone?
- 04 07 25 22 CDR (Laughter) How in the hell --
- 04 07 25 26 CC Snoop, Houston. We'd like you to confirm your NOUN 81-NOUN 86 info on the CSI pad. NOUN 11 and NOUN 37 were entered correctly. We're satisfied with those. Over.
- 04 07 25 37 LMP I'm sorry, Charlie. NOUN 81 - I still think I got a left-out digit, but I know what you're talking about. NOUN 81 is plus 045.3 and plus all balls. Is that correct?
- 04 07 25 52 CC That's affirmative.
- 04 07 25 58 LMP The next number is 106 and then NOUN 86 is plus 453, plus all balls, and plus 0005.
- 04 07 26 11 CC That's - Roger. It's 2 balls 5 on - on the DELTA V<sub>2</sub>. Over.
- 04 07 26 17 CMP Ohh. Oh.
- 04 07 26 22 CDR What's wrong, John. What do you see?
- 04 07 26 24 CMP I've got - ... Y-DOT ... It's plus 6.1 for Y-DOT.
- 04 07 26 34 CDR Don't say.
- 04 07 26 36 CMP One was 7.0. It was seven - 0.
- 04 07 26 42 LMP Watch, you're out of plane on the ball, babe. We never got gimbal lock.
- 04 07 26 44 CDR Okay, John, I - I - I kind of - just don't believe that. I've been tracking the radar here, and we're going right on the centerline of the ball. Let's wait till after CSI and look at it.
- 04 07 26 56 CMP Okay.
- 04 07 27 00 LMP 20 minutes, Tom. Give me a mark. Range rate, what do you suppose it was? God-dang it.

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04 07 27 05 CDR It was 170.

04 07 27 07 LMP 170. Can you update it a little bit? What do you suppose it was?

04 07 27 12 CDR That's what I said. That's what I meant to say.

04 07 27 13 LMP Okay. 170.

04 07 27 20 CDR 12 minutes, we PROCEED.

04 07 27 41 CDR We got beaucoup marks, so --

04 07 27 43 LMP Let's just let it take marks. We won't even recycle that second time around.

04 07 27 47 CDR Yes.

04 07 27 48 CMP I tell you, Tom, I'm tracking you off the center of the ball here.

04 07 27 52 CDR Well, our ball's right in the center. We'll still have plenty of time, John, after CSI.

04 07 27 57 CMP Okay.

04 07 28 02 LMP Shall we see what ours is? We ought to be looking at it in about 15 minutes.

04 07 28 19 LMP Give me your CSM Y-DOT again?

04 07 28 22 CMP It's plus 6.4.

04 07 28 30 LMP Okay, I got plus 6.4.

04 07 28 50 LMP Okay, Tom.

04 07 28 52 CC Snoopy, Houston. We'll have LOS at 103:36 and AOS at 104:25. Over.

04 07 29 01 CDR Roger. 103:36, 104:25. Thank you.

04 07 29 11 LMP Okay. VERB 9 - VERB 90 ENTER ... 3, ENTER. Plus 00045, ENTER. 0.054 --

Day 5 - Page 234  
Tape 10-03601

~~CONFIDENTIAL~~

04 07 29 38 CDR Let's get it.

04 07 29 40 LMP ... 0 ... 0, ENTER. We're looking right up both balls. We're looking up - we're looking up AGS and PGNS, babe. Of course, I aligned the AGS to the PGNS after that alignment, but that damn alignment was right on. It was right on.

04 07 30 05 CDR What was that - plus 4.5?

04 07 30 07 LMP No, that was the time, just coming back at me. Snoop, Houston. If you get a chance, pass to Charlie Brown we've lost his TM in voice, and we'll see him AOS at 104:24. Over.

04 07 30 28 CDR This is Snoopy, Roger. Charlie Brown, this is Snoopy. You'll have acquisition at 104:24. Over.

04 07 30 37 CMP Say again?

04 07 30 39 CDR You'll be picking up Houston at 104:24. And our out-of - and our out-of-plane was 4.1 and we're tracking --

04 07 30 48 LMP In the other direction, though --

04 07 30 49 CDR In the other direction. And we're tracking right up the centerline here. So, we'll just ignore the first out-of-plane correction. Over.

04 07 30 57 CMP Very good.

04 07 31 05 LMP AOS at 104:25, Tom?

04 07 31 07 CDR Yes.

04 07 31 08 LMP We need another mark at 10 minutes.

04 07 32 04 LMP God-dang it.

04 07 32 24 LMP Houston, I'm putting you on OMNI's.

04 07 32 28 CC Roger, Gene.

04 07 32 31 CMP ... ... OMNI ... I just had a ...

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Day 5 - Page 235  
Tape 10-03601

04 07 32 53 LMP Houston, we've got you on OMNI's. You hear music, Tom? That crazy whistling?

04 07 33 00 CDR I can hear it.

04 07 33 01 LMP That's really weird.

04 07 33 02 CDR It is.

04 07 33 04 CC Snoop, Houston. As you go over the hill, you're looking good. We're all GO here.

04 07 33 08 CDR Roger, Charlie, and we'll hit PROCEED at 12 minutes. Everything is looking good, and we're going to ignore the out-of-plane correction at CSI. Over.

04 07 33 15 CMP Am I going to do the out-of-plane at CSI?

04 07 33 18 CDR That's affirmative.

04 07 33 22 LMP Yes. 17 marks.

04 07 33 26 CC Snoop, Houston. Say again. We didn't copy.

04 07 33 29 CDR Roger. Everything's looking good. We're going to ignore the out-of-plane correction at CSI. Over.

04 07 33 36 CMP Roger. I show you about --

04 07 33 39 CC Roger. Understand you are not doing the CSI - the out-of-plane. Over.

04 07 33 42 CMP -- I don't if this is ... or not. Wait till I get ground after CSI.

04 07 33 45 CDR Affirmative.

04 07 34 09 CMP NOUN 81 is minus 46.9.

04 07 34 14 LMP Okay, John. Understand - 46.9.

04 07 34 18 CMP Roger. Minus.

04 07 34 20 LMP Okay. That's alright. We know which way we're going to burn it.

04 07 34 25 CDR We reversed his signs for out-of-plane, right?

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Day 5 - Page 236  
Tape 10-03601

~~CONFIDENTIAL~~

04 07 34 28 LMP Yes, yes. Okay, 15.4 miles.  
04 07 34 34 CMP I'd like to know what you guys got.  
04 07 34 36 LMP Coming up right now, plus 45.3.  
04 07 34 40 CMP Beautiful ...  
04 07 34 43 LMP Okay, so we'll burn our 45.3. That's exactly what Houston gave us.  
04 07 34 49 CMP Roger.  
04 07 34 51 CDR PROCEED.  
04 07 34 59 CDR Beautiful.  
04 07 35 05 CC Hey, Snoop, CAP COMM. We understand you're burning 45.3 Your FIDO's grinning.  
04 07 35 14 CDR It looks just great.  
04 07 35 18 LMP Tom, the clock set up? In 10 minutes I need a range rate mark.  
04 07 35 29 LMP In range, both.  
04 07 35 30 CDR Yes.  
04 07 35 36 LMP We'll see how the backups come up.  
04 07 35 56 CDR Okay, mark it? It was 103 feet per second.  
04 07 36 00 LMP Okay, and what's range?  
04 07 36 01 CDR 157.5.  
04 07 36 07 LMP Okay, babe, you can take the computer and go into VERB 47 - PROCEED out of there, and go to VERB 47. And I'll go to update here.  
04 07 36 14 CDR I got to go to zero, zero, don't I? ENTER.  
04 07 36 17 LMP Yes.  
04 07 36 21 CDR 47.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 237  
Tape 10-03601

04 07 36 23 LMP PROCEED.  
04 07 36 28 LMP I've already been in PC. I'm - I'll figure this one out.  
04 07 36 33 CDR Think we need to put on the helmets and gloves for this one?  
04 07 36 36 LMP I don't think - I don't want to.  
04 07 36 46 CDR Let's me try it just to see what it's like. That's not really a big thing with helmets and gloves.  
04 07 37 18 LMP It's 52.3.  
04 07 37 24 CDR What'd ground give us?  
04 07 37 38 LMP Am I glad we didn't torque up the platform.  
04 07 37 41 CDR How in the hell did we miss that?  
04 07 37 49 LMP We had to have someone on our side that time.  
04 07 37 51 CDR Yes.  
04 07 37 56 LMP Listen to eerie music!  
04 07 38 00 CDR You - You ready?  
04 07 38 04 LMP Yes, I need - You go into 41.  
04 07 38 06 CDR Yes.  
04 07 38 19 CDR Plus 45.3, 0, and 0.6.  
04 07 38 28 LMP Okay, go ahead.  
04 07 38 32 CDR You ready for an AUTO maneuver?  
04 07 38 34 LMP Yes.  
04 07 38 36 CDR Okay. Okay, I'll go ahead and open the RENDEZVOUS RADAR circuit breaker.  
04 07 38 45 LMP What happened?

~~CONFIDENTIAL~~

Day 5 - Page 238  
Tape 10-03601

~~CONFIDENTIAL~~

04 07 38 46 CDR Open the RENDEZVOUS RADARS. We're going to pitch down.

04 07 38 49 LMP Boy, it got quiet.

04 07 38 52 CDR Huh?

04 07 38 53 LMP Didn't it? We still got thrusters?

04 07 38 54 CDR Oh, yes. Ready? PROCEED.

04 07 38 57 LMP Man, I tell you, it just got quiet.

04 07 39 03 CDR John, we're going to pitch down and have our X-axis towards you. You may lose our flashing light.

04 07 39 12 CMP Roger.

04 07 39 27 LMP John, do you know what we're going to burn now?  
43.5 - 45.3, 0, and 0.

04 07 39 33 CMP Roger.

04 07 39 47 CDR Those numbers again, Gene-o, are what?

04 07 39 57 LMP I'll put mine on, Tom.

04 07 40 51 LMP I tell you, John, that music is really weird.

04 07 40 55 CMP ... Think we're going to get it on the front side?

04 07 40 58 LMP I know it. You composed something, huh?

04 07 41 03 CMP I don't know, man.

04 07 41 05 LMP No one will believe us. Okay, Tom, we're set until 35 minutes - 35 seconds. And we're at 4 minutes and 35 from the burn.

04 07 41 21 CDR We pitch down - know it's right, but why should I have him out there?

04 07 41 25 LMP You should be looking at 105.

04 07 41 28 CDR INERTIAL, huh?

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 239  
Tape 10-03601

04 07 41 29 LMP You're looking at 105 INERTIAL. Much better.  
04 07 41 36 CDR But why should I have down -  
04 07 41 38 LMP Why should you have what?  
04 07 41 40 CDR José down below me.  
04 07 41 46 LMP You've got him below you? Where is he?  
04 07 41 50 CDR Maybe it's a reflection. You got him out there?  
04 07 41 54 LMP No.  
04 07 41 56 CDR Something's weird. Go ahead. Okay.  
04 07 42 11 CDR If you didn't have an ORB rate ball, you couldn't tell where - -  
04 07 42 14 LMP You wouldn't know where the hell you were. I'm looking at 270, and my ORB rate balls, according to this thing, is pretty good, Tom. And we just updated it: 258.  
04 07 42 25 CDR Good.  
04 07 42 26 LMP That looks good.  
04 07 42 35 CMP Okay. I show you 3 minutes to burn.  
04 07 42 41 LMP Okay, I'll give you mark at 3 minutes, John - 7 seconds.  
04 07 42 51 LMP 3 - 2 - 1.  
04 07 42 53 LMP MARK it.  
04 07 42 54 LMP 3 minutes. You with us?  
04 07 43 03 CMP Yes, sir. That's SYNC.  
04 07 43 09 CDR That's weird. Why should I see him down there?

~~CONFIDENTIAL~~

Day 5 - Page 240  
Tape 10-03601

~~CONFIDENTIAL~~

04 07 43 12 LMP Tom, we're going to use the ASCENT FEED on this one.  
04 07 43 16 CDR Yes. TTCA's ENABLED.  
04 07 43 20 LMP And mine is DISABLED.  
04 07 43 24 CDR You got the AGS loaded?  
04 07 43 26 LMP The AGS is loaded and counting. When you start,  
I am going to open the ascents and close the  
solenoids, so I'll get them closed in plenty of  
time. ... start closing them at 10 feet per  
second.  
04 07 43 59 CDR Okay.  
04 07 44 13 CDR That is weird.  
04 07 44 18 LMP Hey, Tom, you want me to trim final?  
04 07 44 19 CDR Yes. Trim it.  
04 07 44 20 LMP Ready?  
04 07 44 22 CDR Go. ...  
04 07 44 43 LMP Boy, those are hard to reach. Coming up on 1  
minute, John.  
04 07 44 50 CMP Okay.  
04 07 45 17 LMP I'm coming up on 35 seconds.  
04 07 45 20 LMP Blank. 35 seconds.  
04 07 45 26 CDR Okay, Gene-o. We need to open the -  
04 07 45 34 LMP Turn on the clock, babe.  
04 07 45 36 CDR Okay.  
04 07 45 45 CDR 10, 9, 8, 7, 6, 5, 4, 3, 2, 1.  
04 07 45 54 CDR We're burning. Gee, you can really feel the  
acceleration.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 241  
Tape 10-03601

04 07 45 56 LMP Okay, here it goes.  
04 07 45 57 CDR Open.  
04 07 46 05 CDR We're burning, John, we're burning. We've got 29 to go, 26 to go.  
04 07 46 07 CMP Roger.  
04 07 46 08 LMP ... to go. Watch the AGS, Tom, it's counting better for you. Okay, I'm closing these right now.  
04 07 46 16 CDR You've got it open.  
04 07 46 18 LMP We're okay.  
04 07 46 25 CDR Man, you can really feel that.  
04 07 46 27 LMP Null them out, babe. You got a light vehicle.  
04 07 46 32 CDR That's it.  
04 07 46 34 LMP You want to get that one?  
04 07 46 36 CDR Yes.  
04 07 46 38 CMP Snoopy, did you complete the burn? Over.  
04 07 46 39 LMP Burn complete, John.  
04 07 46 52 CDR Don't want to use too much - Shit! ...  
04 07 46 54 LMP Want to take that one out or not? Okay.  
04 07 46 56 CDR Okay. All zeros and 4. Go. PROCEED.  
04 07 47 14 LMP Good burn, John.  
04 07 47 54 LMP Gee, I wouldn't give you a nickel in a candy store for the - What?  
04 07 47 58 CDR That weird noise is on VHF B.  
04 07 48 01 LMP It's a what?

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Day 5 - Page 2  
Tape 10-03601

~~CONFIDENTIAL~~

04 07 48 02 CDR It's on VHF B.  
04 07 48 03 LMP Is that right?  
04 07 48 04 CDR Yes.  
04 07 48 08 LMP Okay. Let's go up and get him, Tom. The AGS says he knows where he is.  
04 07 48 18 CDR Okay.  
04 07 48 22 LMP 76 and 64. Okay, I've got to load the W-matrix as soon as that thing comes out. The AGS needle is 48.2 by 41.6? Shit!  
04 07 49 05 CMP How do you want to do the plane change, Gene?  
04 07 49 08 LMP John, let me pick a number. Any number you pick, if you've got time to figure it out. Let me load the W-matrix here.  
04 07 49 15 CMP Roger. I show you at 48.2 by 41.  
04 07 49 18 LMP That's what we got. 48.2 by 41.6.  
04 07 49 58 CDR I got a good lockon.  
04 07 50 17 LMP Think you found him?  
04 07 50 18 CDR Yes, we're locked, babe. Good solid lockon, John.  
04 07 50 25 CMP Roger.  
04 07 50 33 LMP Okay, if you got a good solid lockon, Tom, you can go ahead to LGC, and it should take it, all the way. Tracker lights should come on. That's him locking on. Okay, that's good.  
04 07 51 03 CMP I show you at 142.7 miles.  
04 07 51 07 CDR Roger. We're at 142.7, babe.  
04 07 51 11 CMP ...

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 243  
Tape 10-03601

04 07 50 17 LMP Look at that number. Look at that number.  
Every time we get a big high number. I'm  
going to copy that one down.

04 07 50 19 CMP When is your CDH time? Over.

04 07 52 05 LMP I just got 104:43:52.71.

04 07 52 20 CDR Okay.

04 07 52 26 LMP Good. After that first one, they're good.

04 07 52 28 CDR Say it to John.

04 07 52 29 LMP Did you get that, John?

04 07 52 32 CMP 104:43:57.

04 07 52 35 LMP 104:43:52.71.

04 07 52 40 CMP That's right down the alley.

04 07 52 41 LMP And I'll pick a plane-change time here rightaway.

04 07 53 11 CDR I'm going to PGNS now.

04 07 53 29 CDR Hello, Charlie Brown. Snoop.

04 07 53 33 CMP Go ahead. Over.

04 07 53 34 CDR We don't need to show any TV on docking. If  
you get a chance, just go ahead and put up the  
docking target.

04 07 53 39 CMP Say again? Over.

04 07 53 41 CDR Roger. We don't need to show them any TV on the  
docking. If you just put up - if you get a  
chance, go ahead and put up the docking target.

04 07 53 48 CMP Alrighty.

04 07 54 14 CMP If you guys ... too much ... That's the only  
problem.

~~CONFIDENTIAL~~

Day 5 - Page 244  
Tape 10-03601

~~CONFIDENTIAL~~

04 07 54 20 CDR I can imagine.  
04 07 54 47 LMP John, how about the plane change of 104:15:00?  
04 07 54 53 CMP Roger. Thank you.  
04 07 54 54 CDR Give me a CDH time, and I'll start the event timer?  
04 07 54 55 LMP There it is, right there.  
04 07 54 58 CDR Okay.  
04 07 55 35 LMP Holy smoley, babe. I'll tell you.  
04 07 55 38 CDR How you doing?  
04 07 55 39 LMP I need a drink of water. Let's take a look at our systems real quick. Everything looks good here.  
04 07 55 49 CDR Ascent water is 90 percent; O<sub>2</sub> is 95 percent; same for ASCENT 2.  
04 07 56 08 LMP ... air in this water. Not as much, but there's air in it.  
04 07 56 14 CDR I see what may have happened. You know when you stand up like this and you look at a switch? You could nearly say that that's OFF. Son of a bitch!  
04 07 56 31 LMP That's a mistake anyone could have made, if we made it.  
04 07 56 33 CDR Yes.  
04 07 56 34 LMP I assume we did, and so what? So what? That's my feelings. So what? So, we made it. We recovered from it.  
04 07 56 38 CDR When it started to go, I - I - -  
04 07 56 40 LMP I was ready to burn in AGS and align our PGNS to our AGS and then do an alignment. That's what we had to do after insertion anyway.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 245  
Tape 10-03601

04 07 56 46 CDR Yes.

04 07 57 03 LMP Looking at that damn, dry, gray sand for so long, I don't know where the hell we are.

04 07 57 08 CDR I don't either. It's starting to look like home, nearly, isn't it? Not quite, but -

04 07 57 16 LMP You know, you'd call it more at home if it had more security, but son of a bitch, there ain't much security down there at all.

04 07 57 22 CDR Yes.

04 07 57 38 LMP I don't know how the hell guys have lived with this Velcro as long as they have, but it is the shittiest stuff, I tell you.

04 07 58 05 CDR That Z-axis track's taking more fuel.

04 07 58 12 LMP Five more marks and we'll get a - Take some inside while the sun's on us.

04 07 58 25 CDR Yes, that's a good point.

04 07 58 46 CDR You know what the setting is?

04 07 58 48 LMP Might could, I guess.

04 07 58 50 CDR Has it got it on there? On the side?

04 07 58 53 LMP ... guess.

04 07 58 54 CDR No, it's got - is that it on the table?

04 07 58 56 LMP Huh? It doesn't tell you in here.

04 07 58 58 CDR Okay. Go ahead.

04 07 59 10 LMP Do something.

04 07 59 11 CDR Smile, and say "hi." Look out at the window.

04 07 59 47 LMP Must be coming over the landing site again. Oh, hell. We're on the back side.

04 07 59 52 CDR Back side.

~~CONFIDENTIAL~~

Day 5 - Page 246  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 08 00 05 LMP There. Take some this way.
- 04 08 00 07 CDR Yes.
- 04 08 00 16 LMP Get it as far away over there as you can, and that'll do it. Hello there, from the men in the moon.
- 04 08 00 22 CDR (Laughter)
- 04 08 00 26 LMP You can't really bounce around when you're tied down like this.
- 04 08 00 29 CDR No.
- 04 08 00 30 CMP Man ...
- 04 08 00 32 LMP Well, why don't you - why don't you - I flashed up in here, why don't you try and flash back in there. The rest of it, take it outside. Okay?
- 04 08 00 43 CDR Okay.
- 04 08 00 46 LMP I'll just take the rest of it outside.
- 04 08 00 50 CDR I wish I could do this cheaper. John, you ought to hear these thrusters firing in here. It's really like a big garbage can getting banged around.
- 04 08 01 20 CDR We ought to record our fuel. We should have recorded that fuel and I didn't.
- 04 08 01 24 LMP I have been, Tom. I've been recording after every burn.
- 04 08 01 26 CDR After every burn. Good. Go ahead and do it.
- 04 08 01 34 CMP ... in plane.
- 04 08 01 39 CDR John, I'm tracking right on the bellyband, and my inertial needles are right zero, babe.
- 04 08 01 43 CMP Yes. Well, I'm not showing you right on zero, but it's nothing to worry ... 20 miles ... something.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 247  
Tape 10-03601

- 04 08 01 48 CDR Yes.
- 04 08 02 01 LMP John, remember how we said this morning - we all said how good it was to put these suits on for a change? Still feel that way?
- 04 08 02 11 CMP ...
- 04 08 02 13 LMP Still good to put these suits on for a change?
- 04 08 02 19 CMP I never said that.
- 04 08 02 21 CDR I guess I did. I felt like that for a few minutes. I must have lost my mind.
- 04 08 02 28 LMP Actually, it did feel good for a change.
- 04 08 02 44 LMP Helium is ... Well, that's right because we use more fuel on ascent. Boy, the APS sure didn't use much pressure out of there, did it?
- 04 08 02 50 CDR No.
- 04 08 02 51 LMP I recorded it when we started burning and -
- 04 08 03 31 LMP Tom, we need a backup mark at 36 minutes.
- 04 08 03 34 CDR Yes.
- 04 08 03 36 CMP You all do the - plane change at 104:15, right, Gene-o?
- 04 08 03 39 LMP Yes, 104:15, John.
- 04 08 03 44 LMP I hope there is none though. Boy that's a long time in -- Look at this.
- 04 08 04 27 LMP That recycle is taking forever!
- 04 08 04 31 CDR Yes.
- 04 08 04 42 CMP ...
- 04 08 04 45 CDR What, John?

~~CONFIDENTIAL~~

Day 5 - Page 248  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 08 04 49    CMP    Our REFSMMAT's slipped.
- 04 08 04 51    CDR    Yes.
- 04 08 04 55    LMP    John, this consistently is saying we're about 152 to 154 miles. It looks like TPI has gone 54 seconds away from us, made it a little bit longer.
- 04 08 05 09    CMP    Roger.
- 04 08 05 22    LMP    We got real good numbers, plus 0.30, 0, and plus 1.9 on our first cut.
- 04 08 05 30    CDR    That's nothing.
- 04 08 05 42    CDR    There's Jack's crater, again.
- 04 08 06 49    CMP    ... I'm showing a plus point - I'm showing minus 1.1 for the plane change. That looks good.
- 04 08 06 59    LMP    Wait a moment and I'll take a look at what ours says here in a minute.
- 04 08 08 24    LMP    We show minus 3.1, which is again the opposite direction. We will not do it, John.
- 04 08 08 34    CMP    Okay.
- 04 08 09 08    CDR    Okay. Minus 36 minutes. Okay. There's 126 - 7. Let's see how this compares to the nominal.
- 04 08 09 29    LMP    23 and 10.
- 04 08 09 57    LMP    Hey, John, if you can, when we get back, see if you can get a picture of the ascent stage only, will you?
- 04 08 10 02    CMP    Okay ...
- 04 08 10 06    LMP    Okay. Great.
- 04 08 10 12    CDR    Look at the boulders on that.
- 04 08 10 21    CMP    You guys said you weren't going to do that plane change?

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 249  
Tape 10-03601

- 04 08 10 24 LMP No. We are not going to do it. If you can, when we get back - Don't sweat it - but if you can, see if you can get some ascent-only pictures. Ascent-stage-only pictures.
- 04 08 10 42 CMP Yes, I will.
- 04 08 10 44 IMP Okay.
- 04 08 10 53 CMP ... I got you on the other frame, but I don't know if this dang camera was in the right focus for up there, or the right setting. But I was really hopping.
- 04 08 10 58 CDR We got it all taped up for you.
- 04 08 11 00 CMP Your Hasselblad ain't taped up.
- 04 08 11 09 LMP It should be f:8 at 250th, something like that.
- 04 08 11 12 CMP Yes. That's what I had it set on. I think I need ...
- 04 08 11 20 LMP I got to call for another VERB 93 here and initialize, even though we don't do the plane change. I'll do it about plane-change time.
- 04 08 11 29 CDR Look at our rendezvous radar.
- 04 08 11 51 LMP Want some water, babe?
- 04 08 11 52 CDR Yes. Do you want some grapejuice?
- 04 08 11 57 CDR Think I'll have some grapejuice. All we got to do is get back in dock and get that tunnel pressurized and we're home, Gene-o. ... hours to go.
- 04 08 12 17 LMP One more big burn after that. Boy, I'll tell you those burns sure settle that crap that's laying around here, don't they?
- 04 08 12 25 CDR Yes. Boy, that ascent burn was wild, and we're the first ones that's had an evaluation of it. See, 9 only burned it for a couple of seconds. But that thing was whoo, whoo.

~~CONFIDENTIAL~~

Day 5 - Page 250  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 08 12 33 LMP Is that right?
- 04 08 12 34 CDR Yes.
- 04 08 11 35 LMP Boy, it - it was rocking, I thought --
- 04 08 11 36 CDR Boy, it rocks.
- 04 08 12 41 LMP John, could you see our plume when we fired?
- 04 08 12 47 CMP Yes, I could on the descent burn.
- 04 08 14 42 CDR Look at that crater, Gene-o. See those black things where it slumps down? Right near the rim is black stuff and halfway down is black. See that?
- 04 08 14 51 LMP Yes.
- 04 08 14 52 CDR In that region down there?
- 04 08 14 53 LMP Boy, that is something.
- 04 08 15 06 LMP Hey, John, you ain't never seen so many MASTER ALARMS and warning lights as you've seen on this bird.
- 04 08 15 17 CMP Strange things, we got computers going on in here, too. You wouldn't believe some of them.
- 04 08 15 27 CDR On that phasing burn, we had the master caution on three times with the DESCENT QUANTITY going low twice and the GIMBAL light's coming on. Also our fuel pressure showed zero. Other than that, it was a pretty nominal burn, John.
- 04 08 15 52 CDR You can see how these craters are formed? How the sides slump in and leave these tailings in the back?
- 04 08 15 57 LMP Yes, yes, I sure can.
- 04 08 16 03 LMP There's that one that Jack May wanted.
- 04 08 16 15 CMP When is the ground supposed to pick us up?

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 251  
Tape 10-03601

04 08 16 18 CDR Pick us up at 24 and 25.  
04 08 16 21 CMP Roger, after CDH.  
04 08 16 22 CDR Yes.  
04 08 16 23 CMP No, ...  
04 08 16 25 CDR Yes.  
04 08 16 39 LMP There's an update after the - after the - initialize the W-matrix.  
04 08 16 48 CDR What was it?  
04 08 17 17 LMP Okay. Now it's taking one. The first mark after you initialize the W-matrix - -  
04 08 17 20 CDR Is that the ...?  
04 08 17 21 LMP - - is ... Look at that.  
04 08 17 23 CDR Zero.  
04 08 17 37 LMP Look at that - on AGS MIN DEADBAND. Look at how close the AGS thinks that is to it. Look at it.  
04 08 17 56 CDR (Laughter) Want to do this in PGNS, or we do it in AGS ATTITUDE HOLD? Let's do it in AGS ATTITUDE HOLD and see what we get.  
04 08 18 04 LMP Yes, let's do it. Let's try it. We owe it to the vehicle to -  
04 08 18 42 LMP Either these oxygen gages don't work, or we just ain't using any.  
04 08 18 46 CDR Our cabin pressure is holding real good. Real tight.  
04 08 18 52 LMP It's warm in here, but not exceptionally hot.  
04 08 18 55 CDR Yes.  
04 08 18 56 LMP Turn that cabin fan on; see how much noise it makes.

~~CONFIDENTIAL~~

Day 5 - Page 252  
Tape 10-03601

~~CONFIDENTIAL~~

04 08 19 26 LMP We'll make one more recycle after five marks and then let it go to 12 minutes. Oh, Tom, 23 minutes, I need a backup.

04 08 19 33 CDR Okay.

04 08 20 34 LMP AGS is right on. Look, 105.5 miles and 129 feet per second. That's not bad. 23 minutes, T.P.

04 08 20 47 CDR Okay. Mark it. R-DOT is 126.

04 08 20 57 LMP 126. Is that all?

04 08 21 01 CDR Yes. About what it's supposed to be. Yes. That's within a foot per second of the nominal.

04 08 21 35 CDR I still don't hear José out there. Were they there when they burned CSI? The ground wasn't in contact, were they?

04 08 22 08 LMP I'm sorry, Tom, I - I didn't hear you.

04 08 22 10 CDR We were out of contact with the ground when we burned CSI, weren't we?

04 08 22 15 LMP Yes. We need another backup mark at 10 minutes.

04 08 22 23 CDR Yes.

04 08 22 26 CMP You guys got 21 minutes and counting on that?

04 08 22 27 LMP Yes. Yes.

04 08 22 28 CDR Yes. About 21:20.

04 08 22 31 CDR MARK.

04 08 22 33 CMP Okay.

04 08 22 36 CDR How's the burn over there doing on RCS fuel, John?

04 08 22 38 CMP Well, it was doing okay, until the last 100 miles or so. I had to put it in tight deadband, because when you started talking about things like plane changes, I want to be able to go back and look at the ball.

04 08 22 51 CDR Yes.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

Day 5 - Page 253  
Tape 10-03601

- 04 08 22 52 CMP I think we're in ..., right now.
- 04 08 22 54 CDR Yes. Here comes the earth! Beautiful. I'll get it. It really comes up.
- 04 08 23 05 CMP Roger. Burn was nominal. Your burn was 45.3 and you burned ... was 46.9 ...
- 04 08 23 22 LMP Isn't that phenomenal?
- 04 08 23 34 CMP Boy, this tracking of the LM against the background of the lunar surface down there is really fantastic.
- 04 08 23 46 CC We copy, Charlie Brown.
- 04 08 23 49 CDR Houston, this is Snoopy. How do you read?
- 04 08 23 50 LMP Let me get them on high gain, babe.
- 04 08 23 56 CC Hey, Snoop. We're reading you 4 by. Over.
- 04 08 24 00 CDR Roger. We had a nominal burn. Everything went good, and we had a beautiful earthrise as you came up from behind the horizon.
- 04 08 24 10 LMP Golly.
- 04 08 24 12 CC Roger. Need your NOUN 8 - Snoop, Houston. Need your NOUN 81 numbers and your residuals. Over.
- 04 08 24 20 CDR Roger. Stand by.
- 04 08 24 26 LMP Okay. For CSI, the NOUN 81 numbers were 45.3, 0 and 0. Residuals were 0, minus 0.4, and 0.
- 04 08 24 41 CC Roger, Snoop. We copy. 45.3, 0, 0. Residuals: 0, minus 0.4, 0. Thank you much.
- 04 08 24 50 LMP Now we're going to try and get you high gain. Let me copy that down first.
- 04 08 25 14 LMP Wonder if I can call NOUN 75 up?
- 04 08 25 16 CC Charlie Brown, did Snoop do a plane change? Over.

~~CONFIDENTIAL~~

Day 5 - Page 254  
Tape 10-03601

~~CONFIDENTIAL~~

- 04 08 25 18 CMP Snoopy did not do a plane change. He had trouble after that align, which was 6.4, so he decided not to do it then, and at the plane-change time, which was 104:15, I had minus 1.1 and he had plus - had one in the opposite direction. So we decided not to do it there.
- 04 08 25 54 CC Roger. We copy.
- 04 08 25 59 CDR What was that?
- 04 08 26 32 LMP Hello, Houston. This is Snoopy on high gain. How do you read?
- 04 08 26 37 CC Roger. We got you on high gain, Snoop.
- 04 08 26 42 LMP Okay. This - this high-gain stuff is a piece of cake. I don't know what you all were so worried about.
- 04 08 26 51 CDR (Laughter) ...
- 04 08 26 52 CC Wish we could say the same about the OMNI's.
- 04 08 26 53 CDR (Laughter)
- 04 08 26 55 LMP All I did was look at you coming over the horizon and I pointed the high gain up - down my Z-axis liked I hoped I could, and bam! There you were, and she locked on.
- 04 08 27 08 CC Roger. We got you, and we see you counting down. We see you 16:45.
- 04 08 27 13 LMP Okay. It seems like every time we initialize or call a P20 for the first time, the first mark we have to reject because it's got horrendous five-digit numbers in it.
- 04 08 27 29 CC Roger. We copy.
- 04 08 27 43 LMP Charlie Brown, this is Snoopy.
- 04 08 27 45 CMP Go ahead. Over.
- 04 08 27 47 LMP Okay. It looks like TPI - My last recycle, TPI has moved away from us 2 minutes and 20 seconds. I'm going to try calculating our

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~~CONFIDENTIAL~~

Day 5 - Page 255  
Tape 10-03601

our plane change here and compare it with yours,  
but it looks like we're in good shape. I've got  
a DELTA-H of 14.9.

04 08 28 04      CMP      Roger.

04 08 28 10      CC      Roger, Snoop. We copy. Houston.

04 08 28 34      CMP      Okay. I got you at 96.25 miles now. That sound  
about right?

04 08 28 40      CDR      Roger, Charlie Brown, Snoop. We're locked on  
with you all the way. Right together.

04 08 28 107      CDR      I show you're flying right straight down the

Day 5 - Page 256  
Tape 10-03601

~~CONFIDENTIAL~~

04 08 30 59 LMP That's it Charlie Brown. Isn't that magnificent, Tom? Would you believe it? North pole is on the righthand side.

04 08 31 12 CDR Right.

04 08 31 53 LMP Better get the 13th Mark.

04 08 31 57 CDR We got beaucoup.

04 08 32 01 CMP Okay. I'm showing minus 4.2.

04 08 32 08 LMP John, you don't want to burn it, do you?

04 08 32 10 CDR No.

04 08 32 11 LMP Let -

04 08 32 12 CMP I don't believe it.

04 08 32 13 CDR No. I don't either, John, we're going to just ignore it here.

04 08 32 17 CMP You can ... quite easily.

04 08 32 20 CDR Yes.

04 08 32 22 LMP Let's not burn it. Ours was in the opposite direction, even with the sign changed, but let's not burn it - You're right down the bellyband, babe.

04 08 32 35 LMP 13th mark will get it.

04 08 32 39 CDR We'll see.

04 08 32 42 LMP 10 minutes, Tom, I need a mark.

04 08 33 47 LMP Isn't that just fantastic, Tom?

04 08 33 48 CDR Stand by.

04 08 33 50 CDR MARK.

04 08 33 51 LMP Okay.

04 08 33 52 CDR 124 feet per second.

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04 08 33 53 LMP 124. What about - That's all I need.

04 08 33 57 CDR Yes, the ... is ...

04 08 33 59 LMP That's all I need. 0.1 and 137.9. 0.1 -

04 08 34 31 CDR You want me to PROCEED? Get it?

04 08 34 36 LMP Okay. I got plus 1.2 DELTA-V<sub>Z</sub>, and X is plus 0.2.

04 08 34 40 CDR You want me to PROCEED?

04 08 34 44 LMP Okay - okay, that's good - that's good. Yes.

04 08 34 48 CMP Okay, minus ... 81 is minus 0.5, 0, and minus 2.9 for P33.

04 08 35 01 LMP Okay, John, that's good. We'll burn ours. Ours is plus 0.1, 0, and plus 3.0.

04 08 35 11 CC ...

04 08 35 13 LMP Charlie Brown, did you read me? Houston may have cut you out - it's plus 0.1, 0, and plus 3.0.

04 08 35 28 CMP Roger.

04 08 35 29 LMP That's plus 0.1, 0, and plus 3.0.

04 08 35 33 CMP Roger ...

04 08 35 34 LMP Okay, and the backups gave me plus 0.2 and plus 1.2, so we're in good shape.

04 08 35 39 CMP Yes.

04 08 35 41 CDR Okay, we'll make this AGS, ATTITUDE HOLD, and let's make sure we get the right one.

04 08 35 43 LMP Okay. We're all set?

04 08 35 47 CDR We're set.

04 08 35 48 LMP Okay.

04 08 35 49 CDR Call POO.

~~CONFIDENTIAL~~

Day 5 - Page 258  
Tape 10-03601

~~CONFIDENTIAL~~

04 08 35 50 LMP Let's get this thing updated? VERB 47.  
04 08 35 57 CDR Ready? Ready?  
04 08 35 58 LMP Yes.  
04 08 36 40 CDR PROCEED.  
04 08 36 41 CDR We're coming over the old craters.  
04 08 36 42 LMP Okay, babe, call up 41 and get me an 06 86.  
04 08 36 56 CDR Plus 0.1, zip, plus 3.0.  
04 08 37 33 CMP That's the nicest CDH - that's the nicest CDH burn we ever got.  
04 08 37 36 CDR That's right, John. Looks like our CSI solution - the total targeting was just fantastic.  
04 08 37 56 CDR Oh, I wish I had a -  
04 08 37 58 LMP Hasselblad, huh?  
04 08 37 59 CDR Yes. Look at this double digged out crater. Look at the rays that go out from that thing, see. These go out --  
04 08 38 05 LMP ... we'll get them.  
04 08 38 07 CDR Look at them. Boo. See out there.  
04 08 38 08 LMP Yes, yes, you can see across both of them --  
04 08 38 09 CDR -- ... hit.  
04 08 38 12 LMP -- see across both of them.  
04 08 38 13 CDR Okay. Let's make sure we get the right AGS stuff this time. Go to ENTER, to ... --  
04 08 38 21 CMP Going to do it on that AGS, right?  
04 08 38 23 CDR Yes. We'll give the old AGS a try again. (Laughter) We'll make sure we're at ATTITUDE HOLD. We knew what was wrong before.  
04 08 38 31 CDR Okay. What's the procedure now?

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Day 5 - Page 259  
Tape 10-03601

04 08 38 33 CMP The procedure is, babe, just go to AGS, ATTITUDE HOLD for the burn.

04 08 38 39 CDR Yes.

04 08 38 40 LMP AGS MODE CONTROL, ATTITUDE HOLD; GUIDANCE CONTROL, AGS; and that's it.

04 08 38 46 CDR What about DEADBAND?

04 08 38 48 LMP DEADBAND, MIN - DEADBAND, MIN; AGS, MODE CONTROL, ATTITUDE HOLD and GUIDANCE CONTROL, AGS.

04 08 39 06 CMP I'm not sure they weren't taking a wild guess at them answers anyway. I'm not sure - they could have been wrong.

04 08 39 26 CC Hello, Charlie Brown. Houston. Over.

04 08 39 29 CMP Go ahead. Go ahead, Houston.

04 08 39 39 LMP Houston, go ahead. Charlie Brown's reading you.

04 08 39 45 CC Roger, Snoop. I'm not reading him at all. Notice - we noticed he bypassed his roll maneuver at about 104:33. We recommend he manually roll 180 before he does his P20 AUTO maneuver. Over, out to the burn.

04 08 40 00 CMP Roger.

04 08 40 01 LMP He got that.

04 08 40 05 CC Okay, we barely heard him. Thank you.

04 08 40 08 LMP John, we're at 03:43, 03:42, counting down to the burn.

04 08 40 22 LMP You want to make sure you key those in - You put them in PULSE and then key them and then go to -

04 08 40 30 CDR We don't have Z-axis track anymore, do we?

04 08 40 32 LMP Sure we do. Here.

04 08 40 36 CDR Yes. Okay.

04 08 40 38 LMP Sure you do.

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Day 5 - Page 260  
Tape 10-03601

~~CONFIDENTIAL~~

04 08 40 42 CDR How come we're pitching up like that.  
04 08 40 48 LMP Oh, I'm sorry, you do not have Z-axis track.  
04 08 40 53 CDR You better believe it, babe.  
04 08 40 56 LMP Wait a minute. In - We went through and we killed 20, but we didn't kill POO; but we got radar discrete but no Z-axis track.  
04 08 41 09 CDR Listen, these error needles aren't aligned, either.  
04 08 41 18 LMP Yes, sure, we got the radar discrete but no Z-axis track at this point.  
04 08 41 20 CDR That's right.  
04 08 41 39 LMP This means you want to thrust down, babe, with the hand controller.  
04 08 41 41 CDR Yes, TTCA is --  
04 08 41 43 LMP Down and aft. Down --  
04 08 41 46 CDR Aft and left.  
04 08 41 50 LMP Down and aft, but that's down, that's the main thing. That's 2 minutes, John.  
04 08 42 01 CMP Roger.  
04 08 42 14 CMP What's your first hack at TPI?  
04 08 42 28 LMP John, our hack at TPI that we put in back there at --  
04 08 42 32 CDR Oh, what - José, are you - are you maneuvering, now?  
04 08 42 36 CMP Yes.  
04 08 42 38 CDR Okay. We just lost lock.  
04 08 42 39 LMP Okay, you ought to go to -  
04 08 42 41 CDR SLEW.

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Day 5 - Page 261  
Tape 10-03601

04 08 42 42 LMP It's going to be about 2 minutes later than what we had, John. And that first hack at TPI that they updated us on was - 105:21:01.00.  
04 08 42 57 CMP Roger.  
04 08 42 58 CDR Okay ...  
04 08 42 59 LMP That's what we'll go with. It looks like it may slip about 2 minutes.  
04 08 43 02 CDR Let's go to AGS, ATTITUDE HOLD. Alright?  
04 08 43 04 LMP Okay. You got your - your attitudes set? Okay. Get ready. You ready?  
04 08 43 10 CDR Stand by. Go back - go back to PGNS. Go.  
04 08 43 14 LMP Beautiful.  
04 08 43 16 CDR Okay. DSKY blanks --  
04 08 43 21 LMP DSKY blank - blanks, John. We're within 35 seconds.  
04 08 43 27 CMP Roger.  
04 08 43 36 LMP Down 3 and aft.  
04 08 43 37 CDR Yes.  
04 08 43 43 LMP 10 seconds. We're in AGS, MIN DEADBAND, ATTITUDE HOLD - 4, 3, 2, 1 -  
04 08 43 53 LMP BURNING. Skoshi more. That ought to get it. Watch it slip - flip.  
04 08 44 09 CDR Okay, 0, -  
04 08 44 11 LMP 0.10 and minus 1.  
04 08 44 16 CDR The burn was good.  
04 08 44 18 CMP Excellent.  
04 08 44 23 CC Roger, Snoop, we copy.  
04 08 44 24 CDR Did you copy the residuals?

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Day 5 - Page 262  
Tape 10-03601

~~CONFIDENTIAL~~

04 08 44 28 CC Tom, I think we got it all. Over.

04 08 44 35 CDR Okay. Go back up, John, and we'll be all set  
to track.

04 08 44 40 CMP Roger.

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