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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Classification changed to U
By authority of JSC Classification (Security) Office
Date 2-5-73 - 2/9/78 - Sally Hester

APOLLO 12 LUNAR MODULE (LM) ONBOARD VOICE TRANSCRIPTION

(U)

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

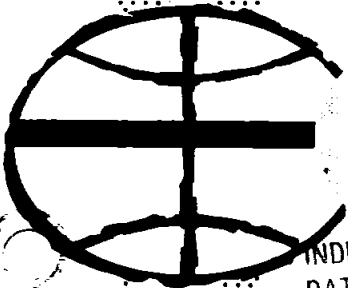
DECEMBER 1969

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SECURITY CLASSIFICATION

The material contained herein has been transcribed into a working paper in order to facilitate review by interested MSC elements. This document, or portions thereof, may be declassified subject to the following guidelines:

Portions of this document will be classified CONFIDENTIAL, Group 4, to the extent that they:

- (1) define quantitative performance characteristics of the Apollo Spacecraft, (2) detail critical performance characteristics of Apollo crew systems and equipment, (3) provide technical details of significant launch vehicle malfunctions in actual flight or reveal actual launch trajectory data, (4) reveal medical data on flight crew members which can be considered privileged data, or (5) reveal other data which can be individually determined to require classification under the authority of the Apollo Program Security Classification Guide, SCG-11, Rev. 1, 1/1/66.

INTRODUCTION

This document is the transcript of the Apollo 12 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.

In the text, a series of three dots (...) designates those portions of the communications that 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. A series of three asterisks (***) indicates voice clipping caused by use of the VOX mode.

The Apollo 12 lunar-landing mission was flown November 14 to 24, 1969. The command and service module (CSM) was designated Yankee Clipper and the lunar module was called Intrepid.

Speakers in the transcript are identified as follows:

CDR	Commander	Charles Conrad, Jr.
CMP	Command module pilot	Richard F. Gordon, Jr.
LMP	Lunar module pilot	Alan L. Bean
SC	Unidentifiable crewmember	
MS	Multiple speakers	
CC	Capsule communicator (CAP COMM)	

The transcript is divided into three columns — time, speaker, and text. The time column consists of four two-digit pairs for days, hours, minutes, and seconds (e.g., 04 22 34 14). The speaker column indicates the source of a transmission; the text column contains the verbatim transcript of the communications.

DAY 5

04 11 52 07 CMP Okay. Our RECORDER's ON. You should be on ICS/
PUSH-TO-TALK, which you are.

04 11 52 15 CDR Okay, Dick, I'm with you. And I'm going to P47
at 1 minute and 30 seconds.

04 11 52 27 CMP Okay.

04 11 52 30 CMP MARK.

04 11 52 31 CMP There you go, 1:30.

04 11 52 33 CDR Okay. And now, I'm going to dial up a VERB 77 and
stand by on the ENTER as you release me.

04 11 52 39 CDR Say, Al, RECORDER, ON?

04 11 52 41 LMP It's ON.

04 11 52 54 LMP Looking good. Looking good, Pete.

04 11 52 58 CMP One minute.

04 11 53 03 CDR Okay, Dick.

04 11 53 13 CMP Footpads look kind of good. It's nice to see you
with your landing gear down for a change.

04 11 53 22 CDR Roger.

04 11 53 28 LMP Okay. This will jump up to one so you won't have
to take it out, Pete.

04 11 53 41 CDR Huh?

04 11 53 43 LMP That'll jump to one in a minute.

04 11 53 44 CMP Five seconds.

04 11 53 45 LMP Okay. Five seconds.

04 11 53 47 CDR Five seconds?

04 11 53 49 CMP Make that 15.

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04 11 53 52 CDR That's better.

04 11 53 54 CMP Now, it's 5.

04 11 54 05 CMP Okay, here you go again.

04 11 54 08 CDR All right.

04 11 54 10 LMP Watch him; watch him.

04 11 54 16 CDR Back off, Dick.

04 11 54 22 LMP Don't let him bump into any of our equipment.

04 11 54 26 CDR There he goes.

04 11 54 28 CMP I just wanted to wait and let that damp, Pete.

04 11 54 32 CDR Okay. I - I got minus - -

04 11 54 37 LMP DEADBAND going MIN.

04 11 54 38 CDR Yes. I got minus 1 and nothing, so forget it.

04 11 54 45 LMP Okay. What, minus 1 and all zips. I'll write it down.

04 11 54 47 CDR Yes.

04 11 54 48 CC Intrepid, Houston. Looks good.

04 11 54 51 CMP How's the tube, Jerry?

04 11 54 56 CC Real good, Dick. Real good.

04 11 54 58 CMP Okay.

04 11 54 59 CDR Okay, Dick. Yawing left, 60.

04 11 55 04 CMP Hey, Pete, you're cutting in and out to me.

04 11 55 07 CDR Roger. Go off VOX.

04 11 55 21 LMP Null NOUN 83's, you did - Are you in POO? You're yawing left, 60.

04 11 55 26 CDR Yes.

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[REDACTED]

04 11 55 27 LMP Pitching up at 90. Going to set the DET time down to SEP, but - -

04 11 55 31 CMP Pete, give me a radio check.

04 11 55 33 CDR How do you read, Yankee Clipper? 1, 2, 3, 4, 5; 5, 4, 3, 2, 1. How's that?

04 11 55 44 CMP Pick up your yaw. How's that picture, Jerry?

04 11 55 52 CC Clipper, Houston. The picture's beautiful.

04 11 55 57 CDR 24.

04 11 55 59 CMP Quite a sight, isn't it?

04 11 56 03 CC It sure is, Dick. We're copying Pete's yaw maneuver now.

04 11 56 07 CMP ...

04 11 56 08 CDR 24 to 420.

04 11 56 09 CMP Just about got it completed.

04 11 56 13 CDR Okay, Dick, how do you read me?

04 11 56 15 CMP Loud and clear, now, Pete.

04 11 56 16 CDR Okay. Pitching up 90.

04 11 56 22 CC Clipper, Houston here. Your FM is breaking up on occasion.

04 11 56 25 CMP What - what's breaking up?

04 11 56 30 CC You're FM is breaking up. It's looking good now.

04 11 56 43 CDR What's next, Al, after I get done doing this?

04 11 56 45 LMP Okay. Pitch up 90 and you should read 180, 195, 0. I've got to reset the DET countdown to SEP. That's where it is.

04 11 56 54 CDR Okay.

04 11 56 55 LMP VHF antenna's going to go to forward in a minute.

[REDACTED]

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04 11 56 57 CC Intrepid, Houston. If you'll give us P00 and DATA, we'll start your uplink.

04 11 56 59 CDR Yes. You got it. How's the high gain? Still locked up okay?

04 11 57 04 LMP Looks good; looks good.

04 11 57 05 CC Roger.

04 11 57 07 CDR Where is he?

04 11 57 09 LMP I don't know where he is. He's flying on - on us.

04 11 57 15 CDR Okay.

04 11 57 25 LMP He should be at - Let's see - Let me get it again.

04 11 57 28 CDR You're going to get that Sun right in the window.

04 11 57 30 LMP 180, 195, 0. You're almost there. We give him F - We're going to give him forward VHF. We gave it to him now.

04 11 57 51 CDR Get his picture.

04 11 57 52 LMP Well, I can't. He's not in my window.

04 11 57 54 CDR The hell he isn't. Look up.

04 11 57 56 LMP Now, he is.

04 11 57 59 CDR Okay.

04 11 58 00 LMP Now, if you - You got to keep him really like that for this SEP maneuver. How far would you say he is out?

04 11 58 06 CDR I haven't any idea.

04 11 58 08 LMP I'd say 50 feet. I'm going to set it at infinity. Right in the Sun. I can't - It's going to be a sorry picture, but let's shoot it, anyway.

04 11 58 21 CDR Forget it. Look at his antenna wobbling around. Isn't that something? Hey, you look pretty nice over there, Yankee.

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04 11 58 32 CDR Hey, Dick, you read me?

04 11 58 35 LMP He's running his camera.

04 11 58 36 CDR I know. He's got it. It's keying his VOX.

04 11 58 40 CC Yankee Clipper, Houston. How do you read?

04 11 58 42 CMP Houston, Clipper. Loud and clear.

04 11 58 44 CDR Hey, Houston, tell him to turn off his VOX because he's cutting out his own VHF.

04 11 58 54 CMP Intrepid, Yankee Clipper. Say again.

04 11 58 57 CDR Okay. You were cutting out your own VHF, being on VOX. Your camera was keying it.

04 11 59 04 LMP Look at that antenna move.

04 11 59 06 CDR Yes.

04 11 59 07 LMP Well, with that, let me get going here.

04 11 59 09 CDR Do what?

04 11 59 10 CMP Okay. I'm off of VOX now, and you're cutting out on me now.

04 11 59 14 CDR Okay, how's that?

04 11 59 15 CMP Okay. That's better. Stay there.

04 11 59 19 LMP LANDING RADAR, closed. RATE/ERROR MONITOR, LANDING RADAR/COMPUTER.

04 11 59 30 CDR Okay, you got it on me. I'm not going to touch anything again.

04 11 59 34 LMP Okay. Yankee Clipper. I'll turn on my tracking lights for a minute. See if you see it.

04 11 59 44 CC Intrepid, Houston with a DOI PAD.

04 11 59 46 CMP I've got it, Al. I've got your light.

04 11 59 50 LMP Just a second, Houston.

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04 11 59 54 CC Okay. Standing by.

04 12 00 11 LMP Go, Houston.

04 12 00 18 CC Clipper, Houston. Try pitch, minus 78; yaw, plus 225 on your high gain.

04 12 00 27 CMP Yes. That's where it's been, Jerry.

04 12 00 31 CC Roger. You're breaking up pretty badly. Intrepid, Houston. P30 LM maneuver DOI PAD: NOUN 33, 109:23:39.41; NOUN 81, minus 0070.8; all zeros, plus 0015.1; NOUN 42, 0060.5, plus 0008.3, 0072.4; burn time, 0.29, 000, 297; AGS, minus 0070.9; plus all zips; plus 0014.4. The rest is NA. Over.

04 12 00 57 LMP Roger. Copied 109:23:39.41; minus 007.8; all zips, plus 0015.1; 0060.5, plus 0008.3, 0072.4; 0.29, 000, 297; minus 0070.9; plus all zips; plus 0014.4.

04 12 02 30 CDR Break, Houston - -

04 12 02 31 CC That's affirmative, Al. Break. The computer is yours.

04 12 02 34 LMP Okay. That's what I wanted to know. Thank you.

04 12 02 41 CDR Can't get any good pictures of you today, Dickie. The Sun's not in the right place.

04 12 02 48 CMP That's okay. We'll do it tomorrow.

04 12 02 53 CC Clipper, Houston.

04 12 02 55 CMP Go ahead, Houston.

04 12 02 59 CC Roger. Have you tried reacquisition on the high gain? And, if you have, why don't you try secondary transponder? Intrepid, Houston with a no-PDI plus 12 PAD.

04 12 03 17 CDR Break, break. Houston, this is Intrepid. If it would be any help to you, Yankee Clipper's S-band antenna is just wandering - it's just oscillating back and forth in two directions, like it can't hold lock.

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04 12 03 34 CC Roger, Pete. Thanks.

04 12 03 35 LMP It looks like it's in some sort of continual search mode.

04 12 03 41 LMP Ready to copy the no-PDI plus 12.

04 12 03 50 CC Roger, Al. NOUN 33, 110:32:04.70; NOUN 81, plus 0116.9, all zips, plus 0131.0; NOUN 42, 0147.6, plus 0013.3, 0175.6; burn time, 041, 000, 199; AGS, plus 0114.8, all zips, plus 0132.8; NOUN 11, 111, 17, all zips; NOUN 37, 112, 58, all zips. Over.

04 12 05 26 LMP Roger, Houston. Copy. 110:32:04.70; plus 0116.9, all zips, plus 0131.0; 0147.6, plus 0013.3, 0175.6; 041, 000, 199; plus 0114.8, all zips, plus 0132.8; 111, 17, all zips; 112, 58, all zips.

04 12 06 02 CC That's affirmative, Al. I've got your PDI PAD and your PDI is less than 10 and greater than 10.

04 12 06 13 LMP Let her go, then.

04 12 06 22 CC Roger, Al. PDI T_{ig} , 110:20:37.58; NOUN 61, 09.42, minus 0004.9; FDAI, 356, 110, 000; DEDA 231 is plus 56960; PDI less than 10; NOUN 37, 112:58 all zips; PDI greater than 10; NOUN 37, 114:57 all zips. Over.

04 12 07 33 LMP Roger. Copied 110:20:37.58; 09.42, minus 0004.9; 356, 110, 000; plus 56960; 112:58 all zips; 114:57 all zips.

04 12 07 56 CC That's affirmative, Al. I have T_2 for you now.

04 12 08 21 LMP Go.

04 12 08 25 CC Roger. T_2 abort: T_{ig} , 110:42:02.00; NOUN 37, 116:56 all zips; T_2 at PDI plus 21 minutes 25 seconds. Over.

04 12 08 56 LMP Roger. 110:42:02.00; 116:56 all zips; 21:25.

04 12 09 07 CC Roger. T_3 , if you're ready.

[REDACTED]

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04 12 09 13 LMP We are ready.

04 12 09 18 CC Roger. T₃: T_{ig}, 112:27:42.00; P22 acquisition at 112:25:00. Break. Yankee Clipper, you are coming on loud and clear on the TV now.

04 12 09 41 CMP Roger. I had to go to MANUAL on my high gain. It won't stay locked on.

04 12 09 47 CDR It's nice and steady over there, now, Dick. I guess something went wrong with the AUTO TRACK.

04 12 09 53 CMP Yes. It's - I'm in MANUAL that I'm staying in then, now.

04 12 09 55 CDR Yes. It's pretty solid. It just wobbles a little bit when you fire a thruster.

04 12 10 01 LMP Readback, Houston, is 112:27:42.00; 112:25:00.

04 12 10 11 CC That's affirmative, Al. Clipper, Houston. Did you try the secondary transponder before you went to MANUAL?

04 12 10 23 CMP That's affirmative.

04 12 10 29 CC Roger.

04 12 10 31 CDR It must be something in the AUTO lock mechanism.

04 12 10 32 CC Intrepid, Houston. I have your gyro torque angles.

04 12 10 38 CDR Gyro torque angles? You got a place to copy them?

04 12 10 42 LMP Just a second; just a second.

04 12 10 43 CDR Yes. Hold it just a minute; we'll be right with you.

04 12 10 49 CC Okay. Standing by.

04 12 11 03 LMP Let me have that, Pete.

04 12 11 09 CDR Do you have any fog on the outside of your - No, you don't.

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[REDACTED]

04 12 11 13 LMP When did - when did they ever give me any of those things?

04 12 11 16 CDR You know what they're for; they go right here. Right here. I'll copy them here and you copy them there. Tell them to go ahead.

04 12 11 26 LMP Go ahead, Houston. Ready to copy.

04 12 11 31 CC Roger. Your LM gyro torque angles: X, minus 0004.5; Y, minus 0003.5; Z is minus 0009.2. Over.

04 12 11 53 LMP Roger. Copied minus 0004.5, minus 0003.5, and minus 0009.2.

04 12 12 04 CC Affirmative. Break. Clipper, Houston with a map update, REV 14.

04 12 12 09 CDR That's a busy mother.

04 12 12 12 CMP Okay. Go, and I copied all the other.

04 12 12 17 CC Roger, Dick. LOS 108:56:58 - -

04 12 12 23 LMP My ears just cleared. Man, that hurt.

04 12 12 27 CC - - 109:21:38; 109:43:04. Over.

04 12 12 40 CMP Roger. 108:56:58; 109:21:38; 109:43:04.

04 12 12 46 CDR ... that camera over there.

04 12 12 48 CC Affirm.

04 12 12 50 LMP What, Pete?

04 12 12 51 CMP And I'm standing by for SEP.

04 12 12 55 LMP Did you set RD up, Pete?

04 12 12 57 CDR Yes, sir. You verified the tracking lights?

14 12 13 01 LMP Yes.

04 12 13 02 CDR I've gone to VERB 76. You got all this? We're standing by for CSM SEP, right?

04 12 13 07 LMP How long before it?

[REDACTED]

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04 12 13 09 CDR Eleven minutes.

04 12 13 10 LMP Eleven minutes. Okay. We got - we got a new tracking - -

04 12 13 14 CDR Huh?

04 12 13 15 LMP We got a new altitude for tracking. The trouble is tracking; they raised the altitude - I think that's in hundreds of feet. They raised it 24 feet. I think it's 20 - - 240.

04 12 13 42 CDR Yes, let me look.. Say, Houston, this SIM's running pretty smooth today.

04 12 13 46 LMP You'd never let me say that, babe. It looks like, because of your tracking, Dick, they raised the landing site altitude about 2400 feet.

04 12 14 05 CMP That's not to believe, Al. Looked like it was in a hole to me.

04 12 14 11 CDR And, Houston, I guess you saw the landing radar self-test. That came out 4.0.

04 12 14 21 CC Roger, Pete. We copied that.

04 12 14 23 LMP again.

04 12 14 26 CDR Right in the - -

04 12 14 29 CC Intrepid, Houston. We'd like to get your valve on transmitter power on that.

04 12 14 37 CDR Okay. Wait 1. They were both 3.6. Actually, isolated velocity XMITTER was 3.62, and the altitude XMITTER was 3.60.

04 12 14 58 CC Roger.

04 12 15 00 CDR I got to get that camera out here. Got to get the camera out. I've got it in my hot hand. Okay. What's the SEP time?

04 12 15 08 LMP SEP time is 108:24:22. Does that strike a memory blank anywhere?

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[REDACTED]

04 12 15 14 CDR No. Is that the time they actually passed?

04 12 15 16 LMP That's the one you - that's the number you gave me.

04 12 15 18 CDR Okay.

04 12 15 19 LMP Is that the one they passed?

04 12 15 22 CMP Houston, Yankee Clipper.

04 12 15 23 CDR Yes.

04 12 15 26 CC Go ahead, Clipper.

04 12 15 27 CMP I'll go back to PRIMARY TRANSPONDER, here, as soon as we separate. ... hasn't helped a bit. Looks like I lost the AUTO track feature in the high gain.

04 12 15 40 LMP That's going to be a pain.

04 12 15 44 CC Roger, Dick. We concur on that.

04 12 15 53 CDR All right, Dick. You're - we're still in secondary SERVO's there. You might go back to primary ones.

04 12 16 06 CC . All right, Conrad. You're stealing our ..., now.

04 12 16 10 CDR Okay. Just trying to help out. Kick that bag.

04 12 16 16 CMP If you'll recall, that's why we left it in the first place.

04 12 16 18 CC You keep your mike just ahead of me.

04 12 16 21 CMP If you both recall, that's why we left it in the first place.

04 12 16 24 CDR Yes. But it wasn't breaking lock then. You were - it's just getting intermittent signal strength.

04 12 16 30 CMP What's it getting now?

04 12 16 32 LMP That's right.

04 12 16 36 CDR Only reason I'm beating you, Jerry, is I'm 257 000-some-odd miles closer to him than you are (laughter).

[REDACTED]

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04 12 16 44 LMP A good answer. Now, look, try to keep him - You're going to track him anyway. Try to keep him in my window and I'll take some shots of him.

04 12 16 54 CDR Just tell me where you want to go.

04 12 16 55 LMP Okay, babe.

04 12 16 56 CDR Because I'm going to pitch to 247 as soon as he goes.

04 12 16 58 LMP Okay. Well, that's the same way. But I'm going to track him for 4 minutes, and it you'll just keep him over here and not let him get over in your window.

04 12 17 05 CDR Okay.

04 12 17 06 LMP Now, he's in a pretty good position.

04 12 17 14 CDR It's on. It's running. It's running.

04 12 17 17 LMP This isn't running.

04 12 17 18 CDR The green light's on.

04 12 17 19 LMP That doesn't mean it's running. It's a timer. It's timing this little package. It'll go out in a second. It times this little package to tell it what film it is and now - -

04 12 17 32 CDR Ho, ho, ho.

04 12 17 33 LMP - - each of them has it - that little microswitch; if I release it and do it again, it'll do the same thing.

04 12 17 38 CDR Oh.

04 12 17 39 LMP Now, I'll check it, though, because it might not work.

04 12 17 42 CDR Now, look, I'm going to yaw back to the left.

04 12 17 46 LMP Okay.

04 12 17 47 CDR Man, does that look hard and barren down there.

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04 12 17 50 LMP You're doing right, Pete. Man, it's going to be little.

04 12 17 54 CDR Yes.

04 12 17 55 LMP Far away from it.

04 12 17 56 CDR Yes.

04 12 18 02 LMP I'll tell you one thing, I've been - a bad habit I've gotten into, and I'm having to be careful here, is I'm always grabbing this hand controller to - to talk. And I - I don't grab it; I just go like this, and I - oh God, and then I have to use this.

04 12 18 20 CDR We got about 12 degrees to go.

04 12 18 33 LMP You can sure see those thrusters fire, can't you?

04 12 18 35 CDR Yes.

04 12 18 51 CC Intrepid, Houston.

04 12 18 52 CDR Go.

04 12 18 56 CC Roger, Pete. The way things are looking right now, you're going to be starting PDI about - about 5 miles north of track; and, during the descent, you are going to be steering south.

04 12 19 06 CDR Five miles north of track. Okay. As long as it knows it, it's okay with me (laughter). My ears cleared up. I don't know why. It pisses me off. Everything's as clear as a bell.

04 12 19 42 CC Clipper, Houston. Are you going to try those primary servo electronics?

04 12 19 49 CMP It's been tried. How's it looking?

04 12 19 56 CC Looking good and solid now.

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04 12 20 00 CDR That's right. The antenna's not moving around at all. It appears to be locked on tight.

04 12 20 11 CC Clipper, Houston. Are you in AUTO now?

04 12 20 17 CMP That's negative.

04 12 20 27 CDR Forget it, Dick, go back to MANUAL.

04 12 20 32 CC Roger. We copy you're AUTO, Dick. You're better off in MANUAL.

04 12 20 36 CDR You still in AUTO, Dick? It's just locked up solid, if it is.

04 12 20 39 CMP No, it's MANUAL.

04 12 20 40 CDR Oh, okay. Sorry.

04 12 20 46 CMP I can move around in here pretty good when I've got all this room.

04 12 20 55 LMP Hey, the next time you're going to pitch or do something, let me know and I want to watch the thruster.

04 12 21 00 CDR Okay.

04 12 21 02 LMP Tell me what you are going to do first, though.

04 12 21 05 CDR I'm going to start to pitch down after a while.

04 12 21 07 LMP Okay, when you do, I'll watch.

04 12 21 09 CDR Why don't I just do a whole bunch of them, as soon as he goes?

04 12 21 12 LMP How's he getting above us like that?

04 12 21 15 CDR I don't know. He's going to fire straight down.

04 12 21 18 LMP I know it. I'm going to have to wait and catch him when he is low.

04 12 21 20 CDR Yes.

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04 12 21 21 LMP Try to keep him - Do what you can. I know you've got lots to do.

04 12 21 31 CDR Let's look over these systems.

04 12 21 33 LMP Yes. It's looking good, Pete.

04 12 22 02 CDR Wonder what we're going to do without our high gain? We'll have to go on OMNI's most of the way.

04 12 22 07 LMP Yes. They can do it. No sweat.

04 12 22 21 CDR This is one of the better visuals I've seen, Dick.

04 12 22 26 CMP Yes. You're right. I've been taking stills, and I let it get out of view of TV. I got to get you back.

04 12 22 39 CDR I got you 1 minute and 40 seconds - -

04 12 22 42 CDR MARK.

04 12 22 43 CDR - - to SEP.

04 12 23 03 CC Clipper, Houston. You're GO for SEP.

04 12 23 05 CMP Roger.

04 12 23 12 CDR Do you get the idea this thing rocks every once in a while?

04 12 23 15 LMP I haven't noticed it, but I haven't - if I don't - -

04 12 23 17 CDR I know what it is. It's that antenna over there is driving me buggy, everytime that thing moves.

04 12 23 21 CC Intrepid, Houston. Give us a mark with 1 minute to go to SEP, would you?

04 12 23 25 CDR It's already 1 minute. I'll give you one at 45 seconds.

04 12 23 37 CDR MARK.

04 12 23 38 CDR Forty-five seconds.

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04 12 23 44 LMP Wonder why he wanted one. Suppose we got the wrong time?

04 12 23 49 CDR I don't know.

04 12 23 50 LMP That's the one you wrote down that he gave us, huh?

04 12 23 51 CDR Yes.

04 12 23 52 LMP Okay. That's got to be it.

04 12 23 54 CDR You concur with that, Yankee Clipper?

04 12 23 56 CMP I don't have average g yet, Pete.

04 12 23 59 CDR Okay. I - I may have copied the time down wrong or something.

04 12 24 03 CMP 108:24:42.

04 12 24 05 CDR Okay; 42. I got 22. I had the nominal time.

04 12 24 09 CMP Average g.

04 12 24 10 CDR Very good.

04 12 24 15 CMP I'll be watching you.

04 12 24 17 CDR Okay. We'll be looking for you, too. Okay. There he goes. He's burning.

04 12 24 34 LMP Funny, I didn't - Now, he's burning.

04 12 24 37 CDR Yes. There he goes; there he goes. Look at that.

04 12 24 42 CC Intrepid, Houston. You were off on that figure by 20 seconds. CSM was right.

04 12 24 47 CDR Yes. I had the wrong time. He's burning now, and he looks good out there.

04 12 24 57 CMP Burn's complete.

04 12 25 00 CDR By-by.

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04 12 25 01 CMP See you, troops.

04 12 25 13 LMP Let him get low, Pete. I can't take his picture. He's way too high.

04 12 25 17 CDR Okay. Why is he way too high? I can see him in my window fine.

04 12 25 23 LMP He's way up at the top. I just - It won't be - Let him get a little lower. Besides, it isn't much of a movie, anyhow.

04 12 25 34 CC Clipper, Houston. You can terminate average g, now.

04 12 25 38 CMP It's done. It's done.

04 12 25 39 LMP Okay. We got a good updata link?

04 12 25 43 CDR Okay, Houston, we're in updata link for you any time you want to send us his state vector.

04 12 25 49 LMP No. Forget it.

04 12 25 54 CC We'll be ready in about 3 minutes, Pete.

04 12 25 56 CDR Okay, in the meanwhile, I'm going to take the computer. Give me a holler when you are ready.

04 12 26 00 LMP Okay, now - I am going to start shooting him, now.

04 12 26 04 CDR Okay.

04 12 26 05 LMP This might not turn out because we're looking right at the Sun.

04 12 26 07 CDR Yes.

04 12 26 08 LMP Get up here. Maybe I can make it. That's a perfect place, Pete. Don't get it - don't let him get any higher in the window than that. Let him get lower in the window.

04 12 26 25 CDR I'm tracking him exactly. I don't want to waste gas.

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04 12 26 28 LMP So, okay. Okay. That's going to be a beautiful shot. Because he's coming down below us. Look at that.

04 12 26 45 CDR Boy, do you look neat down there against the Moon, Dick.

04 12 26 52 CMP Got your pictures?

04 12 26 54 CDR We're taking them. We're taking them.

04 12 27 05 LMP Okay. I need to set ORDEAL.

04 12 27 14 LMP God, that's going to be fantastic shot.

04 12 27 33 LMP Going to be a beautiful picture, Pete. God, it's going to be beautiful.

04 12 27 47 CDR Dick, you want to get your transponder on?

04 12 27 55 CMP Okay.

04 12 28 08 CC Clipper, Houston. Try OMNI Bravo.

04 12 29 14 LMP They want OMNI Bravo.

04 12 29 30 CMP Hello, Houston.

04 12 29 31 LMP Boy, Conrad, if that turns out, it's going to be so spectacular. Don't let me get behind a power curve here.

04 12 29 40 CDR Al, I think you've had enough.

04 12 29 43 CMP You still have the TV on the OMNI?

04 12 29 51 CC That's negative, Clipper.

04 12 28 52 CMP Okay. I'll secure it.

04 12 29 05 LMP Supposed to shoot 1 more minute.

04 12 29 07 CC Clipper, Houston. Would you check your DELTA-V_{CG} switch to CSM?

04 12 29 13 CMP CSM. Thank you.

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04 12 29 16 CDR We're going to go over our landing site here
someplace.

04 12 29 30 CMP Intrepid, Clipper going to DUPLEX B and RANGING.

04 12 29 33 CDR Okay. We're not ready for you yet, but you go
ahead there, and we'll come up - -

04 12 29 39 LMP Right now. We'll do it.

04 12 29 40 CDR Okay. We're coming up now.

04 12 29 41 CMP Okay.

04 12 29 52 LMP How do you hear us now, Dick? Should be on hot
mike.

04 12 29 55 CMP Okay. Loud and clear, but let me get - get locked
on. Don't talk to me for a minute.

04 12 30 02 LMP ...

04 12 30 12 CDR Bring up the cabin lights.

04 12 30 14 LMP Cabin lights coming up.

04 12 30 16 CDR Floods and all that good stuff.

04 12 30 19 LMP Okay. Let me get this camera and stow it away.

04 12 30 25 LMP Okay.

04 12 30 27 CDR We're in ATT HOLD; VERB 77. Are you ready with
that updata link, Houston?

04 12 30 35 CC That's affirmative, Pete. Go to POC and DATA.

04 12 30 38 CDR You've got it. POC and DATA.

04 12 30 42 CC Roger. Intrepid, Houston. We got another delay.
It'll be another minute before we can start it up.

04 12 30 56 CDR Okay. I'll just skip down here.

04 12 31 01 LMP Okay. Do you want me to mark - want me to cross
them off?

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04 12 31 07 CDR Huh?

04 12 31 09 LMP You want to check those off?

04 12 31 17 CDR Where's the radar antenna?

04 12 31 21 LMP Let me look.

04 12 31 22 CC Intrepid, Houston. It's on its way.

04 12 31 29 CDR Got to be in mode 2 or something. I got it. What was that?

04 12 31 41 CC Intrepid, Houston. You ready for your data?

04 12 31 44 CDR Yes. Go ahead.

04 12 31 47 CC Okay. It's on the way.

04 12 31 50 CDR Okay.

04 12 31 52 CMP I got you 0.2 of a mile.

04 12 32 19 CDR What the hell - oh. Pitch.

04 12 32 28 CMP Pete, I show you locked on with the radar.

04 12 32 31 LMP I'm going to flip the AGS to AUTO.

04 12 32 33 CDR Okay. I've got AUTO track.

04 12 32 54 CDR For some reason, we show a great deal out of plane.

04 12 33 25 CC Intrepid, Houston. The computer is yours. Break. Clipper, Houston. If you'll go POO and ACCEPT, we've got your uplink.

04 12 33 33 CMP Okay. It's all yours.

04 12 33 42 CC Roger, Clipper. It's on the way.

04 12 33 48 CDR Check your AGS needle.

04 12 33 50 LMP I did and they weren't even close.

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04 12 33 51 CDR Check them again. You haven't been updated, yet; that's why.

04 12 33 58 LMP That's right. You still haven't been updated.

04 12 34 07 CDR Okay. I hold you at 1.3 - No, excuse me, Dick. I'm looking at the wrong register; 0.22 at about 3 feet per second.

04 12 34 20 CMP I've got it. I've got you at 0.2526 on the VF - VHF.

04 12 34 30 CDR And the tapemeter looks good?

04 12 34 35 LMP I need an update.

04 12 34 36 CDR All right. I got - I got ahead, here.

04 12 34 39 LMP Okay.

04 12 34 40 CDR I had to. Now, let me just get through this right.

04 12 34 42 LMP Okay.

04 12 34 47 CDR I also show you going a good ways out of plane to me for some reason.

04 12 34 51 CMP I've got the same thing myself. I don't understand it. Coming - think I'm coming back a little, though.

04 12 35 04 CDR Okay. I've got him at 1500 feet. That's perfect. Now - -

04 12 35 07 LMP 23 - 23 minutes, 36 minutes, and 23.

04 12 35 21 CDR Everything agrees.

04 12 35 24 LMP At the - -

04 12 35 25 CDR Okay.

04 12 35 27 LMP 47. 47 would be 13, 13.

04 12 35 37 CDR Now, you can check your AGS needles in a minute.

04 12 35 38 LMP Okay.

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04 12 35 39 CDR Because I'll just point at him then.

04 12 35 41 LMP Okay. Just a second.

04 12 35 52 LMP 36; That'll mean that there's 24 minutes and another 23 would be 47 minutes, few minutes, 39.

04 12 36 18 LMP Let me know when you can give me a 47.

04 12 36 21 CDR All right. I can do it right now.

04 12 36 25 LMP Go ahead. Throw.

04 12 36 26 CDR Okay. Now, let me go ahead and track Dick.

04 12 36 42 LMP 36, 36, that would be - -

04 12 36 48 CDR That's it. Right there.

04 12 36 49 LMP 37, 3 - -

04 12 36 54 CDR Now, can you check your AGS needles real quick?

04 12 36 56 LMP I can if you can give me an update.

04 12 36 58 CDR It's coming across.

04 12 36 59 LMP Okay.

04 12 37 05 CDR We're ready to start this alignment right on time.

04 12 37 14 LMP I haven't gotten it yet. Oh, it's got that long computer time.

04 12 37 18 CDR Yes.

04 12 37 31 LMP Why don't we start getting the lights down in here?

04 12 37 33 CDR Well, the Sun's shining right in the window, right at the moment.

04 12 37 37 LMP Okay.

04 12 37 42 CDR There it is. You should have it.

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04 12 37 44 LMP I've got her.

04 12 37 45 CDR Okay. Now, check your AGS needles real quick. Because I'm pointing just about out - -

04 12 37 49 LMP Okay. There - here they come.

04 12 37 51 CDR Okay.

04 12 37 55 LMP They're that far off. Pretty far.

04 12 37 59 CDR Oh, that's pretty sorry.

04 12 38 00 LMP Yes. But we're in close and you know the AGS is not - -

04 12 38 02 CDR Okay.

04 12 38 03 LMP - - any good there.

04 12 38 04 CDR Okay. Go ahead. Now, bring up the lights. Wow!

04 12 38 08 CMP How about some exterior lights for me?

04 12 38 11 CDR Okay. Coming on.

04 12 38 12 LMP Are we supposed to?

04 12 38 15 CDR Give him the tracking light.

04 12 38 17 LMP Pete, are we supposed to?

04 12 38 19 CMP Do you have my lights?

04 12 38 20 CDR Sure do.

04 12 38 22 CMP Okay. Your tracking light's on.

04 12 38 25 CDR All right. Let me PRO out of there. Let's get the damn lights up where we can see.

04 12 38 29 LMP Yes.

04 12 38 30 CDR Now. We need a 400 plus 3.

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04 12 38 34 LMP All right. You get A.

04 12 38 36 CDR Give me a VERB 40 NOUN 20, please. Now, I want to - I got to look at this P30, and then we're done. I did this, this, this, this, this, this, this, this.

04 12 38 58 LMP How long we going to keep this VHF RANGING on?

04 12 39 01 CDR And that. All done. Okay. Can I look at P30?

04 12 39 10 LMP My AGS and PGNS don't really line up too good. They're off in roll.

04 12 39 19 CDR And let me have the DO - -

04 12 39 20 CC Clipper, Houston. Computer's yours.

04 12 39 22 CDR Let me have the DOI PAD.

04 12 39 27 LMP In a line, 2, 3 -

04 12 39 51 CDR Want to set this clock counting up to DOI?

04 12 39 54 LMP I think I did.

04 12 39 56 CDR Yes. You're right. Hope it is. I'll tell you what you never did. You never gave me a VERB 83. If you ever can do it, it should be nice.

04 12 40 06 LMP Do you want to reset that clock? Here's a VERB - -

04 12 40 09 CDR No.

04 12 40 10 LMP All right, VERB 83.

04 12 40 12 CDR ENTER, and that clock's not right.

04 12 40 33 CDR Come on. We got to get going. We're late.

04 12 40 36 LMP No, no, we're not. Here's 20 right here, and we're only 17 here.

04 12 40 42 CDR We're just right.

04 12 40 46 CDR Come on, 83, you - -

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[REDACTED]

04 12 40 47 LMP It takes a long time.

04 12 40 49 CDR I know it.

04 12 40 50 LMP It's right on.

04 12 40 52 CMP I've got you at 4.7 miles.

04 12 40 56 CDR Okay. I've secured mine, Dick.

04 12 40 58 CMP Okay.

04 12 41 01 CDR There it is. My VERB 83 shows you 4.7 at 3-1/2 feet a second.

04 12 41 09 CMP Okay.

04 12 41 11 LMP Boy, mine's different than yours.

04 12 41 16 CDR Well, we better update it again.

04 12 41 18 LMP That's what I think.

04 12 41 20 CDR Are you in - -

04 12 41 30 CDR Let's do it again.

04 12 41 32 LMP Go.

04 12 41 33 CDR Now, wait a minute. I want to get this clock running right here. This is not right.

04 12 41 37 LMP Okay.

04 12 41 41 CDR It's off by 1 second.

04 12 41 54 CDR If I just hold it for 1 second, it ought to be right, huh?

04 12 41 57 LMP Yes.

04 12 41 59 CDR Stop, start. All right.

04 12 42 09 LMP It's okay.

04 12 42 10 CDR All right. PRO? No, wait a minute; I've got to go to P40. Let me get it done.

[REDACTED]

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04 12 42 15 LMP Okay.

04 12 42 16 CDR Okay. Hou - Houston, I'm going to P40 for you to look at it.

04 12 42 23 CC Roger, Pete. Stand by.

04 12 42 27 CDR Holy Christ, are those the right angles?

04 12 42 33 CC Intrepid, Houston. We're copying your P40.

04 12 42 40 CDR Okay. Can I go? Oh, add 180, that's right. Okay?

04 12 42 48 CC Roger. Go.

04 12 42 49 CDR Add 180, ... to this.

04 12 42 53 LMP Well, that thing's, that - -

04 12 42 55 CDR That's roll.

04 12 42 56 LMP Okay.

04 12 42 57 CDR So add 180 to - -

04 12 42 58 LMP Okay.

04 12 42 59 CDR That. Okay. All right, now. VERB 47.

04 12 43 04 LMP Okay.

04 12 43 05 CDR God, this takes long. Hey, I'm going to yaw as soon as I get done doing that. Dick, I'm going to start my yaw maneuver in a minute and go ahead.

04 12 43 16 CMP Okay.

04 12 43 20 CDR Yaw right to 98.

04 12 43 38 CDR How's the high gain going to do? Stay locked on, I guess?

04 12 43 42 LMP Let me check it. Hey, your book's floating up.

04 12 43 45 CDR Okay. Come back, book.

04 12 44 00 LMP Supposed to. Seems to be.

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04 12 44 12 CDR God damn, we ought to have this alignment done.

04 12 44 17 LMP Heck, Pete, we're not even supposed to be there, yet.

04 12 44 20 CDR I know. I just want to stay ahead.

04 12 44 21 LMP Shit, you make me think we're behind all the time.

04 12 44 24 CDR Got to hustle, boy.

04 12 44 25 LMP Shucks, we've just got to do this.

04 12 44 28 CDR Okay. You've got your update in.

04 12 44 30 LMP Okay.

04 12 44 32 CDR Let's don't bother checking it.

04 12 44 36 LMP Let me ask Houston about the AGS and PGNS; see how they think. Houston, Intrepid, how do you think the AGS and PGNS compare? Let them figure that one out.

04 12 44 50 CC Stand by 1 second.

04 12 45 02 CDR Flood - -

04 12 45 03 LMP VHF ANTENNA to AFT. You're going to have to pull that floodbreaker.

04 12 45 07 CDR That's what I'm going to do, right now.

04 12 45 09 LMP Okay.

04 12 45 11 CDR VHF ANTENNA is AFT.

04 12 45 13 LMP Okay.

04 12 45 14 CDR Just a minute now. You usually use your flashlight, remember?

04 12 45 18 LMP Yes. All right. Now.

04 12 45 24 CC Intrepid, Houston. Your PGNS and AGS look real good.

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04 12 45 26 LMP Okay. Thank you.

04 12 45 27 CDR Let's forget checking any of the rest of that stuff, then.

04 12 45 29 LMP Okay.

04 12 45 31 CDR Now, let me get my side panels off.

04 12 45 33 LMP Okay.

04 12 45 34 CDR I'm going to turn down the integral - turn down the DSKY a little bit.

04 12 45 38 LMP Okay.

04 12 45 39 CDR Bring on the flashlight. Okay, going to VERB 37, ENTER, 52, ENTER. That's - We want an option 3, VERB.

04 12 45 56 LMP Yes, that's right. Option 3.

04 12 45 57 CDR VERB 22, ENTER, 3, ENTER, PRO. Now, I want to ENTER and pick the first star. Right?

04 12 46 10 LMP That's right. Go ahead.

04 12 46 12 CDR VERB 21, ENTER, B 10, 2, - -

04 12 46 13 LMP 213.

04 12 46 16 CDR 213, ENTER. Now. It's going to be an AUTO maneuver.

04 12 46 21 LMP Yes.

04 12 46 23 CDR And I want a VERB 76, ENTER, and I want a PRO. There's a set of gimbal angles.

04 12 46 33 LMP Holy shit.

04 12 46 36 CDR That's all right. Here we go. Hang on, you're going for a ride.

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04 12 46 39 LMP Okay.

04 12 46 42 CDR Now, we may lose the antenna, right?

04 12 46 44 LMP Hell, I don't know. We're not supposed to.

04 12 46 47 CDR Okay. It's right on in yaw.

04 12 46 53 LMP Let me know when we're near there.

04 12 46 56 CDR We've got a long way to go.

04 12 46 57 LMP Man, this is a fast maneuver rate. What you got in this thing.

04 12 46 59 CDR Two degrees a second (laughter).

04 12 47 00 LMP You're kidding.

04 12 47 01 CDR No, I'm not kidding (laughter).

04 12 47 02 LMP That's not 2 degrees a second.

04 12 47 03 CDR Look at the ball.

04 12 47 05 LMP I'm looking.

04 12 47 06 CDR Well, look at your rate needles. Man, there go the stars. Antenna looks good.

04 12 47 17 LMP Okay. We there?

04 12 47 22 CDR No.

04 12 47 25 LMP I hope the Moon isn't in the way.

04 12 47 30 CDR Well, let me get that heater off again. The Moon's not in the way. There's nothing but stars out there, buddy.

04 12 47 36 LMP You are there. And the antenna's okay.

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04 12 47 39 CDR Okay. All right. Now, there's an ENTER; there's a PRO; there's a flashing 54. And I'm ready to mark for you.

04 12 47 52 LMP Turn down these lights a little. There's Capella, bigger than life.

04 12 48 01 CDR Okay. Tell me which way.

04 12 48 03 LMP Okay. As slow as you can, pitch up and go left. Up, left.

04 12 48 08 CDR Am I - am I in 54 now?

04 12 48 10 LMP Yes, sir. That's a good Y-mark.

04 12 48 14 CDR Okay. Flashing 52.

04 12 48 17 LMP You can hit it one blip right.

04 12 48 28 CMP Houston, Yankee Clipper.

04 12 48 32 CC Clipper, Houston. Go.

04 12 48 34 CMP Are you copying my gyro torquing angles?

04 12 48 40 LMP Flashing 52; it's almost there, Pete.

04 12 48 45 CDR One blip off; it just isn't going to make it.

04 12 48 51 CC Clipper, Houston. We've got you now.

04 12 48 52 IMF Good mark.

04 12 48 53 CDR Okay.

04 12 48 54 LMP Down and right.

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04 12 48 56 CDR Am I in 54?

04 12 48 57 LMP Flashing 54. One more down. Okay, I think the roll is giving you a problem. How is your roll?

04 12 49 07 CDR It's steady.

04 12 49 10 LMP More to right. Give me a couple right.

04 12 49 12 CDR There you go. One down. Okay. We're get - that's good. Just hold what you've got.

04 12 49 21 LMP I am. Beautiful mark.

04 12 49 25 CDR 53.

04 12 49 26 LMP Okay.

04 12 49 27 CDR Okay. Which way?

04 12 49 28 LMP Up and left. Hold it. Flashing 54, 53. You're going to get it in a second.

04 12 49 42 CDR Okay. No sweat.

04 12 49 47 LMP Beautiful.

04 12 49 48 CDR Beautiful mark, there, I tell you. PRO.

04 12 49 51 LMP Okay. 202. What do we want?

04 12 49 54 CDR VERB 21, ENTER. We want a 12 - oops. CLEAR. 212, ENTER; a PRO. And are you ready for an AUTO maneuver?

04 12 50 12 LMP Which star are we going to?

04 12 50 13 CDR 12. Rigel.

04 12 50 14 LMP Rigel. Okay.

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04 12 50 15 CDR Now, watch the gimbal angles. Here we go. I'll watch the antenna.

04 12 50 21 CDR That was good marks there. This better come out good, or somebody is going to be mad.

04 12 50 30 LMP What about that patch? Where - oh, there it is.

04 12 50 36 CDR Hang on. We're going way out of plane.

04 12 50 38 LMP That's right. That's where we're supposed to go.

04 12 50 40 CDR Okay. Antenna looks good to me. Okay. You're locked in. Flashing 5018. Look through the window first before I do anything.

04 12 50 56 LMP I'll be right there, buddy.

04 12 50 59 CDR She is there. Give me a 54 and -

04 12 51 01 LMP All right. Now, wait a minute.

04 12 51 03 CDR ENTER, PRO; you're flashing 54. Tell me where to go.

04 12 51 08 LMP Down, right.

04 12 51 09 CDR Down, right.

04 12 51 12 LMP More right.

04 12 51 21 CDR More right. In just a minute, I'm going to ask you to give me one last right.

04 12 51 27 LMP Okay.

04 12 51 32 CDR Okay, flashing 53.

04 12 51 33 LMP One left, one - one left and that's it.

04 12 51 34 CDR Flashing 53.

04 12 51 36 LMP Okay, let me get a Y-mark.

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04 12 51 37 CDR Okay.

04 12 51 43 LMP Beautiful. Okay.

04 12 51 44 CDR Okay.

04 12 51 45 LMP Left and up. There you go, buddy.

04 12 51 55 CDR Flashing 53.

04 12 51 56 LMP No. REJECT that.

04 12 51 59 CDR Okay.

04 12 52 00 LMP What have I got? A 54, now?

04 12 52 01 CDR Yes.

04 12 52 02 LMP Okay, pitch down and right. Didn't like that one. That's a good mark there.

04 12 52 13 CDR Flashing 53. What time is LOS, I wonder.

04 12 52 24 LMP Okay, now, up and left. Up.

04 12 52 30 CDR Houston, what time is LOS?

04 12 52 35 LMP ... 52.

04 12 52 37 CC Intrepid, Houston. LOS is coming up in 4 minutes.

04 12 52 45 LMP Letter F. Flashing 52.

04 12 52 51 CDR Okay. Okay, we'll try and have this alignment finished for you, so you can look at it.

04 12 53 00 LMP That should do it.

04 12 53 01 CDR Okay.

04 12 53 02 LMP Be good, you son of a gun.

04 12 53 04 CDR Turn up the light. Here's the star angle difference, Houston. Four balls 2 - -

04 12 53 09 LMP That's it.

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04 12 53 10 CDR Coming at you with the torquing angles. Whee!
Look at that!

04 12 53 17 LMP Now, try the torquing angles.

04 12 53 18 CDR How's that grab you? You looking at the DSKY?

04 12 53 24 CC Those are great. You're GO for DOI.

04 12 53 27 CMP Hey,

04 12 53 29 CDR Yes. You guys are all right.

04 12 53 30 CC We are looking at an AOS of 109:43:30.

04 12 53 37 CDR 109:43:30. Nothing, that's the antenna, you're
going to break lock.

04 12 53 42 LMP I know it.

04 12 53 43 CDR I'm going to torque.

04 12 53 45 LMP I'm not breaking lock, damn it.

04 12 53 50 CC And, Clipper; Houston. We're looking for your
AOS at 109:41.

04 12 53 55 CMP Okay. I'll be there.

04 12 53 57 LMP Now, wait a minute. I don't want to blow this.
And I didn't copy that down, but that's okay.

04 12 54 02 CDR You can probably call it up from memory.

04 12 54 05 LMP Now, ENTER.

04 12 54 36 CDR What the hell is ENTER? Oll, huh? Okay?

04 12 54 39 LMP Yes. That's right.

04 12 54 42 CDR All right. PRO.

04 12 54 44 LMP Okay.

04 12 54 45 CDR VERB 24, ENTER. Now, plus, ENTER. 340, 50 in
pitch! Oh, okay. Hang on.

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04 12 55 15 LMP Let me see that.

04 12 55 19 CDR ENTER; detent, closed.

04 12 55 21 LMP I did.

04 12 55 23 CDR Yes. What star is it I'm looking for?

04 12 55 28 LMP You're looking for Aldebaran in the - Taurus the Bull.

04 12 55 30 CDR Yes. Okay. That one I know.

04 12 55 32 LMP Plus 12 and 0. Plus 12 and 0.

04 12 55 39 CDR Who said you couldn't look out the AOT and - and - and see this thing? Hell, I can see the stars in broad daylight with the cockpit lights up. There it is.

04 12 55 58 CC Intrepid, Yankee Clipper. You're looking good. One minute to LOS; we'll see you on the other side.

04 12 56 03 CDR Yes, sir, and after all that jazz about the LPD, old Aldebaran is a half a degree off in yaw and a half degree off in pitch, which is in the noise level; and I can see it out the window; no strain.

04 12 56 22 CC Beautiful, Pete, beautiful.

04 12 56 29 CDR Okay, it's 1 degree out. Forget it.

04 12 56 31 LMP Want to mark it? You want to mark it with this thing, right here?

04 12 56 34 CDR No, hell no. I know where it is.

04 12 56 36 LMP All right, babe. Let's get some lights in this thing.

04 12 56 39 CDR Turn them up.

04 12 56 42 LMP We don't need to look.

04 12 56 43 CC Intrepid, Houston. Is that in relation to your new mark or the old one?

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04 12 56 46 CDR No. That's right around the 40 mark. It's off about three-quarters of a degree to the right and about 0.2 of a degree down in pitch. Beautiful. It's not even worth screwing with.

04 12 56 57 LMP Just - just lost him, Pete.

04 12 57 00 CDR Yes, okay. Now, wait a minute. Where was I? Hey, Dick, go ahead and start checking my data, babe.

04 12 57 10 LMP You better call him.

04 12 57 11 CDR Okay, now. This detent closed?

04 12 57 14 LMP It's closed. Those are checked off.

04 12 57 17 CDR PGNS MODE CONTROL, ATT, HOLD. Yankee Clipper, Intrepid.

04 12 57 28 LMP Hello, Yankee Clipper; Intrepid.

04 12 57 32 CDR Where'd he go?

04 12 57 34 LMP I don't know.

04 12 57 37 CMP Hey, Al, go ahead.

04 12 57 38 LMP Okay, go VHF A SIMPLEX and record LM data. Here it comes, babe.

04 12 57 42 CMP I'm already there.

04 12 57 44 LMP Okay.

04 12 58 12 CDR Check DPS, APS, RCS, EPS, cycle CWEA; throttle MIN.

04 12 58 33 LMP We got to don helmet and gloves in a minute.

04 12 58 35 CDR Why?

04 12 58 36 LMP Because it says so, hush.

04 12 58 38 CDR (Laughter) Okay.

04 12 58 41 LMP (Laughter) Get this star (laughter). I'll check the DPS's. Rendezvous radar, slew 00; open our

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rendezvous radar breakers, the rendezvous radar breakers, check DPS, APS, RCS, EPS; cycle the CWEA.

04 12 58 56 CDR THROTTLE CONTROL, MANUAL; COMMANDER TTCA, both throttles MIN. Okay?

04 12 59 06 LMP Okay by me.

04 12 59 07 CDR And don't hit yours sideways because they'll fire.

04 12 59 09 LMP I'm not going to touch it.

04 12 59 10 CDR Okay. And at 35, we're right there. Thirty-five or 40. We wait for 40, don helmets and gloves, and - and I ought to maneuver to the burn attitude. What the hell is that?

04 12 59 27 LMP God damn, don't change.

04 12 59 28 CDR Huh?

04 12 59 32 LMP

04 12 59 33 CDR What do you mean?

04 12 59 34 LMP Well, here I was just going to -

04 12 59 37 CDR Shhh! Don't change the gain.

04 12 59 39 LMP Have you got these two rendezvous radar circuit breakers open?

04 12 59 41 CDR Yep.

04 12 59 44 LMP What are we going to do? AUTO maneuver?

04 12 59 45 CDR That's okay.

04 12 59 47 LMP AUTO maneuver at 45. Sit right like this. Cycle CWEA.

04 12 59 51 CDR Okay.

04 12 59 53 LMP That simulator doesn't do like that. Did you notice? You never have that second MASTER ALARM. I didn't check the EPS, Pete.

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04 13 00 02 CDR Okay.

04 13 00 08 LMP I feel good. I'm feeling better. You ought to get your hand in the game once.

04 13 00 15 CDR Hey, that was a fantastic job on that alignment, Al.

04 13 00 19 LMP We slid it in.

04 13 00 25 CDR Can't beat the first team.

04 13 00 28 LMP MANUAL; COMMANDER.

04 13 00 30 CDR MANUAL; COMMANDER.

04 13 00 32 LMP Both MIN.

04 13 00 33 CDR Both MIN. We get our helmets and gloves on; we've got DESCENT QUANTITY to come on in 1 minute. Who's helmet's that? It must be mine, huh?

04 13 00 53 LMP Yes. Here's mine. Does it make any difference? We're all going to the same place.

04 13 00 59 CDR That's right. Come on, IMU do your job, boy. Five miles north of track, huh?

04 13 01 27 LMP Go to them.

04 13 01 28 CDR That's interesting.

04 13 01 32 LMP Don't enter that NOUN 69 until I've seen that mother.

04 13 01 36 CDR No, I won't. We got all the time in the world going down in descent.

04 13 01 48 LMP That's right.

04 13 01 49 CDR The big time is high gate. We got a long time to high gate. Just watch those systems perk along.

04 13 01 59 LMP Hell, I'm kind of surprised they're happy with the PGNS and AGS. That surprised me a little bit.

04 13 02 08 CDR Well, it may be doing a lot better than you think it is.

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04 13 02 10 LMP That's right. I'm hoping it is. Because I didn't like the alignment, and I didn't like the numbers I was getting out of it.

04 13 02 20 CDR Hey, why don't you turn up a little of that LCG cooling? I'm not - I'm getting hot, now.

04 13 02 26 LMP All right. Will do. Just give me a second.

04 13 02 27 CDR I - I - How do you feel?

04 13 02 29 LMP I could care less.

04 13 02 31 CDR (Laughter) Okay, look. This is coming on because it's - it'll be in 40 and I'll bring it on.

04 13 02 42 LMP Okay. Whoops. Okay, I've got to get in my restraint again.

04 13 02 49 CDR I'm in mine, aren't I?

04 13 02 51 LMP Yes. You better be, hadn't you? Okay, where's that camera supposed to be set up for PDI? That's going to make me mad; I think it's supposed to be 12 frames a second.

04 13 03 19 CDR Hey, that's cold enough. God damn. (Whistle)

04 13 03 20 LMP I just barely moved that son of a gun.

04 13 03 23 CDR Whee!

04 13 03 24 LMP Let me turn her down. That was too much. There you go. That thing is sensitive.

04 13 03 31 CDR Boy, I'd say that again. Have we got anything that's going to fall on the floor?

04 13 03 39 LMP No.

04 13 03 46 CDR Okay, DESCENT QUANTITY 1; helmets and gloves are on; I'm waiting for a P40, and an AUTO maneuver.

04 13 03 53 LMP Okay.

04 13 03 55 CDR MODE CONTROL PGNS, AUTO; AUTO maneuver.

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04 13 04 00 LMP All the systems look good, Pete.

04 13 04 13 CDR Got the GIMBAL AC closed?

04 13 04 16 LMP Got the GIMBAL AC closed.

04 13 04 18 CDR STABILIZATION and CONTROL circuit breakers, all closed except the AEA and the AELD and ABORT STAGE.

04 13 04 24 LMP That's correct. I kind of agree with you over here, baby doll.

04 13 04 30 CDR RATE's stay open; DOI is 5 degrees a second.

04 13 04 32 LMP Five degrees a second.

04 13 04 33 CDR THROTTLE CONTROL, MANUAL; COMMANDER.

04 13 04 34 LMP MANUAL; COMMANDER.

04 13 04 36 CDR ATTITUDE TRANSLATION, 4 JET.

04 13 04 39 LMP 4 JETS.

04 13 04 40 CDR BALANCE COUPLE, ON.

04 13 04 41 LMP ON.

04 13 04 42 CDR ENGINE GIMBAL, enable.

04 13 04 43 LMP Enable.

04 13 04 44 CDR DESCENT ENGINE COMMAND OVERRIDE, OFF.

04 13 04 46 LMP OFF.

04 13 04 47 CDR COMMAND ABORT, ABORT STAGE, reset.

04 13 04 49 LMP Okay.

04 13 04 50 CDR DEADBAND, MIN.

04 13 04 51 LMP MIN.

04 13 04 52 CDR ATTITUDE CONTROL, three of them, ROT CONTROL.

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[REDACTED]

04 13 04 53 LMP ROT CONTROL.

04 13 04 56 CDR It's going to be PGNS, AUTO; AGS, ATTITUDE HOLD.

04 13 04 59 LMP All right - -

04 13 05 00 CDR That's exactly where it is.

04 13 05 01 LMP - - That's right there, and all I need to do is call P40.

04 13 05 02 CDR STOP buttons, two of them, reset.

04 13 05 04 LMP Mine's out.

04 13 05 05 CDR So is mine. TTCA, two of them; THROTTLE, MIN.

04 13 05 09 LMP THROTTLE's MIN.

04 13 05 11 CDR That's where we stand as of right this second.

04 13 05 13 LMP Okay. Let's look over this mother. See if we missed anything.

04 13 05 29 CDR I'm going to get a - some kind of an alarm for the 203 that we enter on.

04 13 05 42 LMP Burn abort rules. Why don't I read you a few?

04 13 05 44 CDR Yes. Why don't you?

04 13 05 46 LMP Manual shutdown if DELTA-V_g goes negative, and really that's - ...

04 13 05 51 CDR Okay. It's starting to rise again.

04 13 05 55 LMP Okay. Two-second overburn in AGS. I'll watch the AGS, and I'll watch the time.

04 13 06 00 CDR Yes, what is the burn time?

[REDACTED]

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04 13 06 02 LMP The burn time is 29. Same old number.

04 13 06 03 CDR Okay.

04 13 06 05 LMP Manual takeover, all that baloney, 5 and 5. If PGNS is greater than 10 foot per second in any axis - got to do a DOI plus 10. Forget it. If the AGS and PGNS differ by - And then we got a few other hot rules here like, less than 2, go out for trim to 5. I gather then that if it - if the burn is anything less than 5, you don't trim.

04 13 06 28 CDR That's right.

04 13 06 29 LMP Okay. If it's between 2 and 5 at DOI plus 30 and RR confirms that PGNS NO-GO, do it no-PDI plus 12. Forget it. You're going to have to copy these residuals down. Both of us do.

04 13 06 42 CDR Yes. That's why they're on there.

04 13 06 48 LMP You've got to get them. I'm going to look at my 267. I've only looked at it four times so far. ... 450.

04 13 06 55 CDR (Laughter)

04 13 06 57 LMP Gene Cernan missed this one.

04 13 06 59 CDR Yes.

04 13 07 00 LMP We can't do it. I'm freaked up enough as it is.

04 13 07 04 CDR Hey, Yankee Clipper; Intrepid.

04 13 07 07 CMP Go ahead.

04 13 07 08 CDR Is it all right with you if we turn our tracking light off?

04 13 07 10 CMP Sure is.

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04 13 07 11 CDR Yes. We want to save it.

04 13 07 17 LMP Okay. Okay, baby doll; 367.

04 13 07 24 CDR Okay, now. What are you going to do? Is there a P40 in there right now?

04 13 07 29 LMP I'm waiting until 45.

04 13 07 31 CDR Okay.

04 13 07 37 LMP Hold it - Just a little - just a bit.

04 13 07 43 CDR I'm going to do it right now.

04 13 07 45 LMP I'm with you, babe. Let's begin this show early. That's what I wanted to see.

04 13 07 54 CDR Glycol looks okay. All this stuff looks okay.

04 13 07 56 LMP Hang on.

04 13 08 00 CDR Okay, Clipper, we're maneuvering to the DOI burn attitude at this time.

04 13 08 05 CMP Okay. How many minutes you got to go?

04 13 08 08 CDR About 16 - 15-1/2.

04 13 08 21 LMP That's a great quantity gage we've got.

04 13 08 23 CDR They all do that. They don't do anything - -

04 13 08 26 LMP - -

04 13 08 54 LMP Man, that's it.

04 13 08 56 CDR I'm going to maneuver to the yaw. Can you imagine how sporty this little monster is going to be without descent stage?

04 13 09 02 LMP I know. I don't even want to think about it.

04 13 09 19 LMP That's it, babe.

04 13 09 21 CDR Until later.

04 13 09 25 CDR Inverter 1 going closed.

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04 13 09 27 LMP Okay.

04 13 09 28 CDR That time must be 2:97 and that's what it is.

04 13 09 31 LMP Yes.

04 13 09 32 CDR Inverter 1, closed.

04 13 09 34 LMP Going closed. Closed.

04 13 09 39 LMP Okay, we know those. Okay, AUTO - AUTO maneuver; verify burn attitude.

04 13 09 49 CDR MODE SELECT to PGNS.

04 13 09 51 LMP What's this other?

04 13 09 52 CDR RATE METER to what, RANGE/RANGE RATE?

04 13 09 56 LMP Set the tapemeter. RR dot.

04 13 09 58 CDR TAPEMETER switch, RANGE/RANGE RATE. I don't know what - MODE SELECT, PGNS. TELEMETRY, HIGH; VERB 47 at 53. You might want to do it at 52 because it takes so long.

04 13 10 12 LMP Yes.

04 13 10 22 CDR

04 13 10 28 LMP That would be fantastic, Pete, babe. We don't have a lot to do between DOI and PDI, do we?

04 13 10 41 CDR No.

04 13 10 42 LMP Let me look at this thing 1 second.

04 13 10 45 CDR Hey, don't let me do anything unsafe now. I'm not even going to watch.

04 13 10 49 LMP If I get - I get, no but - I mean if I get to concentrating on something.

04 13 10 53 CDR I'll be helping you.

04 13 10 54 LMP Yes. That's the reason I'm with you. Don't even think about me.

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04 13 10 58 CDR God damn, this suit is tight. I've sure got a tight suit, that's for darn sure.

04 13 11 44 LMP Put that in there, Pete.

04 13 12 56 LMP This damn thing is more trouble than it's worth.

04 13 12 59 CDR Don't tire yourself out on a stupid-ass camera like that. Locked in?

04 13 13 09 LMP Not yet, will be. Hold that.

04 13 13 38 LMP Just didn't want to screw with it later, Pete.

04 13 13 40 CDR Okay.

04 13 13 41 LMP I don't want to - -

04 13 13 42 CDR Here's your eye patch.

04 13 13 43 LMP Okay, I just didn't want to fool with it later. Put it up here.

04 13 14 04 LMP Catch that clip?

04 13 14 05 CDR Huh?

04 13 14 06 LMP Catch that clip. Thank you.

04 13 14 19 CDR 109:23:39. Okay, 50 minutes ...

04 13 14 26 LMP 50 minutes? Oh, thought you meant 50 minutes to the burn.

04 13 14 30 CDR Well, turn up the lights. I don't know what the hell - We're conserving electrical power or something. I don't know whether I'm right-side-up or upside down in this damn inertial world. I could tell myself, though, right now, if I took a quick peek.

04 13 14 50 LMP Okay, that's that.

04 13 14 52 CDR Okay, Al, babe.

04 13 14 54 LMP Okay.

04 13 14 57 CDR TELEMETRY, HIGH.

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04 13 15 00 LMP Okay.

04 13 15 02 CDR 4:14.

04 13 15 03 LMP Yes.

04 13 15 04 CDR Have you got the TELEMETRY, HIGH?

04 13 15 05 LMP I will in just a second.

04 13 15 07 CDR All right. Plenty of time. Are you through?

04 13 15 11 LMP I'm going to do this right on time, right after we pass 52.

04 13 15 14 CDR All right.

04 13 15 29 LMP Go, babe.

04 13 15 31 CDR Yes, I got - -

04 13 15 32 LMP I know. Whenever you want.

04 13 15 49 CDR I want to give that the best chance possible, too.

04 13 15 51 LMP I know it.

04 13 15 57 CDR Your AGS CAL was good. So that thing ought to stay on pretty damn well.

04 13 16 08 LMP Okay, I'm going to shut it across the - -

04 13 16 10 CDR Now.

04 13 16 22 LMP Shut it.

04 13 16 24 CDR Boy, that did it fast, didn't it?

04 13 16 25 LMP Yes.

04 13 16 39 CDR TELEMETRY, LOW.

04 13 16 53 LMP MODE SELECT, PGNS. There you go. 1.59, I've got 1.6. I've got half and you've got 0.8. That's good.

04 13 17 05 CDR Okay. Now, VERB 40, NOUN 20, ENTER.

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04 13 17 17 LMP 54.

04 13 17 23 CDR Okay, I'm going to trim.

04 13 17 24 LMP Okay.

04 13 17 29 CDR Thinks we're there, huh?

04 13 17 33 LMP You're in AUTO, I guess.

04 13 17 34 CDR Yes. I trim again at 55.

04 13 17 49 LMP That's better. That's better, Pete.

04 13 17 53 CDR Oh, yes. Just like the simulator.

04 13 18 00 LMP I got it in; didn't forget it.

04 13 18 13 CDR We'll be coming out in daylight on this burn, huh?

04 13 18 16 LMP How about me giving you this card again, old chap?

04 13 18 18 CDR Wait 1.

04 13 18 19 LMP In case you've forgotten anything.

04 13 18 20 CDR Yes, wait 1. Go right on schedule, here.

04 13 18 24 LMP You said it.

04 13 18 25 CDR All right. Now you're talking my language.

04 13 18 47 CDR Okay. PRO; ENTER; ENTER. There it is. Okay, give me the card again.

04 13 19 00 LMP ...

04 13 19 01 CDR Hey, how about your 407?

04 13 19 03 LMP I'm watching it.

04 13 19 04 CDR Okay. ... see it.

04 13 19 05 LMP CB(11).

04 13 19 07 CDR - - ... - -

04 13 19 08 LMP DECA GIMBAL AC. All right, when you get the 4 minutes, we're - -

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04 13 19 10 CDR - - Hey, hey, yes. Let's get it at - -

04 13 19 12 LMP DECA GIMBAL AC - -

04 13 19 13 CDR Wait. Get that clock. I want the clock. I really do.

04 13 19 17 LMP Stop.

04 13 19 18 CDR Okay.

04 13 19 19 LMP I'll have to reset.

04 13 19 20 CDR 56 set it at.

04 13 19 21 LMP 56.

04 13 19 27 CDR Plenty of time. Got it?

04 13 19 34 LMP That says zero under the second.

04 13 19 36 CDR 1, 2, ...

04 13 19 38 LMP/CDR Zero -

04 13 19 39 LMP Set.

04 13 19 40 CDR Well, hell, you shouldn't have done that.

04 13 19 43 LMP It was perfect.

04 13 19 44 CDR Oh, you got it?

04 13 19 45 LMP Yes.

04 13 19 48 CDR Yes. Tell you what, when the one disappears is when you want to flip it.

04 13 19 52 LMP - - ... - -

04 13 19 53 CDR - - Yes. Yes. About half a second out - -

04 13 19 54 LMP - - Let's do that. Give me the DPS card again. DECA GIMBAL AC.

04 13 19 58 CDR DECA GIMBAL AC, closed.

04 13 20 01 LMP STABILIZATION/CONTROL all closed except AEA, AELD, and ABORT STAGE.

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04 13 20 05 CDR AELD, ABORT STAGE, and AEA are out.

04 13 20 07 LMP RATE SCALE 5 degrees a SECOND.

04 13 20 08 CDR Right.

04 13 20 09 LMP THROTTLE CONTROL, MANUAL; COMMANDER.

04 13 20 10 CDR MANUAL; COMMANDER.

04 13 20 11 LMP ATTITUDE TRANSLATION, - -

04 13 20 12 CDR 4 jet.

04 13 20 13 LMP 4 jet. BALANCE COUPLE, on.

04 13 20 14 CDR ON.

04 13 20 15 LMP ENGINE GIMBAL, enable.

04 13 20 16 CDR Yes.

04 13 20 17 LMP DESCENT ENG COMMAND OVERRIDE, off.

04 13 20 18 CDR Yes.

04 13 20 19 LMP ABORT, ABORT STAGE, reset.

04 13 20 20 CDR Reset.

04 13 20 21 LMP DEADBAND, MIN ATTITUDE, three to MODE CONTROL.

04 13 20 23 CDR Yes.

04 13 20 24 LMP Mode control -

04 13 20 25 CDR AUTO, ATT hold.

04 13 20 26 LMP That's right. STOP push buttons, reset; THROTTLE, MIN; 400 plus 1; ENGINE ARM, DESCENT, at 30. Ullage - ullage at - -

04 13 20 34 CDR Now - now, we're standing by for a MASTER ARM - -

04 13 20 38 LMP At 29.

04 13 20 39 CDR Now turn this - No, no, don't turn this damn thing over. Just leave it right there.

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04 13 20 47 LMP 500 readout. Coming up on, let's see how many degrees I'm off. Oh, ... at your second?

04 13 21 00 CDR Yes. That's good. You're just coming in in ORB RATE.

04 13 21 06 LMP Okay. COMMAND in ATT HOLD.

04 13 21 09 CDR Yes.

04 13 21 10 LMP I'll check it again about one - Let's see what we got here.

04 13 21 12 CDR Got to get MASTER ARM on here.

04 13 21 16 LMP Have you got MASTER ARM that goes at 1?

04 13 21 18 CDR Yes.

04 13 21 20 LMP And I gather you've done the final trim, that's done, CONFIG 407. Standing by for MASTER ARM, and PRO. And I'm going to count off 31 seconds. I don't know about you.

04 13 21 40 CDR This goddamned clock is out of SYNC.

04 13 21 43 LMP What the heck, don't worry about it. 29 seconds burn time, huh?

04 13 21 47 CDR Yes.

04 13 21 51 LMP Over to - Looking for 31.

04 13 21 53 CDR The only other thing that bothers me is that ENGINE COMMAND in THRUST. That is the one - Doesn't it usually keep reading 10 percent all the time in the simulator?

04 13 22 02 LMP Only in AUTO.

04 13 22 04 CDR Only with AUTO?

04 13 22 05 LMP Yes.

04 13 22 06 CDR Oh, you're right. Okay.

04 13 22 13 LMP One minute MASTER ARM on and I'll set my watch.

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04 13 22 16 CDR Okay. My MASTER ARM's coming on. It's on.

04 13 22 19 LMP Okay.

04 13 22 20 CDR I'm ready to burn.

04 13 22 24 LMP All right.

04 13 22 25 CDR ENGINE ARM to DESCENT at 30 seconds.

04 13 22 39 CDR One minute. We just passed 1 minute, Yankee Clipper.

04 13 22 44 CMP Okay, Pete. Right with you.

04 13 22 49 LMP Coming in, Pete.

04 13 22 50 CDR I'll go over to VOX for you, so you can hear it, Dick. How do you read me?

04 13 22 53 CMP ...

04 13 22 54 CDR Okay.

04 13 22 55 LMP ENGINE ARM, DESCENT, at 30, Pete.

04 13 23 02 LMP What happened to the COMM? Do you hear me?

04 13 23 05 CDR Yes. Just keep flying. Do you hear me?

04 13 23 09 LMP Yes, sir. Go.

04 13 23 11 CDR DESCENT ENGINE's armed.

04 13 23 12 LMP Stand by to PRO at 5.

04 13 23 14 CDR Standing by for ullage.

04 13 23 18 LMP Looking for 31 in AGS here. I'll watch mine.

04 13 23 23 CDR I got 10 percent on the Commander gage. 10, 9, 8, ullage, 6, 5, flashing 99, ENGINES armed, 2, 1.

04 13 23 39 CDR IGNITION.

04 13 23 40 CDR It's burning; looks good. To - what? 15 seconds?

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04 13 23 44 LMP 15 seconds you go to 40 percent.

04 13 23 46 CDR 15 seconds, 7, 8, 9, 10, 11, 12, 13, 14, 15.

04 13 23 55 LMP Go to 40, babe.

04 13 23 57 CDR 30 percent.

04 13 23 58 LMP Okay, now - -

04 13 23 59 CDR 18, 19, 21, 2, 3, 4, 5, 6, 7, 8 -

04 13 24 09 CDR SHUTDOWN.

04 13 24 10 LMP Okay. Looks good.

04 13 24 12 CDR Okay. Look at all the - -

04 13 24 14 LMP ENGINE ARM, OFF.

04 13 24 15 CDR Ah, that's a good burn.

04 13 24 16 LMP ENGINE ARM, OFF.

04 13 24 17 CDR ENGINE ARM, OFF.

04 13 24 18 LMP MASTER ARM, OFF.

04 13 24 19 CDR MASTER ARM, OFF.

04 13 24 20 LMP Do not trim.

04 13 24 21 CDR What?

04 13 24 22 LMP Do not trim; PRO, PRO, PRO. And I'll write them down.

04 13 24 24 CDR PRO.

04 13 24 25 LMP Tell me what they are.

04 13 24 26 CDR (Laughter) Zero, plus 2, minus 6.

04 13 24 30 CMP I have you - I have you in the sextant looking right at your descent engine.

04 13 24 35 CDR Okay. What P00? What do we go to, P00?

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04 13 24 39 LMP PRO, PRO, and POO. And you take this, please?

04 13 24 42 CDR Okay.

04 13 24 43 LMP The burn, Pete, babe. That's the way to do it. Look at that. Look at the stars we made.

04 13 24 46 CDR Yes, I know.

04 13 24 50 LMP 500.

04 13 24 52 CDR MODE CONTROL both ATT HOLD.

04 13 24 54 LMP ATT HOLD. PGNS are residual.

04 13 24 57 CDR What were they?

04 13 24 58 LMP I got them right here.

04 13 25 00 LMP Zero. Zero, plus 2, and minus 6. Well, Pete, that was nice. Hey, that thing - -

04 13 25 09 CDR Did your AGS agree? What?

04 13 25 12 LMP It agrees with the minus 6; it agrees plus 1; but I'd say that you - you need a little - three more tenths feet per second - -

04 13 25 18 CDR - - Okay. But the point is we don't trim, we don't need to lock on the - -

04 13 25 21 LMP - - that's right.

04 13 25 22 CDR - - rendezvous radar or anything. Right?

04 13 25 23 LMP That's exactly right, babe.

04 13 25 24 CDR Okay. The next thing is a VERB 82, ENTER.

04 13 25 27 LMP I'm going over to the PDI PAD. And I'm going to stand by for this.

04 13 25 36 CDR 60.5 by 8.9.

04 13 25 41 LMP ... 10 plus all zeros.

04 13 25 45 CDR VHF A XMITTER to VOICE/RANGE.

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04 13 25 47 LMP VOICE/RANGE.

04 13 25 48 CDR VHF B XMITTER, OFF.

04 13 25 50 LMP XMITTER, OFF.

04 13 25 51 CDR Going to PROPELLANT QUANTITY MONITOR, OFF.

04 13 25 55 LMP PROPELLANT QUANTITY MONITOR, OFF. You did that?

04 13 25 58 CDR Yes. Pitch to zero, 109. Okay. 109 from *** hundred is what? ...

04 13 26 17 LMP He's still on VOX, Pete.

04 13 26 19 CDR Yes.

04 13 26 20 LMP Don't forget.

04 13 26 21 CDR Yes.

04 13 26 42 CDR Let me do the VERB 48, ENTER; VERB 21, ENTER; 21112, ENTER; PRO; VERB 34, ENTER.

04 13 27 07 CDR Hey, Dick, that was really a super burn.

04 13 27 10 CMP What's that?

04 13 27 12 CDR It was really a super burn. Right on the money.

04 13 27 15 LMP You - you didn't give me a VERB 82, babe.

04 13 27 16 CDR Yes, I did. There it is right there, 60.5 by 8.9.

04 13 27 20 CMP Okay. Give me VHF ranging, will you, Pete?

04 13 27 23 LMP We've given it to him.

04 13 27 24 CDR Okay.

04 13 27 25 LMP He's got it.

04 13 27 26 CDR You got it.

04 13 27 35 LMP ... point ...

04 13 27 40 CDR You got it, Dick?

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04 13 27 42 CMP Yes, I've got it. Clear to a half a mile.

04 13 27 54 CDR Okay. Turn the lights down.

04 13 27 56 LMP Jesus Christmas! You ought to see the DSKY.

04 13 28 22 LMP Verify loose gear stowed; restraints detached.

04 13 28 26 CDR It is. PCM, HIGH; BIOMED, RIGHT. You got the sequence camera?

04 13 28 36 LMP I've got it.

04 13 28 37 CDR The COAS goes to the overhead window.

04 13 28 40 LMP That Sun got in the way.

04 13 28 41 CDR Man, there's the lunar surface.

04 13 28 46 LMP We're going down, Pete, babe.

04 13 28 47 CDR Yes, I know.

04 13 28 48 LMP Fly that thing in there.

04 13 28 53 CDR I'll do my best.

04 13 28 54 LMP I know it.

04 13 28 56 CDR I just hope it's enough. What in the hell is that?

04 13 29 00 LMP Where?

04 13 29 01 CDR What in Christ's name is this?

04 13 29 02 LMP That's the plug, they put them in there. Just slide it out.

04 13 29 06 CDR What is it?

04 13 29 07 LMP I'll get it.

04 13 29 08 LMP It's just a dummy plug.

04 13 29 10 CDR Jesus Christ, I never saw that before either.

CONFIDENTIAL

Day 5

04 13 29 13 LMP ... don't want any electrical thingamajigs to get in. You're supposed to put it in the - back in the front window. You want to do it? Okay? See, that fills up the slots.

04 13 29 23 CDR Great.

04 13 29 25 LMP Hey ... Oh, beautiful, Pete. Okay. If you can't look out, I ain't going to look out.

04 13 29 46 LMP Nothing for me to do right now. Not a thing I can do, Pete.

04 13 29 59 LMP You locked on with the rendezvous radar?

04 13 30 01 CDR No, why?

04 13 30 03 LMP I didn't know if - because you will be down in here for this perilune. I don't think it's - -

04 13 30 06 CDR I didn't need it for the other.

04 13 30 07 LMP I know it. I know. I just didn't know if you were yet. What a machine. What a machine!

04 13 30 20 CDR That's it, pal. You're in a DOI attitude, 01090.

04 13 30 25 LMP Target PGNS for PDI plus 12 abort.

04 13 30 29 CDR Okay, here you go. Shoot it to me.

04 13 30 32 LMP Stay loose and I will. Need some time's, I bet.

04 13 30 35 CDR Yes.

04 13 30 36 LMP Try 110:32:04.70.

04 13 30 39 CDR 01.

04 13 30 40 LMP/CDR 10.

04 13 30 41 LMP 32 - 0 - 0 - 470. You did it. Okay, plus 0116.9. Good show.

04 13 30 50 CDR All zips.

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[REDACTED]

04 13 30 55 LMP Plus 0131.0, 310. You got that. That's it. It ought to give you about a 147 by 13, roughly.

04 13 31 17 CMP ... 60.9 by 9. ...

04 13 31 21 CDR Roger. I got 60.5 by 8.9, Dick. Very good. Are you tracking me in the sextant?

04 13 31 27 CMP ... not yet. I've just got that 76 up.

04 13 31 30 CDR Oh, okay. I'm in the PDI attitude at this time. How much fuel have I got left?

04 13 31 38 LMP You're so good, it's fantastic. What are you talking about?

04 13 31 44 CDR That's got to be - that's got to be all volcanic down there.

04 13 31 54 LMP Okay. 146, that's good. 13, that's good enough. Forget it. We ain't doing that one.

04 13 32 04 CDR Lets hope not. Okay. What's next? DOI postburn report; helmets and gloves on; CABIN REPRESS, CLOSE; suit gas diverter, EGRESS.

04 13 32 18 LMP Pete, you ought to move this, because I was looking; that thing could fall off there and hit your DSKY now. You ought to put somewhere else.

04 13 32 23 CDR Well, you can take it and put it away for all I give a shit right now.

04 13 32 37 CDR Well, that's complicated.

04 13 32 38 CMP ... you're moving across that surface.

04 13 32 42 LMP Look at that. Look at that thing.

04 13 32 43 CDR Yes, I can tell we're going down, too.

04 13 32 44 LMP Look at that thing. Put it in - put it over in there, Pete, in one of those bags, urine bag or something like that. We'll get it later.

04 13 33 15 LMP Guess when you get down to it, I ought to do that same thing to mine.

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[REDACTED]

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04 13 33 19 CDR No, let's don't; too much trouble.

04 13 33 21 LMP Why? Why? Grab it right down - -

04 13 33 29 CDR - - Something else that I've got to do right now, too.

04 13 33 31 LMP Okay. I can grab them like this. Okay. Okay, now. Have you got clock counting up or down or something?

04 13 33 40 CDR No, I'm not counting any which way. We ought to get - What was the PDI time?

04 13 33 45 LMP PDI time. Let me give it to you, babe. 110:20:37.

04 13 33 50 CDR 1101 -

04 13 33 51 LMP 20

04 13 33 53 CDR 110:20 - -

04 13 33 55 LMP So that's 20 minutes plus - Just a minute. It's going to be 35 in a minute. So, that would be 25 and 20. 45. Put 45 in there. No, no, no, no. I goofed it. Put 15 in there. We want it counting up. I goofed. That's it. Now I'll tell you when. Not - no, no. The time has got to get to 35 something, so it's got to get to 35:37. So I'll watch it. Okay?

04 13 34 26 CDR Yes. I need another shot of cold.

04 13 34 32 LMP Okay. I'd like a shot of cold water, but that's out of the picture. There's a little. It's liable to come in too strong, babe. Let me look at this suit CRIT.

04 13 34 42 CDR When do we - when do we get acquisition?

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04 13 34 44 LMP We get it right here.

04 13 34 47 CDR 109:43, huh?

04 13 34 49 LMP 9 minutes.

04 13 34 50 CDR Okay. Man, Dick. We're in the PDI attitude, which is heads down going forwards right now. And it looks like we're just making a big dive into the lunar surface.

04 13 35 00 CMP I understand. I got you.

04 13 35 05 CDR Did you see that engine burn?

04 13 35 08 CMP Yes.

04 13 35 13 CDR All the pressures good and everything?

04 13 35 14 LMP Yes. 35. Just a second. I'm going to get it - -

04 13 35 17 CDR And I got to put that to AUTO right now.

04 13 35 18 LMP - - ... - -

04 13 35 19 CDR Before I forget it.

04 13 35 20 LMP That's a smart idea.

04 13 35 21 CDR Anything else I got to do?

04 13 35 24 LMP ...

04 13 35 25 CDR All those pressures okay. Super CRIT. Take a look at them. Ambient, 450.

04 13 35 38 LMP ...

04 13 35 40 CDR Okay. You like the way it looks, Old Shoe?

04 13 35 45 LMP Yes, sir.

04 13 35 50 LMP I may as well go get the MODE 2.

04 13 35 52 CDR Lord God no, I don't want to do - Yes, do I? No, I don't want to do - Do I want to do that now? No.

04 13 35 58 LMP Get on the time line.

[REDACTED]

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04 13 36 00 CDR You got the clock counting up? 45 minutes from - 35 minutes is 25 is - no. What time did you say the time was? PDI? 110:20. You're going to have to fold that over and lift it up by the camera - by the camera and in. Now hold -

04 13 36 24 LMP I just want it to sit here a minute. Dick didn't roll good enough. I got to roll it.

04 13 36 36 LMP It doesn't want to roll.

04 13 37 18 LMP 28500.

04 13 37 23 CDR Just say you see the Snowman peak, babe.

04 13 37 36 LMP I changed my mind.

04 13 37 39 CDR Yes. Get rid of that.

04 13 37 40 LMP Liable to break my finger or something?

04 13 37 42 CDR Yes. Let me have it. I'll get rid of it for you.

04 13 37 46 LMP Hold this - hold this end.

04 13 37 53 CDR Oh boy, we really do use descent water, though. We're down to 85 percent right now.

04 13 38 03 LMP I got to get up a little higher.

04 13 38 05 CDR Okay.

04 13 38 11 LMP Here you go. ... that baby away.

04 13 38 13 CDR Yes.

04 13 38 14 CDR But we sure don't need something else in the way. Got her?

04 13 38 17 CDR Yes.

04 13 38 23 LMP 110:20:37. Okay. It's going to be - it's 38. So 38 to 60 is 22.

04 13 38 33 CDR We've got to put these dumb - Don't forget to put these lunar - -

04 13 38 35 LMP - - 22 - 42.

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04 13 38 36 CDR - - ... compartment.

04 13 38 37 LMP 42.

04 13 38 38 CDR Huh?

04 13 38 39 LMP 42.

04 13 38 40 CDR Okay.

04 13 38 41 LMP We won't - we have to get those out to use them at night anyway, Pete. We'll move them. Okay, now, what have we got?

04 13 38 46 CDR At night?

04 13 38 49 LMP Sequence camera. I've got that son of a gun set so good it stinks. If I can just start it now at the ... moment.

04 13 38 55 CDR Hey, hey - why don't you go ahead and button us up? Cabin REPRESS, close?

04 13 39 01 LMP The thing will blow you down a bit, but that's okay. Cabin REPRESS, close. Now what? EGRESS?

04 13 39 07 CDR SUIT GAS DIVERTER, EGRESS.

04 13 39 10 LMP SUIT GAS DIVERTER, EGRESS. Okay.

04 13 39 15 CDR CABIN GAS RETURN, EGRESS.

04 13 39 17 LMP CABIN GAS RETURN, EGRESS.

04 13 39 19 CDR CABIN REG's A and B, EGRESS.

04 13 39 22 LMP ... you to go, baby.

04 13 39 24 CDR UPDATA LINK switch to DATA. Just as soon as we get those, we need - we get them in 4 more minutes.

04 13 39 33 LMP - - ... - -

04 13 39 34 CDR As a matter of fact, we ought to see them come up ov - o - o in front of us.

04 13 39 37 LMP Yes. Now watch this, Pete.

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04 13 39 39 CDR What? You got that in.

04 13 39 44 LMP Yes, sir. Okay. We're standing by to do that. Hey, what's our pitch attitude?

04 13 39 51 CDR 109.

04 13 39 52 LMP 109. It's about 14 and minus 2.

04 13 39 55 CDR That's what I've got. I'm watching for them to come up on the - on the horizon and see earthrise.

04 13 40 01 LMP Wish I could shoot that shot. It'd be - Live forever in the annals of our own personal goodwill. Coming up for PDI.

04 13 40 12 LMP ... got anything tight right here?

04 13 40 14 CDR No.

04 13 40 15 LMP We'd do that and become famous for this.

04 13 40 25 LMP 250.

04 13 40 26 CDR Just a minute. ...

04 13 40 29 LMP Could make us both famous right here.

04 13 40 40 CDR I didn't write down the AOS plan, did you?

04 13 40 44 LMP You wrote it down, Pete. You wrote it down on that other page. But, hell, what difference does it make? It's right - in a minute. We're going to see them come up.

04 13 40 55 CDR 43:30.

04 13 40 56 LMP Can you hear us, Dick?

04 13 40 58 CMP Yes. I can hear you.

04 13 41 00 CDR You know. It doesn't look any closer to me down here than it does at 60 miles. I frankly can't tell the difference.

04 13 41 09 CMP May not be closer to you.

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04 13 41 11 CDR Maybe that's it. Heck, I don't know.

04 13 41 13 LMP I don't imagine we've come down more than 5 or 6 miles.

04 13 41 19 CDR I'll look at it right now. The AGS thinks we're at 50 - 50 miles.

04 13 41 28 LMP Yes.

04 13 41 29 CDR The AGS thinks we're 50 miles, Dick.

04 13 41 35 LMP If we take this picture it'll be famous forever; even better than when we grab the Surveyor by all of its parts, dismantling it handily.

04 13 41 47 CDR Is everything tucked away? Anything going to fall on our heads?

04 13 41 55 LMP Going to have to go to inverter 1 some day. Did you check off those good things I did?

04 13 42 05 CDR S-BAND ANTENNA is FORWARD. Right?

04 13 42 07 LMP Check off the good things I did. You did. We did.

04 13 42 10 CDR All right. COAS is to the overhead window; DOI postburn report we'll get; helmets and gloves are ON; CABIN REPRESS is closed; suit gas diverter to EGRESS; EGRESS; CABIN REG's A and B, EGRESS: and we're standing by for the UPDATA LINK switch. We're going to get earthrise in just a second. You ought to have earthrise by now, Dick.

04 13 42 34 CMP ... be a while yet because I'm looking backwards.

04 13 42 39 CDR Oh, that's right. I forgot.

04 13 42 50 CDR It's going to be at 109:43:30. It's going to be right straight out there or what, I wonder? I'm kind of guessing it is.

04 13 43 02 LMP Or maybe, would it - -

04 13 43 03 CDR Yes.

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04 13 43 04 LMP -- maybe the 15-degree inclination's going to do something to it. I just always imagined it was right in front of us.

04 13 43 17 CDR 15 more seconds. There - No. I thought I saw it coming up. 9 - 30 seconds.

04 13 43 33 LMP Starting - -

04 13 43 34 CDR There it is! Look at it! Goldarn! Watch it - just - keep - just click them off. Oh, that is fantastic!

04 13 43 53 CMP Hello, Houston; Clipper.

04 13 43 55 CDR Give them high gain, Al.

04 13 43 58 LMP They haven't got us yet, Pete.

04 13 43 59 CDR Oh, okay.

04 13 44 00 LMP But I'll go over on it and we'll make it - -

04 13 44 01 CMP Roger. Good burn. Good burn.

04 13 44 06 CDR You can get some more pictures if you want.

04 13 44 08 LMP I'm getting them right now.

04 13 44 10 CDR God dog!

04 13 44 13 LMP Tell them about it, babe.

04 13 44 19 LMP f:ll, 250 is what we've been using, isn't it, Pete?

04 13 44 21 CDR Yes, yes.

04 13 44 24 LMP That's got to be so fantastic.

04 13 44 30 CDR Hello, Houston; Intrepid.

04 13 44 31 CC Intrepid, Houston. How do you read?

04 13 44 33 CDR Roger. We read you loud and clear, and we just watched our first earthrise, which was fantastic! And we had a great DOI burn. The X residual was zero; Y was plus 0.2; and Z was minus 0.6.

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04 13 44 55 CC Roger, Pete. Copy your residuals. X is zero; Y, plus 2 - 0.2; and Z, minus 0.6.

04 13 45 02 CDR That's Charlie.

04 13 45 11 CC Intrepid, Houston. What were your AGS residuals? Over.

04 13 45 16 CDR Coming at you; 1 second.

04 13 45 24 LMP AGS residuals were plus 0.3, plus 0.1, and minus 0.6.

04 13 45 33 CC Roger, Al. Intrepid, Houston. We have your steerable now. Could you give us HIGH BIT RATE?

04 13 45 48 CDR Roger. Going to HIGH BIT RATE.

04 13 45 51 LMP What else do we need to give him? BIOMED?

04 13 45 54 CDR BIOMED, RIGHT; PCM, HIGH; and UPDATA LINK switch to DATA whenever they're ready.

04 13 46 03 LMP Adios, babe. Going to put this away.

04 13 46 05 CDR Okay.

04 13 46 06 LMP Time to get down to business.

04 13 46 07 CDR Yes.

04 13 46 09 LMP Don't lose that picture. That's going to be one that's going to hang around for years. I don't give a shit if it's - streaked.

04 13 46 32 CDR Okay, I'm going to go ahead and get my - No, I'll wait - until I get the computer.

04 13 46 39 LMP Hey, I didn't give them DATA.

04 13 46 41 CDR No, they - they didn't ask for it yet.

04 13 46 43 LMP Oh, man, you scared me.

04 13 46 44 CDR And, Houston, whenever you're ready, we're ready to give you P00 and DATA.

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04 13 46 49 LMP Where's my pen?

04 13 46 53 CC Roger, Intrepid.

04 13 46 57 LMP See a pen floating around here anywhere, Pete?

04 13 46 59 CDR Sure don't.

04 13 47 02 LMP I got it. I got two of them (laughter). Okay, hang in there, babe. Hang in there. PCM, HIGH; BIOMED, RIGHT. Set sequence camera. I did. That's all done.

04 13 47 26 LMP Helmets and gloves on; CABIN REPRESS is closed. And we're right here.

04 13 47 34 CDR Yes. But I got to get the UPDATA LINK first. Can't go on without that.

04 13 47 43 LMP I know it. VHF ANTENNA, FORWARD. It is. Select INVERTER 1. Wait - wait - don't select INVERTER 1 yet, Pete. Have you got your INVERTER 1 circuit breaker off?

04 13 47 59 CDR I sure do.

04 13 48 01 LMP Coming over to ac and I'm going to INVERTER 1. I've got it. Okay. See that guard? That's a - that's a bad one, boy. You could flip that out so easy. I've been worried about that one for months.

04 13 48 18 CDR Okay, let's get the AELD's closed and ABORT STAGES closed.

04 13 48 23 LMP I don't think we ought to do that. Cycle the CWEA.

04 13 48 27 CDR AELD, ABORT STAGE.

04 13 48 30 LMP Here comes the CWEA cycle.

04 13 48 40 CDR I never used the STOP button. The window bars are set.

04 13 48 46 CC Intrepid, Houston. Would you put your BIOMED switch LEFT?

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04 13 48 51 CDR Okay, going BIOMED, LEFT.

04 13 48 53 LMP Had a feeling they were going to want that.

04 13 49 08 CDR How soon before you're going to send up the data, Houston?

04 13 49 13 LMP THROTTLE, MIN.

04 13 49 15 CDR MIN.

04 13 49 16 CC About 1 minute, Pete.

04 13 49 18 CDR Okay, I'll hold then. We're standing right by to do the mode 2 lockon to radar and so we're holding.

04 13 49 26 CC Okay. Break. Yankee Clipper, Houston. I've got a REV 15 map update for you.

04 13 49 32 CMP Roger. Go ahead.

04 13 49 36 CC Roger. LOS 110:55: - -

04 13 49 41 LMP Mode 2 lockon.

04 13 49 42 CDR What?

04 13 49 43 LMP Mode 2 lockon.

04 13 49 44 CDR Yes. That's where I'm holding right now. I don't want to use the computer. I'm waiting for them to uplink. They should have uplinked.

04 13 49 52 CC - - 41:32. Over.

04 13 49 57 CMP Roger. Copy.

04 13 50 26 CDR In 5 minutes, you got to put on the BAT's.

04 13 50 28 LMP Okay. Let's see if this 30 minutes works out.

04 13 50 30 CDR Yes.

04 13 50 31 LMP You tell me what time 30 minutes more is. And I'll tell you if that's right.

04 13 50 40 CDR 50:37. It'll be 20:37.

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04 13 50 45 LMP That's right, babe.

04 13 50 46 CC Intrepid, Houston. Go POO and DATA. We're ready to go.

04 13 50 49 CDR We got it; POO and DATA for you. Go ahead.

04 13 50 54 CC Roger. It's on the way.

04 13 50 57 LMP Hang it in there, Pete, babe. Hang in there.

04 13 51 14 LMP You're about 30 degrees above our horizon now, Houston. And you're about one-third-crescent Moon, and you really are beautiful. See blues and whites.

04 13 51 31 CC Roger, Al. Put on our Sunday best for you.

04 13 51 39 LMP We're pretty well suited out up here ourselves (laughter).

04 13 51 48 CDR Boy, this thing sure flies nice.

04 13 52 09 CDR Hey, does it still look like we're 5 miles north?

04 13 52 26 CC Intrepid, Houston. Affirmative. You're still looking 5 north.

04 13 52 29 CDR Okay. What kind of an azimuth with respect to the Sun will I have on that - Is it that little that I'm not going to notice it?

04 13 52 41 LMP You're cutting in and out slightly, Pete.

04 13 52 56 LMP Just like you landed anytime on Earth, Pete.

04 13 52 58 CC Stand by, Pete. We're checking with the experts.

04 13 53 01 CDR Okay.

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04 13 53 03 LMP I'm not kidding.

04 13 53 04 CDR What?

04 13 53 05 LMP The closer I get, the more I feel like it's just like landing on Earth. Just let it fly down and park it somewhere. We'll bound out and grab a rock.

04 13 53 36 LMP Okay.

04 13 53 45 LMP Let me read the PDI rules to you.

04 13 53 47 CDR Okay.

04 13 53 48 LMP No ullage, NO-GO for PDI.

04 13 53 50 CDR Yes.

04 13 53 51 LMP No ignition, delay 5 seconds; then set descent engine override, on. Thruster rate; okay, 5 degrees. ...

04 13 53 58 CC Intrepid, Houston. The computer's yours.

04 13 54 01 LMP Very good. When I went to VOICE BACKUP, it whistles.

04 13 54 13 LMP Houston, Intrepid. When I went my UPDATA LINK to VOICE BACKUP, it made a whistle on our COMM, so I'm just going to leave it off.

04 13 54 24 CC Roger, Al.

04 13 54 26 CDR Keep reading.

04 13 54 32 LMP What can I do to help you, Pete? Let me cross them off for you.

04 13 54 43 CDR Okay.

04 13 54 44 CC Intrepid, Houston.

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04 13 54 47 CDR Go.

04 13 54 51 CC Roger. Now that you got a new RLS, we've got a new address 231 for you.

04 13 54 56 CDR Go.

04 13 54 59 CC Okay. 231 is plus 56957.

04 13 55 07 LMP Plus 56957. Roger.

04 13 55 10 CDR Coming at you with the radar, Dick.

04 13 55 12 CC Roger.

04 13 55 18 CMP Okay. Okay.

04 13 55 30 CC Intrepid, Houston. That whistle you heard, we think, was because we were still commanding. They'd like to have you try it again.

04 13 55 38 LMP Just tried it - Looks good. I'm in VOICE BACKUP then. Coming on with those BAT's.

04 13 55 46 CDR Yes.

04 13 55 47 LMP 5 and 6, Pete.

04 13 55 48 CDR Yes.

04 13 55 49 CDR Ascent BAT's coming on.

04 13 55 55 CC Roger, Intrepid.

04 13 56 08 CDR And we got a mode 2 lock.

04 13 56 23 LMP Okay, I'm ready to - ready for an altitude check as soon as you can give it to me.

04 13 56 35 CDR Okay. You got 36 minutes?

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04 13 56 42 LMP You said it.

04 13 56 44 CDR Your chart goes that low, huh?

04 13 56 45 LMP Hell, yes.

04 13 56 46 CDR All right, I'll give you one at 37 minutes.

04 13 56 48 LMP All right.

04 13 56 49 CDR How about 36-1/2?

04 13 56 50 LMP How about 37?

04 13 56 52 CDR Okay. 37 it is.

04 13 56 57 LMP What's it going to be, roughly?

04 13 56 59 CDR Looks like it's going to be around 290 to 295, something like that. Sound about right?

04 13 57 08 LMP 295 would put us about 56 thou.

04 13 57 14 CDR It's going - It's going to be - It's not going to be that high.

04 13 57 17 LMP Maybe that's that type where you can't - Don't bother. ... do it. Just screw it, who cares.

04 13 57 25 CDR Yes.

04 13 57 26 LMP I don't think that's worth a damn anyhow. Okay. Give me a 37 one.

04 13 57 40 CDR 293.

04 13 57 48 LMP Give me one at every minute.

04 13 57 50 CDR Yes.

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04 13 57 58 LMP Houston, our first perilune altitude check, using the tapemeter, shows that it's going to be about 57500.

04 13 58 11 CC Roger, Al. Copy.

04 13 58 13 LMP Do you concur or not?

04 13 58 14 CMP Houston, Clipper.

04 13 58 16 CDR Got a - -

04 13 58 17 CMP Houston, Clipper.

04 13 58 18 CDR Got another one.

04 13 58 19 LMP Okay.

04 13 58 20 CC Stand by, Intrepid. We're checking. Break. Clipper, go ahead.

04 13 58 24 CMP Roger, Jerry. Could you send me a good LM state vector, please?

04 13 58 33 LMP What we got to do, Pete?

04 13 58 35 CDR Stand by.

04 13 58 38 CDR MARK.

04 13 58 39 CDR 306.

04 13 58 47 LMP Second check shows it to be 59 000 feet.

04 13 58 55 CC Roger, Al. Clipper, Houston. We think it probably won't do you much good to have it right now. It'd be better later.

04 13 59 02 CMP Okay.

04 13 59 08 LMP Clipper and Houston are clearing good.

04 13 59 11 CDR Man, this suit is too tight.

04 13 59 13 LMP No, that's funny; you're going to love it. You're going to be like a bunny rabbit. Just slow you down.

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04 13 59 25 IMP By-by, Earth. S-band antenna better be grabbing that baby.

04 13 59 31 CDR Okay. Stand by.

04 13 59 32 LMP Hang on there. Okay.

04 13 59 36 CC Intrepid, Houston. We're still looking at a perilune of 50 000.

04 13 59 39 CDR MARK.

04 13 59 40 CDR 320. Okay.

04 13 59 53 LMP 320 shows that? Something's screwy. Something's wrong. Our third one shows it's going to be 64 000. It's - just making kind of a sweep up. Might be this tapemeter problem we saw on our self-check.

04 14 00 15 CC Roger.

04 14 00 20 CDR So I got to go VERB 37, ENTER; 63, ENTER.

04 14 00 26 IMP Okay. That's what you're doing?

04 14 00 31 CDR Yes.

04 14 00 36 LMP We don't - We don't need to do any of those things. Damn bit of difference.

04 14 00 41 CDR No, I'm going to kill it right now.

04 14 00 44 LMP I'm game; kill it.

04 14 00 45 CDR RENDEZVOUS RADAR to SLEW; SLEW, two of them, are open.

04 14 00 52 LMP Okay. TM ALTITUDE, ALTITUDE/RATE.

04 14 00 56 CDR Okay. That's done. Okay, I show 19 minutes and 36 seconds. Off by 1 second.

04 14 01 10 LMP Okay. Do you want me to set it?

04 14 01 11 CDR Yes. Just set it to 41.

04 14 01 25 IMP Say when. You punch it.

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Day 5

04 14 01 39 LMP 41, that tells me that there's exactly 19 minutes to go. That's good. All right. Everything's okay.

04 14 01 45 CDR All right. Now -

04 14 01 47 LMP Let me do this. What do I do here? See, it doesn't look any worse down low that it does high up.

04 14 02 01 CDR Okay, Houston. Are you looking at P63?

04 14 02 09 CC That's affirmative, Pete.

04 14 02 11 CDR If you got enough, I'll go back to P00.

04 14 02 14 LMP Did you do that?

04 14 02 15 CC Stand by.

04 14 02 18 CDR Yes, I did.

04 14 02 19 CC Okay, Pete. Go to P00.

04 14 02 25 LMP How about a little burn abort rules, babe?

04 14 02 27 CDR Okay.

04 14 02 28 LMP I've already given them to you, forget it.

04 14 02 29 CDR RENDEZVOUS RADAR ... two V's ... - -

04 14 02 32 LMP No. Let me - let me finish them.

04 14 02 33 CDR Wait a minute. SLEW make sure those bastards are open. 1, 2, they're open.

04 14 02 38 LMP And the landing radar, how's it doing?

04 14 02 40 CDR I don't turn it on yet; it's - -

04 14 02 41 LMP - - Okay, okay. Now let me read them to you.

04 14 02 45 CDR Okay.

04 14 02 46 LMP I've read part of them. DELTA-H within limits greater than 10 seconds and not out of limits greater than 60. BETA good at greater than 10 grand.

04 14 02 56 CDR Yes.

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04 14 02 57 LMP If no throttledown by P64 plus 15, abort. ... fuel 1 minute 34 seconds after a low level or when fuel quantity less than 2, unless landing imminent. Well, you know that.

04 14 03 07 CDR Yes.

04 14 03 08 LMP For flashing LANDING RADAR, ALTITUDE, or VELOCITY lights that are preceded by 30-cycle RADAR TEST switch. Okay. That's it.

04 14 03 13 CDR The hell we aren't getting low.

04 14 03 16 LMP Don't think about it, it's easier.

04 14 03 18 CDR Hum.

04 14 03 43 CDR What's that whistling anyhow? What is that?

04 14 03 45 LMP I don't know.

04 14 03 57 LMP Hope your pulse is lower than mine.

04 14 04 02 CDR It's not too bad right at the moment.

04 14 04 30 CDR We look real good up here, Houston. How you feeling down there?

04 14 04 37 CC Intrepid, Houston. We're feeling great.

04 14 04 57 CC Intrepid, Houston.

04 14 04 58 CDR Go ahead.

04 14 05 02 CC Roger, Pete. On this Sun angle, or Sun azimuth - As far as we can see, there'll be no noticeable difference as far as you're concerned. All you got to do is watch out and not fly through any clouds.

04 14 05 12 CDR Okay. I'll stay away from the clouds, and we're looking for the Snowman.

04 14 05 19 CC Roger.

04 14 05 37 CDR 45 minutes, perilune altitude checks, RENDEZVOUS RADAR, CB, for the 99th time, they're both open (laughter).

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04 14 05 43 LMP Okay. Touché.

04 14 05 46 CDR The switch is in SLEW.

04 14 05 47 LMP P63.

04 14 05 49 CDR Put your program alarm card out here and your - Slip that under your thing so you can honk that baby out, if we need it. Okay?

04 14 05 59 LMP I'm game.

04 14 06 43 CDR Man, there's some mighty big mountains out there. Look at them.

04 14 06 45 LMP I was just thinking about that while ago. We'll shoot right between a couple of them.

04 14 06 52 CDR I sure hope you have us lined up right, Houston, because there sure is a big mountains (laughter) right in front of us, right now. I hope we go down the middle. There is one valley (laughter).

04 14 07 06 CC Roger, Pete.

04 14 07 20 LMP 46.

04 14 07 33 LMP Okay, Pete, babe. You're going to see it. Keep saying that. Smoke over your circuit breakers while we wait. Just the other ones.

04 14 07 47 CDR Okay. DECA GIMBALS, closed.

04 14 07 53 LMP Now they're all looking good, Pete. Okay, my camera's ready to start.

04 14 08 15 CDR Man, oh man, we're getting low. Ho, ho, ho.

04 14 08 19 LMP That's right; you can't land if you don't get down there amongst them.

04 14 08 21 CDR That's all right. Look at that. I thought it was rela - This must be Fra Mauro we're going over.

04 14 08 32 LMP Can't tell, Pete.

04 14 08 33 CDR Say, Houston; where are we? Over Fra Mauro?

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04 14 08 44 CC Stand by, Pete. We're looking at lines right now; we don't have our map up.

04 14 08 48 CDR Okay.

04 14 09 05 LMP I don't want to look.

04 14 09 07 CDR (Laughter) There's nothing but rocks out there.

04 14 09 18 CDR I hope we go a lot further on.

04 14 09 21 LMP We do; we got a long ways to go. Got a - hundreds of miles after PDI, for Christ's sake. Already, we have 170 by 260 something - -

04 14 09 30 CDR 260, yes.

04 14 09 47 LMP 49, Pete.

04 14 09 49 CDR Okay. We've done this so many times, we'd better do it right. Don't let it get out of sight, don't get low, and don't try to fly too hard. I'd like to fly it there on LPD.

04 14 10 15 LMP That's what I mean. This baby can save gas for us.

04 14 10 27 CDR I'll try to talk about as much as I do in the doggone simulator. If it looks like the gas is good, I'll say it; if it looks like we're too high or something, I'll say it, but I don't - -

04 14 10 36 CC Intrepid, Houston. You've probably just passed over Theophilus.

04 14 10 40 CDR Okay. Pretty darn***there.

04 14 10 50 CC Roger. Tell us when you want us to turn on the mirror.

04 14 10 54 CDR You can turn the mirror on; give me the fox-clipping, and we got the hook down.

04 14 11 01 CC Roger.

04 14 11 02 CMP Roger. Fox-clipping, 285. Clear the deck.

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Day 5

04 14 11 42 CDR Interestingly enough, Houston, at this attitude, I still can see the lunar horizon. I have to really peer to find it, but I can see it.

04 14 11 55 CC Roger, Pete.

04 14 11 58 CDR And in 40 seconds, we'll be going to P63.

04 14 12 04 CC Roger.

04 14 12 48 CDR How about the AGS to AUTO, Al?

04 14 12 50 LMP Not yet, not yet.

04 14 12 51 CDR Okay.

04 14 13 00 CDR 7 minutes to 37?

04 14 13 04 LMP Not yet.

04 14 13 10 CDR Let me trim it up.

04 14 13 28 CDR Okay, Houston. Here's 50 18 for you.

04 14 13 33 LMP Okay. Give me a VERB 47 when you can.

04 14 13 35 CC Roger, Intrepid. Looks good.

04 14 13 37 LMP Wait - wait, wait, wait, wait!

04 14 14 17 CDR That's right.

04 14 15 16 LMP Good. Go out of there.

04 14 15 18 CDR What?

04 14 15 19 LMP That's it.

04 14 15 20 CDR How about a VERB 40, NOUN 20? Okay?

04 14 15 25 LMP No.

04 14 15 26 CDR What?

04 14 15 27 LMP Not yet.

04 14 15 28 CDR Okay.

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04 14 15 38 CDR LANDING RADAR's on.

04 14 16 24 LMP VERB 40, NOUN 20, whenever you want.

04 14 16 30 LMP (Whisper) 37 - minus 120 - 20.

04 14 16 47 LMP Did you give me a VERB 40, NOUN 20?

04 14 16 49 CDR Yes, I did.

04 14 16 50 LMP Did you get finished?

04 14 16 51 CDR Yes. We didn't get any transients.

04 14 17 05 CC Intrepid, Houston. No transients.

04 14 17 07 CDR Roger.

04 14 17 20 LMP You get the landing radar on your final trim.

04 14 17 23 CDR Okay. There it is.

04 14 17 26 LMP Ready for that DPS card?

04 14 17 27 CDR Yes.

04 14 17 28 LMP Okay. Here it goes. CB(11): DECA A - GIMBAL AC, closed.

04 14 17 33 CDR Yes.

04 14 17 34 LMP CB(11), (16): STAB/CONTROL circuit breakers, all closed.

04 14 17 37 CC Intrepid, Houston. GO for PDI.

04 14 17 39 CDR Roger. GO for PDI.

04 14 17 40 LMP Except the AEA, open.

04 14 17 42 CDR They're all closed.

04 14 17 43 LMP Okay. RATE SCALE, 25 DEGREES/SECOND.

04 14 17 45 CDR It is. Okay.

04 14 17 49 LMP THROTTLE CONTROL, AUTO; COMMANDER.

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04 14 17 51 CDR Yes.

04 14 17 52 LMP ATTITUDE TRANSLATION, 4 JETS.

04 14 17 53 CDR 4 JETS.

04 14 17 54 LMP BAL COUPLE, on.

04 14 17 55 CDR On.

04 14 17 56 LMP ENGINE GIMBAL, enable.

04 14 17 57 CDR Enable.

04 14 17 58 LMP DESCENT ENGINE COMMAND OVERRIDE, OFF.

04 14 17 59 CDR OFF.

04 14 18 00 LMP ABORT, ABORT STAGE, reset.

04 14 18 01 CDR Reset.

04 14 18 02 LMP DEADBAND, MIN.

04 14 18 03 CDR MIN.

04 14 18 04 LMP ATTITUDE CONTROL, three of them, MODE CONTROL.

04 14 18 05 CDR Yes.

04 14 18 06 LMP MODE CONTROL, AUTO, AUTO.

04 14 18 07 CDR Yes.

04 14 18 08 LMP STOP pushbutton's reset.

04 14 18 10 CDR Okay.

04 14 18 11 LMP TTCA THROTTLE, MIN.

04 14 18 12 CDR [REDACTED]

04 14 18 13 LMP 400 plus 1: I've done that. I'll check it again.

[REDACTED]

04 14 18 18 LMP Okay. That's done, Pete.

04 14 18 27 LMP ENGINE ARM to DESCENT. We can turn it over, can't we?

04 14 18 31 CDR Wait, let me look; let me look. DPS to T_{ig}; got to do that at 59 - descent. Yes, go ahead.

04 14 18 39 LMP Okay.

04 14 18 40 CDR Tie her down good; we couldn't loose that; we'd be sunk.

04 14 18 51 LMP Standing by on the watch.

04 14 18 52 CDR Okay.

04 14 18 53 LMP Come up VOX.

04 14 18 54 CDR Okay.

04 14 18 56 CDR Hello, Houston; hello, Yankee Clipper; Intrepid's up VOX.

04 14 19 08 CDR Roger.

04 14 19 29 CDR On my mark, it'll be 1 minute -

04 14 19 37 CDR MARK.

04 14 19 38 CDR One minute.

04 14 19 39 LMP Watch is started, Pete. Put her in descent at 35 seconds.

04 14 19 59 CDR Do it at 30, Al.

04 14 20 01 LMP Okay.

04 14 20 04 CDR DSKY's blank; average g; DESCENT ENGINE is armed. VE - VE - VELOCITY light -

04 14 20 14 LMP Got it nice. Steady, couple of lights there.

04 14 20 17 CDR And an ALTITUDE light.

04 14 20 28 CDR 10, 9, 8 - we have ullage - 7, 6, 5 -

[REDACTED]

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04 14 20 35 CDR/LMP PRO -

04 14 20 39 CDR I have IGNITION.

04 14 20 40 LMP Got a start.

04 14 20 41 CDR 3, 4, 5. DESCENT ENGINE COMMAND OVERRIDE, ON.

04 14 20 45 LMP Hey, throttle up to 26.

04 14 20 48 CDR Yes. Al, I can't hardly hear you for some reason.

04 14 20 51 CC Copy - -

04 14 20 52 CDR Okay. Standing by for throttle up, Houston.

04 14 20 56 LMP Pete, it looks good.

04 14 21 04 CDR Throttle up.

04 14 21 07 LMP It really feels good when it comes up.

04 14 21 18 CDR All right.

04 14 21 19 LMP Helium looks good; regulators look good, here.

04 14 21 21 CDR Okay. Standing by for 1-minute hack.

04 14 21 24 LMP Okay. I've got a little RCS activity, not too much.

04 14 21 37 CDR MARK.

04 14 21 38 CDR One minute. 5208, minus 20, 48 000. ... Looks good.

04 14 21 57 LMP PGNS and AGS are hanging in there.

04 14 22 07 LMP Roger. Copied. Plus 04200. It's 21 69. It's in, babe. Okay - -

04 14 22 38 CDR Roger.

04 14 22 40 LMP PGNS and AGS are hanging in. Looks good here.

04 14 22 53 CDR Very good. Very good.

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04 14 23 02 LMP Feels good to be standing up in the g-field again. Okay, 2 minutes and 30 seconds. 4276, minus 53, and 44 700; looks good.

04 14 23 16 CDR Smoking right down there.

04 14 23 21 CDR Check that RCS.

04 14 23 24 LMP Looks good, Pete.

04 14 23 27 CDR ...

04 14 23 30 LMP We can give them the ED BAT's today.

04 14 23 32 CDR Yes. Don't forget the ED BAT's today. There you go.

04 14 23 39 LMP Three minutes.

04 14 23 42 CDR About 44 feet per second fast, about 6 feet per second low on H-dot, and about 100 feet low on altitude. Looking good.

04 14 23 56 CDR Okay, Houston. I have an ALTITUDE light out, and a VELOCITY light out. I'm showing minus 918, minus a 1000; looks good. How's it look to you, Houston?

04 14 24 24 CDR No sooner said than done. Let me know when it converges; I'm going back to my normal displays.

04 14 24 38 LMP Four minutes.

04 14 24 39 CDR ED BAT's are GO, Houston.

04 14 24 44 CC Roger. ... - -

04 14 24 45 CDR Roger. Here comes - -

04 14 24 51 LMP Looking good; looking good. AGS are hanging right in there. SUPERCRIT hangs at 1100 or 12 - all the time.

04 14 25 02 CDR Okay. Smoke over all the gages; check out everything.

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04 14 25 05 LMP Okay. RCS looks good; ... looks good - partial pressure CO₂ is its usual zero (laughter). Got a couple of good winners in these two spacecraft.

04 14 25 19 CDR Okay. We're out at 35 000.

04 14 25 24 LMP You maneuvered a bit on that one.

04 14 25 25 CDR Yes. I'm getting a fair amount - getting a fair amount of RCS firing; more than I think I should. But how's the gimbal look to you guys, Houston?

04 14 25 36 CDR Okay. There's a 5-minute hack, Al.

04 14 25 41 LMP Okay.

04 14 25 42 CDR Boy, it's really giving her heck on the RCS; that must be the radar updating.

04 14 25 47 LMP I'll give the AGS an update; it might need it.

04 14 25 49 CDR Yes.

04 14 25 51 LMP 23 plus - -

04 14 25 54 CDR Really is banging it around, isn't it?

04 14 26 09 CDR We got her, 6 plus 22.

04 14 26 10 LMP Six plus 22.

04 14 26 14 CDR Just gave you a little AGS update. According to this here computer, it's right on the money.

04 14 26 23 LMP Going to turn that sequence camera on in a moment.

04 14 26 26 CDR Okay. 6 plus 22 for throttledown, huh?

04 14 26 30 LMP Yes.

04 14 26 32 CDR Okay.

04 14 26 36 LMP Throttle's down; I'm going to put on the camera. How's that strike you?

04 14 26 38 CDR Here's 6-minute check - 17.

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[REDACTED]

04 14 26 44 CDR Okay, standing by for throttledown.

04 14 26 52 LMP PGNS and AGS agree - fantastic! 23; let's give it another update.

04 14 27 02 CDR Throttle down!

04 14 27 03 LMP Throttle down!

04 14 27 04 CDR 6 plus 23.

04 14 27 09 LMP 0 zero, 0 zero. Give them another AGS update.

04 14 27 16 CDR ... I can just barely see the horizon, but ... is really giving it the gazoozie with the RCS, isn't it?

04 14 27 32 LMP Sure is. Why don't I go ahead and put that camera on now?

04 14 27 34 CDR All right. Why don't you?

04 14 27 35 LMP It's running.

04 14 27 37 CDR All right. Seven minutes. Leave that one by me.

04 14 27 39 LMP Okay, 7 minutes. Looks good.

04 14 27 40 CDR Descent fuel 2; it's there.

04 14 27 48 LMP Okay, Pete, 7 minutes. 1153 means you're about 30 feet per second - Wait a minute; let's go ahead and go for 730.

04 14 27 55 CDR Okay. We're out at 19 000 feet. I got some kind of a horizon out there; I got some craters, too, but I don't know where I am yet.

04 14 28 03 LMP 730.

04 14 28 06 CDR Smoke over the numbers at 730.

04 14 28 07 LMP Okay, 730, 1153 - not too bad. Plus 135, we're descending a little faster than normal, and we're a little bit low.

04 14 28 19 CDR ...

[REDACTED]

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04 14 28 20 LMP Everything looks good.

04 14 28 22 CDR 160 feet a second, huh?

04 14 28 25 LMP 23, we'll be there in a minute.

04 14 28 26 CDR Eight minutes. Numbers -

04 14 28 29 LMP Numbers running.

04 14 28 41 CDR Okay. Passing 12 000 feet, according to our tapemeter, Houston. Spring-loaded to go grab that Surveyor - -

04 14 28 53 LMP Stop when you're out at 10 000 feet. Hook up your lanyard.

04 14 28 56 CDR Okay.

04 14 28 57 LMP Standing by for P64.

04 14 29 00 CDR Okay. I'm trying to cheat and look out there; I think I see my crater.

04 14 29 06 LMP Hey, baby.

04 14 29 07 CDR I'm not sure. Coming through 7.

04 14 29 09 LMP Look up P60 - P64, Pete.

04 14 29 12 CDR P64 - -

04 14 29 13 LMP Pitching over.

04 14 29 14 CDR - - that's it; there's LPD.

04 14 29 16 LMP Okay, there's 6000 update.

04 14 29 17 CDR Hey, there it is! There it is! Son of a gun, right down the middle of the road!

04 14 29 23 LMP Outstanding. 42 degrees, Pete.

04 14 29 25 CDR Hey, it's started right for the center of the crater - -

04 14 29 26 LMP 42 - -

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[REDACTED]

04 14 29 27 CDR Look out there. I can't believe it! Amazing! Fantastic!

04 14 29 33 LMP 42 degrees, babe. Guide it in. 42; we're passing 3500. Coming down at about 99 feet a second; you're looking good. About 15-percent fuel; I'll reset my watch here.

04 14 29 45 CDR Okay. I'm going to flip over one; I just want LPD to the right a little.

04 14 29 47 CC ... landing.

04 14 29 49 CDR Okay. Roger.

04 14 29 50 LMP 40 degrees LPD, Pete; 40 degrees.

04 14 29 51 CDR That's so fantastic, I can't believe it.

04 14 29 53 LMP We're at 2000 feet.

04 14 29 55 CDR How far?

04 14 29 56 LMP The boys on the ground do okay. 1800 feet up, 39 degrees. You got 94 seconds of LP - LPD time left.

04 14 30 03 CDR Okay, I want up - -

04 14 30 06 LMP 38 - 38 degrees, 36 degrees; you're at 1200 feet, Pete.

04 14 30 07 CDR Okay.

04 14 30 08 LMP 1000 feet coming down at 30; you're looking good. Got 14-percent fuel. Looks good out there, babe; looks good. 32 degrees; you're at 800 feet. 33 degrees, at 680 feet. 33 degrees; 600 feet. Antenna's okay.

04 14 30 34 CDR Right.

04 14 30 36 LMP 35 degrees; you're at 530 feet, Pete. 530, 471. You're all right! 426.

04 14 30 45 CDR I got it.

[REDACTED]

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04 14 30 46 LMP 400 - and P66, Pete.

04 14 30 49 CDR Okay.

04 14 30 50 LMP P66. Okay, you're at - -

04 14 30 53 CDR Now, I got to get over here to the right.

04 14 30 54 LMP - - 330 feet coming down at 4.

04 14 30 55 CDR Got it.

04 14 30 56 LMP 11 percent; got loads of gas. 300 feet, coming down at 5. Gosh, it went by - -

04 14 31 04 CDR Hey, look at that crater, right where it's supposed to be! Hey, you're beautiful!

04 14 31 08 LMP 10 percent, 257 feet, coming down at 5. 240, coming down at 5. Hey, you're really maneuvering around.

04 14 31 17 CDR Yes.

04 14 31 19 LMP Come on down, Pete.

04 14 31 20 CDR Okay.

04 14 31 21 LMP 10-percent fuel. 200 feet, coming down at 3; need to come on down.

04 14 31 27 CDR Okay.

04 14 31 29 LMP 190 feet. Come on down; 180 feet. 9 percent; you're looking good. We'll get some dust before long.

04 14 31 39 LMP 130 feet. 124 feet, Pete. 120 feet, coming down at 6. You got 9 percent. 8 percent; you're looking okay. 96 feet, coming down at 6. Slow down the descent rate.

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04 14 31 52 LMP 80 feet - 80 feet, coming down at 4; you're looking good. 70 feet. Looking real good. 63 feet, 60, coming down at 3. 50 feet, coming down. Watch for the dust.

04 14 32 07 CDR 46, 42 feet, coming down at 3.

04 14 32 08 LMP Yes.

04 14 32 11 CC Low level.

04 14 32 12 LMP Coming down at 2, okay. Start the clock. 42 feet, coming down at 2. 40, coming down at 2. Looking good; watch the dust. 31, 32, 30 feet, coming down at 2, Pete; you've got plenty of gas, plenty of gas, babe. Stay in there.

04 14 32 27 LMP 18 feet, coming down at 2. You've got it made. Come on in there. 24 feet.

04 14 32 33 LMP CONTACT LIGHT.

04 14 32 34 LMP It's on.

04 14 32 36 CC Roger.

04 14 32 37 LMP PRO.

04 14 32 38 CDR Yes, PRO.

04 14 32 40 LMP ENGINE ARM, OFF. Okay.

04 14 32 42 CDR Okay.

04 14 32 43 LMP I'll cycle these valves; You got your DESCENT ENGINE COMMAND OVERRIDE, OFF.

04 14 32 47 CDR Yes.

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04 14 32 48 LMP Okey-dokey. I'll cycle the main shutoff valve.

04 14 32 50 CDR Okay.

04 14 32 51 LMP SV, close. Get both REG's closed, babe.

04 14 32 55 CDR The REG's are closed.

04 14 32 56 LMP Good landing, Pete! Outstanding, man!

04 14 32 58 CDR MASTER ARM, ON.

04 14 33 00 LMP Beautiful!

04 14 33 02 CDR Descent vent, FIRE.

04 14 33 07 CDR Okay. I'll smoke over the ascents; the ASCENT HELIUM looks okay. Okay, DESCENT REG warning light; don't worry about it. Ascent expendables look good; O₂, H₂O.

04 14 33 23 LMP This book turned over.

04 14 33 25 CDR Okay, we're in hot shape, Houston; we're in real good shape.

04 14 33 29 LMP Okay. Let me go over this. ENGINE STOP, you pushed it?

04 14 33 31 CDR Yes.

04 14 33 32 LMP Go. MODE CONTROL, both AUTO.

04 14 33 33 CDR Both AUTO.

04 14 33 34 LMP DESCENT ENGINE COMMAND OVERRIDE, OFF.

04 14 33 36 CDR OFF.

04 14 33 37 LMP ENGINE ARM, OFF.

04 14 33 38 CDR OFF.

04 14 33 39 LMP I got the 413 in, and cycled the Parker valve.

04 14 33 40 CDR Okay.

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04 14 33 41 LMP THRUSTER ISOL VALVES are done; MAIN SHUTOFF's done; you've vented; MASTER ARM, ON. MASTER ARM, have you turned it off?

04 14 33 48 CDR MASTER ARM is OFF.

04 14 33 50 LMP Okay. Just watch the systems, and stand by for a few minutes. Okay.

04 14 33 56 CDR Man, oh man, Houston. I'll tell you, I think we're in a place that's a lot dustier than Neil's. It's a good thing we had a simulator because that was an IFR landing. Boy, am I glad I was high, Al; I couldn't, I couldn't - -

04 14 34 10 CC Roger, Pete.

04 14 34 11 LMP I know it. Holy cran, it's beautiful out here!

04 14 34 13 CDR It sure is. It's something else. We flew by -

04 14 34 21 CDR How are you?

04 14 34 27 CDR Thank you, sir. We'll see you in 32 hours.

04 14 34 30 LMP I'll turn this camera off, Pete. I'll check descent REG pressure, Pete.

04 14 34 37 CDR Coming down.

04 14 34 39 LMP Okay. It's coming slow. That was a good show - -

04 14 34 48 CDR Roger. Stay for T₁.

04 14 34 50 LMP Okay, 414 plus 2. ... 68, RECORDER, OFF. ... 4.

04 14 35 09 CDR Hey, we flew right by the crater, Houston. But this ground looks neat out here; we're not going to have any trouble going back there.

04 14 35 16 LMP Okay. We're in lunar align, Houston, on the AGS. Let me know when you get to 68 and I'll write down ... - -

04 14 35 20 CDR Yes.

04 14 35 25 CDR No, sir. About halfway between site 4 and site - -

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04 18 10 15 LMP ON.

04 18 10 16 CDR VHF ANTENNA to EVA.

04 18 10 17 LMP EVA.

04 18 10 18 CDR UPLINK SQUELCH, enable.

04 18 10 19 LMP UPLINK SQUELCH, enable.

04 18 10 20 CDR LMP connect to PLSS COMM - CB audio.

04 18 10 23 LMP Okay.

04 18 27 53 CC ... Clipper. That sounds good.

04 18 28 12 CDR Just hear - -

04 18 28 13 LMP Yes.

04 18 28 14 CDR Hey, all of a sudden I get all kinds of COMM. Could you hear me?

04 18 28 18 LMP Yes.

04 18 28 20 CDR Houston, do you hear me?

04 18 28 23 CC Intrepid, we read you loud and clear.

04 18 28 26 SC Okay. *** along *** along, Houston.

04 18 28 35 CDR Hello, Houston; Intrepid. How do you read?

04 18 28 42 CC Intrepid, Houston. We read you loud and clear.

04 18 28 44 CDR Okay. Do you read Al?

04 18 28 48 CC Negative.

04 18 28 53 CDR Could be your radio.

04 18 28 54 CC Al, now we read you very weak in the background.

04 18 28 56 LMP Houston, how do you read me now?

04 18 28 58 CC Al, give us a short count.

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04 18 29 07 LMP *** 5, 4, 3, 2 ***

04 18 29 15 CC Al, we read you partially on the last part of that count, with a loud hum in the background.

04 18 29 19 LMP ***

04 18 29 26 CC Loud and clear, Al.

04 18 29 27 LMP I accidentally hit your - -

04 18 29 34 CDR (Laughter)

04 18 29 35 LMP Let's go.

04 18 29 36 CDR You got to be kidding.

04 18 29 37 LMP That's right.

04 18 29 38 CDR Wait a minute; go back to B.

04 18 29 40 LMP Okay. We're going to complete some COMM***

04 18 29 43 CDR Go to A.

04 18 29 45 LMP That's what it was, Pete.

04 18 29 46 CDR Yes. Go to A?

04 18 29 47 LMP Loud and clear, babe. Loud and clear. Go to ***

04 18 29 54 CDR Go to B. Go to B.

04 18 29 56 LMP Loud and clear.

04 18 29 57 CDR Okay. Okay; go AR.

04 18 30 02 LMP AR. How do you hear, Pete?

04 18 30 06 CDR Loud and clear.

04 18 30 08 LMP How do you hear, Houston?

04 18 30 12 CC Intrepid, we read you loud and clear; and, for your info, Clipper got a visual on you, and he also picked up Surveyor.

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04 18 30 19 LMP (Laughter) Want to ask him?

04 18 30 20 CDR Hey, where are we? (laughter)

04 18 30 28 LMP Houston, my O₂ quantity is - -

04 18 30 32 CDR Mine's 90, Houston.

04 18 30 34 LMP - - 90 percent.

04 18 30 36 CDR Okay. CB COMM; TV, OPEN.

04 18 30 37 LMP Okay.

04 18 30 42 CC Copy. 90 both.

04 18 30 43 CDR Okay. Did he tell you how far - did he have the LM and the Surveyor in his sextant at the same time?

04 18 30 54 LMP Go ahead. Read that to me, ... Pete.

04 18 30 57 CDR ECS CABIN REPRESS, closed.

04 18 30 58 LMP It is.

04 18 30 59 CDR SUIT FAN DELTA-P, open.

04 18 31 00 LMP Open.

04 18 31 01 CDR ECS SUIT FAN 1, open.

04 18 31 02 LMP Open, SUIT FAN 1, on your side. Okay, read me that.

04 18 31 10 CDR SUIT GAS DIVERTER, PULL/EGRESS.

04 18 31 12 LMP It's PULL/EGRESS.

04 18 31 14 CDR CABIN GAS RETURN to EGRESS.

04 18 31 15 LMP CABIN GAS RETURN, EGRESS.

04 18 31 17 CC Clipper, go ahead.

04 18 31 18 CDR SUIT CIRCUIT RELIEF, AUTO.

04 18 31 20 LMP SUIT CIRCUIT RELIEF, AUTO.

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04 18 31 23 CDR Verify ECS caution and H₂ SEP component lights come on.

04 18 31 29 LMP I don't have anything.

04 18 31 43 CDR SUIT GAS DIVERTER, PULL/EGRESS; CABIN GAS RETURN to EGRESS; SUIT CIRCUIT RELIEF, AUTO. I don't have an ECS light yet.

04 18 31 53 LMP *** all this stuff will be - You know, it runs down, takes a little while.

04 18 31 56 CDR Oh, okay. Very good. OPS connect, LMP first. Turn around - okay - , slowly. What do you want?

04 18 32 07 LMP I thought you were going to undo it.

04 18 32 08 CDR Oh. Well, I can't from this side.

04 18 32 10 LMP Okay.

04 18 32 11 CDR Be still. Right there. Boy, these PLSS's are nice in one-sixth g. There's one O₂ hose - *** five more of an O₂ hose. Houston, Intrepid.

04 18 32 37 CC Intrepid, Houston. Go ahead.

04 18 32 39 CDR Roger. Did Yankee Clipper have us both in his sextant at the same time? Over.

04 18 31 54 CC Roger. That's affirmative. He got you between head crater and Surveyor crater, slightly north.

04 18 33 00 LMP That's it.

04 18 33 03 CDR That - that's where I figured we landed. Okay. Turn around slow.

04 18 33 09 LMP That's all I can do, Pete, with these hoses on.

04 18 33 12 CDR That all you can do? Okay. Let me put this down. That's funny. Oh. I didn't get something. You're going to have to turn around.

04 18 33 21 LMP Okay.

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04 18 33 23 CDR Easy does it, babes.

04 18 33 27 LMP Good shape.

04 18 33 29 CDR I've got to be careful, or I'll jump right through that cabin overhead every time I want to - to do something. Wait a minute.

04 18 33 37 LMP Okay.

04 18 33 39 CDR Got it. Just a second, I'll be right with you. You can carry this PLSS around for 29 hours. Almost feels good.

04 18 33 52 LMP Relatively speaking, it feels great (laughter).

04 18 33 57 CDR Okay. I got one more snap. Can you bend over? That's it, easy. Okay. I got you. Whoops! (Laughter) An O₂ hose - a cable.

04 18 34 11 LMP Okay. Get this one on?

04 18 34 18 CDR Yes. I - You got it?

04 18 34 11 LMP Got that one.

04 18 34 20 CDR Okay. Now, turn - You got to stand - Can you stand up straight?

04 18 34 25 LMP Yes, but I can't turn any further, see; those - -

04 18 34 27 CDR Yes. Wait a minute.

04 18 34 38 CDR Okay, now. You want this under this one flap, don't you?

04 18 34 41 LMP Yes.

04 18 34 42 CDR Okay. Under the flap. Snap, crackle - pop. There you go. Now, where are we? Back to the checklist.

04 18 34 56 LMP Okay, let me get yours, now.

04 18 34 58 CDR Wait a minute. Let's get you off - -

04 18 35 07 LMP Okay.

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04 18 35 08 CDR - - this ship's system first. ... to actuated RCU, which it is; snap OPS O₂ hose to side of PLSS, which I did. SUIT ISOLATION VALVES, SUIT DISCONNECT, on the LMP. There you go.

04 18 35 24 LMP Okay. Connects ... to hoses.

04 18 35 29 CDR I'll get them. Let me get them; they're easier.

04 18 35 31 LMP Okay.

04 18 35 33 CDR Oh, boy. Look at the water!

04 18 35 34 LMP In that suit loop.

04 18 35 36 CDR Where's all the water coming from?

04 18 35 38 LMP Comes right out of the inlet hose.

04 18 35 40 CDR Sure is. Okay, do you want to connect the oxygen?

04 18 35 48 LMP Okay. I'll - Just a second, I want to - I thought I was getting some water in my suit; it's just cold air.

04 18 35 55 CDR Okay. That's connected and locked. Okay. What else we got?

04 18 36 01 LMP Purge valve.

04 18 36 02 CDR Okay, one purge valve, coming up.

04 18 36 12 LMP Wait a minute. Get the safety locked.

04 18 36 15 CDR Is it locked?

04 18 36 16 LMP Yes, sir; that's locked.

04 18 36 23 CDR It's centered in proper height. Okay.

04 18 36 24 LMP Okay, same thing. Lean over and let me get your gear.

04 18 36 26 CDR All right. I'm just going to squat down like this, and you can get all of it.

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04 18 36 35 LMP Okay. That's a good way to do it.

04 18 36 39 CDR I'm going to fuel up on the drinking water.

04 18 36 41 LMP Okay.

04 18 37 01 CDR I got the feeling we're going to put an ALSEP package out.

04 18 37 15 LMP Okay, stand up - Pete. Not a lot of room.

04 18 37 20 CDR Yes.

04 18 37 21 LMP Okay, here's one for over your head - one from under your arm. Looks good.

04 18 37 43 CDR Looks good.

04 18 37 44 LMP Okay.

04 18 37 45 CDR Just a second.

04 18 37 46 LMP Okay, let me disconnect your hose - done.

04 18 37 50 CDR Okay.

04 18 37 56 LMP Here comes your exhaust. ...2 and 3.

04 18 38 00 CDR There's a lot of water in those hoses. Hey, Houston, you read Intrepid?

04 18 38 10 CC Intrepid, Roger. We copy your comment on water in the hoses.

04 18 38 13 CDR It's just that the air seems to be extremely cold - coming in; at least - the inlet hose is quite cold - and some moisture's condensed down in it. Everything else seems okay.

04 18 38 33 CC Roger.

04 18 38 34 LMP That's tricky; that looks like it's locked, and it isn't.

04 18 38 37 CDR What's that?

04 18 38 38 LMP That OPS position right there.

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04 18 38 40 CDR Okay?

04 18 38 42 LMP That's good.

04 18 38 45 CDR You want me to check that again?

04 18 38 47 LMP Yes, check mine to make sure it's locked.

04 18 38 48 CDR Yes. It's locked.

04 18 38 49 LMP Okay.

04 18 38 54 CDR ***crink..

04 18 38 55 LMP Okay. Let's do that.

04 18 38 58 CDR Pass the gun around, and we'll shut off the descent H₂O.

04 18 39 08 CDR (Laughter)

04 18 39 30 LMP ***the water off. The H₂O is off.

04 18 39 35 CDR Okay, position mikes.

04 18 39 37 LMP Do it.

04 18 39 38 CDR Up.

04 18 39 39 LMP S-band on?

04 18 39 40 CDR Yes.

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04 18 39 42 LMP Okay. Mine's on. ... got a clear. Don helmets and visors. Okay. Let me get your helmet for you. Stay right where you are. Okay. Watch your head. Got your snaps; that's on pretty good. Locked. Get your - Everything is so light up here. The helmet cover is just about flipping through this. Out there in the Cape, it was a little bit tougher.

04 18 40 48 CDR Okay. My fan is running.

04 18 40 51 LMP Is your vent flag up? I can't tell.

04 18 40 54 CDR It's not. Came off. Be just a second.

04 18 41 23 LMP *** turn it off. ...

04 18 41 29 CDR I can hear it.

04 18 41 32 LMP Hear it spin up? Remember when we talked about that one? Maybe when I put my helmet on, it won't - Well, that water in your suit's making your helmet fog a bit.

04 18 41 54 CDR Take my helmet off a minute.

04 18 41 55 LMP Okay.

04 18 42 02 CDR Put your hand over the back of my thing and see if you can feel it? No. No. Right over the back of the - the neckring.

04 18 42 35 LMP Don't feel my own either, though.

04 18 42 39 CDR I can feel air blowing out of yours. Can't you feel air blowing out of that?

04 18 42 45 LMP No. Is any of it hitting your neck?

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04 18 42 48 CDR Huh?

04 18 42 49 LMP Is it hitting your neck at all?

04 18 42 51 CDR No. The P-flag goes out, huh?

04 18 42 58 LMP Yes. Mine's out.

04 18 42 59 CDR Hey, Houston. Didn't somebody tell me that these P-flags might not go out until you get your helmet and gloves on?

04 18 43 10 CC Intrepid, that's affirmative. Go ahead and button up; put the helmet and gloves on and turn on the fan and the vent flag should go out.

04 18 43 16 CDR That helmet's sorry. It never - it's not wiped enough.

04 18 43 19 LMP I know what it is; it's got that - all that - probably blowing all this moisture out of your suit. Want to wipe it again? That's better. ...

04 18 43 36 CDR Okay. I'll tell you one thing, let's turn this valve right here up a little bit. Where's the helmet bags?

04 18 43 49 LMP Here.

04 18 44 03 CDR I've got this sneaking suspicion that fan is not running like it should.

04 18 44 11 LMP You'll have to wait until you get your gear on and let's see.

04 18 44 14 CDR I know. It happened to me once before. Somebody left a piece of paper in the PLSS LiOH canister.

04 18 44 25 LMP It would shut down if it did.

04 18 44 27 CDR *** make me unhappy.

04 18 44 31 LMP Okay. Let me do this. You've got to wipe yours off. I didn't wipe it off good. Don't leave that there. Another one of those, huh? Okay?

04 18 44 53 LMP Turn this way and let me check that LiOH canister.

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04 18 45 06 CDR Open that thing up; pull that canister all the way out of there. Look in there, make sure there isn't something in there.

04 18 45 12 LMP Okay.

04 18 45 13 CDR That's exactly what happened the last time.

04 18 45 16 LMP Nothing - clean and neat.

04 18 45 18 CDR Put the canister back in and lock the door.

04 18 45 24 LMP Locked.

04 18 45 25 CDR That a boy.

04 18 45 28 LMP Just a second. That's good and tight now.

04 18 45 42 CDR Okay. Hey, I'm going to do this the other way around, Al. Going to get my gloves on first; helmet last.

04 18 46 08 LMP See how it runs this trip. Try it this way this time. Pretty good, looks pretty good.

04 18 46 28 CDR Okay.

04 18 46 29 LMP See how it works this trip.

04 18 46 35 CDR Okay, let's - -

04 18 46 36 LMP Hey, your vent flag went out. Looks good, Pete.

04 18 46 38 CDR Oh, yes. Okay.

04 18 46 39 LMP Everything's working.

04 18 46 40 CDR Crazy. Everything looks good, Houston.

04 18 46 50 CC Roger, Intrepid.

04 18 46 51 CDR Double check my helmet down will you, Al?

04 18 46 53 LMP Okay; it's not locked.

04 18 46 58 CDR It's locked.

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04 18 46 59 LMP Okay. Get your gloves out.

04 18 47 02 CDR Okay. Wait a minute.

04 18 47 06 LMP ... yours. *** this out for you. It's right over here; right by yours. It's right there.

04 18 47 23 CDR Wait a minute. Do you want to get your EV gloves out of the way? You want to leave them right where they are?

04 18 47 27 LMP No. Mine's good - good enough right where they are.

04 18 47 28 CDR Look, can you see, the window's beginning to fog up. You want to put the window heaters on?

04 18 47 34 LMP No. We can't watch them.

04 18 47 37 CDR Better put them on, for a while; pull them before you get out.

04 18 47 40 LMP Okay, that's what I'll do. Never get any pictures that way.

04 18 47 44 CDR Hey, Houston?

04 18 47 45 LMP Which one's yours?

04 18 47 46 CDR That's yours. Put it on your head.

04 18 47 54 LMP But I want to - Okay. Mine's back there. Just a second, I'll get it.

04 18 47 58 CDR What do you need?

04 18 47 59 LMP I was going to get you a turn on that LMP - -

04 18 48 01 CC Clipper, understand. You want to know which camera to be using on the next pass. Is that AFFIRM?

04 18 48 06 LMP - - a picture of the lunar surface.

04 18 48 12 CC Copy. Stand by.

04 18 48 14 LMP Just a second. Let me look - let me look at this, Pete. I'm going to really check that.

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04 18 48 21 CC Dick, let's go with the color interior.

04 18 48 24 LMP Okay. Look real sharp here.

04 18 48 32 CC Dick, go with the color exterior for the next pass. Color exterior.

04 18 48 46 CDR Okay. Now. Let me slip my PLSS up. Stuff flies out under the - -

04 18 48 50 LMP - - the RCU. Will do, Pete, will do.

04 18 48 53 CDR And I'll get you all buttoned up.

04 18 48 56 LMP Looks fine. Let me pull your visor down a little bit so you can - -

04 18 48 58 CDR Yes, that a boy.

04 18 49 00 LMP Good, and then you got these - -

04 18 49 01 CDR Okay. Let's leave my gloves off until I get your helmet and visor on.

04 18 49 04 LMP All right.

04 18 49 06 CDR Your helmet. Hand me that, and I'll hold it for you. There you go. Let me slide that on your head.

04 18 49 30 LMP I'll hold it up if you'll lock - -

04 18 49 34 CDR No, no. No. Wait a minute. Locked.

04 18 49 38 LMP Looks good. Everything looks - -

04 18 49 42 CDR Hold this - hold your thing just a second. Okay. Wait a minute. *** I checked that for you.

04 18 50 05 LMP Okay.

04 18 50 10 CDR Okay. There you go.

04 18 50 11 LMP Okay.

04 18 50 13 CDR Pull up your PLSS here. Pull up your PLSS, and wait a minute, let me get all this out first. Out and about. There you go.

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[REDACTED]

04 18 50 29 LMP Okay. Okay. What does it say next?

04 18 50 36 CDR Now, we need a set of gloves.

04 18 50 37 LMP Okay.

04 18 50 38 CDR Now let me just turn real slow.

04 18 50 50 CC Yankee Clipper, Houston. One minute to LOS. And we'll be giving you a P22 PAD at AOS. Yankee Clipper, Houston 30 seconds to LOS.

04 18 50 51 CDR Boy, you can tell those are brand new gloves. I can hardly get my fingers down them. Before you cover your wrist, let me check your locks and you check mine.

04 18 52 26 LMP Okay, just a second.

04 18 52 28 CDR Okay.

04 18 52 30 LMP How does that look to you, Pete? These are locked.

04 18 52 45 CDR Just a minute.

04 18 52 54 LMP Let me see if - that looks good. *** look at you. Good enough.

04 18 53 07 CDR Okay.

04 18 53 09 LMP Okay, babe. Here, let me see that. Okay, it's on there. Okay.

04 18 53 30 CDR Okay, now. Hold the phone. Let's see.

04 18 53 33 LMP Give you a shot of cold water here.

04 18 53 36 CDR Yes. *** some helmet bags in the SRC area. They are already there.

04 18 53 44 LMP Okay.

04 18 53 45 CDR *** a shot of cold water, and then we'll turn off the pump.

04 18 53 47 LMP Okay. Here it comes. *** chill down.

04 18 53 57 CDR *** chill down.

[REDACTED]

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04 18 54 06 LMP Yes, leave it on for a second.

04 18 54 19 CDR That it?

04 18 54 20 LMP That's it.

04 18 54 21 CDR Okay. CB(16): ECS/LCG PUMP, open.

04 18 54 27 LMP ***

04 18 54 29 CDR PLSS to DISCONNECT. Let me disconnect yours.

04 18 54 33 LMP Okay.

04 18 54 39 CDR You have to turn this way. ***

04 18 54 43 LMP That it?

04 18 54 44 CDR Okay.

04 18 54 45 LMP Just a second. Let me get yours. Okay. Just let - hold that a second.

04 18 54 58 CDR Yes, now I got to hook up yours.

04 18 55 02 LMP *** right over the top.

04 18 55 13 LMP It's in.

04 18 55 14 CDR In?

04 18 55 15 LMP In, babe.

04 18 55 17 CDR Okay. Thank you. Hang on to your water hose, here. No, your right hand, that a boy. Okay?

04 18 55 35 LMP *** rotate ***.

04 18 55 40 CDR *** in. Locks go in?

04 18 55 41 LMP Yes, sir.

04 18 55 43 CDR Okay. Both locks are in.

04 18 55 46 LMP *** stow these hoses.

04 18 55 50 CDR Okay.

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04 18 55 54 LMP Try to route yours up there on the wall.

04 18 55 56 CDR Yes. Yes.

04 18 55 57 LMP While you're doing that, I'll get this in.

04 18 55 59 CDR I'm afraid I can't do it with you standing there. I'm going to have to wait until you turn around.

04 18 56 04 LMP Okay.

04 18 56 05 CDR Put yours in there.

04 18 56 10 LMP Okay.

04 18 56 26 LMP Okay. I'll turn around and get out of your way.

04 18 56 35 CDR Back off into your corner.

04 18 56 35 LMP Okay.

04 18 56 46 CDR *** get up on the step, a little bit.

04 18 56 48 LMP ...

04 18 57 11 CDR *** hold these hoses.

04 18 57 13 LMP Sure. *** step?

04 18 57 31 CDR Turn around.

04 18 57 32 LMP Okay.

04 18 58 01 CDR I wonder if I need to get the water in there? Maybe you could do that.

04 18 58 02 LMP Okay.

04 18 58 07 CDR Every *** else is in.

04 18 58 09 LMP Will do.

04 18 58 10 CDR Wait a second. Got it.

04 18 58 13 LMP Okay.

04 18 58 45 LMP Got the window heater on over there, Pete?

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04 18 58 48 CDR No. I'll have to wait until you turn around.

04 18 59 00 CDR Let's - How you doing over there?

04 18 59 02 LMP Good. Just about got it done.

04 18 59 06 CDR Okay. I'll turn on your window heater in just a second.

04 18 59 08 LMP All right. That's it.

04 18 59 10 CDR You get in your corner again.

04 18 59 15 LMP Okay.

04 18 59 17 CDR I don't know about you, but my suit is collapsing around me. How about you?

04 18 59 21 LMP That's right.

04 18 59 22 CDR Huh?

04 18 59 23 LMP Yes, so's mine. Cabin pressure must have pumped a little.

04 18 59 31 CDR It's the last breaker in the upper left. Okay, now, verify. Don EV gloves - Wait a minute - -

04 18 59 39 LMP *** here.

04 18 59 40 CDR Torso tie-down?

04 18 59 42 LMP Mine's okay.

04 18 59 43 CDR All O₂ connectors locked?

04 18 59 45 LMP *** mine. I'll check yours. I'll check yours again. Locked; that one's locked. That's locked. They're vertical. Are my diverter valves vertical?

04 18 59 57 CDR Let's see. Your diverter valves are vertical. Everything looks locked, here? ***

04 19 00 05 LMP Make sure the water lock is in. Is the water lock in?

04 19 00 07 CDR You don't have a lock on your water control.

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04 19 00 09 LMP - - ... little pins go in.

04 19 00 10 CDR No, it's - it's locked.

04 19 00 11 LMP Hey, here's one that doesn't have a lock locked.

04 19 00 16 CDR That's locked.

04 19 00 17 LMP Okay. Mine is giving a squeak.

04 19 00 20 CDR What am I hung under?

04 19 00 23 LMP Under there? Okay. Go ahead.

04 19 00 26 CDR I think we ought to get over here where we turn on the oxygen.

04 19 00 29 LMP That's right. Got a warning tone for a PRESS or something.

04 19 00 33 CDR Yes. We

04 19 00 37 LMP We need PRESS O₂ ON. *** what it says?

04 19 00 42 CDR Yes. No; wait a minute. Excuse me. PLSS DIVERTER, MIN. Okay.

04 19 00 47 LMP Okay.

04 19 00 48 CDR PLSS pump, on.

04 19 00 49 LMP Just wait. Let me read that thing.

04 19 01 06 CDR *** Let's get the oxygen on.

04 19 01 07 LMP Okay.

04 19 01 09 CDR Wait a minute. Get your pump on.

04 19 01 14 LMP There we go. DIVERTER, MIN; PRESS REG's A and B, EGRESS.

04 19 01 20 CDR Okay.

04 19 01 21 LMP Try that for size. Okay. They're EGRESS.

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04 19 01 25 CDR Okay. *** PLSS O₂, ON.

04 19 01 29 LMP Okay. Verify - Okay, that's a good idea.

04 19 01 39 LMP There we go.

04 19 01 45 CDR I've got an O-flag, a tone on, and - -

04 19 01 48 LMP Okay. Check your CB configuration while we wait.

04 19 01 57 CDR I don't think we can both turn around at the same time.

04 19 02 00 LMP Okay. Go ahead and check yours, and I'll check mine.

04 19 02 13 CDR How's your window doing?

04 19 02 16 LMP It's clearing up.

04 19 02 25 CDR Oh, boy! That suit was really clapped down around me.

04 19 02 28 LMP Yes.

04 19 02 47 CDR Yes. CB's look pretty good.

04 19 02 49 LMP Okay. Let me check mine.

04 19 02 56 CDR And I'm sitting at 3.8. Okay.

04 19 03 13 LMP Okay. Looking good. Turn my suit PRESS up. Coming on up. Do I need ...K check now?

04 19 03 35 CDR Yes.

04 19 03 36 LMP Okay. Feels good in this one-sixth g, doesn't it?

04 19 03 43 CDR Yes, except I noticed with the slight slope we're standing on, I keep falling in the back.

04 19 03 47 LMP Yes.

04 19 03 50 CDR I think I left my oxygen off. Coming up.

04 19 04 13 LMP Those rocks have been waiting 4-1/2 billion years for us to come grab them.

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04 19 04 18 CDR Think so, huh?

04 19 04 19 LMP Let's go grab a few (laughter). Yes. Heck, yes.

04 19 04 23 CDR Get an ALSEP out first.

04 19 04 24 LMP Okay.

04 19 04 27 CDR *** the old check. Okay. Mine's holding real good.

04 19 04 41 LMP Got a good tight suit?

04 19 04 43 CDR Yes. And the tone came on, so I'm ready to have the oxygen off. I've got a good tight suit.

04 19 04 59 LMP Okay. ... - -

04 19 05 00 CDR Here we go. Houston, are we GO for EVA?

04 19 05 07 CC Stand by, Intrepid. We'll be right with you.

04 19 05 12 LMP Okay.

04 19 05 13 CDR Stand by? You guys ought to be spring-loaded.

04 19 05 20 CC Intrepid, you're GO for EVA.

04 19 05 21 LMP ... - -

04 19 05 22 CDR Roger. CABIN REPRESS valve, closed?

04 19 05 25 LMP Okay. Just a second.

04 19 05 26 CDR Easy does it.

04 19 05 30 LMP CABIN REPRESS, close.

04 19 05 36 CDR Okay. DUMP valve open, then AUTO at 3-1/2.

04 19 05 43 LMP Okay. Easy does it.

04 19 05 52 CDR Want me to help you?

04 19 05 53 LMP ***

04 19 06 03 CDR What do you need?

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04 19 06 04 LMP Just need to move a little bit.

04 19 06 06 CDR Okay.

04 19 06 15 LMP Kind of give me a push back, Pete.

04 19 06 21 CDR Why don't you let me get it, Al? Stand up. Stand up, Al.

04 19 06 26 LMP I - I got it.

04 19 06 28 CDR The ... in the way again.

04 19 06 29 LMP Yes.

04 19 06 31 CDR Why don't you - Wait, listen. You just tire yourself out doing that. Let me get it. That a boy. Okay. That's it, cabin going down. Okay.

04 19 06 47 CDR MARK.

04 19 06 48 CDR 3.5. Okay. Let me see.

04 19 06 54 CC Copy 3.5.

04 19 06 55 CDR Verify cuff gage does not drop below 4.8.

04 19 07 00 LMP Sure doesn't.

04 19 07 01 CDR Man, mine's up in the overhead someplace. You got a foggy visor?

04 19 07 12 LMP No.

04 19 07 14 CDR No? Verify cabin at 3-1/2, suit circuits at 3-1/2 to 4.5, and it's up there at 4.2.

04 19 07 29 LMP Okay.

04 19 07 33 CDR PGA is greater than 4.8 and it's decaying.

04 19 07 35 LMP Go.

04 19 07 37 CDR Okay, Houston, we're GO to open it all the way here. How about you?

04 19 07 41 LMP They said GO.

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04 19 07 44 CDR Okay, FORWARD DUMP valve, open.
04 19 07 46 LMP That's it, Pete.
04 19 07 47 CC Roger, Intrepid. Looks good here.
04 19 07 48 LMP Feels good. ...
04 19 07 56 CDR When do we turn on the water - -
04 19 08 01 LMP Just as soon as we get this thing down real low.
04 19 08 07 CDR We got a tone.
04 19 08 08 LMP That's right.
04 19 08 11 CDR And an H₂O flag.
04 19 08 12 LMP That's good. Both suits.
04 19 08 20 CDR I show 1 pound on the cabin.

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04 19 08 22 LMP Okay.

04 19 08 56 LMP How's it look?

04 19 08 57 CDR Oh, it's about 0.2.

04 19 09 00 LMP Let's give it a go.

04 19 09 01 CDR Okay.

04 19 09 10 LMP Not quite.

04 19 09 12 CDR Just let it sit for a while.

04 19 09 11 LMP Yes.

04 19 09 35 CDR On about a 0.1 now.

04 19 09 44 LMP Okay. Give me a little push down.

04 19 09 46 CDR Down?

04 19 10 09 CDR How are you doing?

04 19 10 10 LMP Oh, I'm doing great; just waiting for the pressure to get low enough to open the hatch.

04 19 10 14 CDR You can reach that upper left-hand corner; you can feel it.

04 19 10 24 LMP Easy, easy does it.

04 19 10 30 CDR There you go.

04 19 10 31 LMP Got it, babe.

04 19 10 33 CDR Okay. The hatch is open now. Okay.

04 19 10 36 LMP Let me reset the valve.

04 19 10 38 CDR Okay.

04 19 10 39 LMP Whoops. Wait a minute. I'll hold it. Pull her open again.

04 19 10 47 CDR There. You got it?

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04 19 10 49 LMP Okay. I got the hatch. Go ahead and reset the valve.

04 19 10 53 CDR Okay. Now, what I need to do is get some water going after you stand up. Okay?

04 19 10 57 LMP Good shape.

04 19 11 00 CDR All right. Lean it against me.

04 19 11 05 LMP Okay. Feedwater, open. Okay. Let's get it going.

04 19 11 16 CDR Mine's on.

04 19 11 18 LMP Mine's on, too.

04 19 11 21 CDR Okay.

04 19 11 22 LMP ...

04 19 11 23 CDR All right, while we're doing that, rest until cooling sufficient; verify PGA stable at 3.7. Mine's still up there at some horrendous number. 4.8 - -

04 19 11 32 LMP Get these.

04 19 11 33 CDR No wonder I can't move. ... down. IM suit circuit 3.6 to 4.0.

04 19 11 38 LMP It is 4.1.

04 19 11 41 CDR Good. ***4.3. CWEA status. You should have an ASCENT PRESS light, a preamps, and an ECS.

04 19 11 48 LMP Exactly what we've got.

04 19 11 50 CDR And H₂O SEP COMPONENT LIGHT, ON.

04 19 11 52 LMP Okay.

04 19 11 54 CDR LIGHTING ANUNCIATOR/NUMERICS, DIM.

04 19 11 58 LMP Okay.

04 19 12 00 CDR CB(16): TV, close.

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04 19 12 02 LMP All right.

04 19 12 03 CDR Do that.

04 19 12 04 LMP I'm going to turn around.

04 19 12 05 CDR Okay.

04 19 12 19 LMP Closed.

04 19 12 21 CDR Now, if you'll just hold still a minute - No, you're going to have to turn around and get in the corner.

04 19 12 27 LMP Okay.

04 19 12 28 CDR And bend over and I'll get your antenna up.

04 19 12 29 LMP All right.

04 19 12 31 CDR Easy. Easy does it.

04 19 12 33 CDR Okay. Bend over.

04 19 12 34 LMP Okay.

04 19 12 35 CDR ...

04 19 12 50 CDR One antenna up.

04 19 12 51 LMP Okay.

04 19 13 10 LMP Yours is up.

04 19 13 11 CDR Okay. ... cool.

04 19 13 25 LMP Why don't you put those LIGHTING ANUNCIATORS to DIM?

04 19 13 28 CDR Okay. If you'll back into your corner so I can turn around.

04 19 13 31 LMP All right.

04 19 13 44 LMP Okay.

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04 19 13 52 CDR I'm finding it the other way around. In the airplane, I walk flatfooted. Here, I'm standing on my toes all the time.

04 19 14 07 CDR A pretty good vacuum. Wonder how long it's going to take this boiler to get going.

04 19 14 24 LMP New visor.

04 19 14 27 CDR No. Same as yours.

04 19 14 30 LMP Some of this cool air in here and it'll be okay.

04 19 14 37 CDR There goes the hatch.

04 19 14 38 LMP Oh, oh. Let's get that baby. Get it. Okay. I'll hold it open. Yes, because that water - -

04 19 14 47 CDR Yes, I know.

04 19 14 48 LMP That'll tend to keep it closed. Yes, let's pull it all the way open while waiting for ...

04 19 14 52 CDR There. That a boy.

04 19 15 26 CDR Hey, my boiler's on the line.

04 19 15 28 LMP Yes. Mine's coming up, too. Feels real good.

04 19 15 31 CDR Let's see. I can go to intermediate flow, huh?

04 19 15 37 LMP Yes. Soon as she starts.

04 19 15 41 CDR ***, it's in INTERMEDIATE. I'm ready to go over the sill.

04 19 15 44 LMP Just a second.

04 19 15 45 CDR Open my checklist.

04 19 15 46 LMP ***find the LEC; hey, come on, babe.

04 19 15 50 CDR Deploy the LEC and the MESA; mobility; cg*** downreach, arm motion, walking balance, and all that good stuff.

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04 19 15 59 LMP All right. Just a second, pull the door all the way back. ***hand you something? ***you go out, and then I'll hand it to you. Yes. By-by; see you in a minute.

04 19 16 15 CDR How am I doing? Am I hanging on something here? I get the feeling I'm stuck under something here.

04 19 16 20 LMP You're bumping into the - the purse there. ***for-ward.

04 19 16 24 CDR Purse? Clear the purse. Okay.

04 19 16 28 LMP All right, now you're in good shape.

04 19 16 29 CDR Okay.

04 19 16 30 LMP Go straight down from where you are.

04 19 16 31 CDR Okay.

04 19 16 34 LMP Good; that's good.

04 19 16 36 CDR Okay.

04 19 16 37 LMP Doing good. You're headed right square out the hatch. You'll have to bend over more, though. Wait - wait - wait - oops. Come forward a little. Go to your right - here - There you are. Now go. Get that little - -

04 19 16 57 LMP You got to kneel down a little more.

04 19 17 01 LMP Well, I'll push you if you don't mind.

04 19 17 08 CDR What am I hung on?

04 19 17 10 LMP ***You're okay.

04 19 17 12 CDR Got this garbage bag in my way.

04 19 17 15 LMP Okay. You're headed out the door. Looks real good.

04 19 17 37 CDR Okay. Okay, I'm out on the porch. Just a second, gang, let me pull the pip pin. Deploy the MESA.

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04 19 17 56 LMP Okay.

04 19 17 57 CDR And I'm going to give a heck of a tug on that handle. Down another step.

04 19 18 01 LMP Okay. While you're doing that, let me get the LEC ready for you.

04 19 18 08 CDR Good Godfrey. That - that handle's in there like something I never saw before.

04 19 18 16 LMP How's the lock joint? Is it easy to get - Was it easy to get the lock out?

04 19 18 19 CDR Yes. Now that's better. I couldn't even get the handle out of the deal. I just pulled the table releases down.

04 19 18 26 LMP Okay.

04 19 18 27 CDR There you go.

04 19 18 32 LMP You haven't got anything to do, so you can take this with you.

04 19 18 35 CDR Hey, I'll tell you what we're parked next to.

04 19 18 37 LMP What?

04 19 18 38 CDR We're about 25 feet in front of the Surveyor crater.

04 19 18 41 LMP That's good. That's where we wanted to be.

04 19 18 43 CDR I got - I bet you when I get down to the bottom of the ladder, I can see the Surveyor.

04 19 18 49 LMP Roger. Here you are. You want to take this with you, Pete?

04 19 18 51 CDR Just swing her out here.

04 19 18 54 CC Sounds good, Pete. Just like you wanted.

04 19 18 55 CDR That's right.

04 19 19 00 LMP Okay; now hold it there just a second, Pete.

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04 19 19 02 CDR Okay.

04 19 19 04 LMP One second.

04 19 19 09 CDR Do you have any TV, Houston?

04 19 19 16 CC Roger. We've got a TV.

04 19 19 17 CDR How's the color?

04 19 19 18 CC No Pete Conrad as yet.

04 19 19 22 CDR I'm at the top of the ladder. Okay. Now look, this thing is all the way out of the package. How do you want me to do it? This way?

04 19 19 29 LMP Just keep going.

04 19 19 30 CDR Huh?

04 19 19 31 LMP Adios.

04 19 19 32 CDR No, but this thing isn't all the way out of the - ... Here, let me have this end of it. Let me come back up the ladder a notch.

04 19 19 41 LMP Okay.

04 19 19 43 CDR That a boy. Which end is that? ***do I want? This is the end I want.

04 19 19 48 LMP There you go.

04 19 19 50 CDR There we go (laughter). Look at that stuff go.

04 19 19 54 LMP Sure glides at one-sixth, doesn't it?

04 19 19 56 CDR Yes. *** Looks - looks like we got 900 feet of this stuff.

04 19 20 05 LMP Hey - Okay, just a second. Don't go down yet. I've got to get my camera on you, babe.

04 19 20 09 CDR I can't go down yet, anyhow. I got to - whoops - get the LEC all the way down.

04 19 20 14 LMP Okay.

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04 19 20 15 CDR There you go.

04 19 20 34 CDR All right. Sure can't figure out what kind of a snarl I've got here.

04 19 20 53 CDR Hey, Al.

04 19 20 54 LMP Yes.

04 19 20 55 CDR Can you look - can you look out your window?

04 19 20 57 LMP Sure.

04 19 21 00 CDR All right. I think I see what's wrong.

04 19 21 05 LMP What's the problem?

04 19 21 06 CDR Oh, that LEC came out of the bag in three pieces, and, as you would well imagine, I picked the wrong piece.

04 19 21 13 LMP Do you want me to pull it back in and throw you the end?

04 19 21 15 CDR No. That's not the problem.

04 19 21 17 LMP Okay. It's no trouble.

04 19 21 18 CDR I got it right now. Man, they aren't kidding when they say things get dusty. Whew! I'm headed down the ladder.

04 19 21 24 LMP Okay, wait. Let me get the old camera on you, babe.

04 19 21 27 CDR Okay.

04 19 21 49 CDR Man, is that a pretty-looking sight, that LM.

04 19 22 00 CC You're coming into the picture now, Pete.

04 19 22 01 CDR Okay.

04 19 22 04 LMP Okay; got the old camera running.

04 19 22 07 CDR Okay. Down to the - the pad.

04 19 22 13 LMP Okay.

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04 19 22 14 CDR Whoopie! Man, that may have been a small one for Neil, but that's a long one for me. I'm going to step off the pad.

04 19 22 22 CDR MARK.

04 19 22 23 CDR Off the - ooo, is that soft and queasy. Hey, that's neat. I don't sink in too far. I'll try a little - Boy, that Sun's bright. That's just like somebody - shining a spotlight on your hand.

04 19 23 10 CDR Well, I can walk pretty well, Al, but I've got to take it easy and watch what I'm doing. Boy, you'll never believe it. Guess what I see sitting on the side of the crater.

04 19 23 25 LMP The old Surveyor, huh?

04 19 23 26 CDR The old Surveyor; yes, sir (laughter). Does that look neat! It can't be any further than 600 feet from here. How about that?

04 19 23 42 CDR Okay. Let me see. I've got a little chore to do here, right?

04 19 23 45 CC Well planned, Pete.

04 19 23 47 CDR Say again.

04 19 23 52 CC I say that was well planned, Pete.

04 19 23 53 CDR Yes. Just a couple of months with a lot of people. Let's see, deploy the LEC and the MESA - That's done. I'm looking at my mobility, cg shift. I have the decided impression I don't want to move too rapidly, but I can walk quite well. That cra - The Surveyor really is sitting on the side of a steep slope, I'll tell you that. Okay. Now, I'll work on my contingency sample. Got to walk real careful, Al.

04 19 24 34 LMP Okay.

04 19 24 35 CDR Can you see me all right?

04 19 24 36 LMP Not yet. I need you ... back of the window for
- -

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04 19 24 39 CDR Okay.

04 19 24 40 LMP - - check.

04 19 24 41 CDR ... move in a hurry.

04 19 25 01 CDR As you might suspect from some of the pictures Neil brought back, gang, I have a - several small rocks sitting out in front of me that have a neat amount of dirt built up around them. I'm not sure that my descent engine didn't blow them there. But then again, it may not have. I have the contingency sample - -

04 19 25 38 CC Roger, Pete. Copy that. Is the dirt built up on the side closest to the LM?

04 19 25 41 CDR Well, let me - I'm going over to get my contingency sample, and I'll get one of the rocks - in the sample. And yes, as a matter of fact, it is built up on the side that - that the LM landed on. Let me get it. Well, there's one scoop. There's another with some more rocks in it. Whee! This dirt's just like the one-sixth g airplane, Al. Flies up in the air, and you can just chase it around. Boy, now, I'll tell you - you know, this Sun, it - it really is - it's just somebody's got a - a superbright spotlight. Here's another good looking rock. Whoops! In the sample. There's another rock I want to get in it.

04 19 27 04 CDR I think that's about enough, don't you? Except there's one - one big rock that's too pretty to pass up. No, I ... not be a hog. It won't fit. I'll go over here and get this other one, though.

04 19 27 17 LMP Boy, you sure lean forward, Pete.

04 19 27 20 CDR ***I lean forward; I feel like I'm going to fall over in any direction.

04 19 27 24 LMP You're leaning about - -

04 19 27 25 CDR Say, Houston, one of the first things that I can see, by golly, is little glass beads. I got a piece about a quarter of an inch in sight, and

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I'm going to put it in the contingency sample bag, if I can get it. I got it. Am I really leaning over, Al?

04 19 27 48 LMP You sure are. You - On Earth, you'd fall over, I believe.

04 19 27 52 CDR Huh?

04 19 27 53 LMP On Earth, you'd fall over leaning that far forward.

04 19 27 57 CDR But - it seems a little weird, I'll tell you. It's - Don't think you're going to steam around here quite as fast as you thought you were.

04 19 28 04 LMP ***tell you, your boots are digging in the soil quite a bit. If you don't pick up your feet, you really kick a - a load of dirt ahead of you. Your left foot's got a big mound ahead of it right now that it's just pushing along.

04 19 28 18 CDR Uh-oh, do I hear a tone?

04 19 28 21 LMP Yes. I've got an H₂O A.

04 19 28 25 CDR You do?

04 19 28 27 LMP Yes. I wonder why? Hey, Houston.

04 19 28 36 CC Al, verify feedwater's on.

04 19 28 37 CDR Ish.

04 19 28 38 LMP It's been on. It's still on.

04 19 28 41 CDR Boy, do I sink in. Wow!

04 19 28 43 LMP Feedwater's on and it's still real cool in here.

04 19 29 06 CC Al, DIVERTER VALVE to MINIMUM.

04 19 29 07 LMP Okay. It's MINIMUM now. What do you think I may have done? Broken through the sublimator or something?

04 19 29 20 CC That's affirmative, Al.

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04 19 29 33 CC We have a good shot of you there, Pete.

04 19 29 34 CDR Okay. Well, I'm starting to - take this baby apart. While I am doing that - Houston.

04 19 29 51 CDR That descent engine! It's just like Neil's.

04 19 29 54 CC Go ahead.

04 19 29 55 CDR I didn't dig any crater at all. Al, you've really got to watch your step down here.

04 19 30 06 LMP Okay.

04 19 30 18 CDR Look at all those good things in this MESA. Things that I've seen before. Didn't hardly stroke the gear at all, and it looked like we were - looks like I landed just about vertical.

04 19 30 44 CDR Just like Neil and Buzz said, Al. You get on a little slope and you tend to keep on going.

04 19 31 18 LMP ... fell over.

04 19 31 28 CDR Would you believe it - the MESA is too low for once?

04 19 31 39 CC Al, how does the feedwater look now?

04 19 31 45 LMP Well, it's still got an A in there, but I'm plenty cool; I went back to MINIMUM, and I'm sitting here in MINIMUM. What do you think happened?

04 19 32 04 CC Al, we would like to watch it a little bit. It could be instrumentation. Stand by.

04 19 32 06 LMP Okay.

04 19 32 37 CDR (Humming) How long have I been out, Houston?

04 19 32 47 CC Pete, you've been out 25 minutes, and you're about 4 minutes ahead.

04 19 32 50 CDR Okay. I got the table out, ... the MESA, and I'm setting up ETB at this time. Let's see. How is this packed? Very nice. Very nice.

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04 19 33 12 CDR Hey, Al, ... work out here all day. Just take your time.

04 19 33 20 LMP Almost too cold on INTERMEDIATE. I'm thinking seriously of going to M.

04 19 33 36 CDR There's some - color charts.

04 19 33 53 CDR (Dum de dum dum dum, de de dum dum dum) ***tray is right side out.

04 19 34 04 CDR All right. No, that's not right. ***I think our next big surprise, Al, is getting this thing up.

04 19 34 17 LMP Getting what up?

04 19 34 18 CDR The ETB.

04 19 34 20 LMP Oh, is that right?

04 19 34 23 CDR (Laughter) We'll see what happens. Okay? How's your water?

04 19 34 26 LMP Oh, it still shows an A, but it's cool. It may be instrumentation.

04 19 34 30 CDR Let's hope so. Just beginning to warm up to this task.

04 19 34 53 CDR LCG water pump sounds like a diesel truck running out here. Comforting to know that it's running. I'm off to get the battery.

04 19 35 09 IMP Okay. I think I know what happened, Houston. I think I know what happened.

04 19 35 25 LMP Ahhh!

04 19 35 27 CC Pete, go ahead.

04 19 35 28 CDR What did - what did you just do, Al?

04 19 35 29 LMP Man, I just figured it out.

04 19 35 31 CDR You sure did. You just blew water out the front of the cabin.

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[REDACTED]

04 19 35 34 LMP That's what - -

04 19 35 35 CDR Ice crystals.

04 19 35 36 LMP - - that's what had happened to the PLSS.

04 19 35 39 CDR What's that?

04 19 35 40 LMP Oh, the door had swung shut, like it did before; and it probably bothered the sublimator, because it wasn't in a good vacuum anymore.

04 19 35 45 CDR Yes.

04 19 35 48 LMP So, I opened the door, and it's probably going to start working in a minute.

04 19 35 52 CDR (Laughter) I should hope so. When you opened the door, that thing shot iceballs (laughter) straight out the hatch.

04 19 35 58 LMP Yes. And there's probably - all from my - never thought you'd have to do that. Hey, you bent the outside of that front hatch on the way out. You tore some of the skin.

04 19 36 08 CDR How did I do that?

04 19 36 09 LMP I don't know; must have hit your PLSS there. Got a nice scrape mark right along the way out.

04 19 36 19 CDR Sorry about that. ...got to be gentle.

04 19 36 23 LMP Houston - -

04 19 36 27 CC Al, it's looking better.

04 19 36 28 LMP Yes, I - I didn't realize that the hatch could close quite so tightly like that. It was just - when I was working on the other side of the cabin, the hatch went closed and I didn't notice it, and apparently the - it quit holding a good vacuum in here. My H₂O A flag is OFF now, so everything is copacetic.

04 19 36 54 CC Roger, Al. It looks good down here.

[REDACTED]

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04 19 36 55 LMP Okay.

04 19 36 56 CDR Okay. I've got both canisters, Al, both batteries. As soon as I get them in here, I got to pack the contingency sample.

04 19 37 09 LMP Okay. Sitting tight; waiting for you, babe.

04 19 37 12 CDR Okay, I just - I tell you, you really can't move as fast as I thought you could. You got to take it real easy. It's a feeling that I'm most spiffy on the balance up here. Help. I may have to -

04 19 38 04 CDR Okay. Man, did I get dirt all over myself. This is what is known as dirt's dirt.

04 19 38 39 LMP Let me know when you start heading back out there to duty, Pete - Pete - Pete. I'll get a good shot of you, babe.

04 19 38 45 CDR Getting ready to do it in just a second, Al, just as soon as I get the bag. I got the contingency sample in the bag.

04 19 38 52 LMP Okay.

04 19 38 53 CDR Just as - I've got everything else, bus batteries, LiOH canisters, and I just got to hook up the LEC. (Dum do do do, do do do) I tell you one thing, we're going to be a couple of dirty boogers.? Why don't you take up a little slack, Al?

04 19 39 33 LMP All right. Just a little. It works. Hey, this is - - What?

04 19 39 38 CDR I tell you, this is dirt, dirt.

04 19 39 49 CDR (Laughter) That's the greatest.

04 19 39 51 LMP What's that?

04 19 39 53 CDR My end of the ETB just came out of its metal slot. Somebody that made this can didn't make it like all the training units; they made it littler, so it came out. I caught it as it was

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going by. You know this metal pin keeps it from sliding all the way through?

04 19 40 09 LMP Yes.

04 19 40 10 CDR Unfortunately, it's smaller than the metal holder. Kind of interesting.

04 19 40 16 CDR Wait, wait, wait, wait, wait, wait.

04 19 40 17 LMP Okay.

04 19 40 21 CDR And, come on. That a boy. Wait just a minute. Okay, now.

04 19 40 28 LMP Hold the phone a second.

04 19 40 32 CDR You can - wait, wait. Here I go. De de de do do (laughter). Wait until I get in this shadow, because I can't see what I'm doing more than right here in the front - -

04 19 40 44 LMP Okay.

04 19 40 45 CDR - - and I'm about to fall down this little crater hole. Oops. Wait, it really does get -

04 19 40 51 LMP You'd better get over here in the shadow.

04 19 40 54 CDR I'm down in a - Oops, another crater hole (laughter).

04 19 40 59 LMP It's a regular obstacle course over there.

04 19 41 00 CDR Man, am I going to get dirty. Hold it, now. Back up a little ways. ... Tell me if it's clear of the porch rail, huh?

04 19 41 18 LMP It is now.

04 19 41 19 CDR It is? I can't see a thing, looking into the Sun. Pull.

04 19 41 23 LMP Okay, I'll bring her in.

04 19 41 27 CDR ***it in easy.

04 19 41 29 LMP Okay. Good rig.

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04 19 41 30 CDR I can't. Wait a minute. Wait, wait, wait, wait. That a boy; now, I can see. Oh, ... (laughter). I'm getting dirty. Whee! Got it.

04 19 41 54 LMP Okay. I'll just step right back out to you in a flash.

04 19 41 58 CDR Okay, let me see. While you're doing that, what was I supposed to do? Oh, I know, possible TV deploy. I'll go work on the - yes - tripod.

04 19 42 13 LMP Okay.

04 19 42 15 CDR Dum dum, tunk-e tunk-e tum. Trying to learn to move faster. Pretty good. Hey, I feel great. How long we been out, Houston?

04 19 42 39 CC Pete, you're 34 minutes into the EVA, and you're right on the nominal time line.

04 19 43 11 CDR That contingency sample is black.

04 19 43 14 LMP You'd better believe it.

04 19 43 22 CDR I may have put - filled the bag too full.

04 19 43 31 LMP ***go into one of these.

04 19 43 34 CDR One camera, two cameras. Come on, little fellow. Here comes one TV camera.

04 19 43 57 LMP Okay, ready for you, Pete.

04 19 43 59 CDR Right. Well - Shoot - All right. I got to stop what I'm doing. Let me come over here and get it. Here I come.

04 19 44 11 LMP Okay.

04 19 44 14 CDR De-dum dum dum. I feel like Bugs Bunny (laughter).

04 19 44 31 LMP Take it away whenever you need it.

04 19 44 33 CDR Okay. I'm going right now, if I don't fall over, I can -

04 19 44 41 LMP Sure goes out easy.

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04 19 44 42 CDR *** Let her keep coming. Let me get over to this side. Let's get it over the handrail. Hold it, hold it right there.

04 19 44 54 LMP Okay.

04 19 44 55 CDR Now, I can't see it on account of the Sun, so tell me when it's over the handrail.

04 19 44 58 LMP It's over the handrail now.

04 19 44 59 CDR All right. Just lower it real slow. That's a boy. Easy. Hold it right there.

04 19 45 04 LMP Okay.

04 19 45 05 CDR Just stay put. Okay, let her go.

04 19 45 12 LMP That's it.

04 19 45 13 CDR All right. Now, just hold it right there. Hold it; hold it; hold it. One - that is - two. Okay, let go. All the way.

04 19 45 28 LMP Okay.

04 19 45 31 CDR All right, LEC, possible TV deploy, LMP egress, contingency sample area. Deploy color chart and place 70 millimeter on the MESA. So I get me a camera.

04 19 45 57 LMP Okay, be out in a minute. Got to set the camera, and I'll be right out.

04 19 46 01 CDR All right. Let me know so I can photograph you.

04 19 46 04 LMP Okay.

04 19 46 10 CDR Okay, contingency sample 8, that's 8. Eight, five.

04 19 46 57 CDR We sampled in quite a few places, Houston, so I'm taking a bunch of pictures. Four - -

04 19 47 02 CC Roger. Pete.

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04 19 47 03 CDR - - five pictures.

04 19 47 04 CC Pete, for your information for those photos, your shadow lines right now is about 45 feet on a level plane.

04 19 47 14 CDR Okay, very good. Contingency sample area I got; deploy the color chart (laughter). Take your time, Al.

04 19 47 26 LMP Okay. I'm ready to do it.

04 19 47 53 LMP Houston. How does the LM look? I'm getting ready to move out the front door.

04 19 48 01 CC Roger. I'll stand by on that.

04 19 48 34 CDR Dum de dum dum. Whoops. Hey, wait, I'm going to - I wonder if I can get in the bottom of this crater hole.

04 19 48 44 CC Al, Houston. The LM is looking good. You're GO for egress.

04 19 48 48 LMP Okay.

04 19 48 49 CC Pete, you're at 40 minutes into the time line, and you're about 4 minutes ahead.

04 19 48 53 CDR Okay. ... (laughter) Oh dear.

04 19 49 08 LMP Okay, Pete, here I come.

04 19 49 09 CDR Wait, wait, wait, wait.

04 19 49 11 LMP You ready now?

04 19 49 12 CDR No, no, no, no. Let me come - dum de dum dum dum. Got to run through this crater. Here I come. Now, wait a minute, LM egress 5:6 - *** to a shambles ... that color chart. I tried to throw it in the ground; and, naturally, it went in sideways, and it's got itself so covered with dirt, you wouldn't know what color it was. Okay, I'm ready for you.

04 19 49 41 LMP Okay, you might want to give me directions, too.

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04 19 49 43 CDR All right, yes.

04 19 49 46 LMP Bumping anything?

04 19 49 50 CDR Okay, you're coming straight out and the further you can bend over, the better. All right, move to your right.

04 19 49 57 LMP Okay.

04 19 49 58 CDR That a boy. Now. That's it. You have to get your knees down. That a boy. Good shape, good shape.

04 19 50 10 LMP Okay, I'll pull the hatch closed here.

04 19 50 13 CDR Okay. Don't lock it. Okay, you're right at the edge of the porch.

04 19 50 20 LMP Okay.

04 19 50 34 CDR Hey, and if I'd landed 20 feet behind where I landed, we'd have landed right smack in that crater.

04 19 50 47 CDR ***

04 19 50 49 LMP Oh, it's kind of hard to move the door. I was just getting in and trying to get it.

04 19 50 55 CDR There you go.

04 19 50 57 LMP I'm going to try to keep the door open for us there.

04 19 51 01 CDR Okay.

04 19 51 10 LMP Pretty good, I'd better get my visor down though.

04 19 51 13 CDR Yes, sir. My, that Sun is bright.

04 19 51 25 LMP Well, the IM looks nice on the outside.

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04 19 51 27 CDR Houston, let me ask you a question. How important is that color chart? I tried to spike it in the ground, you know, so it was perpendicular to the Sun, and it just didn't do that, and it's all covered with dirt. I can go back and resalvage it, if you want to take the time. Okay, you're on the last step there.

04 19 51 47 CC Press on with what you're doing there, Pete, and we'll get a answer back to you.

04 19 51 50 CDR Okay. Okay. Turn around and give me a big smile.

04 19 51 55 CC Pete, press on. No problem.

04 19 51 57 CDR Okay. That a boy.

04 19 51 58 LMP Okay?

04 19 51 59 CDR You look great. Welcome aboard. Good place - Wait a minute - The chart I didn't get, deploy color chart on undisturbed surface. Didn't make it. Contingency sample area I got, and LMP egress I got. I'm off for S-band antenna.

04 19 52 16 LMP Okay. My, but that Sun is bright.

04 19 52 20 CDR Yes, take it easy.

04 19 52 23 LMP It feels good.

04 19 52 24 CDR Yes, you really do begin to adapt. You hop a little bit. If you turn around and walk over to your right a little bit and look over that crater, you're going to see our pal sitting there, and that's one steep slope it's on. Okay, now what have you got all over your boot? Stop. You picked up a piece of landing gear. ...

04 19 52 44 LMP Okay. There you go.

04 19 52 47 CDR That a boy.

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04 19 52 49 CDR Okay, I'm going into -

04 19 52 50 LMP Hey, you've got to watch it in these shadows.

04 19 52 52 CDR Yes. You can't see what you're doing. Come over here where I am. See that Surveyor sitting there?

04 19 52 57 LMP There that thing is. Look at that.

04 19 52 59 CDR Will you look how close we almost landed to that crater!

04 19 53 04 LMP Beautiful, Pete.

04 19 53 06 CDR Look at the descent engine. It didn't even dig a hole. Okay.

04 19 53 14 CDR Houston, I'm need to process - -

04 19 53 15 CC Pete, Houston.

04 19 53 16 LMP Go ahead, Houston.

04 19 53 17 CDR Hey, Al?

04 19 53 18 LMP Yes?

04 19 53 19 CDR I got to save this paper. Would you get - -

04 19 53 23 CC Pete, will you give us status the - on the LM and also some comments on your boot penetration?

04 19 53 30 CDR Okay. My comment's are exactly the same as Neil's. In fact, everytime I get down in one of these little craters, I sink in a lot further. I'd say our footsteps are sinking in -

04 19 53 40 LMP What do you want to do with it?

04 19 53 41 CDR Put it over by that Y-gear. I think I cover that rock box with it later. Remember, last minute change. And -



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04 19 53 51 LMP Hey, wait a minute. You want ...?

04 19 53 58 CDR Oh, ... I think it's pretty much the same as Neil and Buzz found, don't you, Al?

04 19 54 03 LMP I do. One thing I've noticed; it seems to compact into a very shiny surface. I guess the particles are very small and very cohesive, so when you - every footprint, as you look at it, it looks almost like getting a piece of rubber itself. It's so well defined, and you can't see any grains in it or anything.

04 19 54 24 CDR Al, can you find - can you find the Earth?

04 19 54 27 LMP Where's the Earth?

04 19 54 29 CDR Oh, there it is; I can see it. Hello there, Earth.

04 19 54 31 LMP Where is it?

04 19 54 32 CDR Just look at the S-band antenna and look up that way; it's right up there.

04 19 54 36 LMP I'll have to back up a little.

04 19 54 38 CDR Okay. Now - Where did we all agree was the best place to deploy this S-band? ... the Y-gear, huh?

04 19 54 43 LMP Yes. A little bit further out.

04 19 54 45 CDR That ought to - Here's a good spot. Hey, I don't want to get too far away from the cable.

04 19 54 49 LMP What's the - what's the matter with right here?

04 19 54 50 CDR That's a good place.

04 19 54 51 LMP Okay.

04 19 54 52 CDR Point to Earth.

04 19 54 54 LMP That's what it says.

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04 19 54 57 CDR Okay.

04 19 54 58 LMP I'm glad you didn't land back about 50 feet.

04 19 55 00 CDR That's what I'm saying, buddy (laughter).

04 19 55 03 LMP Hey, you can see some little shiny -

04 19 55 09 CDR Glass.

04 19 55 10 LMP Right - glass, in these rocks.

04 19 55 12 CDR Yes, I reported that.

04 19 55 16 LMP You can also see some pure glass, if you look around. You can jump up in the air.

04 19 55 24 CDR Hustle, boy, hustle. We got a lot of work to do. I've got to do my PAN's in 15 - 5 minutes here.

04 19 55 29 LMP Okay. I'm doing some useful work, like getting that TV camera going.

04 19 55 33 CDR Okay, good idea.

04 19 55 40 LMP You really got to be careful when you go out of the light into the dark.

04 19 55 44 CDR Yes. Okay.

04 19 55 56 LMP Okay. Move position 20 feet and 10.

04 19 55 57 CDR Hey, I got a - This second thing won't come out. Hey, give me a hand here.

04 19 56 07 LMP Yes, sir; what can I do for you?

04 19 56 09 CDR This second S-band thing won't deploy.

04 19 56 11 LMP Well, do you want me to pull or hold?

04 19 56 13 CDR On this?

04 19 56 14 LMP Yes. On this. Pull. Pull away from me.

04 19 56 17 CDR Okay.

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04 19 56 19 LMP Okay, never mind; forget it.

04 19 56 21 CDR You get it?

04 19 56 22 LMP No - I don't think it's - Let go, let go.

04 19 56 24 CDR Try a different -

04 19 56 25 LMP I got it; never mind.

04 19 56 28 CDR That's not right, is it? Doesn't that thing have two sections to it?

04 19 56 32 LMP No, never mind; forget it; let's go.

04 19 56 37 CDR Hey, Houston. Does the inner mast - It's just one piece, huh?

04 19 56 50 CC Copy the question. You want to know if the inner mast is one or two sections.

04 19 56 53 CDR Yes. It seems to me - I'm getting dumb-dumb, maybe. It looks shorter than it used to look in practice for some reason. I thought there was more than one section - -

04 19 57 06 CC Pete, that inner mast should be two sections.

04 19 57 07 CDR - - I think so; you have to pull out this. The top side ... in the inside.

04 19 57 16 LMP Move this TV over - cable over here by the front porch.

04 19 57 20 CDR Okay. Do you know - -

04 19 57 21 LMP The TV is almost off.

04 19 57 24 CDR - - you know, it is significantly easier just to do anything here. Just like this arm motion is so simple because you're not fighting the rest of your weight like you are there in one g.

04 19 57 36 LMP All set? Okay.

04 19 57 41 CDR (Laughter) Look at that; that leg doesn't want to - Go on down, leg (laughter).

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04 19 57 47 LMP Okay, let's get that TV out and show everybody. Wait a minute. Lock inner mast; lock outer mast; extend and lock brakes - we've done; align; remove thermal cover. Okay? We want thermal cover.

04 19 58 10 CDR Goodby.

04 19 58 19 LMP Okay, Houston, I'm going to move the TV camera now.

04 19 58 25 CC Roger, Al.

04 19 58 26 CDR Hey, it's real nice moving around up here. You don't seem to get tired. You really hop like a bunny. Where, oh where is Earth? There it is. Here is the TV. And let me set this - Pointing toward the Sun. That's bad. Point it here a minute. Dum de dum dum dum dum dum.

04 19 59 05 CDR There's that. Look at that go (laughter).

04 19 59 24 LMP Hey, Red, I was going to deploy this 20 feet and 10; but, because of the Sun being where it is, we're going to have to deploy it a little bit more toward the 2 o'clock position. I think that will be okay though. That will give you a good shot; right in here. I'll see if I can keep the Sun from getting in the camera at all. I'll have to move it ... hey, am I - -

04 19 59 47 CC Al, we have a pretty bright image on the TV; could you either move or stop it down?

04 19 59 50 CMP Okay, I'm going to have to stop it down. That's as far as it goes, Houston. How does that look to you?

04 20 00 10 CC No, it's still - still looks the same, Al. Why don't you try shifting the scene?

04 20 00 13 LMP Okay, I'm going - The problem is the LM is very reflective. Let me - I got two choices. Let me go over here further to the side, and you check and see if it reflects too much; and if it does, I'll have to go stick it in the shade. And then maybe shine past the LM; of course, that makes it not be too good either, but it may be the best we can do. See how this looks to you, Houston.

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04 20 00 39 CC Okay, Al. And also, you might try the automatic light control to the OUTSIDE.

04 20 00 56 CDR Okay, Al, watch.

04 20 00 59 LMP Wait a sec. Let me go - -

04 20 01 00 CDR I got - -

04 20 01 01 LMP How does that look, Houston?

04 20 01 07 CC Still looks the same, Al.

04 20 01 12 CDR (Laughter) Man, oh man, did that thing deploy!
(Laughter)

04 20 01 20 LMP Well, I'll tell you what let me do, Houston. Let me move it around here back, so the back is to the Sun, and maybe that'll help. Maybe that's the way we're going to have to do it.

04 02 01 32 CC Okay, Al; go ahead.

04 20 01 33 LMP Once we learn the trick here, I think we can do it each time. That may do it; that may do it, right there, Houston.

04 20 01 51 CC Al, we haven't seen any change at all. Why don't you go and take and put your glove in front of the lens, but not over it, to see whether we can get any change at all.

04 20 01 59 LMP What do you see now?

04 20 02 04 CC Still the same, Al. We've got a very bright part - about 20 percent of the top, and black on the bottom.

04 20 02 13 LMP Well, got any suggestions? I'm pointing it in a nonbright area. Let me point it - -

04 20 02 21 CC Stand by, Al.

04 20 02 22 LMP I - got it pointed away from the Sun here. It may be ground problems. I hope it is. All the connections look good.

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04 20 02 45 CC Hey, Al, why don't you take a good close look at the lens and make sure it's in the right configuration?

04 20 02 50 LMP Okay, I've got it on at focus at infinity; I've got the zoom at 30 or 40 or 50; I'll put in 75; and I got the f-stop at 22.

04 20 03 09 CC Roger, Al; we copy.

04 20 03 12 LMP I've got it pointing exactly opposite of the Sun here, so -

04 20 03 28 CC Al, we see no change at all in the scene. Why don't you just give it a little tap? It may be the color wheel is hung up.

04 20 03 51 LMP I put this antenna up 1 foot too close.

04 20 04 11 CDR Hey, Houston, it won't hurt if my PLSS antenna hits this S-band antenna, will it?

04 20 04 26 CC Stand by on that, Pete.

04 20 04 34 CC Pete, that's no problem.

04 20 04 35 CDR Okay.

04 20 04 46 CDR Hey, Al.

04 20 04 47 LMP Yes.

04 20 04 48 CDR Come over here. You're going to have to help me line up this antenna.

04 20 04 51 LMP All right. Houston, I'm going to leave the camera just pointed off in the distance. If you get any ideas, I'd be glad to work on it for you.

04 20 05 03 CC Roger, Al. Try and point it off where you don't get any reflectance into it, and we'll be thinking about it here on the ground.

04 20 05 07 LMP Okay. The plug that runs right into the back of the TV, it's sort of a white plastic material, and it looks like it's cracked and maybe been melted a little bit. It doesn't look typical of that sort of connector.

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Day 5

04 20 05 21 CDR Stand around to the back. No, no. No, you got to go around - go around so you can look at the antenna and tell me when I've got it pointed at the Earth.

04 20 05 28 LMP All right.

04 20 05 29 CDR No, don't get underneath it. That a boy.

04 20 05 31 LMP Okay.

04 20 05 32 CDR Now. Whoops, see what I mean; this thing - you're going to have - really going to have to watch that ALSEP. You could trip over this whole antenna without even blinking at it.

04 20 05 40 LMP Okay, go ahead.

04 20 05 42 CDR Can you see the Earth?

04 20 05 43 LMP No.

04 20 05 44 CDR You've got to get around here. The Earth and the Sun are right lined up. You're going to have to look right into the Sun and look up in the sky. Watch it; you're on the TV antenna - I mean cable.

04 20 05 54 LMP Okay.

04 20 05 58 CDR See what I'm trying to do? I've got to pitch over now, right?

04 20 06 01 LMP Yes. Oh, there it is. I got you now. Bet we can hide it.

04 20 06 06 CDR Yes.

04 20 06 07 LMP I tell you where you need to go, Pete. Okay, that's good. Now you need to point - you need to rotate the whole thing counterclockwise. That's good. You're getting there - getting there. That old Earth's just hanging up there.

04 20 06 26 CDR Okay. How much further?

04 20 06 27 LMP Oh, I'd say another 3 or 4 degrees maybe. Stop. Good boy. Okay, now. Wait. That looks just good, as far as angles. Now, up and down -

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04 20 06 39 CDR I can move it in a little closer, but -

04 20 06 44 LMP Okay, come down with it.

04 20 06 49 CDR Watch it now; I'm going to try to kneel down.

04 20 06 53 LMP Come down. Come on down.

04 20 06 57 CDR Coming.

04 20 07 00 LMP Okay, stop. Now - now go clockwise. All right, a little more. I think you're pretty close to right on there, Pete.

04 20 07 10 CDR All right, now wait a minute. Don't - don't let me knock it over, but I got to -

04 20 07 13 LMP Okay. I'm trying to stabilize it for you.

04 20 07 15 CDR Yes, but every time you do, you push it in the -

04 20 07 17 LMP Okay. You go ahead.

04 20 07 20 CDR That's difficult ***. It's so tender up here on these legs.

04 20 07 24 LMP Yes. I know.

04 20 07 26 CDR I don't see the Earth anywhere in the sight. Too close. Got any ideas of which way to go?

04 20 07 34 LMP Yes. Just like that.

04 20 07 39 CDR Say, we're going to have to - let's push these legs in a little bit and get this thing more stable. Get this thing in the dirt.

04 20 07 46 LMP Okay.

04 20 07 48 CDR Don't break them. That thing is delicate.

04 20 07 49 LMP I know it; now, it's in the dirt. Now, let's line her up.

04 20 07 53 CDR Okay. Can you look right down the mast?

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Day 5

04 20 07 55 KNO Yes. It looks like it's lined up to me. We'll just have to move in and try it, because you're awfully close -

04 20 08 01 CDR About as - How is it in azimuth? And I'll look for it in pitch.

04 20 08 05 LMP Come a little bit more clockwise. You're right on it, babe; stop. Now, run it up and down in pitch, and you're bound to get it.

04 20 08 21 CDR No. I've got to go the other way and get it. Whoops! I just saw the Earth. Hold it. Take your hands off it.

04 20 08 30 LMP I can't; it'll fall over.

04 20 08 31 CDR No. Leave it alone. - -

04 20 08 32 LMP You're pulling on it. You're pulling on it, here.

04 20 08 33 CDR Leave it alone.

04 20 08 36 LMP Okay, I've got my hands off it. It's standing there.

04 20 08 38 CDR Oh.

04 20 08 40 LMP Be delicate, because this pulls on it, see?

04 20 08 42 CDR Yes.

04 20 08 47 LMP Got it?

04 20 08 55 LMP You want me to go work on something else now?

04 20 08 57 CDR Yes.

04 20 08 58 LMP Okay. Looks good. Just be careful you don't move it any closer to the right side of your PLSS and bump it.

04 20 09 05 CDR Okay?

04 20 09 07 LMP I'll put out the solar wind collector. Before I do, let me get a camera out here so I can take your picture, Pete. *** get out that solar wind collector.

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[REDACTED]

04 20 09 38 CDR Okay. Earth, I have you in the S-band antenna sight. Now, what's next?

04 20 09 49 LMP Okay. To me, it's solar wind collection.

04 20 09 52 CDR Okay. How much time, Houston?

04 20 09 58 CC Al, when you finish up the solar wind, would you give one more last try on that camera?

04 20 10 00 LMP I sure will.

04 20 10 01 CC Try opening up the f-stop all the way and exercising the zoom.

04 20 10 05 LMP I sure will. Boy, we sure don't want to touch those cables.

04 20 10 14 CDR No, we've got to stay away from those cables; you're right.

04 20 10 20 CDR Got a camera with you?

04 20 10 22 LMP I certainly do.

04 20 10 23 CDR Okay, just hang on to it. Houston, how much - how long have we been out?

04 20 10 36 CC Pete, you've been out 1 hour and 2 minutes, and you're both running about 2 minutes off nominal, behind.

04 20 10 42 CDR Okay.

04 20 12 23 LMP Looks like a good place for the solar wind collector, Pete. I think I'll stick it right here.

04 20 12 47 CDR Where are you?

04 20 12 48 LMP Right here.

04 20 12 49 CDR Okay.

04 20 12 50 LMP I'm planting it right here.

04 20 12 51 CDR Okay.

[REDACTED]

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04 20 12 59 LMP Got to get back on this time line in a minute.

04 20 13 00 CDR Yes, let's go, boy. I knew we were going to run late. Ding-a-ling TV didn't help.

04 20 13 17 LMP Okay. Solar wind collector, do your collection.

04 20 13 37 CDR That looks good. Okay, come here! I've got something for you. Let's go.

04 20 13 40 LMP Okay.

04 20 13 41 CDR A hammer. Now. Take the hammer - -

04 20 13 44 LMP Wait, wait. Want me to bang that TV first?

04 20 13 46 CDR Yes, yes.

04 20 13 49 LMP How about right here?

04 20 13 51 CDR Okay.

04 20 13 53 LMP Right here's a good spot.

04 20 13 54 CDR Okay.

04 20 13 57 LMP Okay. Right here.

04 20 13 58 CDR No.

04 20 14 01 LMP Right here?

04 20 14 02 CDR Yes.

04 20 14 10 LMP Goes right in the ground.

04 20 14 12 CDR Yes, that's no problem, is it?

04 20 14 15 LMP Those poles just drags right in. Okay.

04 20 14 30 CDR You might go whistle on the TV.

04 20 14 33 LMP Okay, I'll go work on it a little bit.

04 20 14 34 CDR Okay.

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[REDACTED]

04 20 14 41 CC Al, we copy your comment on insertion of that into the ground. How far in are you able to get it?

04 20 14 45 LMP Oh, I pounded it in over a foot, I'd say; and it didn't look like it was any harder towards the end than right at the beginning. It's there. It's pretty -

04 20 15 00 CDR I'll tell you what, Al -

04 20 15 01 LMP Okay, now, I'm going - Houston, I'm going to move the fo - move the focus a bit and see what happens.

04 20 15 12 CC Roger, Al. Go ahead and don't spend too much time on it. You're running a tad behind.

04 20 15 15 LMP Okay, well, I'll tell you what. I can feel that the wheels, when I hold the - when I hold the end of the lens, I can feel the wheels running, because I can feel something in motion inside. Okay, now, I just changed completely the settings I had before. The f-stop's is still 22, but I can try something else - -

04 20 15 36 CC Okay, Al, we see no change down here. Why don't you press on?

04 20 15 38 LMP Okay, let me - let me try another f-stop, the other way. How's that?

04 20 15 50 CC There's no change down here, Al. That's coming in there, now, Al. Okay, what change did you make?

04 20 16 00 LMP I hit it on the top with my hammer. I figured we didn't have a thing to lose. I just pounded it on top with this hammer I've got.

04 20 16 10 CC Skillful fix, Al.

04 20 16 11 LMP Yes, that's skilled craftsmanship. ***

04 20 16 15 CDR Hey, that's - Al -

04 20 16 17 LMP Yes, sir.

04 20 16 18 CDR That part has already sheared this thing.

04 20 16 23 LMP Never touched it.

[REDACTED]

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04 20 16 25 CDR Okay.

04 20 16 26 LMP What should we do now with the lens, Houston?

04 20 16 36 CC Okay, why don't you give it one more light rap, and also cut down the f-stop?

04 20 16 41 LMP All right, will do. Now, is the zoom right for you?

04 20 17 02 LMP ...

04 20 17 03 CDR Oh, darn. ... you really got this, Al.

04 20 17 04 LMP Okay.

04 20 17 05 CDR Down the ...

04 20 17 14 CC Al, we're still not getting a good picture. Why don't you press on, and we'll try to get back to it later, if we have time.

04 20 17 19 LMP Okay, I'll pound it a little bit. There you go. I'll just leave it like it is, pointed slightly towards the LM here, so that if you do get a picture, you'll see something.

04 20 17 34 CDR Ready to go now.

04 20 17 35 LMP That ought to give you some sort of a picture that you can think about. I'll be glad to come back and work on it. Got to go to work again.

04 20 17 41 CDR Al?

04 20 17 42 LMP Yes, sir.

04 20 17 43 CDR What I need is a piece of tape.

04 20 17 46 LMP *** get some.

04 20 17 47 CDR Good luck.

04 20 17 49 LMP Oh, there's all kinds of tape around here.

04 20 17 52 CDR Okay.

04 20 18 40 LMP I've had it on this thing.

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04 20 19 25 CDR Houston.

04 20 19 30 CC Pete, go ahead.

04 20 19 31 CDR Okay, the flag is up. We hope everyone down there is as proud of it as we are to put it up.

04 20 19 39 CC Roger, copy. The flag is up. We show you are very close to the nominal time line. How about an EMU check?

04 20 19 46 CDR Okay. We have the flag up. Like I said, I hope everybody down there is as proud of it as we are to put it up.

04 20 20 04 CC Affirmative, Pete. And we're proud of what you're doing.

04 20 20 16 CDR Al?

04 20 20 17 LMP Yes, sir.

04 20 20 18 CDR Can we have a quickie here?

04 20 20 20 LMP Okay.

04 20 20 30 CDR Back up a little more -

04 20 20 31 LMP Okay.

04 20 20 32 CDR About 15 feet.

04 20 20 33 LMP All right.

04 20 20 38 CDR ... getting into the TV cable?

04 20 20 41 LMP No, I just went right over it, babe.

04 20 20 42 CDR (Laughter)

04 20 20 43 LMP Here you are. Take a look, Pete.

04 20 20 46 CDR I can't see you.

04 20 20 54 LMP Get it?

04 20 20 55 CDR Sure did.

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04 20 20 56 LMP Okay.

04 20 21 01 CDR Another one?

04 20 21 02 LMP Wait 1.

04 20 21 15 CDR Okay, got you.

04 20 21 18 LMP Okay, that's good.

04 20 21 20 CDR Okay, get back working, while I go get my camera. I got some PAN shots and next the ALSEP. And, Houston, I'm down on MIN cooling.

04 20 21 43 CC Roger, Pete. How's Al doing?

04 20 21 48 CDR Say again.

04 20 21 54 CC Is Al doing all the work?

04 20 21 56 CDR No, sir. I'm headed out to do the PAN photographs right now; and, with any luck at all, we'll get back on the time line and complete what we need. Al's taking shots of the solar wind, and I'm hopping out here to the number 1 slot.

04 20 22 17 LMP Boy, you sure can move on this surface.

04 20 22 19 CC Roger.

04 20 22 20 CDR Yes, but watch it when - watch it when you hit a rock.

04 20 22 23 LMP ...

04 20 22 27 CDR Okay, go f:11; f:11 it is. 1, 2, 3, now f:8, 4, 5, 6, 7, ***

04 20 23 28 CDR 7.

04 20 23 46 CC Clipper, you were broken up. Say again.

04 20 23 48 CDR Who are you talking to?

04 20 23 55 CC Pete, we have Clipper both - and you both on the same air to ground - Clipper, go ahead. Say again.

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04 20 24 16 CC Roger, Clipper.

04 20 24 45 CDR 1, 2, 3, 4, 5, 6 -

04 20 25 16 LMP Do you hear a little background noise, Pete? Kind of staticky and things?

04 20 25 19 CDR I keep hearing a whistle.

04 20 25 20 LMP That's what I hear. Okay.

04 20 25 42 CDR Okay, Houston, two of the PAN's are done.

04 20 25 51 CC Roger, Pete. Copy. Two PAN's. Al, how was the LM inspection?

04 20 25 54 LMP I'm working on it right now.

04 20 26 01 CC Roger.

04 20 26 03 CDR Taking a look at that Surveyor, Al; I should suspect we ought to be able to get there quite readily. I'm going to head down there by the crater a little bit for this set of PAN's - whoops ...

04 20 26 12 LMP Watch yourself; it's easy to slide.

04 20 26 14 CDR Yes, you can say that again. I notice you've been over here, haven't you?

04 20 26 20 LMP Yes. ...

04 20 26 27 CDR I don't think this is going to show anything, but I'll give it a go.

04 20 26 31 LMP What's that?

04 20 26 32 CDR Oh, I'm trying to show the front gear here and how it went - how it planted itself, but it's not really - it's not bright enough.

04 20 26 44 LMP Give it a go, though.

04 20 26 57 CDR Uh-oh.

04 20 26 58 LMP Bad?

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04 20 27 01 CDR I think my camera's -

04 20 27 52 CDR This pad bounced.

04 20 27 56 LMP *** your plus Y bounced about pad diameter.

04 20 27 58 CDR That'd be an interesting picture there.

04 20 28 07 CC Al, do you have any comments on the footpad interaction with the surface?

04 20 28 09 LMP Yes, I do. Actually we - Pete's pads went in a little bit further than did Neil's; I'd say most of the pads are in about an inch and a half to two, and it sort of looked like we were moving slightly forward, and that pretty well killed off our left-right velocity when we touched down. The right-hand footpad seems to have bounced; that'd be the plus Y, the right-hand-side one; the others don't seem to have. So it must have - maybe hit there first, and rocked back and forth or something.

04 20 28 50 CC Roger, Al. Do you see anything on the surface from the DPS?

04 20 28 54 LMP No, I don't. The surface under there - It's kind of interesting - The surface under there is clean. It doesn't have the loose dust particles that - as does the rest of the lunar surface about here. It also has a number of small round dirt clods, if you want, that seem to be ... off in a radial direction from underneath the skirt of the engine. I'll take a couple of pictures ... good shots ... just about 8 inches or so off the ground. I think I can get a good one for you, Houston. There we go.

04 20 29 48 CC Thank you, Al. It's a good description.

04 20 29 49 LMP Say, you can really move around out here, Houston. That a mobile POGO ridge that we've got there, and also that one in the centrifuge - Man, it's just like this. You can just run and bounce just like you can on that POGO. It's a real good training device.

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04 20 30 07 CDR Where are you, Al?

04 20 30 09 LMP I'm over here back - the back tee - I'm ready to -
to start the ALSEP ... when you are.

04 20 30 14 CDR Okay. I got the ... and I'm coming around.

04 20 30 16 LMP All right.

04 20 30 18 CDR Okay, Houston, I went back to intermediate cooling.

04 20 30 27 CC Roger. We copy that.

04 20 30 28 LMP Good idea. Say, I've noticed when you get started
moving down that way, it's sometimes hard to stop.

04 20 30 35 CDR Yes. Hold on to this.

04 20 30 37 LMP All right.

04 20 30 38 CDR We're putting on our saddlebags now - -

04 20 30 42 CC Pete and Al, you're 1 plus 22 into the time line,
and you're running about 6 minutes behind nominal.

04 20 30 44 CDR We're going to catch up right now - -

04 20 30 46 CC We're monitoring PLSS feedwater 2 as a determining
parameter.

04 20 30 53 CDR Okay, Houston. We'll start catching up now. We've
kind of gotten over the initial checkout on how to
walk and move around, and maybe we got - we won't
have any problems with this hardware like we did
with the - -

04 20 31 08 LMP ... Here you go.

04 20 31 11 CDR - - in the antenna.

04 20 31 18 CC Roger. And we're showing 2 plus 30 left in the
EVA.

04 20 31 21 CDR Okay.

04 20 31 27 LMP Okay, Pete, your saddlebag's on.

04 20 31 29 CDR All right, let's go.

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04 20 31 32 LMP Okay, and we're off to ... the ALSEP. ...

04 20 31 37 CDR No. We ought to be able to move out with this thing.

04 20 31 46 LMP The LM exterior looks real good. The LM exterior looks beautiful the whole way around. Real good shape. ... that doesn't look like it did the day we launched it.

04 20 32 00 CDR Right.

04 20 32 10 LMP Okay. Here we go, Pete. Ohh, up they go, ..., one ALSEP. There it is.

04 20 32 22 CDR There it is, is right. It is laying on the lunar surface. Better go to intermediate cooling, get good and chilled down. Okay?

04 20 32 42 LMP Hey, it's dusty, isn't it? You've got to go easy.

04 20 32 46 CDR You sure do.

04 20 32 50 LMP Here it comes.

04 20 32 51 CDR Coming right up.

04 20 32 52 LMP Hey, that's about right.

04 20 32 55 CDR Widen that out on the boom, Houston. Sure looks pretty.

04 20 33 04 CC Roger, Pete. We copy.

04 20 33 34 LMP Look at me, Pete. It's a good shot, babe. The LM and everything's reflected in your visor.

04 20 33 43 CDR Lay her on the ground. Okay, I'll bring mine out.

04 20 34 05 CDR Right out on the Moon, just like advertised.

04 20 34 11 LMP Wait until I get this out of your way.

04 20 34 12 CDR Okay.

04 20 34 46 CC Yankee Clipper, Houston. OMNI Charlie, OMNI Charlie.

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04 20 35 15 CDR It's going to look like - -

04 20 35 17 LMP Say again.

04 20 35 18 CDR Going to look like the back of the flightcrew training ... in a minute.

04 20 35 21 LMP Yes.

04 20 35 23 CDR Okay. That, ... there is coming closed. Uh-oh. All right, you can push that door.

04 20 36 45 LMP How do I ... that one?

04 20 36 47 CDR I don't know.

04 20 37 11 CDR Hey, Al, when I free this strap, would you mind ...?

04 20 37 14 LMP Let me look, Pete. I have one here. Let me get it out for you.

04 20 37 19 CDR Thank you, sir.

04 20 37 25 LMP Okay, lift your left foot up and you're okay.

04 20 37 28 CDR Okay. Thank you.

04 20 37 40 CC Yankee Clipper, Houston. High gain antenna: Pitch, minus 13; yaw, 225.

04 20 38 06 CDR Hey, Houston, do you hear this constant beeping in the background? On the COMM.

04 20 38 14 CC That's affirmative.

04 20 38 15 CDR What is it?

04 20 38 16 CC We've heard it now for about the past 45 minutes.

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04 20 38 18 LMP That's right, so have we. What is it?

04 20 38 28 CC Intrepid, we've tried to isolate it. It appears as though it's coming on the downlink where it's coming from the LM.

04 20 38 43 CDR Hey, Al.

04 20 38 44 LMP Just a second.

04 20 38 45 CDR Hey, there's your lunar tools, all set up for you, fellow.

04 20 38 48 LMP Okay.

04 20 38 51 CDR This ALSEP's doing okay.

04 20 38 57 LMP Old Chuck Wetherred will be happy to know we're throwing it up for him, here. That's all right.

04 20 39 03 CDR Here you go. Now, what do you need of these?

04 20 39 08 LMP I need anything you've got. There you go - -

04 20 39 09 CDR Good.

04 20 39 10 LMP - - I need that tool.

04 20 39 12 CDR How about this? You need that one?

04 20 39 16 LMP How about the - Here, let me put that on. No, no. You put that in package 2, and I'll pick that up later.

04 20 39 21 CDR It's already in package 2.

04 20 39 23 LMP Then, one must be yours.

04 20 39 27 CDR Okay. Okay, I put that there.

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04 20 39 44 LMP Excuse me, Pete, I'll move it over and plant it.

04 20 39 46 CDR Wait a minute.

04 20 39 47 LMP All right.

04 20 39 49 CDR Got to put this together right - Where's the arrow?
We've got to let down the cap while we wait?

04 20 39 59 LMP Wait a minute. Here you go.

04 20 40 02 CDR Okay.

04 20 40 03 LMP Put this together.

04 20 40 13 LMP Houston, we're going to go ahead and put down the
fuel cask right now, and then I'll take the fila-
ment out of it.

04 20 40 27 CC Roger, Al. Copy. You're working with the fuel
cask.

04 20 40 29 CDR Wait, wait, wait, wait, wait.

04 20 40 33 LMP I knew it. This is such a bad place to put it,
Pete.

04 20 40 36 CDR Huh?

04 20 40 37 LMP That's a bad place to put it.

04 20 40 39 CDR Yes.

04 20 40 42 LMP Fuel cask comes down beautifully in position.
Came down just right.

04 20 40 47 CDR Oh, I know what I have to do, Al, and I'm standing
here not doing it.

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Day 5

04 20 40 53 LMP Okay, now you need to move the SIDE on in.

04 20 40 58 CDR We're moving right along, Houston. We're ***

04 20 41 23 CC Yankee Clipper, Houston. Go to wide deadband.

04 20 41 27 CDR Houston. You can log me for my first ... on the Moon.

04 20 41 35 CDR Hey, Houston.

04 20 41 38 CDR Something that's real interesting, as we put out this ALSEP right - -

04 20 41 41 CC Pete, go ahead.

04 20 41 42 CDR There's one thing that's pretty obvious, as we're setting out the components of the ALSEP here, is I just hope that these thermal coatings don't have to stay as white as they are right now, because there's just no way. With all this dust, there's just no possibility that - -

04 20 41 59 LMP You cannot get them a little bit dirty. And - -

04 20 42 01 CDR Little bit dirty isn't the word for it.

04 20 42 03 LMP I know it. This - this - this - this - this is real - going to be a real problem, I guess, if thermally they've got to maintain ***. Everything that touches the ground picks it up. This suit is about half dirty because the strap landed on it. Uh-oh. It's a little dirty even on top of the fuel element, there. Okay.

04 20 42 27 CDR Wait just a minute now before you - get carried away.

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04 20 42 35 CC Al, we copy your comments.

04 20 42 37 CDR ***. Okay.

04 20 42 38 LMP I guess we'll just have to make allowances for things like that when we build them. They sure are going to get dirty.

04 20 42 48 CDR Okay, I'm unlocking the cask dome, right now. It unlocks perfectly, shaking it now and trying to get it off. There you go.

04 20 43 00 LMP It came off beautifully. Put the tool and in the - dome aside.

04 20 43 07 CDR Very nice.

04 20 43 08 LMP Okay. I'll get out the cask removal tool.

04 20 43 17 LMP You can stand over there, Pete.

04 20 43 20 CDR Okay. I've got to - got to go back to MIN cooling. I'm about to freeze to death.

04 20 43 25 LMP ...

04 20 43 26 CDR Yes. Okay. Go ahead.

04 20 43 34 LMP Yes, oh.

04 20 43 35 CDR Okay, now start. There you go.

04 20 43 51 LMP ... in there.

04 20 43 53 CDR Okay, tighten up the locks ...

04 20 43 57 LMP Hold it.

04 20 44 08 LMP ... be chipped.

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04 20 44 16 CDR There. Screw it all the way down. That could make a guy mad, you know it?

04 20 44 26 LMP Yes.

04 20 44 30 CDR Let me undo it a minute, and try it a different way.

04 20 44 32 LMP Yes.

04 20 44 36 CDR It can really get you mad. Houston, Al put the tool on, screwed it all the way down, and the fuel element would not come out of the can. He's taking the tool off, and he's working it again.

04 20 44 56 CC Roger, Pete. We copy.

04 20 45 11 CDR You got any suggestions?

04 20 45 15 LMP ... kind of surprised me there.

04 20 45 23 CDR ***?

04 20 45 24 LMP Come over and look.

04 20 45 26 LMP I tell you that worries me, Pete. If I pull on it too hard, there's a very delicate lock mechanism.

04 20 45 31 CDR Better not push the pins in quite so far, and wiggle it a little. I just get the feeling that it's hot and swelled in there or something. Doesn't want to come out.

04 20 45 40 LMP I can sure feel the heat, though, on my hands. Come out of there, rascal.

04 20 45 53 CDR Suppose it's outgassed or something?

04 20 46 02 LMP Say, Houston.

04 20 46 08 CC *** ahead.

04 20 46 09 LMP Okay. We've really got a problem, I guess. I've tried using different pins; you know, it's got a three-pin removal - -

04 20 46 17 CDR Dual.

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04 20 46 18 LMP - - so I tried using different pins in different holes. That doesn't appear to have any effect. It operates - You know - Everything operates just exactly like it does in the training mockups - and - up at GE. The only problem is, it just won't come out of the cask. I am suspicious that it's pulling in there or something and friction's holding it in. But it's such a delicate tool, I really hate to - to pull on it too hard. I believe what we can do, Pete - -

04 20 46 46 CDR Hey, I'll be right with you.

04 20 46 48 LMP - - go get that hammer and bang on the side of it.

04 20 46 50 CDR No. I got a better idea. Where's the hammer?

04 20 46 52 LMP That's what I said.

04 20 46 53 CDR No, no. But I want to try and put the back end in under that lip there and pry her out. Let me go get the hammer. Be right back. Where did you put it?

04 20 47 04 LMP Huh? What? Hammer's on the MESA.

04 20 47 06 LMP Okay. Let me get the tool off. It's starting to warm up.

04 20 47 12 CDR Okay.

04 20 47 24 LMP Can't figure that out, Houston.

04 20 47 25 CDR Hey, now.

04 20 47 26 LMP Look, Pete.

04 20 47 27 CDR Huh?

04 20 47 46 CC Al, when you're working on that, try to make sure you've got the pins all the way in, tighten up on it; then you can try pushing down on it a little, before you pull it out.

04 20 47 55 LMP Okay. Don't - don't touch these. These are - If these break off, that's all she wrote.

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04 20 47 59 CDR Yes. I understand.

04 20 48 00 LMP And don't pound on anything that'll break.

04 20 48 02 CDR No, no. I'm not going to.

04 20 48 03 LMP Okay. We'll try it again.

04 20 48 10 CDR Rotate and try it this way.

04 20 48 16 LMP Pry's in there just like you - going to do the job, only it just doesn't do the job.

04 20 48 21 CDR Oh man, look at the dust fly.

04 20 48 28 LMP Just a minute. Just - just a minute. Get those pins in here again.

04 20 48 36 CDR You're not getting those pins all the way in.

04 20 48 39 LMP They're not in now because I'm lining them up. Just a damn minute. Now, they are all the way in.

04 20 48 44 CDR They're all the way in - not quite. That bottom one down there's - Now, my recommendation would be pound on the cask ...

04 20 48 53 LMP Yes.

04 20 48 54 CDR Hey, that's doing it; give it a few more pounds. Got to be harder than that. It's going - It's coming out.

04 20 49 07 LMP Keep going.

04 20 49 08 CDR It's coming out. Pound harder.

04 20 49 09 LMP Keep going. ...

04 20 49 10 CDR Come on ...

04 20 49 12 LMP Keep going, baby. That hammer's a universal tool.

04 20 49 15 CDR You better believe it; there you got it.

04 20 49 17 LMP Got it. Got it, Houston.

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04 20 49 19 CDR (Laughter) That's beautiful. That's too much.

04 20 49 21 LMP Now, I think I'll put the - -

04 20 49 25 CC Well done, troops.

04 20 49 26 LMP We got it, babe. It fits in the - ***.

04 20 49 38 LMP Hey, don't ever - don't ever come to the Moon without a hammer.

04 20 49 40 CC Yankee Clipper, Houston. One minute to LOS.

04 20 49 42 LMP That's it, Pete.

04 20 49 48 CDR (Laughter)

04 20 49 49 LMP That's outstanding.

04 20 49 50 CDR (Laughter)

04 20 49 55 LMP Make our move -

04 20 49 56 CDR I'm ready. ... going.

04 20 50 03 LMP Okay, Houston. The fuel element is in the RTG. I can feel it radiate heat already. Put your hand over here, Pete.

04 20 50 13 CDR That's amazing. Wait a minute - no.

04 20 50 15 CC Copied that, Al.

04 20 50 16 CDR No, wait a minute, Al; have you got it strapped around your boot? Let me look and see.

04 20 50 19 LMP Okay.

04 20 50 21 CDR No, you're all right.

04 20 50 22 LMP All right?

04 20 50 23 CDR Yes.

04 20 50 24 LMP Boy, this thermal coating doesn't mean a thing here.

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04 20 50 27 CDR Yes. That thing is really getting covered with dirt. My gosh.

04 20 50 31 LMP I hope they made allowances for it.

04 20 50 34 CDR *** do. Okay.?

04 20 50 39 LMP It doesn't look like it's - Let me look at that just a second.

04 20 50 42 CDR Okay.

04 20 50 43 LMP It's the right way.

04 20 50 50 CDR That's it.

04 20 50 52 LMP Hey, feel the heat off that machine. That's amazing.

04 20 50 57 CDR 1400 degrees.

04 20 51 00 LMP Almost as hot as the Sun.

04 20 51 01 CDR Okay. Sure it is (laughter).

04 20 51 04 LMP Hey, do me a favor.

04 20 51 05 CDR What do you need? ...

04 20 51 06 LMP No, go lower. There you go; you got it.

04 20 51 09 CDR Okay. Okay, let me go - scout - smoke over the area. Okay. Okay, let me go - scout - smoke over the area. Okay.

04 20 51 16 LMP Got everything you need?

04 20 51 20 CDR All right, there's no TV, so I got the SIDE - and the picker-uppers for the rocks.

04 20 51 28 LMP Okay.

04 20 51 29 CDR Okay. Let's go right off to that little mound over there. How does that grab you?

04 20 51 34 LMP Okay. Something's wrong.

04 20 51 37 CDR What's the matter?

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04 20 51 47 LMP *** The thing doesn't - *** Okay. Okay, Pete. We're okay.

04 20 51 59 CC Pete, we copy. You've got the UHT tongs and sub-pallet.

04 20 52 05 CDR We're making our move, Houston.

04 20 52 09 LMP Ahhh, I can tell this is going to be work - out. Now, take it easy.

04 20 52 14 CDR How long did you say our shadow was - the LM's shadow, 150 feet?

04 20 52 24 LMP No, that isn't any 150 feet.

04 20 52 26 CC Stand by, Pete.

04 20 52 32 CDR Take your time, Al; I'm just going out - -

04 20 52 34 LMP That's what I'm saying. What's the hurry? We got it made.

04 20 52 36 CDR No, I'm just going out to scout the area, that's all.

04 20 52 38 LMP Okay, I'm going to set it down and rest.

04 20 52 40 CDR Okay.

04 20 52 41 LMP Go to intermittent cooling.

04 20 52 42 CDR ***

04 20 52 43 LMP Okay.

04 20 52 53 LMP You know, they ought to build this equipment for lunar operations some other color besides white.

04 20 52 57 CDR (Laughter)

04 20 53 06 LMP I'm going to go right up to the head crater, I guess.

04 20 53 12 CDR Well, if you're going to do anything - -

04 20 53 20 LMP *** let me move it. Move it some more. Got any directions you want me to go?

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04 20 53 24 CDR Well, it looks to me like either the direction you're headed is good or the one a little bit more to the right. You're going to - you're going to have to go far enough so we don't end up in one of the craters when we start to ... deploy.

04 20 53 39 LMP Okay.

04 20 53 40 CDR Okay.

04 20 53 42 LMP But I want to go 10 degrees off our takeoff angle; and I think I'm headed out about that way now.

04 20 53 48 CDR Okay.

04 20 53 59 CDR You just stay back there and take your time. I'll go out here and scout the area.

04 20 54 06 LMP You're getting pretty far out.

04 20 54 07 CDR Huh?

04 20 54 08 LMP Getting pretty far out.

04 20 54 10 CDR I'm going to do a slow - -

04 20 54 15 CC Pete and Al, your LM shadow should be about 110 feet.

04 20 54 18 CDR Okay, I'm looking for - I'm dying to find out what this mound is over here anyhow, Al. We got a very peculiar mound sticking up out of the ground, Houston, that I want to go look at. As a matter of fact, I think I'll go take a picture of it. Oh my -

04 20 54 34 LMP Look at how that LM is ...

04 20 54 35 CDR ... is it?

04 20 54 41 CC Roger, Pete. Could you give us your position and distance with respect to the LM?

04 20 54 44 CDR Wait 1.

04 20 54 46 LMP Go ahead, Pete, and do what you're doing. Pete's about - I'd guess, about 300 feet at 12 o'clock.

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[REDACTED]

He's in the bottom of a shallow crater that you probably see on your map. It's sort of a doublet. Okay?

04 20 54 59 CDR I'm headed to the right-hand edge of the head crater.

04 20 55 12 CDR Hey, Al. Here's a neat spot to put it out up here.

04 20 55 15 LMP Is it flat for a good piece?

04 20 55 17 CDR Oh, you'd better believe it.

04 20 55 18 LMP Okay, we'll put that - It's a good long ways away, too; it must be at least - what - 500 feet from the LM?

04 20 55 25 CDR I don't know.

04 20 55 26 LMP 600?

04 20 55 29 CDR It's the world's most peculiar - I got to photograph this thing. I can't imagine what it is. A mound is sticking up; and I can't imagine how it got there or what would make it.

04 20 55 44 LMP Boy, you can cover the ground on this light-weight ... at one-sixth g. Really move.

04 20 55 51 CDR I got to get them a stereo of this thing. It's really fantastic.

04 20 56 04 CDR How's our time line going, Houston?

04 20 56 06 LMP *** sit here and really rest awhile.

04 20 56 10 CC Pete, at 1 plus 48 into the EVA, you're looking good. Looks as though you're right on there, if you've just about completed your traverse.

04 20 56 17 CDR We have, Houston. Yes. Yes. Now, look, Al. Look over here. We're way out from the LM. Over here, Al.

04 20 56 25 LMP Okay.

04 20 56 26 CDR See where I'm headed? This great big flat area.

[REDACTED]

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04 20 56 27 LMP That's a good - Hey, there's another one of those mounds over there.

04 20 56 29 CDR Where? Hey, you're right. What do you suppose they are?

04 20 56 33 LMP I don't know, Houston, what they are; they're just sort of mounds. Look like - don't take this the wrong way. It looks like a small volcano, only it's just about 4 feet high; and it's about - at the top, it's about 5 feet across; and it then slopes from the top on down to the - level with the terrain, and that - that diameter, that circle - where it finally becomes level with the terrain, is about 15 or 20 feet. So, it looks sort of like a small volcano. There's a couple of them out here. They look like they were formerly made out of mud or something.

04 20 57 17 CC Al, Roger. We copy. Is there any hole or central vent?

04 20 57 20 LMP I don't know. I'm not - -

04 20 57 21 CDR I got to go over - we'll - we'll - -

04 20 57 22 LMP We'll go look them over.

04 20 57 23 CDR - - ... after we get the ALSEP out. There's a couple of them here. There was a - This is a - We couldn't ask for a better spot to put this ALSEP down.

04 20 57 31 LMP No. This is nice.

04 20 57 33 CDR ***, too.

04 20 57 34 LMP Hey, lot more rocks up here.

04 20 57 44 CDR Listen, there's a - We could play geologist for 2 days and never get any further than we are right now. Seeing all different kinds of things.

04 20 57 49 LMP Hey, here's a different one.

04 20 57 50 CDR Yes. It's really neat. Better than any ... geology in Houston (laughter).

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[REDACTED]

04 20 58 00 LMP I'm getting a quick PAN of the area here to - ...
down this ALSEP deployment - There you go.

04 20 58 07 CDR Okay, man alive.

04 20 58 11 LMP Tired?

04 20 58 12 CDR No, I'm not so tired. That handle, you know, when
you carry this thing around in one g, the ALSEP
tends to hang down, but you carry it around up
here at one-sixth g, in particularly, the RTG
tends to rotate - and the whole pallet, so, in a
few minutes, you've got one up - kind of halfway
up in the air and the other one's down by your
left leg, and you keep being afraid that this
handle's going to come undone. It doesn't - Your
handle doesn't lock. Okay. I have to almost -
That's slick. You know these neat little decals
we got on here?

04 20 58 51 LMP Yes.

04 20 58 52 CDR You can't hardly read them in the sunlight because
they don't have enough contrast to them. They're
so bright.

04 20 59 05 LMP Okay, let's move them.

04 20 59 07 CDR Okay. Let me make sure now that we're not going
to run out into some holes.

04 20 59 13 LMP That's pretty good. Pete, I'm going to move just
a little bit further to the east - correction, to
the north, so that I won't end up over in that
hole to the side. Okay?

04 20 59 23 CDR All right. Yes, I think it would be a real good
spot.

04 20 59 49 LMP Okay, I'm - -

04 20 59 50 CDR Awfully frustrating.

04 20 59 51 LMP Now, I think this is the spot, Pete, right here.

04 20 59 55 CDR You look and make sure now that we're going to
have a good place for everything.

[REDACTED]

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04 21 00 00 LMP Yes, we will. Magnetometer can sit over there and the seismometer will sit on a good flat place; although the trouble with the seismometer, we don't have any good solid bedrock or anything to set it on. All we've got is this - this dirt. And I don't see any area around that has any rock.

04 21 00 22 LMP I'm afraid we're just going to have to take what we can get on this seis - -

04 21 00 25 CC Roger, Al.

04 21 00 37 CDR You know, this must be some thermal expansion or something. I'm having a heck of a time getting this UHT in this SIDE. It just flat won't go in there.

04 21 00 47 LMP Well, just pick it up with your hands. I always handled the SIDE with my hands.

04 21 00 51 CDR I can't bee - bend down that far.

04 21 00 52 LMP Okey-doke. ...

04 21 01 46 CDR Where'd you go, Al?

04 21 01 47 LMP I'm right over here, babe.

04 21 01 48 CDR Oh, you're miles away.

04 21 01 50 LMP Yes, I am. I moved over here.

04 21 01 52 CDR Oh, son of a gun.

04 21 01 53 LMP I had to do it, Pete, so that I'd have a good place for the SIDE.

04 21 02 04 CDR Okay, there's a good spot. Looks good.

04 21 02 20 CC Al, when you deploy that PSE stool, it would help if you tamp that ground down as well as you could before putting the stool down.

04 21 02 27 LMP I'm going to try to do that. This - this ground is - is not - you know; it doesn't get hard as you move down a couple of inches - you can tamp it, and that's what I'm plan to do; but I don't know.

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We'll just have to see what happens. I - I'm worried about it getting a thermal short myself.

04 21 02 51 CC Roger, Al.

04 21 03 06 LMP Boy, I'll tell you.

04 21 03 08 CDR Man, are you dirty.

04 21 03 09 LMP Boy, this sure ... that ALSEP. Look at the ALSEP.

04 21 03 14 CDR I know.

04 21 03 15 LMP Ridiculous.

04 21 03 16 CDR (Laughter)

04 21 03 18 LMP I remember how they took care of this white paint. You had to have gloves to touch it.

04 21 03 20 CDR (Laughter)

04 21 03 21 LMP Remember?

04 21 03 22 CDR Yes (laughter). They got kind of a problem here.

04 21 03 39 LMP I'm going to have to do this myself. I'll have to do this backwards; but it's going to work right. Do me a favor, Pete.

04 21 04 03 CDR I got my hands full, buddy (laughter). I'll be with you in a minute.

04 21 04 05 LMP Okay. That's okay.

04 21 04 08 CDR You can relieve me in this SIDE right here while I - -

04 21 04 10 LMP Well, I will, because it looks like you might -

04 21 04 12 CDR Yes.

04 21 04 13 LMP Give me that thing. Let me hold it.

04 21 04 14 CDR Easy, easy. That a boy.

04 21 04 15 LMP I got it.

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04 21 04 16 CDR That a boy. Now - wait.

04 21 04 18 LMP Watch for - watch those cables.

04 21 04 19 CDR Yes, but let me get it plugged in.

04 21 04 21 LMP They sure splay around under this one-sixth g, don't they? It's moving around a bunch. ...

04 21 04 27 CDR Watch it, watch it. Where's the orange stripe?

04 21 04 31 LMP Should be same as on that other one.

04 21 04 35 CDR Obviously, it's on the side I can't see.

04 21 04 38 LMP Yes. Blue to blue.

04 21 04 53 LMP You know that noise - that whistling - is coming from you, Pete, because every time you move around, it whistles. When you stop, it quits.

04 21 05 04 CDR Is that right?

04 21 05 05 LMP Yes. There it is.

04 21 05 07 CDR Is it locked good?

04 21 05 08 LMP Yes, sir. Okay, you're - -

04 21 05 10 CDR ... that one over there?

04 21 05 11 LMP ...

04 21 05 12 CDR Drop that baby.

04 21 05 13 LMP Okay. You got it?

04 21 05 14 CDR Let me have the cable right there.

04 21 05 15 LMP All right. Oops! That came out.

04 21 05 17 CDR That's what I wanted.

04 21 05 18 LMP Okay.

04 21 05 19 CDR That's what I wanted.

04 21 05 20 LMP All right. Those lights came on nice.

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04 21 05 22 CDR Yes.

04 21 05 26 CDR The next thing I got to do is head this way with it, right?

04 21 05 28 LMP No. Before you do that, come here a second, would you, please?

04 21 05 31 CDR Yes, but let me set it down.

04 21 05 33 LMP Uh-oh, the top popped open.

04 21 05 37 CDR Supposed to do that?

04 21 05 39 LMP No. Not supposed to do that. You can close it, though, before it gets any dirt in it. You can just reach up there and close it.

04 21 05 47 CDR Okay. You better - you better do it for me - -

04 21 05 49 LMP ... close it while I'm holding it - -

04 21 05 50 CDR Okay.

04 21 05 51 LMP Before we get any dirt on it.

04 21 05 52 CDR Son of a gun. Why did that happen? Never saw it do it before.

04 21 05 53 LMP *** We could still salvage that, though.

04 21 06 02 CDR Wait a minute. The little - the little -

04 21 06 03 LMP I see it. I see it.

04 21 06 05 CDR That a boy.

04 21 06 06 LMP Now, turn it - turn it over with your other hand, Pete. So - -

04 21 06 08 CDR Wait a minute. Wait, wait. I'm going to ... it.

04 21 06 10 LMP I'm waiting.

04 21 06 12 CDR Where do you want to go with it?

04 21 06 13 LMP Well, I want to see if you - Let me get this. Okay. Now, let's see the other side.

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04 21 06 19 CDR This way?

04 21 06 20 LMP That's - *** Yes. This won't - this won't hurt a thing. Yes. Wait a second.

04 21 06 26 CDR That's it. You got it.

04 21 06 27 LMP But just don't touch that. It'll be okay.

04 21 06 29 CDR Okay.

04 21 06 30 LMP Didn't hurt a thing.

04 21 06 31 CDR Let me just put this down here.

04 21 06 34 LMP Okay.

04 21 06 40 CC Pete, before you set the central station down for the final time, would you also tamp that ground down? It would help in keeping the dirt off of the thermally sensitive areas.

04 21 06 55 CDR Oh, I did it; I did it (laughter).

04 21 06 58 LMP You set it down.

04 21 06 59 CDR I set it down and it didn't fall over. I can't believe it. Here I come. What do you need, Al?

04 21 07 03 LMP Use your tongs to hold this up a minute. It's a little hot, and I don't want to touch it. Watch this.

04 21 07 10 CDR Where are my tongs?

04 21 07 12 LMP Right there in your - There you got them. Now, if you'll just hold it steady, then I can do the rest. There, now. That's good.

04 21 07 31 LMP Thanks, Pete. Got it.

04 21 07 33 CDR Okay. I'll go get the rest of the stuff over here. Where we at?

04 21 07 37 LMP Okay. I'll work on getting these apart.

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04 21 07 40 CDR Okay. Take your time. Thing's coming out real well. The name of the game is to get the ALSEP here. Whee! Up to one crater and over another (laughter).

04 21 07 48 LMP Oh, man.

04 21 07 50 CDR Does that - does that look as good as it feels?

04 21 07 53 LMP It does. Hey, I'll tell you the way to do, Pete, bend and rock from side to side as you run. Like that. There you go.

04 21 08 01 CDR (Laughter)

04 21 08 02 LMP You really move better that way.

04 21 08 05 CDR Here I come, ready or not.

04 21 08 13 LMP Houston, I'm - I'm not kidding; we are really getting dirty out here. There's no way to handle all this equipment with all the dust on it. Every time you move something, the dust flies; and, in this low gravity, it really takes off, goes way up in the air, and then comes down and lands on you.

04 21 08 30 CDR How far do you estimate we're from the LM? 600 feet? 700 feet?

04 21 08 34 LMP At least.

04 21 08 35 CDR I think you're right. 600, 700 feet.

04 21 08 38 LMP Way to do it.

04 21 08 49 CDR Here I come. Do do de-dum.

04 21 09 28 CDR Dum dum de-dum. Coming after the antenna mast.

04 21 09 33 LMP Okay.

04 21 09 48 LMP Okay, let me plug this thing in, Pete.

04 21 09 50 CDR I can't get down low enough to get it off.

04 21 09 52 LMP I'll get it for you, if you can't.

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04 21 09 54 CDR Okay. Wait a minute. Let me move that dust cover for you.

04 21 09 57 LMP How's that strike you?

04 21 09 58 CDR Okay. Just leave this latch - -

04 21 10 00 LMP Hey, I'm making a joke -

04 21 10 01 CDR Strikes me pretty good. I'll be tamping the dirt around this central station.

04 21 10 11 LMP Okay. Going to have to design things with little legs on them or something, so you can put them down and they stand off the soil (laughter).

04 21 10 21 CDR If we had that suit we could bend over in, we'd have the job done by now.

04 21 10 25 LMP Hey, can you push down on this side of that?

04 21 10 27 CDR Yes. My biggest sweat is trying to bend over. Wait a minute. Ready, get set, push. That on, or not?

04 21 10 33 LMP I don't think so.

04 21 10 34 CDR I don't think so.

04 21 10 36 LMP No, let me - let me look at it a second. Here we - here we are.

04 21 10 39 CDR Which way do you want this?

04 21 10 40 LMP Under there. Right there.

04 21 10 43 CDR I had to really push that other one. Look at all that dust.

04 21 10 51 CDR Okay now -

04 21 10 54 LMP Wait a second. Wait a second. Let me get it with you.

04 21 10 59 CDR *** That got it, didn't it?

04 21 11 02 LMP That did it, now.

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[REDACTED]

04 21 11 03 CDR That did it.

04 21 11 04 LMP Now, we won't touch the shorting button. Okay. We've connected the RTG to the central station, Houston. And we're ready to go to work deploying the experiments.

04 21 11 13 CDR I got the antenna mast.

04 21 11 14 LMP All right.

04 21 11 15 CDR De-dum de-dum dum.

04 21 11 35 CC Pete, did you experience any difficulty with the dust cover on the SIDE?

04 21 11 39 CDR It opened, Houston, and we closed it again, and we got no dirt on it, fortunately.

04 21 11 52 CC Roger, Pete. Well done.

04 21 12 09 CDR Okay. Let me tamp the dirt down underneath the central station. Hey, easy does it - Whoops! (Laughter) That's me.

04 21 12 17 LMP What happened?

04 21 12 19 CDR Oh, I started to walk away with the central station attached to the UHT via the little gizzy. Okay?

04 21 12 27 LMP The RTG's down and cooking.

04 21 12 28 CDR Okay. I'm tamping the dirt, here.

04 21 12 31 LMP Okay.

04 21 12 32 CDR Have I got it tamped pretty good? Look over where I'm tamping. How am I doing?

[REDACTED]

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04 21 12 36 LMP Looks good. Need a little bit more this way, I think. The problem with tamping, Pete, it looks like every time you tamp, as your foot comes up - you know it - -

04 21 12 44 CDR Yes. In tamping - -

04 21 12 45 LMP It redusts - it redusts the area.

04 21 12 47 CDR Yes. Okay. Here we go, Al. Now, take your U - U - UHT, there - -

04 21 12 53 LMP Move that.

04 21 12 54 CDR - - and keep the SIDE cable cleared.

04 21 12 55 LMP Sounds good.

04 21 12 56 CDR All right.

04 21 12 57 LMP A little bit.

04 21 12 58 CDR Here she comes. Over she goes. Get it right down ... No. There you go. How's that?

04 21 13 08 LMP That's good.

04 21 13 10 CDR Okay.

04 21 13 12 LMP Ready to go to work.

04 21 13 13 CDR Go. Have at it.

04 21 13 16 CDR Okay, well, I got to - Let's see, I've got to get that solar wind, huh?

04 21 13 20 LMP Don't know when I'm going to do the -

04 21 13 26 CDR I better -

04 21 13 36 CDR Houston, how we doing on the time line?

04 21 13 56 CDR Do you read me, Al?

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[REDACTED]

04 21 13 57 LMP Sure do.

04 21 13 58 CDR Hello, Houston. How we doing on the time line?

04 21 14 07 LMP They may be talking to Yankee Clipper.

04 21 14 15 CC Al, did you have a reading on the shorting amps?

04 21 14 17 CDR Wait a minute. I'll get it. Hold the phone. Do you read me, Houston?

04 21 14 26 CC Sure do; go ahead.

04 21 14 27 CDR Okay. I was asking you how we were doing on the time line?

04 21 14 55 CDR Can't see that needle anywhere. Can you, Al?

04 21 14 58 LMP Let me see it. Let me help you. Doesn't it show any amps?

04 21 15 03 CDR Place is covered with dust.

04 21 15 05 LMP I know.

04 21 15 08 CC Pete and Al, at 2 hours and 7 minutes into the EVA, you're about 5 minutes behind.

04 21 15 13 CDR Okay.

04 21 15 14 LMP Pull - hold me a little bit.

04 21 15 15 CDR Wait a minute. Going back to MIN cooling. What do you need?

04 21 15 20 LMP Hold - hold me to look.

04 21 15 22 CDR Oh, okay. ...

04 21 15 27 LMP I don't even see a needle in there.

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04 21 15 28 CDR I don't either. That's what's bothering me. It's not reading zero, and I don't see a needle.

04 21 15 32 LMP I don't even see a needle in there, Houston.

04 21 15 34 CDR Yes. Okay. Let's quit screwing with it. Get on the time line.

04 21 15 40 LMP I don't know where it went.

04 21 16 25 CDR Houston, did you get our last comment?

04 21 16 33 CC Negative, Pete. Go ahead.

04 21 16 34 CDR We can't see a needle in the shorting amps anywhere. It's not at zero. It's not in sight.

04 21 16 47 CC Roger. We copy. Go ahead.

04 21 17 28 LMP We're not done for the mag - for the - seismometers, Houston. And I've sort of dug a little crater so that the - essentially the stool - the hole in the center of the stool, has - is de - is de - has more clearance between it and the ground. Hopefully, this will keep the SIDE from ... the ground at all. Going to try anyway.

04 21 18 02 CC Roger, Al. That's good. Go ahead.

04 21 18 03 LMP - - ... the seismometer. We'll see - We'll see how it works. It looks like it might work. I tamped it also in the - in the small crater there.

04 21 18 14 CDR Okay. I've got the solar wind deployed here. Okay. Just a minute.

04 21 18 29 LMP Boy, you really have to be careful of these cables, don't you?

04 21 18 40 LMP Hey, it looks good. Looks good.

04 21 18 48 CDR Okay. After the solar wind, I get an EMU check and I'm down to MIN-cooling, anyhow; and it says LSM off load, two Boyd bolts. Wait a minute. Let me by. Whoops.

04 21 19 01 LMP Okay, now.

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04 21 19 06 CDR Say, we have to be careful. Don't move sideways or backwards. You just don't know what's there. You've always got to move forwards.

04 21 19 12 LMP Yes. Pete, could you shove the central station this way a little bit?

04 21 19 23 CC Pete, we copy an EMU check.

04 21 19 25 CDR Shove it?

04 21 19 27 LMP Just move - just put your thing in the - in the holder, and just move it over this way a little bit.

04 21 19 33 CDR I'm not sure I can do that, but I'll give it a try.

04 21 19 39 LMP Watch it. There you go.

04 21 19 41 CDR How's that for one-footed - La-dee-da?

04 21 19 46 LMP Pretty good.

04 21 19 48 CDR You make me knock my solar wind over, I'm going to be mad at you.

04 21 19 51 LMP Okay. You're just - Here, let me give you a hand.

04 21 19 57 LMP Make sure you - you hold it there.

04 21 19 59 CDR Hey, don't - don't touch that. I've got a - one Boyd bolt off it.

04 21 20 03 LMP Aren't you going to ...?

04 21 20 04 CDR Huh?

04 21 20 05 LMP Want me to help you move it that way?

04 21 20 07 CDR No. It's got one Boyd bolt out of that magnetometer.

04 21 20 09 LMP Okay. Okay. Go ahead.

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04 21 20 13 CDR What we're doing it, making a mess. You'd be better off - Let me - Listen, can you - you - leave - leave it sit. Let me hold that. You - you put that stool back here closer.

04 21 20 21 LMP Okey-dokey.

04 21 20 22 CDR Am I over all the cables?

04 21 20 24 LMP Okay.

04 21 20 25 CDR Huh?

04 21 20 26 LMP No, you're okay. You got it?

04 21 20 28 CDR Yes. Let me have it. All right?

04 21 20 30 LMP Yes. Take your clip off.

04 21 20 32 CDR Okay.

04 21 20 33 LMP All right, now, you move your stool back.

04 21 20 43 LMP ... a second.

04 21 20 47 CDR Okay. *** your EMU break.

04 21 20 51 LMP I am.

04 21 20 54 CDR I try to stay away from - That's a nice job on that solar wind.

04 21 20 56 LMP Thank you. You've got to be careful you don't kick dirt on them once we get them setting down. I guess the way you could do it is have - have it in some sort of package - a package out on the dirt.

04 21 21 08 CDR What are you doing anyhow?

04 21 21 11 LMP Well, I had to get this - Oh, I'm sorry.

04 21 21 19 CDR Here you go; move it up right here where my foot-prints are.

04 21 21 21 LMP Okay.

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04 21 21 23 CDR There. That a boy. That a boy. Now don't -
doing good. There, now, kind of tamp it right
around in there. That a boy.

04 21 21 44 LMP *** go off the central peak. Now, let's see what
happens if we set it right -

04 21 21 57 CDR That's good.

04 21 21 59 LMP That looks like it'd be okay, doesn't it?

04 21 22 00 CDR Yes.

04 21 22 01 LMP Just a second. Let me do a couple of things. Do
this ... Take ... a little bit out of there.

04 21 22 10 CDR Pull it over a little bit more and level it up.

04 21 22 14 LMP This doesn't - Yes, this doesn't need to be level.
Okay. That's got kind of a deeper hole there in
the center.

04 21 22 20 CDR Yes. You're in good shape. That doesn't have to
level, huh?

04 21 22 22 LMP No, because the - the other one levels ... this
stool.

04 21 22 25 CDR Okay. Push it down a little bit.

04 21 22 27 LMP Okay. That's a good idea.

04 21 22 30 CDR *** it?

04 21 22 33 LMP Looking good. Looking good.

04 21 22 35 CDR Just give me the tongs, and I'll put them away.

04 21 22 37 LMP Okay.

04 21 22 40 CDR Get with it and I'll start opening Boyd bolts.

04 21 22 50 LMP That's going to do okay, Pete.

04 21 22 53 CDR Thank you.

04 21 22 54 LMP Yes.

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04 21 22 57 CDR All right.

04 21 23 11 CDR *** I'd whistle while I work. I can't do it.
(Whistle) Oh, yes, I can.

04 21 23 32 LMP Okay. That seismometer's right in position now.
Here's hoping. Here's hoping nothing happens to
it.

04 21 23 44 CDR Looks real good, Al.

04 21 23 45 LMP Yes, it does. It looks like it's going to clear.
Houston, looks like digging that little hole
might work. Setting up there nice now, and it
looks like maybe it's not going to ... down in the
hole. Maybe - maybe we did it. We'll have to
see.

04 21 24 07 CC Roger, Al. We concur; it sounds like a good plan.

04 21 24 18 CDR Whoops!

04 21 24 27 LMP Isn't that something? Look at that.

04 21 24 30 CDR What? Just have to put a little dirt on it, I
guess.

04 21 24 36 LMP When I put out the skirt of this foil, it doesn't
want to lie down. I guess because it's been
folded so long. I guess I can just probably just
put it out. It acts almost like it's got an
electrostatic charge on it that's resisting the
lunar surface. I'm sure that isn't it.

04 21 24 50 CDR Hey, stop 1 second. Watch out. Don't - don't
come across - don't - I know. That's what I want
you to do is come take it.

04 21 24 56 LMP Okay.

04 21 24 57 CDR That cable isn't even unreeling. See, it's per-
fect. Take it out there and set it. That a boy.

04 21 25 04 LMP It's right behind there. You may - -

04 21 25 06 CDR There you go.

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04 21 25 07 LMP Just trip it. You might want to trip it - Trip it off that thing, Pete.

04 21 25 15 CDR Trip it off what?

04 21 25 16 LMP It's on that post.

04 21 25 18 CDR Oh. All right. I see what you're talking about.

04 21 25 21 LMP That shadow's going to be just right. Looking okay.

04 21 25 34 CDR Oh, fiddle-de-diddle. Come on.

04 21 25 45 CDR Okay. Everything is going great, but that whistle is driving me nuts. Bothering you?

04 21 25 52 LMP A little bit.

04 21 26 01 CDR Okay. Oh, darn it. I can't - can't help but get dirt on this darn thing, no matter how careful I am.

04 21 26 17 LMP I don't think there's a way, Pete. I don't think there's a way. But you got - if you got where you could - You put it out in a package and then your last step was - like the SIDE over there, it just deploys off the thermal wrapping, your dirt protector, and you end up with a nice clean experiment sitting there.

04 21 26 46 CDR How we doing on the time line, Houston?

04 21 26 51 CC Stand by, Pete.

04 21 27 07 CDR Whooo! (Laughter)

04 21 27 10 LMP What happened?

04 21 27 12 CDR Oh, it's just the way things pop off down here in one-sixth g. Okay. Won't be long and I'll get to my favorite task, pointing the antenna.

04 21 27 31 CC Pete, we show you're about 8 to 10 minutes behind but it's no sweat. You've got - you got lots of oxygen and feedwater. We'll give you an update on the time remaining, when you finish deploying the ALSEP.

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04 21 27 41 CDR/LMP Okay.

04 21 27 42 LMP Good. Looks like it's going real good, Houston. This seismometer, I'm having a little trouble making the skirt lie down; but, other than that, it looks good. It doesn't want to just lay flat like it does on Earth at one g. It sort of wants to flip up again. I guess it's just because it's got this memory in it from being folded so long, and the forces to make it lie down aren't too good.

04 21 28 10 CC Roger, Al. You can make a two-man task out of that and put a little dirt around the outside edge to hold it down if you like.

04 21 28 13 LMP Okay. Well, I noticed that if I just - -

04 21 28 17 CC You won't have any trouble getting any dirt on it, will you?

04 21 28 18 CDR Let me push this down. That'll do it.

04 21 28 38 LMP Okay, Pete. Let me level it up. I think it's pretty near level. It's lined up exactly east. If I give it a couple of pushes.

04 21 28 47 CDR I got this feeling there's a couple of Boyd bolts that aren't undone here for some reason.

04 21 29 10 LMP Thing looks level as can be to me.

04 21 29 14 CDR Looks good.

04 21 29 22 CC Roger, Al. Copy. You have the bubble centered.

04 21 29 28 LMP I'll tell you an interesting thing about this bubble, Houston; no, it's okay. It's okay.

04 21 29 42 CDR I am not happy here, Al. I'm afraid something ... one these Boyd bolts is not undone, and I don't understand why.

04 21 29 55 LMP Why, one of them didn't do or what?

04 21 29 57 CDR Well, I don't know. I haven't the foggiest idea. I thought all of them did.

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04 21 30 02 LMP Looked like you're well ahead of the time.

04 21 30 04 CDR Hey, take your stick and kick a little dirt up on it right there.

04 21 30 09 LMP Huh?

04 21 30 10 CDR Take your stick and just put a little dirt on the edge, just on the edge, though. Not much. Uh-oh. I got some bad news.

04 21 30 21 LMP That's okay. I won't do that anymore. That's okay; that skirt'll stay down enough.

04 21 30 30 CDR Okay. That's - that's complete. Let me take a couple of pictures of it. Okay, Houston. The passive seismic is down; the alignment is exactly 90 degrees, and I'm going to take a couple pictures of it here. Hey, Al.

04 21 30 50 LMP Yes, sir.

04 21 30 52 CDR I don't know what's the matter, but something is.

04 21 30 57 LMP Here it is.

04 21 30 58 CDR Okay. Would you look and see if the lens on my camera looks clean? Wait a minute.

04 21 31 11 LMP There, you got it made.

04 21 31 13 CDR No, I don't either. I don't know what's the matter.

04 21 31 15 LMP Want me to hold down this part while you get that other bolt -

04 21 31 16 CDR Push - push - push that center down. All right? Looks good.

04 21 31 20 LMP Oops. Got it.

04 21 31 21 CDR Very good.

04 21 31 22 LMP That's beautiful.

04 21 31 23 CDR Hey, it's alive (laughter).

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04 21 31 24 LMP It sure wants to come up, doesn't it? Whoo!

04 21 31 27 CDR That did it.

04 21 31 28 LMP That's beautiful.

04 21 31 29 CDR That did it.

04 21 31 37 CDR Houston, central station's up.

04 21 31 44 CC Roger. Copy. Central station up, and 90 degrees on the PSE gnomon.

04 21 31 54 CDR Hey, Al.

04 21 31 55 LMP Yes, sir.

04 21 31 58 CDR Never mind. I'll get you in a minute.

04 21 32 02 LMP Don't ever move backwards (laughter).

04 21 32 03 CDR Hey, we're going to have to do a lot of - What did you do, fall over?

04 21 32 06 LMP No.

04 21 32 07 CDR No?

04 21 32 08 LMP No, but I just - I didn't come close even - it's just that - I think something you want to follow as a rule - -

04 21 32 16 CDR But don't kick dirt on this - -

04 21 32 18 LMP I'm doing my best.

04 21 32 36 CDR ...

04 21 32 39 LMP ... and the central station is not level.

04 21 32 59 CDR Not too bad.

04 21 33 02 LMP Get a good shot of it here, Pete?

04 21 33 04 CDR Okay.

04 21 33 33 CDR Okay, I'll take out the - the magnetometer.

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04 21 33 38 LMP Central station went up so nice.

04 21 33 42 CDR Al, those are my last two Boyd bolts.

04 21 33 45 LMP Okay.

04 21 34 07 LMP I'm down in a little crater now, Houston; and, sure enough, right in the bottom of the craters, there is a lot more - a lot softer dust than up on the rim. Not much; but it's noticeable. I don't think the sides are slippery at all. I don't think it's going to bother us going over to get our Surveyor ... about that distance, Pete?

04 21 34 34 CC Roger, Al. We copy. You on your way out with the LSM?

04 21 34 36 LMP That's right. Got it right in hand; I'm out at the end of the line, and I'm deploying the legs right now.

04 21 34 48 CC Roger.

04 21 34 53 CDR One antenna mast in place, Houston. Going back for the - my favorite thing.

04 21 35 01 LMP Are you through with - you got all these other packing ... - -

04 21 35 07 CC Roger, Pete. Copy antenna mast in place and good luck.

04 21 35 08 CDR What'd you - -

04 21 35 09 LMP Look at that, Pete.

04 21 35 10 CDR What?

04 21 35 12 LMP Hey, one of the fun things here, Houston, is all these Styrofoam packing blocks that come off - to - that are put on there to protect it during man - shipment, or launch - when you take them off and throw them, they really sail. These things stay airborne up for 10 seconds, maybe.

04 21 35 38 CDR Got any more thoughts on our TV camera, Houston?

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04 21 35 42 LMP Pete? Pete.

04 21 35 44 CDR What?

04 21 35 45 LMP Watch this.

04 21 35 48 CDR (Laughter)

04 21 35 49 LMP (Laughter) Try that on - Hey, I just threw something. It hasn't hit the ground yet; it must have gone up 300 feet. Boing!

04 21 35 59 CDR (Laughter) Stop playing and get to work (laughter). Come on. Maybe they'll extend us until 4-1/2 hours. I feel like I could stay out here all day. ...

04 21 36 06 LMP I know it ... Right there. Okay.

04 21 36 23 CC Pete, we've been thinking on that camera, and when you get back, we'll have a test for you to run on it. It looks as though part of it's come back. And we're going to try and see what we can salvage.

04 21 36 32 CDR Ok - okay.

04 21 36 40 LMP What do you think happened to it, Houston?

04 21 36 53 CC Al, we're not sure on that. Why don't you wait until you get back - wait until you get back at the LM, and we'll work it out a bit and see if we can determine it?

04 21 37 03 LMP All right.

04 21 37 05 CDR Hey, Al?

04 21 37 06 LMP Yes, sir.

04 21 37 08 CDR Gee, that's nice. Gee, that's weird (laughter).

04 21 37 11 LMP (Laughter) Those arms, on Earth they just flop down in position. Here, they don't even want to stay. There they go.

04 21 37 20 CDR That thing hit the ground; it's still bouncing.

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04 21 37 32 LMP That's slick. That's really slick. Boy, I hope -
I hope - -

04 21 37 46 CC Hello, Yankee Clipper; Houston.

04 21 37 52 CDR You hope, you hope?

04 21 37 54 LMP Oh, I was just thinking about something. Pete,
no way to keep these things clean; I'm really
worried about this white coating.

04 21 38 15 CDR Lucky for me that the antenna head is almost level.

04 21 38 42 LMP I can see that. This dot doesn't - doesn't seem
hard to see.

04 21 38 48 CDR I'll see what I can do with it. There it is. Here
it is. I think. Right there. Right in the center.
Center.

04 21 39 16 CC Yankee Clipper, Houston.

04 21 39 17 CMP Hello, Houston; Clipper here.

04 21 39 24 CC Dick, the EVA - EVA is going pretty well; they're
2-1/2 hours into it; and they've got the ALSEP
a good way deployed. Apparently, both of them
look as though they just crawled out of a coal
bin. Other than that, seems pretty much nominal.

04 21 39 38 CMP Very good. Thank you.

04 21 39 40 LMP Okay, Houston. The magnetometer's deployed; it's
level, and it's pointed exactly east. And the
little black dot is right in the middle ...

04 21 39 55 LMP Same - -

04 21 39 56 CC Roger, Al. Copy.

04 21 39 57 LMP Same - Main concern here, there's just a lot of
dust on top of the box and the electronics there.
Just hope it doesn't bother it too much.

04 21 40 18 CC Roger, Al. Yankee Clipper, we have a map update
for REV 19.

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04 21 40 32 CC REV 19: LOS 118:48:40, 119:13:30, 119:34:33.

04 21 40 48 LMP Okay, Pete, let me take a couple of pictures of this. ...

04 21 40 56 CDR What are you mumbling about over there?

04 21 40 58 LMP Well, I just - I just don't - I don't like all that dirt on it; don't know what we can do though. There's no way to work around them; the radiator's got a little dirt on it, and there's no way to dust it off, and there is no way - All you can do is tap it a little bit and hope some of it falls off and that's about it. Don't want to tap it too hard. That's the best I can do.

04 21 41 27 CDR Okay.

04 21 42 16 LMP Okay. Okay. I've deployed the SIDE now, Pete.

04 21 42 28 CDR Okay.

04 21 42 29 LMP It's my last item.

04 21 42 32 CDR Not my last one.

04 21 42 33 LMP Okay.

04 21 42 50 CDR Does the antenna look like it's pointed at Earth? Wait.

04 21 42 55 LMP It looks close.

04 21 43 00 CDR That's it. ...

04 21 43 17 CDR Okay.

04 21 43 19 CDR Do the SIDE right now.

04 21 43 24 LMP Got her.

04 21 43 25 CDR Okay.

04 21 43 32 LMP Okay. I hope I don't tug on the station here, as I come out, Pete.

04 21 43 37 CDR If that happens -

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04 21 43 39 LMP It all looks pretty level, by the way. Your station does.

04 21 43 43 CDR Yes.

04 21 44 18 CDR We're nearing the end, I'll bet.

04 21 44 21 LMP I'm done.

04 21 44 25 CDR How's that -

04 21 44 36 LMP Now it's just - (laughter) - They must have doubled the cable length on this one.

04 21 44 41 CDR That does it?

04 21 44 51 LMP Okay.

04 21 44 52 CDR You're at the end. You're at the end.

04 21 44 53 LMP Okay. Let me set it down and work on it right here.

04 21 44 56 CDR That does it, old buddy.

04 21 44 57 LMP Okay.

04 21 45 15 CDR Okay. Now what do I want to do?

04 21 45 34 LMP ... do like that, does it?

04 21 45 37 CDR Have you got the tongs?

04 21 45 39 LMP What?

04 21 45 40 CDR Have you got the tongs? Were they with that box - or do I have them?

04 21 45 44 LMP You've probably got them on you.

04 21 45 46 CDR I do? I can't see - No, they weren't with that box.

04 21 45 50 LMP We used them - they're probably by your central station.

04 21 45 59 CDR Hey, I got them on me.

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04 21 46 01 LMP Okay.

04 21 46 11 CDR Okay, Houston, the antenna is up. It's aligned to 1644 and 525.

04 21 46 22 CC We copy that, Pete. You got the nominal alignment.

04 21 46 27 LMP That came out.

04 21 46 28 CDR SIDE screen came out very nice. Okay.

04 21 46 33 LMP Popped right out. Looks good.

04 21 46 36 CDR Boy, are you dirty. I'm just as dirty. Don't much want to stay down. Okay. That first shape; I can't believe it.

04 21 47 24 LMP (Laughter) They've got to be kidding. Yes. Boy, anytime you put anything spring-loaded on the Moon, you're in trouble (laughter). This screen has got sort of - you know - a spring to it?

04 21 47 36 CDR (Laughter).

04 21 47 39 LMP Doesn't want to lie down much up here in this gravity.

04 21 47 46 CDR Okay. Houston, how long we been out?

04 21 47 55 CC Pete, you've been out 2 plus 40, and the pacing one right now is Al. You're running around 20 minutes behind. And when you can, we'd like an EMU check, and if you'd give us your O₂ readings?

04 21 48 09 CDR Okay. My O₂ reading is 50 percent. And have you got anything for us? Haven't heard too much from you.

04 21 48 24 CC Negative on that. You're perking along real well. And we're following your progress. It looks as though you're getting the job done.

04 21 48 27 CDR Okay. Look - How you doing, Al?

04 21 48 37 LMP I'm doing good.

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04 21 48 38 CDR Okay.

04 21 48 39 LMP That little thing just doesn't want to - -

04 21 48 40 CDR Houston, let me ask you a question. Can I push in the shorting amp thing?

04 21 48 53 CC That's affirmative, Pete. We understand you're not able to get a reading. So, go ahead and close it - -

04 21 48 56 CDR All right. It might - -

04 21 48 57 CC And we'll stand by for a zero reading.

04 21 48 58 CDR - - okay, it might be full-scale high.

04 21 49 01 LMP Hey, you'd better tell them I still haven't put the SIDE down.

04 21 49 05 CDR That doesn't make any difference, does it?

04 21 49 06 LMP I don't know.

04 21 49 07 CDR It's all connected. It's all connected. Does it make any difference, Houston?

04 21 49 15 CC Stand by.

04 21 49 17 CDR You're a big-area litterbug? You know that?

04 21 49 21 LMP I know it.

04 21 49 32 CC Pete, we'd like you to go ahead and get the full deployment down first before you depress the shorting amps.

04 21 49 36 CDR Okay. Boy, you're dirty all the way to you knees. Can I give you any help?

04 21 49 40 LMP Sure could.

04 21 49 42 CDR All right; here I come.

04 21 49 52 CC And, Pete and Al, a comment on picture taking. If you would, try to document some of the dirt which you've - which has gotten over - all over the equipment. If you would, try to get closeups

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which will show the dirt we might have on thermally sensitive areas. And, also, when you get done, if you would, take one or two extra pictures showing the ALSEP with the mounds that you described previously in the background. That'll give us a good geometric reference.

04 21 50 21 CDR Okay. I did a PAN -

04 21 50 22 LMP Hold it - Hold that, Pete.

04 21 50 23 CDR I did a PAN out here at the -

04 21 50 29 LMP Okay. Just a second. Now, let me hold this end and you stretch that end out.

04 21 50 33 CDR Okay. I got it.

04 21 50 34 LMP Go to the right. That's it. Get the ... Get the coils out of it.

04 21 50 37 CDR Which way's this thing head?

04 21 50 39 LMP It's got to head away from - central station - away from everything. Probably ought to point right over there.

04 21 50 48 CDR Okay.

04 21 50 49 LMP But, now, I think if you kind of twirled it a couple times, it would end up uncoiling that twist in the line there.

04 21 50 57 CDR That's right. Let me try it that way again.

04 21 51 00 LMP Looks like it might be working. That's good. That's doing good. Okay. Let me take and set this thing down, and it's supposed to point to the Earth this way. That'll be good.

04 21 51 13 CDR Got your ground wires wrapped around the leg.

04 21 51 15 LMP Yes, I know. Got it. Looks like it's going to be okay.

04 21 51 23 CC Yankee Clipper, Houston.

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04 21 51 31 CC Yankee Clipper, if you'll give POO and ACCEPT, we'll ship you up a state vector, a target load, and a REFSMMAT.

04 21 51 41 LMP Okay. Hold on, hold on. Don't tip over.

04 21 51 42 CC Roger.

04 21 51 45 CDR Now, wait a minute, wait a minute.

04 21 51 47 LMP Okay.

04 21 51 48 CDR I got it steadied.

04 21 51 49 LMP Okay.

04 21 51 51 CDR There, that's all right.

04 21 51 52 LMP Just hold it there and twist it.

04 21 51 53 CDR Watch it, watch it, watch it.

04 21 51 54 LMP Okay. I'm trying to.

04 21 51 55 CDR No, your foot's hung in it. That a boy.

04 21 51 59 LMP That did it. Okay. Let me sneak it back on again. Okay.

04 21 52 04 CDR Now, what do you want?

04 21 52 05 LMP I want to put that lid back on there. It would probably be best if we just left it off.

04 21 52 09 CDR I think it would be best if you left it alone.

04 21 52 11 LMP Okay. Now, if you hold it there while I - -

04 21 52 13 CDR ... I got it. I got it anchored.

04 21 52 15 LMP - - because this is going to want to turn it over.

04 21 52 17 CDR Yes. I know.

04 21 52 22 CC Yankee Clipper, Houston. We're coming up with a load.

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04 21 52 23 CDR Yes. Step on it.

04 21 52 29 LMP Okay. That's what I think I can do. No.

04 21 52 35 CDR They've got to be kidding about that cable. I've been - They knew that thing was going to do that.

04 21 52 51 LMP There, maybe that's better.

04 21 52 57 CDR Come on, this thing's making us run behind.

04 21 53 00 LMP I know it, but I don't see any way to quickly -
(Laughter)

04 21 53 05 CDR All right, now, just a minute. Your foot. That's better.

04 21 53 12 LMP Okay. Make it turn - Let's try it a couple more times. I think if I hold it this way and use this tool, I can probably set it - -

04 21 53 19 CDR Hey, it's just like zero g; everything floats up. That baby's going to nose dive into the dirt every time, sure as I'm standing here. That cable's cleverly designed to make it do that.

04 21 53 29 LMP Let's put it like this. Down like that.

04 21 53 33 CDR Don't fall over.

04 21 53 35 LMP Okay. There's no way.

04 21 53 38 CDR Uh-uh, just - That a boy.

04 21 53 43 LMP That thing goes right in the dirt each time - -

04 21 53 45 CDR I know, I know. It's going to do that. It's very frustrating. Turn it around and point it the other way. See if it'll - see if it'll point out that way.

04 21 53 53 LMP All right. That might be good, too. Okay.

04 21 53 57 CDR Do - I knew that ding-a-ling cable was going to make us spend hours trying to do that.

04 21 54 06 LMP (Laughter) Doesn't that make you mad?

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04 21 54 10 CDR Yes. I know - especially when you know it's going to happen.

04 21 54 12 LMP Look, why can't I set it like this? You just let go of the SIDE and come over and step on that thing.

04 21 54 16 CDR Hey, if this SIDE falls over, then I'm really going to be mad. I got that thing firmly planted.

04 21 54 20 LMP Just a minute. Wait, wait. Hold - hold it. Hold her a minute. Okay. Get this just arranged. That's it. Now, step on it.

04 21 54 35 CDR I can't. Here - There's no way. Let go of the - let go of the string in your hand. That a boy; now, bend -

04 21 54 45 LMP It's just - -

04 21 54 46 CDR ... That's it. Push it in.

04 21 54 49 LMP Ah! We made it. I hope. Let's push it real hard in there.

04 21 54 53 CDR Okay.

04 21 54 54 LMP I think we've got it licked.

04 21 54 56 CDR That a boy. Easy does it.

04 21 54 57 LMP Oh, you - That thing just jumps right up.

04 21 55 02 CDR (Laughter)

04 21 55 03 LMP Pete, I'm just afraid that one - We've had it on this one.

04 21 55 06 CDR We've had it on that one, all right.

04 21 55 08 LMP Hey, here it is here. Look, I don't think it makes any difference if it - if it lays on its side as long as it points its aperture in the right place.

04 21 55 14 CDR Yes.

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04 21 55 15 LMP Let's move it around here and just let it lay on its side. Yes, it doesn't know - it doesn't know the difference. Let's just kind of lay it around. Let's turn it - now, that'll be - that'll work; that'll work.

04 21 55 30 CDR That work right there?

04 21 55 32 CC Al, we concur with that. Go ahead.

04 21 55 33 LMP Okay. It looks like the only way this - this cable has just got too much spring for the - for the - the weight of the package, and there's just no way. Okay, Pete. Let her go. Now, let me level it. No way.

04 21 55 52 CDR That's a shame. What time is it, anyhow? Let me get over here and get a big picture of this.

04 21 56 10 CC Pete, you're 2 plus 48 into the EVA.

04 21 56 14 LMP Okay. Level this, Pete. That's leveling good. Leveling real good.

04 21 56 32 CDR That American flag sure looks pretty back here next to the IM, doesn't it? The S-band - looks like a model.

04 21 56 40 LMP Yes. I think that's going to do it for the SIDE. That was a tough one ...

04 21 56 45 CDR Back off; I got the picture.

04 21 56 48 LMP ... you got a cross-Sun?

04 21 56 50 CDR No. Let me get - I'm just getting one from a distance here ...

04 21 57 02 CC Al, copy you have the SIDE deployed.

04 21 57 03 CDR Yes. Everything's deployed. I'm going to go get the shorting plug now, Houston.

04 21 57 10 CC Okay. Standing by.

04 21 57 11 CDR (Humming) Boy, do I like to run up here. This is neat.

04 21 57 14 LMP Yes. It is fun.

CONFIDENTIAL

[REDACTED]

04 21 57 15 CDR The first thing we've got to do is run over to that volcano-looking - whatever that little jobber-do is. That's interesting. Okay, Houston. Here comes the shorting plug.

04 21 57 46 CC Yankee Clipper, Houston. The computer is yours.

04 21 57 55 CDR ... ASTRO switch 1? Hey, Al.

04 21 57 58 LMP Yes, sir.

04 21 57 59 CDR I need your help over here after a minute.

04 21 58 02 LMP I'll be there.

04 21 58 04 CDR Houston, how about ASTRO switch 1?

04 21 58 11 CC You're clear to rotate ASTRO switch 1, Pete.

04 21 58 13 CDR Okay.

04 21 58 17 LMP Okay.

04 21 58 31 LMP Okay.

04 21 58 32 CDR Okay. Gosh, we can't - We've got to realign that antenna.

04 21 58 44 CDR Okay, Houston. ASTRO switch 1 is rotated; shorting amp switch is in. I'll be a happy man if you tell me you're getting a signal.

04 21 58 56 CDR Boy, it's all put up.

04 21 58 58 CC Roger, Pete. Stand by.

04 21 58 59 LMP It sure looks nice.

04 21 59 00 CDR How about - how about messing with this one thing right here?

04 21 59 03 LMP Okay. Well, we'll do it, Pete. Let's - let's - I wanted to just look at the numbers with you, too. Hey, would you just do me a favor? Use your tongs and pick up a couple of these Boyd bolts and set them on the edge of that skirt - ... the seismic. There's about 10 Boyd bolts just near it over there. What did you want me to look at?

CONFIDENTIAL

Day 5

04 21 59 24 CDR Just check - check that antenna; make sure it's level.

04 21 59 27 LMP Okay.

04 21 59 29 CDR Okay, I'm ... You do that. I'll give you the tongs. I'm going to run over and photograph this ding-a-ling looking -

04 21 59 35 LMP All right.

04 21 59 38 CDR Houston, how long you going to let us stay out?

04 21 59 41 CC Pete and Al, - -

04 21 59 42 CDR Go ahead.

04 21 59 43 CC Pete and Al, Houston. Looks like you did the job. We're getting data back.

04 21 59 45 CDR Hey, that's - You don't know how happy I am.

04 21 59 49 LMP Okay. Tell me again the ... numbers you're supposed to use.

04 21 59 52 CDR 16445.25. Here, turn around.

04 21 59 56 LMP Okay.

04 21 59 57 CDR I shouldn't have done that ... dirty all over, here.

04 21 59 59 LMP Okay.

04 22 00 00 CDR All right, I'm going over to this mound.

04 22 00 01 LMP Okay.

04 22 00 02 CDR I'll be back in a flash. By-by.

04 22 00 04 LMP Okay. I'll tell you the numbers I read; you tell me if they're right.

04 22 00 07 CDR Okay.

04 22 00 09 LMP I read 52 - no, no, correction - I read 525.

04 22 00 15 CDR That's right.

04 22 00 17 LMP Okay. I also read - 16 - 42.

CONFIDENTIAL

[REDACTED]

04 22 00 31 CDR I don't know what this thing is. It's really weird.

04 22 00 34 LMP 1642. You ever - Is that - Is that it?

04 22 00 37 CDR 1644, A1.

04 22 00 39 LMP Okay. Same thing. Looks good, looks good.

04 22 00 44 CDR I don't know what this is. Let me get the - ... feet at f:8.

04 22 01 10 CC Yankee Clipper, Houston. Go ahead.

04 22 01 19 CC That's affirmative. We'll be up with you in about 2 minutes.

04 22 01 24 CDR I know what it is.

04 22 01 26 LMP What is it?

04 22 01 27 CDR Well, I think that rock - I think it's - it's just a little secondary impact crater. Very funny ... Boy, is that a funny rock - It looks -

04 22 01 40 CC Yankee - Yankee Clipper, Houston. I have the maneuver PAD when you're ready to copy.

04 22 01 45 LMP Hey, here's a rock they'll be glad to see in Houston.

04 22 01 48 CDR Good.

04 22 01 49 LMP It's an interesting one. It looks like a solid glass chunk - -

04 22 01 53 CDR Oh, yes?

04 22 01 55 LMP - - shiny black material, I've never seen anything like it before.

04 22 01 56 CC ***lunar orbit plane change 1, SPS/G&N: 36733; minus 0.73, plus 0.51; 119:47:12.54; minus 0011.5, plus 0349.6, minus all balls; roll, pitch, and yaw, all zeros; 0062.5, plus 0057.3; 0349.7, 0:18, 0337.1; 05, 002.6, 18.7.

04 22 03 14 CC Dick, for boresight, Draco Beta.

[REDACTED]

CONFIDENTIAL

04 22 03 22 CC And that's down, 007; right, 46. The remainder is NA.

04 22 03 37 LMP Hey, Pete, let me put this rock in your pack.
... - -

04 22 03 44 CC Sirius and Rigel.

04 22 03 46 LMP - - glass spatter on it. That's fantastic. Never seen anything like that rock.

04 22 03 50 CC For your alignments, 047, - -

04 22 03 51 CDR No, I haven't. No, I haven't.

04 22 03 52 CDR That's great.

04 22 03 53 CC - - 263 - -

04 22 03 54 CDR ... go.

04 22 03 55 CC - - 055 - -

04 22 03 57 CC - - And that's two-jet ullage - -

04 22 03 58 CC - - for 15 seconds. Read back.

04 22 03 59 CDR Hey, are you - are you through, Al?

04 22 04 01 LMP Yes. I - I got - I got some pictures to take and that's it.

04 22 04 05 CDR Well, you take some pictures, and I'll meet you over at that big mound. All right?

04 22 04 08 LMP All right. Sounds good.

04 22 04 10 CDR All right.

04 22 04 11 CC Clipper, go ahead.

04 22 04 20 CDR Going to bring the tongs, Al.

04 22 04 22 LMP Okay. Unless you want them, right now.

04 22 04 27 CC Okay, Clipper. Understand. You did not copy all of that PAD. Is that affirm?

CONFIDENTIAL

04 22 05 52 CDR Okay. Boy, is that a big rock!

04 22 06 28 CDR Okay, Al. What are you up to?

04 22 06 31 LMP I'm coming your way. Let's start sampling.

04 22 06 34 CDR Okay.

04 22 06 35 LMP I'll be there in a minute.

04 22 06 36 CDR Houston, how long you going to let us stay out?

04 22 07 03 LMP Hello. Hello, Houston?

04 22 07 13 CC Al, Houston. Go ahead.

04 22 07 14 CDR Okay. How long you going to let us stay out?

04 22 07 25 CC Pete, you'll be extended 30 minutes; so, you're out for a total of 4 hours.

04 22 07 28 CDR All right, how much do we have?

04 22 07 31 CC And it looks as though you're - Okay. You've got about 1 hour left, and it looks as though we're going to have to close off pretty much with the nominal plan; and stand by; we have some words on the traverse back.

04 22 07 47 CDR Okay. We're standing over at the head crater.

04 22 07 53 LMP Why don't we start picking up some rocks, Pete, while we wait? Yes?

04 22 07 55 CDR Yes. Yes. Yes.

04 22 07 59 LMP Want to get a picture of that?

04 22 08 01 CDR Sure do.

04 22 08 03 LMP Let me get it set up.

04 22 08 05 CDR Right.

04 22 08 10 LMP ... and f:8. Okay. There you go. Okay. Grab her up, Pete.

CONFIDENTIAL

Day 5

04 22 08 33 CC Pete and Al, two things we'd like you to do on the traverse on the way back: One is to get samples and some documentation of those mounds; and secondly, if you can, get over to the 1000-foot crater, which is northwest of the ALSEP, and get samples and documentation of that sample from there.

04 22 08 54 CDR 1000-foot crater?

04 22 08 55 LMP Suppose that's where we are? Is that one - that one over there?

04 22 08 57 CDR You don't mean the head crater, do you? Let's get some of this mound Al.

04 22 09 02 LMP Okay.

04 22 09 05 CDR It's an interesting thing. There's a little vent hole.

04 22 09 07 CC Negative. We'll - If you're at head crater now, we'll give you - we'll give you a radar vector. Stand by.

04 22 09 10 LMP ... this way. You're - you've already got pictures of the - this, Pete?

04 22 09 15 CDR Yes, at 15 feet. I'm just taking it close up over here.

04 22 09 16 LMP Okay. Take that at about - -

04 22 09 17 CDR Go get the - Look at this black rock, here.

04 22 09 19 LMP Okay. Wait. Let me get close - Wait - Wait. Uh-oh. That - that ruins it.

04 22 09 23 CDR I got it; I got it; I got it.

04 22 09 24 LMP Yes, but I didn't get a picture of it. Okay.

04 22 09 26 CDR Of that one? Yes. Okay?

04 22 09 30 LMP There, you old picture in there. Let's get another one from right here ... this one -

CONFIDENTIAL

04 22 09 36 CDR Let's go around to the other side and not kick any dirt on it. It ruins it.

04 22 09 38 LMP Yes. Okay; go ahead.

04 22 09 40 CDR Go.

04 22 09 45 CC Pete, Houston. The crater which we speak of is - Pete, the crater which we speak of is about 300 feet northwest of head crater.

04 22 09 56 CDR The head - Oh - I see it. Yes. You mean the great big one over here? Okay. Yes. We can go over there.

04 22 10 03 CC That's affirmative.

04 22 10 04 CDR We can go over these, but that's the - -

04 22 10 05 LMP Wait, wait, wait a minute.

04 22 10 06 CDR Huh?

04 22 10 08 LMP Try a piece of that.

04 22 10 11 CC And, Pete and Al, we'll be - talking with Yankee Clipper, giving him a maneuver PAD, for about the next 5 minutes.

04 22 10 16 CDR Very good.

04 22 10 18 LMP Let me see if I can chip some of that off, Pete, with this. Get my tool here. I know - You could work 6 or 7 hours here; never bother you a bit - a bit ...

04 22 10 34 CDR Right. Okay.

04 22 10 35 LMP I'm going to knock a piece of that off.

04 22 10 39 CDR (Humming) You know, I've got the feeling that when that crater was made, it just threw out a big blob of dirt. This is where it landed.

04 22 10 46 LMP Yes.

04 22 10 49 CDR Ain't any that big.

CONFIDENTIAL

04 22 10 51 LMP Hey, you'd almost - I wouldn't be surprised to find this is that microbreccia; you haven't got any - -

04 22 10 57 CDR Hey, let me get a picture. Let me get a picture of that one.

04 22 11 00 LMP Okay. That'll be a goodie.

04 22 11 03 CC Pete and Al, Houston.

04 22 11 04 CDR Go.

04 22 11 05 LMP Go ahead.

04 22 11 07 CC We're trying to get a maneuver PAD up to Clipper; he's having a hard time copying it with you talking in the background. Could you - could we have some silence for about - -

04 22 11 21 CDR Okay.

04 22 11 22 CC - - For about 5 minutes, while we get that PAD up? Okay. We'll be right back with you.

04 22 14 34 CC Pete and Al, we're back with you.

04 22 14 35 LMP Okay.

04 22 14 36 CDR Roger-Roger. We're almost over to the 1000-foot crater.

04 22 14 41 CC Roger.

04 22 14 42 CDR Got - got about another 200 feet to go. You can see these linear patterns quite frequently on the surface, Houston. They are - seem to generally run from the north to the south, and they're just little lines. They're off in the dirt; sometimes you see a large area - We're in an area right now. It looks like it had a fresh impact not too long ago.

04 22 15 13 LMP Let me take a picture of this one, Pete. This - -

04 22 15 15 CDR Hey, I got some neat - neat ones right here.

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[REDACTED]

04 22 15 17 LMP Okay. Looks like a secondary impact crater that occurred - recently.

04 22 15 26 CDR Yes. Some of them do, don't they?

04 22 15 28 LMP They do. This one looks like fresh - doesn't have that old look like all the rest of these - -

04 22 15 31 CDR Come on. Let's go.

04 22 15 32 LMP There's some of that ... in the bottom of there.

04 22 15 39 CC Roger, Pete and Al. We copy that. We show you're 3 hours and 7 minutes into it - into the EVA. And we'd like you back to the LM to start the closeout in 10 minutes. That's at 3 plus 17.

04 22 15 50 LMP Okay.

04 22 15 51 CDR Holy Christmas, we're going to have to smoke there, Houston.

04 22 15 54 LMP Well, we're there, now.

04 22 15 55 CDR Yes. We're almost to the crater.

04 22 15 57 CC That's affirmative.

04 22 15 58 CDR Okay, we'll - we're not getting very many rocks by going this far, but if that's what you want, that's what you want. Run, baby (laughter).

04 22 16 07 LMP Hey, let's - When we start picking up, let's try and get a larger sample - -

04 22 16 10 CDR Hey, look at - This looks like a brilliant spanking fresh impact crater. Look at that little fellow, huh?

04 22 16 19 LMP Sure does, doesn't he?

04 22 16 20 CDR Yes. Let's get some rocks right here; here's some. Here, get some pictures first. Get some pictures of that crater, and I'll get some over there. I'll get this one right here.

[REDACTED]

CONFIDENTIAL

04 22 16 30 LMP Okay. Wonder why these look so fresh? Must be just the difference in materials.

04 22 16 36 CDR Boy, it sure does look fresh though, doesn't it?

04 22 16 41 CDR There - there's a rock for you.

04 22 16 42 LMP Okay.

04 22 16 44 CDR Listen, we need to find a grapefruit, too, you know.

04 22 16 46 LMP Yes. There's a bunch around.

04 22 16 48 CDR Made a dent on this rock. Whoops. Wait a minute; I dropped it. Hold it; move on a little bit. Move on; move forward.

04 22 16 54 LMP Okay.

04 22 16 56 CDR Don't like hustling. I'll be dobbed! Let's go.

04 22 17 02 LMP Okay.

04 22 17 04 CDR Get right to the edge of this crater and photograph it. Get a PAN in it, and then we won't have to come back this way. Look at there; that crater's spectacular, isn't it? Wow, a monster! Look at that rock! I'd like to -

04 22 17 16 LMP Oh ... get some of this bedrock - -

04 22 17 18 CDR Well, we may want to go back there tomorrow, but we can't go any further. We'll never get back in 10 minutes.

04 22 17 25 LMP Hey, there's bedrock down here, a little ways.

04 22 17 27 CDR Where?

04 22 17 28 LMP It's right down the hill.

04 22 17 29 CDR Hey, you're right.

04 22 17 30 LMP About 50 - 50 yards.

04 22 17 32 CDR Here I go.

CONFIDENTIAL

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04 22 17 33 LMP Hey, good show.

04 22 17 37 CDR You're right. I'll PAN it first. Got just a minute. I'm going to get in here and - You got to go to intermediate cooling.

04 22 17 45 LMP Okay.

04 22 17 47 CDR Been around here so far on MIN.

04 22 17 49 LMP Yes, let's ... -

04 22 17 50 CDR Look at - don't - don't - don't they look like something looking into zero phase? Look at those - -

04 22 17 54 LMP Yes.

04 22 17 55 CDR - - fresh little jobber-do's. Now, wait a minute. I want to - -

04 22 17 57 LMP Why don't you go ahead and PAN - right here?

04 22 17 58 CDR And I want to get to 74.

04 22 18 01 LMP Okay.

04 22 18 02 CDR 74 - -

04 22 18 03 LMP You ought to have two f:8.

04 22 18 04 CDR 8, right?

04 22 18 06 LMP 50, and you're looking - right there.

04 22 18 09 CDR And you ought to have 8 over there, and 11 right there, and 8 over there.

04 22 18 12 LMP Yes.

04 22 18 13 CDR 1, 2, 3 - -

04 22 18 17 LMP Beautiful.

04 22 18 18 CDR - - 4 - -

04 22 18 19 LMP You can - better believe it -

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Day 5

04 22 18 21 CDR - - 5. Now, let me go back to f:ll.

04 22 18 25 LMP Okay.

04 22 18 26 CDR We'll have to smoke to get back to that LM. We're a long way. Look where we are. Oh, we can make it; no strain.

04 22 18 33 CDR Huh?

04 22 18 35 LMP Got it. I was just looking over this rock, down here. Looks like it came - -

04 22 18 39 CDR Just a minute.

04 22 18 40 LMP Okay. Now, let me go over here, and I'll get one in stereo of this baby.

04 22 18 45 CDR Okay.

04 22 18 46 LMP Let me just leap over here a ways.

04 22 18 48 CDR Houston, we're looking down into this big crater now, and it looks rather old. ... - -

04 22 18 51 LMP Hey, there's some bedrock on the bottom, I think, here. Looks like big boulders.

04 22 18 55 CDR There's some big boulders that are resting inside the rim. None on the rim like we see on a large crater that's further to the west by another 1000 feet. But you don't see any outcroppings of rocks either that - you know - that we could look down and say, well, from the top of the rim down to about 20 feet or something, then we come to the - the underlying rock, but there is this rock that's very large, an arm's spread around. We're going to try to collect some of the samples.

04 22 19 29 CDR Hey, I'm going to get the - -

04 22 19 31 LMP We can get them here - -

04 22 19 34 CC Roger, Al. We suggest that you hustle. We show you're 3 hours - 3 hours and 11 minutes, and we'd like you back there around 17 - 6 more minutes.

CONFIDENTIAL

[REDACTED]

04 22 19 41 CDR We're picking up a couple right now, and we're on our way back. Just a minute.

04 22 19 51 LMP Boy, there's a big block over there.

04 22 19 53 CDR I can't get it?

04 22 19 54 LMP You got it?

04 22 19 55 CDR I can't get it with the tongs.

04 22 19 56 LMP Hold my hand, and I'll pick it up.

04 22 19 57 CDR Hey, wait a minute. How about this?

04 22 20 04 LMP Get it?

04 22 20 13 CDR Push it over here, and I'll get it.

04 22 20 14 LMP Push her over here.

04 22 20 24 CDR Okay ...

04 22 20 25 LMP Drop it in my bag.

04 22 20 27 CDR Okay. You got anything else you want to put in your bag? Got to push another one over here.

04 22 20 32 LMP Okay, in just a minute.

04 22 20 33 CDR Okay.

04 22 20 35 LMP A couple of big ones. Oh, I wish - Get this inside of that. I can't.

04 22 20 39 CDR Try that one.

04 22 20 40 LMP That's a good one.

04 22 20 42 CDR Huh?

04 22 20 44 LMP A couple of nice ones right here. Wait a minute. Get my hand here.

04 22 20 51 CDR There you go. Oops.

04 22 20 54 LMP Okay. Wait a minute. Yes. Let's just - let's just get - get this real good one.

[REDACTED]

CONFIDENTIAL

04 22 21 00 CDR Yes.

04 22 21 01 LMP Okay. We're getting you some of this rock, Houston; I hope it's a - sufficient. Let's go back and pick up another kind. Where the heck is the LM?

04 22 21 12 CC Roger, Pete and Al. We copy. We suggest you start smoking on back there. You're 3:13, and I'd like you back there in 4 minutes.

04 22 21 19 CDR Okay. We're on our way. Let's go, Al.

04 22 21 20 LMP Hey, Pete?

04 22 21 21 CDR Yes.

04 22 21 22 LMP Let me ask you something.

04 22 21 23 CDR What?

04 22 21 24 LMP What -

04 22 21 26 CDR Huh?

04 22 21 27 LMP That's interesting, isn't it?

04 22 21 28 CDR When?

04 22 21 29 LMP I was looking at that rock perched right over on top of the hill, there. ... my distance here, because there's nothing but -

04 22 21 36 CDR Here.

04 22 21 37 LMP - - all the same.

04 22 21 39 CDR Yes.

04 22 21 40 LMP ... the same.

04 22 21 46 LMP Must have been 1200 - 1300 feet, huh?

04 22 21 48 CDR At least.

04 22 21 50 LMP At least. You could travel a lot further than that; you know it?

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04 22 21 52 CDR Yes.

04 22 21 53 LMP You could really make a long traverse if you had a good long-term OPS.

04 22 21 56 CDR What do you figure my strides are - 10 feet?

04 22 22 00 LMP No. I'd say your - Each - each step only goes about - When you're running normal, I'd say they'd go about 3 or 4 feet, but you could just go in- definitely at this pace.

04 22 22 09 CDR Yes.

04 22 22 10 LMP You don't get tired. Seems that you land flat-footed and then you just push off your toes and - then you go.

04 22 22 22 CDR (Laughter)

04 22 22 23 LMP Fun! Well, we got that ALSEP up.

04 22 22 31 CDR Listen. When I get this rock box, we've got to get some more rocks. Turned us all around, and we didn't get any rocks.

04 22 22 42 LMP I'm getting some up here.

04 22 22 44 CDR We'll fill it. Just a minute.

04 22 22 51 CDR Hey, Houston. We're approaching the ALSEP, headed back to the LM.

04 22 23 01 CC Roger, Pete. We copy.

04 22 23 03 CDR If you hadn't made me run all the way -

04 22 23 05 LMP Who, me?

04 22 23 06 CDR Yes.

04 22 23 07 LMP Hey, ease over this way a little.

04 22 23 08 CDR Which way?

04 22 23 09 LMP Over towards your left.

CONFIDENTIAL

Day 5

04 22 23 10 CDR What you want to do?

04 22 23 12 LMP I thought there were a couple of good rocks over there. There.

04 22 23 19 CDR Be about halfway -

04 22 23 21 LMP Why don't we grab a couple of rocks here?

04 22 23 24 CDR All right. Here's one right here.

04 22 23 25 LMP Okay. Let me get a photograph of it. Hurry. We're on the way.

04 22 23 31 CDR Coming?

04 22 23 36 LMP Okay. There's a good one. Wait a minute. 8. Step in and get the picture.

04 22 23 46 CDR Got it?

04 22 23 47 LMP Got it. There you go.

04 22 23 51 CDR Good boy. Okay.

04 22 24 06 LMP Get another good one. Forget the picture.

04 22 24 09 CDR Okay. You're in the shadow. Step back just a little.

04 22 24 12 LMP I said forget the picture. - -

04 22 24 13 CDR Okay.

04 22 24 15 LMP That's a good one. That's a heavy son of a gun.

04 22 24 19 CC Pete and Al, we're picking up your heavy footprints going by the seismometer.

04 22 24 22 CDR That's great.

04 22 24 23 LMP Hey, Pete.

04 22 24 24 CDR Yes.

04 22 24 25 LMP Let's get one last shot of this thing.

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04 22 24 28 CDR You - Look, I got to get going on the rock box.
I can't - -

04 22 24 30 LMP Oh, okay ...

04 22 24 33 CDR Go ahead and get one more. Zing. I feel like
Ebenezer Scrooge or something whistling across
the plain.

04 22 24 47 LMP Boy, there's a lot of soft land here.

04 22 24 51 CDR Okay. We're within about 300 feet of the LM now,
Houston. Coming on at a full gallop.

04 22 25 01 CC Roger, Pete. We copy.

04 22 25 02 CDR There's a good rock.

04 22 25 03 LMP Halt, halt, halt!

04 22 25 04 CDR Look at that!

04 22 25 05 LMP I swear there's a - -

04 22 25 06 CDR Never saw one like that before. Look at that!

04 22 25 10 LMP Okay.

04 22 25 13 CDR That green? What is it?

04 22 25 15 LMP - - see it.

04 22 25 16 CDR No, it was grinning at me. That's why I stopped.

04 22 25 17 LMP Okay.

04 22 25 18 CDR The heck with it. Put it in the rock bag.

04 22 25 19 LMP Let's go.

04 22 25 20 CDR Yes, sir.

04 22 25 21 LMP Okey-doke.

04 22 25 26 CDR (Laughter)

04 22 25 28 LMP Here, let's pick up a couple of these.

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04 22 25 30 CDR Okay.

04 22 25 34 LMP Hey, they're good. They're a little different. They're more the gabbro type. Yes - wait a second. Wait a second.

04 22 25 57 CDR Get it in?

04 22 25 59 LMP Good show.

04 22 26 00 CDR/LMP Let's go.

04 22 26 03 CDR What I'd hate to see is an LMP laying on the lunar surface. Hey, what's that glass! Look at that! Son of a gun. I got to have that. Look at that, a pure bead of glass! Hey, that's -

04 22 26 16 LMP Let's grab it. Oh, come on. Hold my hand.

04 22 26 22 CDR Okay.

04 22 26 29 LMP Oh, I'm losing it.

04 22 26 42 LMP Got it.

04 22 26 43 CDR Pure glass or something, huh?

04 22 26 44 LMP It's one of those black beads, only this one's - -

04 22 26 45 CDR Careful.

04 22 26 46 LMP - - about - -

04 22 26 47 CDR All look green to me. Okay.

04 22 26 50 LMP - - three-eighths of an inch in diameter. And they're all - -

04 22 26 54 CDR ... Intrepid. Okay. What do I got to do here?

04 22 27 07 LMP Okay. - -

04 22 27 09 CDR Okay. I'll tell you something you can do.

04 22 27 11 LMP Okay.

CONFIDENTIAL

04 22 27 12 CDR Take the PAN photographs again. I took them at 15 feet, I think, by mistake.

04 22 27 16 LMP Okay.

04 22 27 17 CDR And I'll get the rock box out.

04 22 27 18 LMP All right. Real good.

04 22 27 20 CDR Hey, Houston. We're back at the LM.

04 22 27 28 CC Roger, Al, Pete. We copy. After you get finished with the core tube, Al, we'll have some instructions for you with the TV.

04 22 27 33 LMP Sounds good. Okay, Pete. Where are the tongs for a moment?

04 22 27 39 CDR The tongs are on the MESA.

04 22 27 41 LMP Okay.

04 22 27 42 CDR They are?

04 22 27 43 LMP I have them now. Now, which PAN's do you want me to take? Over here?

04 22 27 45 CDR No, about - Yes. Front and over on left and rear.

04 22 27 49 LMP Fifteen, 12 each or - -

04 22 27 51 CDR Yes, take 15.

04 22 27 52 LMP Okay. Will do. I'll take them again. I'm going to take a few PAN's first, Houston, if that's okay. It'll take about an additional 3 minutes.

04 22 28 12 CDR Hey, Al.

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04 22 28 14 LMP Yes, sir.

04 22 28 15 CDR Never mind. Wait a minute. I think I'm getting it. Now, I got it.

04 22 28 19 LMP Okay. Okay.

04 22 28 47 CDR One camera in the ETB.

04 22 29 19 CDR That Surveyor sure looks neat sitting on the side of that crater.

04 22 29 23 LMP Pretty steep walls down there.

04 22 29 41 CDR I'm not going to have any trouble sleeping tonight.

04 22 29 44 LMP Okay. Okay, let me just get the other two PAN's, Pete. Be finished in a minute.

04 22 29 52 CDR Okay. Okay, stow 70-millimeter, the hammer - Okay, stuff that handle. I'm getting it right now. Good Godfrey. Okay, SRC number 1 coming up.

04 22 30 36 LMP ... PAN's. Get on a higher place.

04 22 30 40 CDR Say again?

04 22 30 41 LMP Oh, I was too low for the PAN's. Okay, this is a good spot, I think. Okay. That's it for the PAN's, Pete.

04 22 31 49 CDR Okay. One rock box open.

04 22 31 51 LMP Okay, one more set to go.

04 22 31 54 CDR Okay.

04 22 31 57 LMP I've got this bag of rocks on me, here. Want me to bring them to you in a minute?

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04 22 32 01 CDR Yes. I'm - I'm having trouble over here with the rock box holders.

04 22 32 07 LMP Okay. If you have a little trouble, I can help you with it.

04 22 32 11 CDR Yes. Yes. This rock box keeps wanting to go up in the air. Oh, the heck with it. I think I'll put them in there.

04 22 32 37 CDR On the scale.

04 22 32 38 LMP Okay.

04 22 32 46 CDR Got to get this core tube, buddy.

04 22 32 48 LMP I know it.

04 22 32 58 LMP - - as fast as I can.

04 22 33 03 CDR Just great.

04 22 33 08 LMP Okay, all the PAN's are done, Pete. Okay?

04 22 33 12 CDR Come get the core tube.

04 22 33 13 LMP Okay. It's in work. Okay. Here's this. Put this back.

04 22 33 27 CDR Throw it in the handtool carrier.

04 22 33 29 LMP Yes sir. I'm just going to lay it in there. I'm not going to - -

04 22 33 33 CDR Yes.

04 22 33 34 LMP - - fit it in there now, so we can get finished.

04 22 33 37 CDR Okay. Here, hang those on there, too.

04 22 33 41 LMP Good. You want it hung on there, Pete.

04 22 33 47 CDR Okay.

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04 22 33 48 LMP You bet. You bet. Got it. Okay. Let me go get that core tube.

04 22 33 52 CDR Here's your core tube, right here.

04 22 33 54 LMP Just a second.

04 22 33 55 CDR Okay.

04 22 34 02 LMP Okay. Here is the core tube.

04 22 34 04 CDR And I've got the cap back here - -

04 22 34 09 CC Pete and Al, you're 3 plus 26 into the EVA. And, Al, we'd like you to hustle. We'd like you back there at the bottom of the ladder in 3 minutes.

04 22 34 16 LMP I'll hustle. I'll hustle.

04 22 34 20 CDR Let me get your rock bag before you get away.

04 22 34 22 LMP Okay, get that rock bag. I'll go get this core tube. I think I can make it in 3 minutes.

04 22 34 26 CDR All right, wait just a minute.

04 22 34 28 LMP If they'd give me 2 minutes, I'd go over and do their TV. Maybe they ... the TV, too.

04 22 34 32 CDR Yes.

04 22 34 33 LMP Got that?

04 22 34 34 CDR Yes.

04 22 34 35 LMP Got the bag?

04 22 34 36 CDR Yes.

04 22 34 37 LMP Adiós. I'll go for the core tube. I'll go for the core tube over near the TV, and I'd come back by it.

04 22 34 45 CDR There you go. There you're thinking.

04 22 34 52 CDR I sure wish we had more rocks.

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04 22 34 54 CC Okay, Al, good idea.

04 22 34 55 LMP Say again?

04 22 34 56 CDR I wish we had more rocks.

04 22 35 00 LMP Okay, I'm core tubing it, right now.

04 22 35 10 CDR You know, I wish we had more rocks.

04 22 35 18 CC Pete, you can go ahead and fill up the remainder with the fines from that area.

04 22 35 22 CDR Okay. I'll have to wait for Al to come back anyhow. Let me see; is there something I could be doing all this time? Yes, one thing is shut down my water. Good Lord, I'm floating to death again. Let's see. Scoop material. That a boy.

04 22 35 36 LMP Houston, we're getting the core tube in real good. It's down almost full length now.

04 22 35 42 CDR That a boy, Al.

04 22 35 43 LMP It's a little hard to drive in; you have to auger it a bit and then pound it, but now it's full length, and let me take a - a picture of it and that will be it. Okay 250, 8.

04 22 35 55 CC Roger, Al. Sounds like you've got the lunar core tube technique worked out.

04 22 35 58 LMP I got the record for core tube depth, right now.

04 22 36 00 CDR (Laughter)

04 22 36 01 LMP - - in my pocket.

04 22 36 02 CDR (Laughter) good show (laughter).

04 22 36 09 CC Copy your record of core tube depth, and you've probably got the record for swinging pieces of ALSEP across the lunar landscape.

04 22 36 16 CDR And would you believe, I've found a use for the big scoop.

04 22 36 21 LMP Okay, here comes the core tube.

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04 22 36 24 CDR Okay.

04 22 36 25 LMP Got the cap ready, Pete?

04 22 36 26 CDR Yes.

04 22 36 27 LMP This stuff comes right out, doesn't it? That's all right.

04 22 36 30 CDR Okay.

04 22 36 31 LMP I'll bring it right back.

04 22 36 33 CDR Just a minute, I - -

04 22 36 34 LMP Houston, I'm coming right by the TV camera. Did you want me to do anything to it?

04 22 36 42 CC That's affirmative, Al.

04 22 36 43 LMP Okay.

04 22 36 47 CC First, we'd like to take and put the automatic light control switch to INSIDE - -

04 22 36 49 LMP All right; will do.

04 22 36 55 CC - - then, open the aperture in steps and leave it at 10 seconds at each step.

04 22 36 57 LMP Okay. It's now on INSIDE. Okay, now, I'm going to the aperture. Looking almost directly cross-Sun, by the way, Houston.

04 22 37 17 CC Roger. Call it out if you would, Al, while you're doing it.

04 22 37 19 LMP All right; f:22. Okay, I'm in f:22 right now. I'll stay right there for about 10 seconds. Okay, going to the next one. There's not a lot of them marked on here, Houston; there's only about three marks; I'll just move it a little touch. Okay. I moved it just a little bit, and I'll leave it there for 10 seconds. Now, I'll tell you when I come to the next marked one. Okay, moving again.

04 22 38 10 CDR Houston, rock box 2's going onto the Y-pad with the Mylar or whatever you - film or whatever you call that stuff off the S-band antenna, going on top of it.

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04 22 38 20 LMP Okay, and it's in 5.6 now, Houston. It's been there for about 5 seconds.

04 22 38 28 CC Roger, Al; we copy. And, Pete, we copy you got the rock box over there with the H-film from the S-band.

04 22 38 32 LMP Yes. Okay, it's now a little past 5.6, opened up a little more. I'll bring you that core tube in a minute, Pete.

04 22 38 41 CDR Now, I'm just looking for things to do. I got a whole bagful of soil, and rock box 2 out. Man, does that LM look pretty! Does that Surveyor look pretty!

04 22 38 55 LMP Okay. I'm turning it again, Houston.

04 22 38 59 LMP Okay. Now, it's just a little bit above 2.2.

04 22 39 02 CC Roger.

04 22 39 15 LMP Okay. Now, it's going to be wide open on the next move, which is right now. Okay. It's wide open, Houston.

04 22 39 37 LMP Standing by for some more instructions, Houston.

04 22 39 44 CC Okay, Al. Would you do one other thing, then? Pick the camera up and invert it. Maybe give it a shake or two and see if we can get anything.

04 22 39 51 LMP Will do. It's upside down and I'm shaking it now. I still am a little concerned about this plug on the back of the camera; it looks - doesn't look exactly copacetic. It looks like it's cracked a little bit, - the ... material, and it looks like it could have melted or something. There might be a problem right in the wiring there. Okay, I've shaken it and what have you. I'll hold it upside down just for a few minutes. I can feel the motor running.

04 22 40 26 CC Okay. And, Al, why don't you try moving that wire on the back and see if that will do anything?

04 22 40 28 LMP Okay. I'll try to hold it in for 10 or 15 seconds.

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04 22 40 47 LMP Okay. I'm holding it in now.

04 22 41 13 CC Al, I think we've run out of ideas here for the present time. Let's press on. Will you take the camera over and put it in the LM shade, point it at a darkspot, the darkest spot you can find, and open the camera way up, f:2.2?

04 22 41 26 LMP Okay. Will do. Let's go with the core tube.

04 22 41 31 CDR Okey-doke.

04 22 41 32 LMP Okay, babe. Here you are. Take this hammer and core tube if you would; both of them in my hand here. Let me set the camera down, then I'll help you. Hold on.

04 22 41 42 CDR That a boy.

04 22 41 43 LMP Camera right there.

04 22 41 44 CDR What a shame that camera didn't work.

04 22 41 46 LMP That's right. Take - put that somewhere. Just drop it right in this baby right here.

04 22 41 50 CDR Okay.

04 22 41 51 LMP Okay, Pete. Does it look like the dirt's in there?

04 22 41 54 CDR Yes, sir. It looks like the dirt is in there.

04 22 41 56 LMP Good. Put the cap on that tube. You got it on unlock here.

04 22 42 01 CDR Okay. Unlock.

04 22 42 03 LMP That's it. That core tube's in the bag - Wait a minute. Give me my - give me my rocks off of here, will you?

04 22 42 10 CDR Sure will.

04 22 42 11 LMP We've got a whole bagful of dirt there.

04 22 42 14 CDR Okay.

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[REDACTED]

04 22 42 15 LMP Here's a rock.

04 22 42 16 CDR What'd we do with it? No, no, no, just give me the bag, the whole bag.

04 22 42 19 LMP Okay.

04 22 42 20 CDR Do we want to save that bit?

04 22 42 23 CDR Yes. Let's throw that bit in the box.

04 22 42 25 LMP Okay, I will. Let me have it.

04 22 42 28 LMP Here you go. No, no, not there. Here - You've got it.

04 22 42 31 CDR All right. Hey, that's a couple of neat-o rocks.

04 22 42 36 LMP Okay.

04 22 42 43 CC Pete and Al, Houston. We show you are 3 plus 35 into the EVA. And you've got plenty of consumables, so we suggest you go at a relaxed hustle to get back in.

04 22 42 54 LMP Okay. It's almost all done. Think we've got it made.

04 22 42 58 CDR Hey, Al. I got to dump some of this dirt. Come here, Al.

04 22 43 01 LMP Just a second, let me move this TV.

04 22 43 05 CDR Okay, forget it.

04 22 43 06 LMP There you go. It's wide open, now, in the dark. Okay, Houston; it's wide open in the dark.

04 22 43 20 CC Okay, Al.

04 22 43 25 LMP I feel like the guy in the shopping center waiting for his wife.

04 22 43 30 CDR Okay?

04 22 43 31 LMP I'm standing here holding two bags, buddy.

[REDACTED]

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04 22 43 34 CDR I'm coming - coming (laughter).

04 22 43 37 LMP Look out for the S-band; don't get tangled up in the LEC.

04 22 43 40 CDR Okay, what I want you to do - No, no, no - Dump some dirt in this bag.

04 22 43 44 LMP Dump some dirt in that bag.

04 22 43 45 CDR Yes, yes, that a boy.

04 22 43 47 LMP How much? When you say stop?

04 22 43 49 CDR Well, let's just keep on going for a little bit.

04 22 43 50 LMP Okay.

04 22 43 52 CDR All right, let me look. All right. Boy, that's dirt.

04 22 43 56 LMP That's dirt, you better believe it. They're not going to grow many roses here, but - -

04 22 44 00 CDR Now, that's good; that's plenty. Hold it. All right. Now, let me shake her all down. That's a good bagful.

04 22 44 19 LMP Do you want me to just - What do you want me to do with this, Pete?

04 22 44 22 CDR Wait a minute. Yes. I may need some help from you.

04 22 44 24 LMP Okay. Want me to help close that box?

04 22 44 25 CDR Yes.

04 22 44 26 LMP Okay.

04 22 44 27 CDR Get it in here.

04 22 44 28 LMP All right.

04 22 44 29 LMP I'll just set this here because we can always get it when we need it. Put it right there.

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04 22 44 33 CDR Now, hang onto the box while I stuff it.

04 22 44 35 LMP Okay.

04 22 44 36 CDR ... me to make sure I don't grab the seal.

04 22 44 39 LMP Okay. Go. Hey, you're right, that thing doesn't want to stuff, does it? Kind of - kind of flimsy. They better start making this lunar equipment a little more sturdy.

04 22 44 56 CDR These bags are all breaking open, too.

04 22 44 58 LMP That's ALSEP...

04 22 45 00 CDR And there's a rock box that's full of rocks.

04 22 45 05 LMP Okay. That looks good, Pete. Could we - put it in any other way? Better put it in the middle - It's going to be right on that seal. There, it's in there okay. That'll do it.

04 22 45 17 CDR Got a ... have the room.

04 22 45 20 LMP It closed; don't you worry.

04 22 45 21 CDR Okay. Is that it?

04 22 45 22 LMP Wait a minute. Looks good; you've got a good - good full box.

04 22 45 28 CDR Okay. Close the door. Watch your handle there; watch your handle.

04 22 45 33 LMP Wait a minute.

04 22 45 34 CDR Okay? ...

04 22 45 37 LMP You've got it, babe.

04 22 45 38 CDR Now, just hold. Hang onto the box. Go. Watch it; I don't want to break the table.

04 22 45 42 LMP That's what I was thinking. Hey, that's good.

04 22 45 45 CDR Lock that latch.

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04 22 45 49 LMP Go to it!

04 22 45 50 CDR I got it!

04 22 45 51 LMP The other one. All right.

04 22 45 52 CDR Hot-diggety dog. Okey-doke. All right, now.
Put your camera in the ETB.

04 22 45 56 LMP All right. I'm not sure I didn't use up all my
pictures today. That's a good idea.

04 22 46 00 CDR I don't know how many I took; I wasted ... 36 on
there ... or so - wait a minute - -

04 22 46 06 LMP No, 140.

04 22 46 08 CDR Okay ... Let's see; we've sealed the organic thing,
removed the saddlebags; we scooped material; we
stowed the SRC; we stowed the core tube; we closed
the SRC; we got an EMU check, COMM check - Hello,
Houston. How do you read? ... bolt on.

04 22 46 28 CC Loud and clear.

04 22 46 29 CDR Okay. How much time have we got, Houston?

04 22 46 31 LMP Hold that bag - just a minute, Pete.

04 22 46 38 CC Pete, we show that you're 3 plus 38 into the EVA,
and you've got a fair amount of consumables; so
don't - don't rush too hard getting back in -
Just do what you have to, and do it at a safe
pace.

04 22 46 50 CDR Okay. Sounds good.

04 22 46 52 LMP You going to leave your - There we go.

04 22 46 57 CDR Frustrating, doesn't it?

04 22 46 58 LMP Okay. It is frustrating.

04 22 47 00 MS ...

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[REDACTED]

04 22 47 02 LMP Hold it up just a little bit, Pete. Lift it up just a little ... better there. There you go.

04 22 47 10 CC Pete, will you confirm that you have the stereocamera over in the Sun?

04 22 47 15 LMP Is your stereocamera in the Sun, Pete?

04 22 47 17 CDR No, just a second.

04 22 47 18 LMP Okay.

04 22 47 19 CDR I want to see that first.

04 22 47 21 LMP Okay.

04 22 47 26 CDR Stereocamera going into the Sun.

04 22 47 28 LMP ... clean the EMU and check Commander ingress ...?

04 22 47 30 CDR It'll do. I've got to take this tool off. ... camera. Okay. ... over on the Y-pad, next to my handy-dandy rock box 2, which is neatly covered. You want it sitting in the sunshine, is that correct, Houston?

04 22 47 49 LMP Watch that cable, Pete; you're bothering your S-band.

04 22 47 52 CC That's affirmative, Pete.

04 22 47 53 CDR Did I hit it?

04 22 47 54 LMP Yes. You clipped your left foot on it.

04 22 47 56 CDR Did I - ruin the S-band?

04 22 47 57 LMP I don't think so, but you ought to check it before you go in.

04 22 48 00 CDR Okay.

04 22 48 01 LMP Don't think you did, but the danger is great.

04 22 48 04 CDR ... all over the camera.

[REDACTED]

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04 22 48 07 LMP There you go.

04 22 48 08 CDR Why don't you walk around and check it? (Laughter)

04 22 48 16 LMP Damn you! Getting in a hurry.

04 22 48 21 CDR (Humming)

04 22 48 28 CDR Hey, Al.

04 22 48 29 LMP Yes, I'm coming.

04 22 48 30 CDR Oh, okay.

04 22 48 31 LMP I don't like to come across that area; that S-band line is too tender.

04 22 48 35 CDR Okay. Get that.

04 22 48 48 CDR Thank you.

04 22 48 49 LMP That's good.

04 22 48 51 CDR Okay.

04 22 48 54 LMP That's a pretty good idea, putting that foil over there.

04 22 48 59 CDR Hey. Al, let me check the S-band.

04 22 49 01 LMP Okay.

04 22 49 02 CDR And then, we ought to dust each other off and get in.

04 22 49 04 LMP Man, we are filthy!

04 22 49 07 CDR We need a brush, a whisk broom.

04 22 49 09 LMP Okay. S-band antenna, lunar stay; would you - I'll get in there and try that?

04 22 49 14 CDR Okay, all I got to do is get in, soon as we dust off.

04 22 49 24 LMP Okay. We're looking at the Earth.

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04 22 49 25 CC Roger, Pete.

04 22 49 27 CDR Yes, go ahead. Okay, dust me off; and I'll dust you and get in.

04 22 49 33 LMP I don't know what good you're going to do.

04 22 49 35 CDR Hey, it does dust off a little bit.

04 22 49 36 LMP Does it?

04 22 49 37 CDR Stand still.

04 22 49 38 LMP Okay.

04 22 49 39 CDR Very good.

04 22 49 40 LMP Yes, I guess it does. Get some of that loose stuff.

04 22 49 47 CDR Hey, come over here by the ladder where - -

04 22 49 49 LMP It's going to be dark over here - -

04 22 49 50 CDR - - No, I can see. Let me - just come over here by the ladder.

04 22 49 53 LMP Okay.

04 22 49 54 CDR There you go.

04 22 50 00 LMP Oh, I see why; you can get lower that way.

04 22 50 01 CDR Yes.

04 22 50 02 LMP Good idea. Good idea.

04 22 50 12 CDR Kick your boots real hard when you - -

04 22 50 14 LMP Okay.

04 22 50 15 CDR Okay, now turn around this leg this way - other way.

04 22 50 18 LMP I can crawl up the ladder halfway if you'll get my upper. I can be going up the ladder, and you can knock it off.

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04 22 50 23 CDR There you go. That's a good idea; go ahead and do that.

04 22 50 24 LMP See anything else above me - or behind?

04 22 50 25 CDR No. Just go ahead and start up the ladder.

04 22 50 27 LMP Okay.

04 22 50 30 LMP ... - Apollo 12.

04 22 50 36 CDR There you go. You didn't quite make it.

04 22 50 37 LMP Oh, yes, I did.

04 22 50 38 CDR Stay put.

04 22 50 39 LMP Okay.

04 22 50 44 CDR Let me get these - wait a minute, wait, wait.

04 22 50 45 CC Al, would you give us a mark when you're on the footpad?

04 22 50 46 LMP Roger. I'm off the footpad right now; I'm standing on the ladder. Pete's dusting my boots off, trying to keep some of this dust out of the LM.

04 22 50 55 CDR Oh, man, is it dusty. Just hold still for a while. Let me try to - Wait - wait - wait just a couple; man, but let me brush.

04 22 50 58 CC Roger, Al. Thanks.

04 22 51 02 LMP Man, you can get rid of a lot of it, kicking that way, - -

04 22 51 05 CDR Okay.

04 22 51 06 LMP - - ... get it out of your soles of your boots.

04 22 51 08 CDR Okay; go ahead on up.

04 22 51 09 LMP Oh, okay.

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04 22 51 20 CDR Oh - I'm in this dingy television wire again. There we go. All right, I'll help you - back here as best I can.

04 22 51 36 LMP That's a good idea. I'm going to raise my gold visor here so I won't scratch it, and just put my protective visor down. There.

04 22 51 46 CDR Now. Soon as you can see the hatch - When you come up, take a good look at that hatch.

04 22 51 51 LMP I'm really going to have to be tender about it; I'm not sure we're not going to want to put some tape over it or something.

04 22 51 59 CDR Okay. All the way down. Hey, raise your rear end. That a boy. Got her.

04 22 52 13 LMP That's as far as I can go; I'll just do a pushup. Slide in some more.

04 22 52 18 LMP I'm in.

04 22 52 19 CDR Very good.

04 22 52 20 LMP I'm in the hatch, Houston.

04 22 52 25 CC Roger, Al. Copy. You're in.

04 22 52 27 CDR Okay, your old friendly third will get the ETB.

04 22 52 30 LMP Okay, just a second. Let me get my gear. Okay. Just a second.

04 22 52 41 CDR An ETB and two cameras ready to come up. Oh, there's my friend again. Al Bean?

04 22 52 51 LMP What?

04 22 52 53 CDR That thing's going to drive me buggy. Guess what.

04 22 52 59 LMP Houston, do you want me to switch over to LUNAR STAY antenna - -

04 22 53 04 CC Go ahead, Pete.

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04 22 53 05 LMP - - Do you want me to switch to LUNAR STAY antenna right now, while Pete's on the surface? Over.

04 22 53 14 CC Roger. That's affirmative, and TRACK MODE, OFF.

04 22 53 15 LMP Okay. I'm going to LUNAR STAY right now, but we may lose COMM for a second; if I don't hear from you, I'll come back up.

04 22 53 25 LMP STAY.

04 22 53 26 CC Roger.

04 22 53 41 LMP Houston, Apollo 12. How do you hear on LUNAR STAY?

04 22 53 47 LMP ... start this ETB up.

04 22 53 48 CC Intrepid, you're loud and clear. Sounds like Pete did the job.

04 22 53 50 LMP Sure did. Got good signal strength, Houston? Go ahead and start the ETB up. I got - I'm going TRACK MODE to OFF.

04 22 54 01 LMP Now, just a second, Pete, I haven't got this ETB rigged. One second.

04 22 54 04 CC Roger.

04 22 54 06 CDR Okay.

04 22 54 21 CC Intrepid, signal strength is good.

04 22 54 22 LMP Okay.

04 22 54 23 CDR Matter of fact, you sound stronger, Houston.

04 22 54 25 LMP Just a second, Pete.

04 22 54 26 CDR Okay.

04 22 54 31 CDR Need to mount it.

04 22 54 32 CC I believe so, Pete.

04 22 54 33 LMP Got it. We've got it. Wait a second; let me clear a nice little room here for it.

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04 22 54 44 LMP Say, are we going to jettison this garbage bag at the end of this EVA, Pete?

04 22 54 46 CDR Yes, sir.

04 22 54 47 LMP Okay, let me get it in good position.

04 22 54 49 CDR Why don't you throw it out right now?

04 22 54 50 LMP That's a good idea.

04 22 54 52 CDR Go on and get rid of it.

04 22 54 54 LMP That's a good idea; you can move it out of the way.

04 22 54 56 CDR That's a smart one.

04 22 55 04 LMP Okay, here it comes.

04 22 55 13 LMP Just a second.

04 22 55 14 CDR Okay.

04 22 55 15 LMP Just a second.

04 22 55 20 CDR Don't worry about it. Is that okay?

04 22 55 22 LMP Sure. It won't bother us. Get it when you come up. Haul her up.

04 22 55 27 CDR Okay. Just a second.

04 22 55 32 LMP Let me try something that might be just easier on all of us. I don't have to run one over a pulley; I can just pull it up, Pete.

04 22 55 39 CDR It doesn't weigh anything.

04 22 55 40 LMP That's right. Who needs a pulley? This is easier this way.

04 22 55 42 CDR Wait a minute. Go ahead, pull. 1, 2, 3. That a boy.

04 22 55 51 LMP Hey, I got an idea. Now, you pull it - you pull.

04 22 56 03 CDR Wait - wait a minute. Now, it's making a mess. Never mind. Keep on pulling.

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04 22 56 04 LMP Okay. Okay, just a second.

04 22 56 09 CDR All right.

04 22 56 19 LMP I got my transfer bag in. Secured.

04 22 56 45 LMP Okay, bring her on back, Pete.

04 22 56 49 CDR Okay. Wait, wait. Don't let it get hung up. Coming.

04 22 56 54 LMP Let her go.

04 22 56 55 CDR No, wait a minute, now. Just keep it taut.

04 22 56 58 LMP Okay.

04 22 57 02 CDR See, you can't do it that way, Al. Take it easy. Let's do that slow. That a boy. That a boy. Now, now, you can let go of it.

04 22 57 29 CDR Here is that. We got one rock box coming up. Okay, Al. Easy does it; easy does it. Wait a minute, now. Easy does it. Easy, easy! Easy! Easy! Easy! You're pulling when I don't want you to pull. Okay, now pull. Okay, now we got to give it the heave-ho, ready? 1, 2, pull.

04 22 58 15 LMP Got it made. Okay, lift her up a little bit, Pete. Let it come forward.

04 22 58 24 CDR That baby is heavy.

04 22 58 25 LMP That's right in the door, though. Let me slide that in here.

04 22 58 30 CDR Okay. Okay, Houston. One rock box inside.

04 22 58 40 CC Roger, Pete. Copy. One SRC in.

04 22 59 00 LMP Okay, bring her out.

04 22 59 03 CDR Okay. Wait, wait, wait, wait, wait! This thing is like playing with a snake. Okay, that's a boy. Now. Easy does it. Get all this good stuff and put it over here in the gear pad. Okay, now, down. Now, you're going to hang on to it

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and hand it to me, right? So I can tie it on the porch?

04 22 59 36 LMP Yes. That's right.

04 22 59 37 CDR Okay. Am I dirty.

04 22 59 58 CDR Okay, Houston. What do you want me to do? Get in?

04 23 01 01 CDR Hello, Houston. What happened to Houston, Al?

04 23 01 03 LMP We'd better go off the LUNAR SURFACE for a minute.

04 23 01 06 CDR Al, wait a minute. Hold it, Houston.

04 23 01 08 LMP They may be having a site handover.

04 23 01 10 CDR Yes.

04 23 01 11 LMP Got good signal strength.

04 23 01 13 CDR I'm looking at that Surveyor. We can look around that crater - on the left side. That looks like bedrock over there, doesn't it?

04 23 01 19 LMP Uh-huh.

04 23 01 20 CDR And just ease right down the side of that baby over there, to Surveyor.

04 23 01 22 LMP Hello, Houston. How do you read?

04 23 01 24 CDR What happened to them? You all ready for me to come in, Al?

04 23 01 25 LMP I'm ready. It's up to them.

04 23 01 26 CDR Wonder what happened to Houston.

04 23 01 28 LMP I'm not sure that that LUNAR STAY didn't do it. I'd rather go back on TRACK and get them back. Of course, we've got fuller signal strength.

04 23 01 37 CC Intrepid, Houston. Stand by.

04 23 01 38 CDR Okay, what's your problem?

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04 23 01 43 CC Okay, we had a changeover from one site to another, down here. It was all on our end. No problem with your antenna. It's working well.

04 23 01 49 CDR Okay, you guys ought to call those things out in advance. That's been happening all the way through this flight.

04 23 02 00 CC Roger, Pete. We concur.

04 23 02 02 CDR Okay, what do you want me to do - -

04 23 02 03 CC And go ahead and press on on the ingress.

04 23 02 04 CDR Okay. All right, Houston.

04 23 02 11 CDR MARK.

04 23 02 12 CDR I'm on the footpad.

04 23 02 29 CDR That was easy.

04 23 02 33 LMP I just closed my feedwater. You might want to do that, too.

04 23 02 40 CDR That's probably a good idea. Let me see if I can find it back here. Okay, I just closed mine. Coming up the ladder.

04 23 02 55 LMP Gosh, you're shaking the whole LM.

04 23 02 57 CDR Sorry about that.

04 23 02 59 LMP *** get a warning, because you haven't got your feedwater, but that's okay. You've got cooling for quite a while.

04 23 03 04 CDR Yes. Understand. Okay, one garbage bag. Anything else in there you want to get rid of?

04 23 03 11 LMP Not a thing.

04 23 03 14 CDR All right, hand me the LEC.

04 23 03 16 LMP Okay, the LEC's got kind of a little slipknot in it because of the - Got it?

CONFIDENTIAL

04 23 03 22 CDR Yes.

04 23 03 23 LMP Letting it go.

04 23 03 24 CDR It's okay.

04 23 03 28 CC Pete, on your way through the hatch, will you give a check on the seal?

04 23 03 31 CDR Check on the seal.

04 23 03 32 LMP Yes. I can see it probably better than he can from this side, Houston. Seal looks real good. I'll tell you what we did do; when we got out, we - -

04 23 03 42 CDR I can't believe I did that.

04 23 03 44 LMP Yes, you did. Because I remember, you were hitting here and then when I backed up, I could - I'll tell you - we probably just ought to put a piece of tape over it.

04 23 03 52 CDR Okay. That's my feedwater.

04 23 03 53 LMP We broke through the skin on the hatch, and for about a 10-inch cut, there; and it didn't hurt the insulation, didn't hurt the hatch, and I don't know whether you want us to put a piece of tape on there or just forget it. It doesn't look like it's going to bother anything.

04 23 04 12 CDR I'd say just forget it.

04 23 04 13 LMP Okay, Pete.

04 23 04 14 CDR Why don't you get over on your side?

04 23 04 15 LMP Okay. Let me move over.

04 23 04 16 CDR Okay.

04 23 04 18 LMP I just checked your circuit breakers, and they're all good.

04 23 04 20 CDR All right.

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04 23 04 25 LMP Just a second; I'm not out of the way, yet.

04 23 04 27 CDR All right, but I want you to hold the door for a minute while I - -

04 23 04 29 LMP Okay.

04 23 04 30 CDR - - close this front - -

04 23 04 31 LMP Well, I've got to get out of the way.

04 23 04 33 CDR - - front thing here.

04 23 04 34 LMP Okay.

04 23 04 37 CDR Yes, all right.

04 23 04 39 CC Pete, we concur. No tape.

04 23 04 40 LMP Okay.

04 23 04 42 CDR Okay.

04 23 04 44 LMP Now, wait a second, Pete. Let me back up a little better.

04 23 04 48 CDR Okay, tell me which way to go.

04 23 04 49 LMP Just a second. Okay, you're just perfect. Shoot right on in. Get your chest down and your rear end up - there you go; got it. Go a little bit to the left. Go a little further until your head bumps. Do a pushup and you're fat - little bit to the left, little bit further to the left. That's it. Up.

04 23 05 12 CDR Okay.

04 23 05 14 LMP You're in the best possible position. Scoot in in a little more - and you got it.

04 23 05 17 CDR I'm in; no sweat.

04 23 05 19 LMP Okay. Now careful when you turn around. You've got - ...

04 23 05 21 CDR Yes.

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04 23 05 23 LMP Okay. Boy, you look dirty.

04 23 05 26 CDR Oh, you do, too.

04 23 05 29 LMP ... watch your turn now. I'll get this hatch. Okay, it says PLSS feedwater, closed. We did that. Forward hatch closed and locked. When you're out of the way, I'll slide over and lock it.

04 23 05 38 CDR Am I out of the way?

04 23 05 39 LMP Not yet.

04 23 05 40 CDR Wait until I turn around. Just a minute.

04 23 05 45 LMP Okay?

04 23 05 46 CDR Okay.

04 23 05 47 LMP Let me get down on my hands and knees and lock this thing. I need a push down. Wait just a second; let me raise my visor so I can see what's going on in here.

04 23 05 56 CDR Okay.

04 23 05 58 LMP Can you give a push-me-down?

04 23 05 59 CDR I am pushing you down. Need further?

04 23 06 05 LMP Just back up, and let me tilt further forward, which is just as good.

04 23 06 08 CDR I can't go back any further. Why don't you let me close it?

04 23 06 14 LMP Okay, see if you can reach it. It's just a little bit out of my reach; you might be able to get it. Okay, easy.

04 23 06 21 CDR I'm ready.

04 23 06 22 LMP Let me get back here in the corner. Watch your PLSS. There you go.

04 23 06 36 CDR Hatch closed.

04 23 06 37 LMP Did you get it?

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04 23 06 38 CDR Yes.

04 23 06 39 LMP Good show.

04 23 06 40 CDR Okay.

04 23 06 41 LMP Okay, next one. DUMP valve, both AUTO. I've verified this one; verified that one.

04 23 06 47 CDR That one's AUTO.

04 23 06 48 LMP Okay. Let me look at something first. Okay. PLSS O₂ and PRESS flags may come on during REPRESS; if PLSS O₂ less than 10 percent, manually control cabin REPRESS to maintain positive PGA pressure. Forget it. Okay, LIGHTING ANUNCIATOR AND NUMERICS, BRIGHT.

04 23 07 10 CDR Wait a minute, easy. There you go.

04 23 07 17 LMP Okay, now I'm going to go over here, over just a little so I can turn around. Oh, you did your circuit breakers? The best I can; easy does it.

04 23 07 27 CDR What are you trying to do?

04 23 07 29 LMP Get that STOP button depressed.

04 23 07 31 CDR Yes.

04 23 07 32 LMP I've got to turn around. REPRESS valve. Okay?

04 23 07 36 CDR Well, I can reach the REPRESS valve, if you want.

04 23 07 39 LMP No, I've got it here.

04 23 07 41 CDR That does it.

04 23 07 42 LMP Why don't you reach it? It may be better if you could.

04 23 07 45 CDR Can you reach CABIN REPRESS to what, AUTO?

04 23 07 48 LMP CABIN REPRESS to AUTO. PRESS REG's A and B to CABIN.

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04 23 07 52 CDR Okay.

04 23 07 53 LMP MASTER ALARM in this CABIN REPRESS. Let's watch the pressure. Cabin pressure is starting up.

04 23 08 05 CDR One psi.

04 23 08 17 LMP Coming in.

04 23 08 19 CDR Huh?

04 23 08 20 LMP It's coming in good.

04 23 08 24 CDR ... as usual.

04 23 08 26 LMP Suit pressure's looking good.

04 23 08 34 CDR Two and one half; PLSS O₂, OFF.

04 23 08 36 LMP What did you get? That's it; a little bit more.

04 23 08 51 CDR That's it. PLSS O₂, OFF. Can you verify that I've got mine off?

04 23 09 02 LMP What?

04 23 09 03 CDR Will you verify that I've got mine off?

04 23 09 05 LMP I'll pull your diverter valve up, and check your water, and you do have it off.

04 23 09 16 CDR Okay, Houston. There's the cabin at 4.6.

04 23 09 20 LMP Okay, MASTER ALARM. Let me turn it off. Okey-doke.

04 23 09 29 CDR Let me operate yours, too.

04 23 09 33 LMP Okay.

04 23 09 43 LMP Okay. CABIN REPRESS valve closes at 4. Verify CABIN PRESS stable. Okay.

04 23 09 57 CDR CABIN GAS RETURN to AUTO.

04 23 09 59 LMP Okay, CABIN GAS RETURN, AUTO.

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04 23 10 01 CDR Wait a minute.

04 23 10 02 LMP Get over here.

04 23 10 04 CDR Okay. AUTO.

04 23 10 10 LMP SUIT CIRCUIT RELIEF, AUTO.

04 23 10 11 CDR That's already AUTO.

04 23 10 12 LMP That's right. SUIT GAS DIVERTER, push CABIN.

04 23 10 17 CDR Push CABIN.

04 23 10 18 LMP Verify EVA circuit breaker configuration on your side: SUIT FAN number 1, closed.

04 23 10 23 CDR Wait just a second. SUIT FAN 1, closed and I'll close the SUIT FAN DELTA-P. Okay.

04 23 10 31 LMP And I also notice ECS caution and H₂O SEP, and I've got them. And COMM: TV, OPEN. Houston, do you want me to turn off the TV or leave it on?

04 23 10 44 CC Affirmative, Al. Turn it off.

04 23 10 50 LMP Okay, and it says doff gloves, helmets, visors, and all that. Hey, let's go off RELAY. We're going off RELAY right now, Houston.

04 23 10 59 LMP How do you want me to go, Al?

CONFIDENTIAL

DAY 6

05 11 02 08 CDR ... ON.

05 11 02 09 LMP It's ON.

05 11 02 10 CDR VHF ANTENNA to EVA.

05 11 02 11 LMP EVA.

05 11 02 12 CDR UPLINK SQUELCH, enable.

05 11 02 13 LMP UPLINK SQUELCH is enabled.

05 11 02 14 CDR LMP connect to PLSS COMM, AUDIO CB:

05 11 02 15 LMP Okay.

05 11 02 16 CDR ... PLSS mode, LMP to A.

05 11 02 17 LMP A.

05 11 02 21 CDR Hello there.

05 11 02 22 LMP Read you loud and clear, Pete.

05 11 02 24 CDR Read you the same. You should have a tone on, a VENT flag, a P, and a PRESS flag 0.

05 11 02 28 LMP Got them.

05 11 02 29 CDR PLSS O₂ PRESS gage greater than 75.

05 11 02 31 LMP It is.

05 11 02 32 CDR We have a good COMM check with me. No, I'm sorry; we don't need that. Commander's gone to PLSS COMM.

05 11 02 39 LMP Okay.

05 11 02 40 CDR Hold the card.

05 11 02 47 LMP A and B is OFF. Okay. PLSS mode, Commander to B. You get no MSFN reception.

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Day 6

05 11 02 54 CDR Hello there. I read you loud and clear. I got a PRESS O flag.

05 11 02 56 LMP Read you the same.

05 11 02 58 CDR I got an O₂ flag and I've got 80 percent.

05 11 03 02 LMP Okay. VENT flag, P, and a PRESS flag O. That's what I've got. You don't have an O₂ to begin with, do you?

05 11 03 08 CDR No, I've got an O₂ PRESS and a VENT.

05 11 03 10 LMP O₂ will go out in a minute. Okay?

05 11 03 12 CDR Yes.

05 11 03 13 LMP Okay. PLSS O₂ greater than 75?

05 11 03 14 CDR Yes.

05 11 03 15 LMP Okay. Perform COMM - we did that. PLSS mode - I'll go B and you go A. How do you hear?

05 11 03 24 CDR Loud and clear.

05 11 03 25 LMP Read you the same. Okay. PLSS mode, both of them, AR.

05 11 03 29 CDR Okay.

05 11 03 30 LMP How do you read?

05 11 03 31 CDR Loud and clear. Houston, Intrepid. How do you read?

05 11 03 44 CC Intrepid, we read you both loud and clear.

05 11 03 45 CDR Very good. Very good.

05 11 03 47 LMP Okay, Houston, LMP's O₂ quantity is 80 percent.

05 11 03 53 CDR And so's the - -

05 11 03 55 CC 80 percent. Copied.

05 11 03 57 CDR - - and CDR, 80 percent, also.

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05 11 03 59 LMP Okay. We are opening the TV circuit breaker right now.

05 11 04 00 CC Roger.

05 11 04 03 CDR Final systems PREP - -

05 11 04 06 CC Roger.

05 11 04 07 CDR - - CB(16):ECS: CABIN REPRESS, close; verify.

05 11 04 11 LMP It's closed.

05 11 04 12 CDR Fan DELTA-P, opened.

05 11 04 14 LMP It's opened.

05 11 04 15 CDR CB(11):ECS: SUIT FAN 1, open.

05 11 04 17 LMP Okay.

05 11 04 18 CDR Verify ECS CAUTION and H₂O SEP component lights on.

05 11 04 22 LMP On in a minute. Yes.

05 11 04 24 CDR Okay. Suit GAS CONVERTER, pull - EGRESS.

05 11 04 26 LMP Pull? I'll get it. Okay, pull - EGRESS.

05 11 04 28 CDR Okay. CABIN GAS RETURN to EGRESS.

05 11 04 30 LMP CABIN GAS RETURN to EGRESS. And verify that the SUIT CIRCUIT RELIEF is in AUTO.

05 11 04 37 CDR SUIT CIRCUIT RELIEF is in AUTO.

05 11 04 39 LMP Okay.

05 11 04 40 CDR Connect to the OPS's.

05 11 04 42 LMP Okay. Just a second. There is your hose. Let me button your flap. Okay.

05 11 05 10 CDR Now, if you will turn the other way, I will get your other side.

05 11 05 14 LMP Just a second. Okay. Turn to the right here. Got it.

CONFIDENTIAL

Day 6

05 11 07 05 CDR Easy does it, that's a boy. MASTER CAUTION, an ACO SEP light, and an ECS light; that's the ones we wanted.

05 11 07 13 LMP Yes.

05 11 07 14 CDR Okay. Now, let's me - get it.

05 11 07 17 LMP Where are you going?

05 11 07 18 CDR Down here just a little bit.

05 11 07 23 LMP And I get that to snap - Can't see, that's - Okay, that's all snapped. Okay?

05 11 07 27 CDR Okay. All right. Do you want to get - Oh, wait a minute, one other thing, right here. Got it. I snapped your - OPS hose in the side of the PLSS there.

05 11 07 43 LMP Okay. Did you trim this thing out?

05 11 07 44 CDR Yes.

05 11 07 45 LMP Okay. Let me do that to you now.

05 11 07 47 CDR Okay.

05 11 07 49 LMP And we throw in a couple of purge valves then.

05 11 07 51 CDR Yes, I got the purge valves right now.

05 11 07 54 LMP Okay. This'll finish you off.

05 11 07 58 CDR Okay.

05 11 08 19 CDR ... do that?

05 11 08 20 LMP Yes, sir.

05 11 08 21 CDR That's verified locked.

05 11 08 22 LMP Okay. Let me check you. Your's good.

05 11 08 25 CDR And let me disconnect you from your suit hoses.

05 11 08 28 LMP Okay.

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05 11 08 29 CDR You're disconnect.

05 11 08 40 CDR Okay, that's good.

05 11 08 42 LMP This would be easier if you'd -

05 11 08 47 CDR Okay. Tuck this in.

05 11 08 59 LMP It's not in. You're going to have to do that; I can't see it.

05 11 09 02 CDR I'll do it. Okay. What'd you have to do - -

05 11 09 08 LMP Purge valve.

05 11 09 09 CDR Okay.

05 11 09 11 LMP Get it started and rotate it with that counter-rotate thing you got.

05 11 09 16 CDR That's locked and that's locked; while I'm down here, let me - that's locked, locked.

05 11 09 21 LMP Okay. That's it.

05 11 09 23 CDR Hoses under the flap, huh? Let me check all yours - 1, 2.

05 11 09 27 LMP Okay.

05 11 09 29 CDR Safety's in, safety's in. That safety's in and that safety's in. Okay, they look good.

05 11 09 40 LMP Verify PLSS centered and proper height.

05 11 09 42 CDR Yes. Mine is. Okay. Take a drink and DESCENT H₂O, closed.

05 11 09 46 LMP Okay.

05 11 10 04 CDR Okay.

05 11 10 28 CDR And H₂O, closed. Okay. Position mikes.

05 11 10 34 LMP Okay.

05 11 10 35 CDR PLSS fan, on.

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05 11 10 36 LMP On.

05 11 10 37 CDR And VENT flag.

05 11 10 39 LMP Wait a minute.

05 11 10 42 CDR Don helmets, then visors.

05 11 10 43 LMP Okay.

05 11 10 46 CDR This one is *** yours.

05 11 10 49 LMP Okay.

05 11 10 50 CDR Pull that.

05 11 11 08 CDR Okey-dokey.

05 11 11 26 LMP Yes, helmet's locked.

05 11 11 42 CDR That sounded real good.

05 11 11 44 LMP Yes.

05 11 11 47 CDR And your helmet is locked.

05 11 11 49 LMP Okay.

05 11 11 50 CDR Hold still and I'll put this on.

05 11 11 51 LMP All right. It's a bit cool in here today.

05 11 11 57 CDR Give you a little chilldown with this LCG. Okay.

05 11 12 07 CDR Okay, then leave them on.

05 11 12 12 LMP Just a second.

05 11 12 15 CDR ... First, let me get it all down in the back and everything. Okay, heist her.

05 11 12 21 LMP Okay. You got it.

05 11 12 27 CC Intrepid, Houston.

05 11 12 28 CDR Go, Houston.

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05 11 12 29 LMP Here you go, snug as a bug in a rug.

05 11 12 33 CC In looking at the TV, it appears we'll be leaving the TV off for this, so if you would take the - keep that circuit breaker out and go to S-BAND MODE, PM.

05 11 12 42 CDR Okay. We'll do it in just a minute.

05 11 12 53 LMP Okay - up. Okay, Pete. ... look up.

05 11 13 03 CDR Houston, I'm sure sorry the TV didn't work. It's a beautiful sight to see - Intrepid and Surveyor sitting here on this crater.

05 11 13 18 CC Roger, Pete. We'll be waiting for those pictures.

05 11 13 23 LMP Hey, lift up your PLSS.

05 11 13 24 CDR Okay.

05 11 13 32 LMP Okay. You're all buttoned in.

05 11 13 35 CDR Beautiful.

05 11 13 36 LMP Okay. Next.

05 11 13 37 CDR Here's a pair of gloves for you.

05 11 13 39 LMP Okay. PLSS FAN on down here and visors -

05 11 13 42 CDR Okay. LCG pump open?

05 11 13 45 LMP Yes. Right now.

05 11 13 47 CDR Okay. And you might as well get the TV and S-band reconfigured. The TV's still out, of course.

05 11 13 54 LMP Okay. We're going to PM, Houston.

05 11 13 57 CDR There's PM and - -

05 11 14 00 CC Roger.

05 11 14 06 LMP Disconnect LM hoses and stow - Connect PLSS H₂O hoses and stow LM hoses.

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05 11 14 13 CDR Okay.

05 11 14 27 LMP I'm going to turn around here, Pete.

05 11 14 29 CDR Okay - and I've got my hoses off. How come - how come we don't have our gloves on yet?

05 11 14 37 LMP ... - Do this first.

05 11 14 39 CDR Okay. Very good. Can't see the checklist, that's all.

05 11 14 44 LMP Go ahead and get all spiggied up there.

05 11 14 47 CDR Okay.

05 11 15 05 CDR Okay, my PLSS water is hooked up.

05 11 15 08 LMP Okay, let me turn around.

05 11 15 10 CDR Okay, and I'm ready to do - the hoses.

05 11 15 12 LMP Okay. Get yours routed and hand them to me and I'll stick them in.

05 11 15 15 CDR Okay, coming up and over. Take it around real easy. Okay, now. I've got to get over there against the hamper.

05 11 15 25 CDR Coming over.

05 11 15 51 CDR I hung up again.

05 11 15 53 LMP I don't know; let me see. You look okay.

05 11 15 56 CDR I can't move in for some reason.

05 11 15 59 LMP Move over my way just a little way.

05 11 16 01 CDR Never mind, I'm going to do it with these.

05 11 16 03 LMP All right. You're kind of hung up on the flight data file.

05 11 16 06 CDR This is going to do it better anyhow. Done it that way yesterday. How's that look?

05 11 16 12 LMP Looks good to me.

CONFIDENTIAL

05 11 16 13 CDR Okay, that's pretty steamy. Here's a pair of gloves for you.

05 11 16 15 LMP Let me grab that checklist again.

05 11 16 16 CDR Okay.

05 11 16 24 LMP Verify the following: helmet and visors, locked and adjusted.

05 11 16 29 CDR Okay.

05 11 16 36 LMP Okay, you're locked and adjusted.

05 11 16 41 CDR Okay, torso tiedown adjusted.

05 11 16 45 LMP I can see that you are locked - I can see it - in good shape. Okay.

05 11 16 52 CDR Okay, torso tiedown.

05 11 16 53 LMP Mine's okay.

05 11 16 54 CDR Mine's okay, too.

05 11 16 56 LMP Okay. O₂ connectors - Let me check all yours, then you can check all mine. Those are vertical - in - locked. COMM is locked; let me see about your water.

05 11 17 25 LMP Water's locked. Everything's locked.

05 11 17 27 CDR Okay, you look good.

05 11 17 28 LMP I've been over these a couple of times; every safety - -

05 11 17 30 CDR Hey, does that water look good?

05 11 17 31 LMP - - and I checked your water. It's in and locked - things are flush.

05 11 17 35 CDR Okay.

05 11 17 39 LMP Purge valves are all in. Okay, don EV gloves and lock them up.

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05 11 17 46 CDR Okay, here's a pair for you.

05 11 17 51 LMP Thank you.

05 11 19 15 CDR Find it? The right one of mine didn't want to do it either.

05 11 19 19 LMP Take it off again.

05 11 19 33 CDR Can't tell whether they're in or not.

05 11 19 36 LMP ..., Pete?

05 11 19 41 CDR Verified. Pull this one open.

05 11 19 48 LMP Just a second.

05 11 19 54 CDR Why don't you just let me have it?

05 11 19 56 LMP Okay. There you go.

05 11 20 16 CDR Now, then. There you go. Now do it; push your button down.

05 11 20 24 LMP Turn yours in a smidgeon.

05 11 20 26 CDR Huh?

05 11 20 28 LMP Do it this way.

05 11 20 39 CDR The left-hand one hangs up.

05 11 20 41 LMP Doesn't want to do it, does it? There it did. I can't do it with your -

05 11 20 50 CDR Got them in there?

05 11 21 04 LMP It never fails, does it? The one time you don't want something to hang up with you, it's going to start fogging up.

05 11 21 11 CDR There you go; let me look at it.

05 11 21 16 LMP Got her.

05 11 21 17 CDR That's a ... is out of there. Everything looks good.

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05 11 21 30 LMP ... Let me see that locked?

05 11 21 32 CDR Okay, verify mine.

05 11 21 36 LMP I can't see it. There, that's locked.

05 11 21 42 CDR It's locked.

05 11 22 18 LMP *** Diverter is in MIN; I'm going to PUMP, on.

05 11 22 34 CDR Verify it's locked.

05 11 22 57 CDR Then tie this thing.

05 11 22 59 LMP Okay.

05 11 23 04 CDR Locked?

05 11 23 05 LMP Yes, sir.

05 11 23 15 LMP PLSS DIVERTER, MIN. PUMP.

05 11 23 19 CDR Right. PUMP's on and I'm beginning to be sucked down. Let's get the cabin to EGRESS, okay?

05 11 23 25 LMP EGRESS.

05 11 23 26 CDR Can you get them?

05 11 23 27 LMP EGRESS.

05 11 23 28 MS Mode's in EGRESS. ...

05 11 23 30 CDR Okay. Jettison bag is up - the LHSSC is unstrapped. It's got PLSS batteries, Li cartridges - -

05 11 23 38 LMP All that other?

05 11 23 39 CDR Yes. Position ETB on engine cover.

05 11 23 42 LMP Where is it?

05 11 23 43 CDR Huh?

05 11 23 45 LMP Right here.

05 11 23 47 CDR Okay.

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05 11 23 49 LMP Here you go.

05 11 23 52 CDR Turn around, I got her.

05 11 23 53 LMP Okay. Turn around.

05 11 23 55 CDR Okay. Back on the engine cover that was.

05 11 23 59 LMP Don't hurry, I'm getting my - going to get my EV-CB batteries still.

05 11 24 03 CDR I - get my CB's real quick. Row 1: One, in. Out - One, out; three, in; one, out. Those are in. FAN 1 is in; CABIN FAN 1 is out; GLYCOL AUTO TRANSFER is - all in. And out. Two in, all the way out to SIG CONDITIONER, that's out, ... out. All out but MISSION TIME.

05 11 24 45 LMP Hey, these guards are really good.

05 11 24 47 CDR Three - out. That's it.

05 11 24 56 LMP Okay. Same here, they all look good.

05 11 24 57 CDR Ready for a PRESS INTEG check.

05 11 24 59 LMP Okay. PLSS O₂, on.

05 11 25 12 CDR Yes, oh boy, does that feel better.

05 11 25 16 LMP Got a O₂ 0 flag; PRESS 0 flag.

05 11 25 20 CDR Pressure's coming up good.

05 11 26 02 CDR Coming up.

05 11 26 24 LMP I'll make it.

05 11 26 25 CDR Okay.

05 11 26 31 LMP I'm to set it at a regulated 3.9, for some reason.

05 11 26 35 CDR I've got to get my O₂ off.

05 11 26 39 LMP You ready? Okay. Let's see what that says.

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05 11 26 46 CDR Mine's off.

05 11 26 47 LMP Okay. Let's time it.

05 11 26 49 CDR ... set.

05 11 26 52 LMP Stop.

05 11 26 53 CDR Thanks for that.

05 11 27 33 CDR Okay, Houston. The decay checks look pretty good; are we GO for EVA?

05 11 27 44 CC Stand by, Intrepid. You are GO for EVA, Pete.

05 11 27 48 LMP ... I get my OX back.

05 11 27 50 CDR Roger. Okay. What are you going to do?

05 11 27 54 LMP Get my oxygen back on.

05 11 27 55 CDR Okay. Same here. My oxygen's back on. Very good, a tone, then an O, looks good.

05 11 28 07 LMP Confirmed. Okay, CABIN REPRESS VALVE, closed.

05 11 28 10 CDR Okay.

05 11 28 12 LMP I'll get it.

05 11 28 13 CDR Okay.

05 11 28 17 LMP CABIN REPRESS valve, closed.

05 11 28 20 CDR Okay.

05 11 28 21 LMP Wait a minute; it's not all the way. Okay, closed. What else?

05 11 28 26 CDR Okay. I'm going to drop the *** now for the forward dump valve.

05 11 28 30 LMP Excuse me.

05 11 28 31 CDR I'm hung up on something.

05 11 28 34 LMP Okay.

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05 11 28 36 CDR Not a lot of room.

05 11 28 37 LMP Okay.

05 11 28 49 CDR Okay, four - ... There you go.

05 11 28 58 LMP Okay.

05 11 28 59 CDR Okay, 3.5; verify cuff gage does not below - drop below 4.8.

05 11 29 03 LMP Okay, the suit loop is 4.1 - -

05 11 29 07 CDR Mine's 4.8.

05 11 29 08 LMP - - my cuff gage is 4.95.

05 11 29 11 CDR Okay, cabin at 3.5 - it is?

05 11 29 14 LMP Yes.

05 11 29 15 CDR LM suit circuit 3.6 to 4.3?

05 11 29 18 LMP It is.

05 11 29 20 CDR PGA greater than 4.8?

05 11 29 22 LMP And decaying.

05 11 29 23 CDR Looks good.

05 11 29 24 LMP Go.

05 11 29 25 CDR Start your watch.

05 11 29 27 LMP Okay.

05 11 29 31 CDR Got it started?

05 11 29 32 LMP Yes.

05 11 29 34 CDR Forward dump valve to open.

05 11 29 35 LMP Yes.

05 11 29 37 CDR Dump it.

05 11 29 40 LMP Coming down, Pete.

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05 11 29 57 CDR Is something open?

05 11 29 58 LMP No, that little - ... cap - popped off.

05 11 30 12 CDR Cabin's 1 pound.

05 11 30 13 LMP Okay.

05 11 30 27 LMP And I'm 5.0, and the suit loop is 4.0, and the cabin is a half, about 0.6.

05 11 30 33 CDR Okay.

05 11 30 59 CC Everything looks good down here, Pete.

05 11 31 00 CDR Roger. It looks good up here.

05 11 31 02 LMP Okay, there goes a - H₂O.

05 11 31 07 CDR Got one too?

05 11 31 08 LMP Yes, there it goes. Push to PRESS.

05 11 31 13 CDR Okay, cabin is still about 2-1/2; it's 0.25, Al.

05 11 31 18 LMP Okay.

05 11 31 19 CDR Just let it bleed for a while.

05 11 31 20 LMP Okay.

05 11 31 44 LMP My suit's still 4.9.

05 11 31 45 CDR You'll have to jiggle on it a little bit.

05 11 31 51 LMP Okay.

05 11 31 54 CDR Probably still outgassing. All right, let her go for a while. Let her go, still - still a little bit more.

05 11 32 05 LMP These suits are bleeding down, too. See.

05 11 32 21 CDR They're holding it at that 0.2. Jiggle that.

05 11 32 29 LMP Okay. Think I can get her now, Pete.

CONFIDENTIAL

05 11 32 39 CDR Everything all right?

05 11 32 40 LMP Got her.

05 11 32 41 CDR Okay. You hold her open.

05 11 32 42 LMP Look at all that stuff whistle out the door.

05 11 32 44 CDR I'll hold it. I got it open.

05 11 32 45 LMP Got it?

05 11 32 46 CDR Yes.

05 11 32 53 LMP Just a second. Got my foot by it.

05 11 32 58 CDR All right. There you go. Okay. Now, I'm going to put this DUMP valve to AUTO.

05 11 33 06 LMP DUMP valve to AUTO. My feedwater is on.

05 11 33 14 CDR Okay, that DUMP valve look in AUTO?

05 11 33 16 LMP Let me check. I can't see. Yes, sir, it looks in AUTO.

05 11 33 20 CDR Okay. Now, let's just hold this door open right here like that. Get my feedwater on.

05 11 33 25 LMP Okay.

05 11 33 41 CDR While we're standing here, why don't we jettison this gear? If you'd just back into the corner.

05 11 33 48 LMP Just a second, Pete. Wait until the suit pressure goes down a little bit.

05 11 33 59 CDR All right, leave that right where it is.

05 11 34 01 LMP What do you want to do?

05 11 34 03 CDR Close it.

05 11 34 04 LMP I will. If you stick it in the crack here - No, stick it in that crack right there. There's a good spot.

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05 11 34 10 CDR That a boy.

05 11 34 11 LMP Yes. Get that hatch all the way back, I'm going to get this gear out of here.

05 11 34 19 CDR That's all right.

05 11 34 24 LMP Will you stand there and make sure that my water is on all the way?

05 11 34 28 CDR Okay. You'll have to turn.

05 11 34 29 LMP Okay.

05 11 34 31 CDR You're on.

05 11 34 32 LMP Okay.

05 11 34 36 CDR Turn further than that, please.

05 11 34 38 LMP Okay.

05 11 34 39 CDR Wait - wait. That's outgassing (laughter).

05 11 34 53 CDR It's all the way out.

05 11 34 54 LMP Okay. My water light is out; I have a good boiler.

05 11 34 58 CDR Mine isn't out yet.

05 11 35 00 LMP Okay.

05 11 35 02 CDR Now. Get rid of this baggage here. Back up.

05 11 35 09 LMP Caution and warning status check is okay.

05 11 35 11 CDR All right.

05 11 35 26 LMP Get it.

05 11 35 27 CDR Did it make it?

05 11 35 28 LMP No, it's sitting on the front porch, but it's okay. My suit's still pretty high, 4.3. LIGHT-ING ANNUNCIATOR/NUMERICS, DIM.

05 11 35 37 CDR Okay, let me turn.

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05 11 35 38 LMP Okay.

05 11 35 40 CDR Towards you.

05 11 35 41 LMP Okay. It's DIM.

05 11 35 50 CDR Yes.

05 11 35 55 LMP Okay, I'm just - Tell you what; why don't you release my antenna? Adjust that flap; no, that flap right there.

05 11 36 07 CDR Flap.

05 11 36 08 LMP Okay.

05 11 36 13 CDR I'm pulling mine and then when you go down to go out, I'll take yours out.

05 11 36 15 LMP Okay. Up?

05 11 36 23 CDR Fine. I'm ready to go.

05 11 36 27 LMP Okay, just a second.

05 11 36 28 CDR All right. Let me - hold my knee against that - That Velcro doesn't hold worth a hoot.

05 11 36 34 LMP Okay, out you go.

05 11 36 36 CDR Okay.

05 11 36 43 LMP Don't get hung on there. Anything?

05 11 36 46 CDR No.

05 11 36 47 LMP Okay. That's the way; you're centered good this trip. That's good. Move a little bit to the left - little bit to the left; there you go. You better get that antenna as you go.

05 11 37 02 CDR Okay. It's out. Get it?

05 11 37 06 LMP Yes, ready to go.

05 11 37 07 CDR Okay.

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05 11 37 08 LMP Move a little bit to your right - and you're out the hatch - and I'll be standing by to get the LEC.

05 11 37 15 CDR Wait a minute. Must be going off; did the bag go off?

05 11 37 20 LMP I can't tell.

05 11 37 22 CDR I can't either. Okay. Good shape. Okay. Do you want to hand me the LEC? I mean the - the left-hand side stowage, you want to get rid of it?

05 11 37 42 LMP Let's get rid of it.

05 11 37 43 CDR All right.

05 11 37 46 LMP You okay?

05 11 37 48 CDR Okay.

05 11 37 54 LMP Check it. Open the hatch a little more and give it a kick.

05 11 38 06 LMP And I'm standing by for the LEC.

05 11 38 11 CDR All right, wait a minute. The LEC, coming at you. I've got to bring it up. Wait a minute.

05 11 38 19 LMP Okay. Got it.

05 11 38 24 CDR There you go. I'm headed down the ladder.

05 11 38 26 LMP All right.

05 11 38 27 CDR Now, the cameras.

05 11 38 30 LMP Okay.

05 11 38 48 CDR Whoops, long step. Okay, Houston -

05 11 38 56 CDR MARK.

05 11 38 57 CDR I'm on the lunar surface.

05 11 39 03 CC Roger. Copy, Pete.

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05 11 40 23 CDR One of these contrast charts fell down here yesterday, Al, so there's only two good ones; the other one's too dirty.

05 11 40 29 LMP All right.

05 11 40 30 CDR It doesn't rap off; it just -

05 11 40 39 LMP Okay, ready to transfer ETB when you are.

05 11 40 41 CDR Okay. Coming right after it, right now.

05 11 40 52 LMP Looks like the lock on this ETB - I mean the lock on the LEC is - jammed with -

05 11 41 01 CDR Dirt?

05 11 41 02 LMP Dirt, yes.

05 11 41 19 LMP Pull away.

05 11 41 21 CDR Huh?

05 11 41 22 LMP Pull away.

05 11 41 24 CDR Oh, it may - have to let it out easier. Okay, let it go. Just lower it. Lower. All right, just lower it some more - and hold it right there.

05 11 41 38 LMP Okay.

05 11 41 41 CDR Boy, I'll tell you, I'm going to learn - two things I'm going to learn to dislike, and one of them's a TV cable and the other one's the S-band antenna cable.

05 11 41 54 CC Roger, Pete. We copy that.

05 11 41 56 CDR And they are constantly underfoot.

05 11 42 06 CDR All right. Now, let me take it across to the other side - where it's out of your way.

05 11 42 15 LMP Okay.

05 11 42 23 CC Al, before egress, would you confirm that the TV circuit breaker is out?

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05 11 42 26 LMP Confirmed; out.

05 11 42 30 LMP It is out, Houston.

05 11 42 32 CC Roger.

05 11 42 36 LMP Okay.

05 11 42 37 CC Roger, Al.

05 11 42 46 CDR ... , my friendly gnomon. In all that - ... activity yesterday, I forgot all about him sitting here.

05 11 44 19 CDR What you up to, Al?

05 11 44 21 LMP Getting this camera set.

05 11 44 22 CDR Okay. Got SRC 2 - Working away here.

05 11 44 53 LMP Okay. Let me check all the circuit breakers and I'll be out with you.

05 11 44 57 CDR Okay.

05 11 45 11 CDR Down that side.

05 11 45 15 LMP Do you have enough?

05 11 45 42 CDR I'll tell you, these Teflon bags don't hold up too well in a vacuum. In a lunar environment, I'll put it that way.

05 11 45 56 CC Roger, Pete. We copy that comment. Any clarification?

05 11 45 58 CDR Yes, they tend to have fatigue failures along the cracks when you go to open them up. I notice the two bags that I put in the SRC yesterday - they're that way. And, let me get back here just a second; let's see, pass LEC, ETB transfer, geology PREP, stow on HTC; contrast charts, extension handle, hammer, small shovel, and gnomon.

05 11 46 20 LMP Here I come, Pete.

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05 11 46 21 CDR Okay, have fun. Place SRC 2 on MESA, attach weighbag to scale, attach saddlebag to LMP. There's one thing that's bothering me; I don't have that saddlebag. I wonder - why I don't. Might I find one? Ah ha ha, here's one. ..., how are you doing?

05 11 46 49 LMP Good.

05 11 46 51 CDR Check. Okay - keep coming - you're in pretty good shape. There you go - a little - a little ... - -

05 11 46 59 LMP I'm trying to close this hatch.

05 11 47 01 CDR Oh, okay.

05 11 47 32 CDR Right now, this stuff, this - material around the spacecraft reminds me - in this Sun angle, looking into the Sun - a very rich brown color - it reminds me of a good plowed field.

05 11 47 58 CDR Looking down-Sun, it's still the same old ash gray, very light white ash gray.

05 11 48 01 CC Roger, Pete.

05 11 48 38 LMP Okay. LMP's off the footpad.

05 11 48 42 CDR Okay, LMP. How about let's get a - a Surveyor parts bag here?

05 11 48 52 LMP All right, just a second, Pete. All right, and thermal visors.

05 11 48 55 CDR Huh?

05 11 48 56 LMP I'm going to pull down those little side visors.

05 11 49 00 CDR They are - Houston. I think Al and I both find that these little side Sun visors are extremely handy.

05 11 49 12 LMP Watch that rock box, I've got a strap down.

05 11 49 15 CC Roger, Pete. We copy.

05 11 49 39 CDR Almost cold today on MIN cooling. How are you doing?

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[REDACTED]

05 11 49 42 LMP About the same. ... put that line right there, Pete.

05 11 49 48 CDR Say again.

05 11 49 49 LMP I'm going to set the tether right there and - -

05 11 49 52 CDR Okay.

05 11 49 58 LMP Okay, and I'll put it on you here, babe.

05 11 50 03 CDR How's that? Is that - You want me to stand low or high?

05 11 50 06 LMP Low.

05 11 50 07 CDR Okay. How's that?

05 11 50 10 LMP Good.

05 11 50 12 CDR Okay, got that one on - ... other side - Looking good so far.

05 11 50 28 LMP You know, other than the large-size rocks - very, very difficult to determine a contact around here.

05 11 50 38 CDR Okay - we looked.

05 11 50 48 LMP Okay. Now, around to the side. We're putting the parts bag on Pete right now, Houston. Going on, okay. Real well ...

05 11 51 02 CC Roger. We copy that.

05 11 51 03 LMP Boy, Houston. That COMM is super; it sounds like you're right inside my helmet.

05 11 51 11 CC Roger. The best SIM we've had.

05 11 51 14 LMP I wonder what happened since yesterday?

05 11 51 21 CDR I don't know; I think everybody learned a little - -

05 11 51 23 LMP Okay. That bag's on there; now, let's see what else.

[REDACTED]

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05 11 51 26 CDR I need to get the tool, tool, tool (singing).
And before you put the tool in, we got to cut a
TV cable.

05 11 51 32 LMP All right.

05 11 51 33 CDR Okay.

05 11 51 36 CC That's affirmative. Cut the TV cable below the
adapter - -

05 11 51 38 CDR Understand. Got it. On my way.

05 11 51 40 CC - - about 1 inch and then - that's 1 foot below
the adapter, and then stow the TV camera in the
ETB.

05 11 51 48 CDR Okay. Hey, look at that Surveyor, Al. That's not
anywheres near as bad a slope - -

05 11 52 07 LMP No - -

05 11 52 08 CDR - - Now that it's out of the shade.

05 11 52 09 LMP Hey, Houston, that Surveyor looks a lot better
today. Yes, now that the Sun's up on it, shone
on it.

05 11 52 14 CDR Get those TV cables cut. Now, wait a minute;
leave it right on there for a second. Come on
over and put the thing in my back and let's mount
our cameras and then ETB. Is that all right?

05 11 52 24 LMP Sounds good.

05 11 52 25 CDR Or either that, bring it back - I'm sorry.

05 11 52 26 LMP It's okay. Doesn't make any difference. Here
it is.

05 11 52 35 CDR I think you got ... right here.

05 11 52 37 LMP Got the right idea; that's the lunar walk. Okay.
Stick it in here.

05 11 52 45 CDR Look at that part number on the side of the tool.

05 11 52 55 LMP ... that a few times.

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05 11 52 59 CDR Say, Houston, while he's putting the tool on, it's a very interesting thing. There is a angular rock that's literally 6 inches from the engine exhaust skirt. It's just sitting on the - on the lunar surface, and I really find it hard to believe that the engine exhaust couldn't blow that rock away. It's only about 3-1/2 inches by 3-1/2 inches, and it's not stuck in the ground; it's just sitting there loosely about 6 inches from the engine bell; and, of course, the ground. is blasted clean all the way around it and yet the engine exhaust blast didn't blow that rock away.

05 11 53 35 LMP Pete, where's the saddlebag? You don't have one.

05 11 53 42 CC Roger, Pete. We copied that comment. Were you able to get a photo of that in the first EVA?

05 11 53 45 CDR No, we'll get that right now. Is there one in here, Al?

05 11 53 50 LMP Yes.

05 11 53 51 CDR Oh.

05 11 54 03 CC And, Pete, now for your reference on the photos. Your shadow length now is 18 foot.

05 11 54 06 CDR Okay.

05 11 54 08 LMP Here's a couple of sneaky bags first ... this one.

05 11 54 16 CC Al, also if you would, before you start that traverse, would you get a good photo of the solar wind to show us how that foil is wrapped around?

05 11 54 24 CDR Will do.

05 11 54 25 LMP Okay, Houston, that won't take a second. Okay, let me attach this bag to - would you attach this bag to me, Pete?

05 11 54 32 CDR Yes.

05 11 54 37 LMP I'm going to slide that off at the same time. All right.

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05 11 54 47 CDR Okay, I'll tell you what, if you'd go put one camera - Here, the saddlebag's on - If you'd put one camera on, you look at those little - Go get the TV, I'll mount this other - gear on here. My compliments to the man that packed that SRC box; it looks just like the training boxes.

05 11 55 14 CDR Hand me those tongs a second.

05 11 55 15 LMP Yes, sir. Here's the tongs. Where are you?

05 11 55 21 CDR Right behind you. Hold on just a second. Hold on; let's see what this is.

05 11 55 29 LMP That's what left of - -

05 11 55 31 CDR Okay, got you.

05 11 55 32 LMP - - some of those parts bags.

05 11 55 33 CDR Got you.

05 11 55 34 LMP Okay.

05 11 55 42 CDR Okay - the core tubes. Come on; get out of there. If I didn't know better, I'd say there was solar wind up here, that blows hard enough to blow sample bags in the wrong direction. Okay, Al, three core tubes and the film.

05 11 56 22 LMP Okay - take them.

05 11 56 29 CDR - - got this stuff here coming up.

05 11 56 36 LMP Okay.

05 11 57 03 LMP Saddlebag.

05 11 57 10 CDR Chart fits right in its back.

05 11 57 12 LMP Worried about that.

05 11 57 15 CDR Got it?

05 11 57 16 LMP Yes, sir. It's in the saddlebag.

05 11 57 17 CDR Okay. Now, here's the other thing here, that safety line.

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[REDACTED]

05 11 57 22 LMP Huh? Oh, yes.

05 11 57 26 CDR When I hook those on there, too, that thing's a pain in the neck over there, the way they spread out in the vacuum.

05 11 57 13 LMP Okay.

05 11 57 32 CDR And I got the gas sample tube here.

05 11 57 33 LMP All right.

05 11 57 37 CDR Gas sample tube coming up.

05 11 57 41 LMP Okay.

05 11 57 42 CDR Now, I need to get that safety line.

05 11 57 45 LMP Okay, I'll put that over here, babe.

05 11 57 47 CDR Okay, I'll get the safety line. One safety line - Whoops, excuse me.

05 11 57 51 LMP That's okay.

05 11 57 53 CDR I'll put my camera on; we'll put the TV camera in the ETB, and away we go.

05 11 57 59 LMP ... - ... take the ... There.

05 11 58 03 CDR Thank you.

05 11 58 04 LMP Right there.

05 11 58 08 CDR Got it?

05 11 58 09 LMP Yes, sir. It's in.

05 11 58 10 CDR Okay. If you get your camera, I'll put that TV camera in the ETB.

05 11 58 14 LMP Okay.

05 11 58 15 CDR Per their request.

05 11 58 23 CDR Okay, from the local terrain, Houston, as you know it right now, and with the polarizing filter, have you got any particular place enroute to the

[REDACTED]

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ALSEP or to head crater that you'd like polarizing pictures taken?

05 11 58 43 LMP Hey, hold that, would you, Pete?

05 11 58 45 CC We'll get back to you on that. Press on now - the nominal plan right now.

05 11 58 49 CDR Here, let me have it.

05 11 58 51 LMP Okay, let me film the handle - -

05 11 58 52 CDR Film the handle, yes. Hold it tight.

05 11 58 57 LMP I got it as far as I can. Permanently mounted that baby - -

05 11 59 08 CC Pete, we have no preference on that. Go ahead and take it as called out for in the cuff checklist.

05 11 59 12 CDR Okay. Stick it in the ETB and we'll screw with it later.

05 11 59 14 LMP Good idea.

05 11 59 15 CDR Handle in.

05 11 59 16 LMP Okay.

05 11 59 17 CDR Drop her. Okay, Houston, one TV camera in the bag and - our plan of attack is - Al?

05 11 59 29 LMP Go.

05 11 59 32 CDR One picture of that rock under the descent stage - -

05 11 59 34 LMP Shall do.

05 11 59 35 CDR - - Grab the handtool carrier and head for the solar wind and grab a picture of that. In the meantime, I'll lope off to the ALSEP and check the SIDE's; I'll meet you at point 1 at head crater.

05 11 59 43 LMP Okay.

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05 11 59 44 CDR If you see any Indians, don't shoot until you see the whites of their eyes.

05 11 59 47 CC Roger; we copy. And, Al, have you gotten the readings on the contrast charts?

05 11 59 55 LMP Not yet and I plan to do that real quick.

05 11 59 59 CDR Houston, Pete's on his way to the ALSEP. Okay.

05 12 00 01 CC Roger.

05 12 00 06 CC Roger, Al; we copy. And at ... minutes into the VA - EVA, you're pretty close to the nominal time line.

05 12 00 15 LMP Okay. Very good.

05 12 00 28 CDR Can the guy with the seismometer hear me running?

05 12 00 34 LMP ...

05 12 01 05 CDR Okay.

05 12 01 13 CC Pete, we're watching you down here in the seismic data - looks as though you're really thundering right by it.

05 12 01 18 CDR Yes, I - I ground to a halt there to switch to intermediate cooling. I noticed that - it is obviously a little bit hotter out here with the higher Sun angle right now. Okay, I'm approaching the infamous SIDE.

05 12 01 43 CC Roger. And we're able to copy your rest and now that you're moving again.

05 12 01 46 CDR Okay. All right, Houston. The status is - Oops, I'm going to get dust in it. The cover is off, and it's pointed up at the sky at about a 60-degree angle.

05 12 02 11 CC Roger. Do not touch it right now, Pete. Which way is that pointing - relative to east-west?

05 12 02 17 CDR It is pointed down-Sun.

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05 12 02 25 CC Roger. Pete, no need to change the configuration; let's press on.

05 12 02 33 CDR Okay. Now - -

05 12 02 35 CC We copy that you've stopped on the seismic.

05 12 02 39 CDR Yes. Where's me handy-dandy LMP?

05 12 02 45 LMP He's contrast charting.

05 12 02 47 CDR Oh, okay. Meet you at the head crater, pal.

05 12 02 50 LMP Okay.

05 12 02 55 CDR Oh, boy, is ... like I want that rock. Here's a dandy extra grapefruit-size-type goodie.

05 12 03 02 LMP Find a crater with a shadow in it first; there's one.

05 12 03 22 LMP Okay, Houston, I'm approaching a crater now, and I'm going to put the contrast chart in it - one on each side; one on the sunny side, one on the shadow side. I'll give you a report.

05 12 03 37 CC Roger.

05 12 03 42 LMP There's the one on the sunny side.

05 12 03 44 CDR Man, have I got the grapefruit rock of all grapefruit rocks. It's got to come home in the spacecraft; it'll never fit in the rock box. Okay, Houston, I'll tell you what I'm going to do. I'm going to wind up at the right place at head crater; and, while I'm waiting for Al, I'll roll a boulder for you. Okay, Houston? I'm now looking at - -

05 12 04 09 CC Sounds good, Pete.

05 12 04 18 CDR - - That crater is - -

05 12 04 20 CC Okay, Houston. Can you give us a mark when you roll over - -

05 12 04 21 CDR Yes, I sure will. That crater is, by golly, a rather steep crater - a lot steeper than it looks from out the LM. It's -

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05 12 04 35 LMP Houston?

05 12 04 40 CC Yes, go.

05 12 04 41 LMP I'm looking at the contrast chart in the Sun, and I can see all the different shades. And I've taken a photo of it; now, look at the one in the shadow. In the shadow, I can see - Well, depends on how close I am. If I'm within about 3 feet of it or 4 feet of it, I can see all six shades. I'll take a picture here, then I'll back up.

05 12 05 08 CDR Let me ask you a question, Houston. How big a rock?

05 12 05 19 CC Pete, Houston. I presume - whatever's a convenient size for you. We'll check that out, though.

05 12 05 25 CDR Okay. The other rocks that I was talking to you about are pretty well buried, and they're pretty large; I don't think I could get one of them going.

05 12 05 37 LMP Houston?

05 12 05 42 CC Roger. We copy. Grapefruit-size or any size is fine.

05 12 05 47 CDR Okay. Al, are you standing still?

05 12 05 51 LMP I'll stand still; go ahead.

05 12 05 52 CDR Okay. I'm standing still. Houston, on my mark, they're rolling -

05 12 05 58 CDR MARK.

05 12 05 59 CDR It's starting down - hit, hit, hit, hit. Now, it's just rolling. Roll, roll, roll, still rolling. Roll, roll, roll - -

05 12 06 15 CC Roger, Pete. We've got some jiggles that I can see here. We'll get a reading on it for you.

05 12 06 20 CDR Still rolling - still rolling. Very slowly, still rolling. And it's stopped -

05 12 06 29 CDR MARK.

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05 12 06 30 CDR Stop.

05 12 06 35 LMP Okay, Houston, I looked - I'm looking at the contrast chart in the shadow; and, as I mentioned at 3 feet, I can see all six. If I back up maybe to 10 feet, as long as I stand here a moment and adapt my eyes, I can see all six also. Now, the thing that seems to have the biggest effect on it is how low the Sun is. The Sun is high now and so I don't have to squint my eyes particularly, looking in that direction. Yesterday, looking into the same crater, even though it wouldn't be any darker in there because the Sun was there, I could - I would never be able to adapt. Right now, I can see all six marks, and I've taken the photographs. Going to go out and do solar wind now.

05 12 07 22 LMP I can't see a lot of difference in visibility -

05 12 07 25 CC Roger, Al.

05 12 07 26 LMP The only major difference I've noticed is the fact that when you're out here on these - this area, if you look cross-Sun, the Moon appears one color; if you look down-Sun, it's another; if you look up-Sun, it's another. But looking into shadows or anything else like that, it's pretty much the same as on Earth.

05 12 07 57 CC Copy that, Al.

05 12 07 58 LMP Okay, I'll take some pictures here of the solar wind for you.

05 12 08 13 LMP It doesn't look as pronounced, wrapped around the pole now that I get out here, Houston. It - looks pretty much like yesterday, just sort of, I guess it was sort of an optical illusion from inside the spacecraft. I took a couple of pictures of it, but I don't think there's anything unusual going on there.

05 12 08 39 CC Roger, Al. And, Pete, if it's convenient, and you can find another rock there and give her a heave, Experiments sure would like to see another one.

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05 12 08 48 CDR Okay, I was setting up my rock hole and all that - good things for the polarizing light. And - Say, I was looking at a rock that has small crystals in it. One of them is shining very, very bright green, like ginger-ale-bottle green.

05 12 09 26 CDR Okay. Al, are you on your way?

05 12 09 28 LMP That's affirm; I'm now making sure that everything is in the tool box - handtool carrier here.

05 12 09 36 CDR Okay.

05 12 09 37 LMP I'm mounting them pretty firmly. Hey, Houston? As I was working around the handtool carrier a moment ago, the canvas bag came loose. It took me about 2 minutes to put it back together again; it came off the metal sides. And it looks like those clips that hold it on are going to be completely inadequate, and I expect that we're going to have some trouble with it all day today. We ought to think about fixing it before next time.

05 12 10 07 CC Roger, Al. We copy that. Do you think once you put a little weight in it, she'll hold better?

05 12 10 10 LMP I don't know; they don't - the - they don't seem to have a lot of friction on the sides there, and the bag just floats around it. It needs to be more firmly attached some way.

05 12 10 23 LMP Okay.

05 12 10 26 CC Roger.

05 12 10 33 CDR Al?

05 12 10 34 LMP Yes, sir.

05 12 10 35 CDR Where are you?

05 12 10 36 LMP I'm just leaving the LM.

05 12 10 38 CDR Okay.

05 12 10 39 LMP Boy, this handtool carrier is - is light and nice. Compared to carrying it around on Earth I think

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it's going to be - We might be able to just slip it right down inside the Surveyor crater with us. Piece of cake. Okay, I see you over there; I'm on the way. Oh, don't tell me, you ding-a-ling camera. Man.

05 12 11 18 LMP I can see anything - everything from fine-grain basalt as I come running across the area here, to - coarse - a few coarse-grain ones; I see some - sort of light reddish-gray colored rock that I would call - I don't know really what I would call it; it looks almost like a granite, but, of course, it probably isn't, but it has the same sort of texture. The individual components - constituents, so to speak, are crystals, but it still has that same appearance. They'll have a chance to examine one closer.

05 12 12 04 CC Roger, Al. We copy that. And, Pete, can we give you any help with that camera?

05 12 12 07 CDR I got it going - just fine.

05 12 12 14 CC Roger.

05 12 12 15 CDR I'm taking the polarized pictures right now - but Al, when you get up to me, if you'll just stop up-Sun at 15 feet and take that shot of what I'm shooting at, 11 15, two pictures; one before, one after.

05 12 12 34 LMP Okay, let me take something out of this crater hole, Pete. It's sort of unusual; it's got a lot of those little droplets on it, those blips. But - but the - the fragments in this crater looks different from - the others. Take a couple of quick pictures, then I'll be right with you.

05 12 12 52 CDR Okay. It's all working out just fine.

05 12 12 59 LMP Get me a stereopair of this. Good. We'll use the tongs here and I'll pick it up.

05 12 13 14 LMP It's right exactly - this is a very small crater, Houston, probably about 3 feet in diameter and looks like it was made at - not very fast-moving or energetic or heavy projectile. Yet, right in

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the middle of the hole is some of these glass-covered rock fragments. And, on some of the other rocks that seemed to be rested in the hole, I'm putting them all in a - sample bag 1 here, I mean - some of the others don't have any coating on them at all. I'm picking them up with the tongs, but I can't tell how strong they are but they don't seem - they don't seem to hold together too well; they seem kind of weak. There you go. Now, I'll head on over where Pete is.

05 12 14 09 CC

Roger, Al. We copy that. If you're going to document that, try to get some of the material around the glass as well as the glass itself.

05 12 14 14 LMP

Okay. I want to - I'll just get this as a bonus, and I want to get over here to start working with Pete as a team, here. Just didn't want to have to try to remember where that was.

05 12 14 23 CC

Roger.

05 12 14 24 CDR

You're going to get a big surprise when you look into this head crater, Al. It's a heck of a lot deeper than it looks.

05 12 14 28 LMP

Okay.

05 12 14 37 CDR

Here's a nice white, small crater - a white rim on it, about a 5-foot diameter one.

05 12 14 46 LMP

I've been concentrating, Houston, as I came walking over here to head crater, to see if there were any possible changes in either texture, slope, color, anything you could think of or anything that I could think of, that would say to me that I was walking on a different surface than I was when I started. And I can't - haven't seen a thing yet; it all looks the same - it all looks like it's covered with this - black rock.

05 12 15 17 CDR

Slow up. Don't - don't - don't kick dust in the middle of my polarized picture area, here.

05 12 15 21 LMP

Okay. I'll stop right here.

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05 12 15 23 CDR Okay. Put the tool carrier down and get - get your up-Sun pictures. You see where my footsteps are, that rock that's half buried and the two rocks that I've turned over in my footsteps?

05 12 15 33 LMP Yes.

05 12 15 34 CDR Okay, it's 15 feet, f:11, two shots - Now, you're not going to get the before, unfortunately.

05 12 15 44 LMP Okay. How about right - Better have my shadow here or over there?

05 12 15 48 CDR No, that's the pile, right there. See where my - see where I turned over the two rocks alongside the great big rock, where my foot tracks are?

05 12 15 56 LMP Oh yes, way down there at the end.

05 12 15 58 CDR No, right here. I'll walk over to it.

05 12 16 02 LMP That's a good idea.

05 12 16 04 CDR Right straight in front of me. This rock pile, right here.

05 12 16 07 LMP Oh, okay. Want me to shoot it from right here?

05 12 16 09 CDR Yes, and you aren't 15 feet; back up; you're ... feet.

05 12 16 11 LMP All right. I sure will. Fifteen feet - okay, it ought to be about f:11.

05 12 16 35 LMP Okay, got those two. Got a couple of pictures there, Houston. Let me tell you what my camera reading is now, and then we can try to keep up with it from time to time. Next time, I'll come over here by Pete and we'll - -

05 12 16 48 CDR Yes, Houston, I've shot three - six - nine - 12, 15 - 15 pictures.

05 12 17 03 CC Copy 15, Pete.

05 12 17 04 CDR Okay, and on my mark, I'm going to send a slightly smaller rock into the crater. Are you ready?
Get set -

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05 12 17 12 CDR MARK.

05 12 17 14 CC Roger. We're watching.

05 12 17 16 CDR I didn't quite kick it hard enough; wait 1 and I'll do it again.

05 12 17 23 LMP And, Houston, that sample bag that I put the fragments in that I mentioned earlier, that I found in the bottom of that small crater?

05 12 17 29 CDR MARK.

05 12 17 30 LMP That's sample bag 1-D.

05 12 17 39 CC Copy your mark, Al, or Pete, and 1-D on that sample bag.

05 12 17 44 CDR You know, it's a funny thing, Houston, in one-sixth g, these - even though slopes are steep and everything, these rocks just don't want to go anywhere.

05 12 17 58 LMP Okay, Pete. I need you to - -

05 12 18 00 CC Roger, Pete. We haven't been able to pick it up on the PSE here.

05 12 18 02 CDR Okay, that was too small a rock.

05 12 18 03 LMP - - take the filter off the front of my camera, would you?

05 12 18 06 CDR Okay. Let me set this down.

05 12 18 07 LMP And you might want to take the ... tools in a second.

05 12 18 13 CDR Okay. Here's your camera. Filter's off.

05 12 18 18 LMP Okay. That's it for the filter. Goodness, that thing goes.

05 12 18 28 CDR Okay. Okay, I've got a rock over here.

05 12 18 36 LMP Okay.

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05 12 18 37 CDR What are we supposed to get here?

05 12 18 30 LMP We probably ought to come over here to the other side; it looks the best, and do a little trench, and compare some of the soil profiles.

05 12 18 47 CDR Okay, they wanted it - look, I've got an area right over here that looks like a good area to work in. Okay?

05 12 18 54 LMP These little white spatterlike craters; it looks like they're very fresh impact, like that little one right there.

05 12 19 01 CDR Yes, that's a good idea.

05 12 19 02 LMP Let me go over here; there's three in a row, and let's work this area a little bit, which is the corner of head crater they wanted us to work.

05 12 19 10 CDR Okay.

05 12 19 11 LMP And we can work right here and up to the top of it.

05 12 19 14 CDR What - what corner is this?

05 12 19 16 LMP We're in the northwest corner.

05 12 19 19 CDR Okay.

05 12 19 20 LMP Right as I indicated on the map.

05 12 19 22 CDR Okay.

05 12 19 23 LMP Okay. Now, I don't want to get any dirt in this thing; it's pretty interesting.

05 12 19 26 CDR Okay.

05 12 19 27 LMP A little secondary impact crater, huh?

05 12 19 31 CDR Okay, you want me to step - down from here?

05 12 19 34 LMP No, I'll - I'll get the cross-Sun.

05 12 19 36 CDR Okay. I'll set this - -

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05 12 19 38 LMP Well, you've got to, also got to be careful with this tool carrier, Houston. Did you want to put the gnomon in, Pete?

05 12 19 43 CDR Oh, yes, let me have my tool.

05 12 19 45 LMP Okay.

05 12 19 46 CDR Wait 1.

05 12 19 47 LMP Here's your - grabber.

05 12 19 49 CDR Grabber - ... at it.

05 12 19 54 CC Roger, Al. We copy that comment; and, on the northwest rim, we're looking for two partial PAN's.

05 21 19 58 CDR Okay, that's - -

05 12 19 59 LMP All right.

05 12 20 03 CDR We'll get them - in a little - -

05 12 20 04 LMP Okay, wait, let me get my pictures, Pete.

05 12 20 08 CDR Okay.

05 12 20 09 LMP Let me get over here and get the gnomon and - a sample of this rock right here; this rock is very - typical of all the fragments around here.

05 12 20 22 CDR Okay.

05 12 20 26 LMP Hey, that's interesting; look where you kicked. Got some lighter material there.

05 12 20 30 CDR Boy, sure did, didn't I!

05 12 20 32 LMP Yes, that's interesting; that's the first time we've seen that.

05 12 20 34 CDR In fact, you know what it looks like here, it looks like it may be this darker material - Well, I don't know - -

05 12 20 40 LMP I'm going to photograph that, too. Let me get - -

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05 12 20 42 CDR Okay.

05 12 20 43 LMP - - let me get this. Houston, kind of interesting here. Pete walked across one edge of the rim here. We're about - oh, 50 feet inside the - the upper rim and he happened to scrape an area there with his foot. It's a much lighter-colored soil - -

05 12 21 02 CDR Like cement.

05 12 21 04 LMP Yes. Let me take -

05 12 21 06 CDR Get your picture?

05 12 21 07 LMP I got it.

05 12 21 12 CC Roger, Al.

05 12 21 13 LMP Here, let me get my bag, Pete. You got to be careful with that handtool carrier; it'll fall over.

05 12 21 20 CDR Right.

05 12 21 23 LMP It's light and - -

05 12 21 24 CDR Sample bag number 13, okay?

05 12 21 27 LMP Oh.

05 12 21 30 CDR Okay. Al, let me photograph this thing, and let's trench this whole area.

05 12 21 35 LMP Okay.

05 12 21 36 CDR I dropped the gnomon in right here over my foot-steps and the light soil versus the dark, and we can trench there - -

05 12 21 43 LMP Okay, I just put it into 3-D. In just a second.

05 12 21 51 CC 3-D, Al.

05 12 21 52 LMP Okay.

05 12 21 53 CDR Let's see. Five feet, f:8, 1/250th. Okay.

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05 12 22 04 LMP Okay, and let me get a picture of what you're doing.

05 12 22 05 CDR Get the stereopair on, I think.

05 12 22 08 LMP Okay. You're going to trench right there, huh?

05 12 22 11 CDR Yes, let me get my shovel.

05 12 22 14 LMP Okay.

05 12 22 25 LMP Okay. That's going to make an interesting shot. What can I give you, Pete.

05 12 22 31 CDR I need the shovel.

05 12 22 32 LMP All right. I'll hold the tool carrier while you grab at it. Got her?

05 12 22 37 CDR Yes. Let me have the handle.

05 12 22 38 LMP Need the handle?

05 12 22 40 CDR Wait a minute.

05 12 22 41 LMP Can I get it?

05 12 22 42 CDR No.

05 12 22 43 LMP Okay. Move over here where I can bag it better for you.

05 12 22 56 CDR Okay.

05 12 22 57 LMP Very interesting things about this side of the mountain - I mean, this side of the crater - is that these boulders aren't uniformly distributed around. They all seem to be over here on the western side. If you look over the eastern side or the north or south, you can see some; but there's quite a bit more over here on the west, for some reason. ... - -

05 12 23 19 CDR Here you go, Al - quit baloneying and help me.

05 12 23 22 LMP Okay.

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05 12 23 27 CC Roger, Al. We copy that.

05 12 23 28 LMP Okay.

05 12 23 29 CDR Look at that.

05 12 23 30 LMP Stick it right in there - -

05 12 23 31 CDR In that white soil with the brown, huh?

05 12 23 32 LMP Yes.

05 12 23 33 CDR There you go. Now, let me trench it.

05 12 23 37 LMP Okay.

05 12 23 38 CDR We get some photos of that.

05 12 23 39 LMP Okay, look, you can see where you dug in that; there's still some under you; why don't you give me another scoop right in there?

05 12 23 44 CDR Okay. A good idea.

05 12 23 46 LMP There's not much in here. Okay. Where Pete digs up - sure enough, right underneath the surface. you find some much lighter gray - Boy, I don't exactly know why at this point, and you can look around now and see several places where we've walked that the same thing's occurred. We never have seen this at all - Boy, that's going to make a good picture, Pete. Never seen this at all on the area we were before. Hey, that looks nice. There's really quite a contrast there between the - -

05 12 24 24 CC Roger, Al. We copy that; you think it could be the Sun angle?

05 12 24 25 LMP Listen. No, not at all. This is definitely a change to light gray as you go down, and the deeper Pete goes - he's down about 4 inches now - it still remains this light gray. It's - this soil must be of a different makeup than that we were on outside the crater, because we have to - -

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05 12 24 43 CDR Say, this is different than around the spacecraft, because we've kicked up all kinds of stuff around the spacecraft and it's all the same color - -

05 12 24 50 LMP Top and bottom, this is quite a bit different.

05 12 24 52 CDR But this soil looks like it -

05 12 24 56 LMP I tell you what we should do here, Pete.

05 12 24 58 CDR What?

05 12 24 59 LMP Why don't you dig deep - -

05 12 25 00 CDR Deep?

05 12 25 01 LMP Yes, dig as deep as you can, then get me a sample right out of the bottom, because this will be something new. I'll put it in sample bag number 5-D.

05 12 25 13 CDR Kind of hard to get down in there - -

05 12 25 15 CC Al, we copy 5-D. And would you give your location relative to the center of head crater? Specifically, are you just on the west side of it, where we have the triple crater?

05 12 25 22 LMP We aren't; we're on the northwest corner of it - -

05 12 25 25 CDR Right where you told us to go, Houston.

05 12 25 29 LMP Give me another shovelful there, Pete.

05 12 25 32 CC Roger. You should be very close to that triple crater.

05 12 25 33 CDR Triple crater. Well, there's one crater right here - -

05 12 25 37 LMP There's a couple of craters right over the rim here; we're sort of - Pete's down now about - -

05 12 25 44 CDR That's not a good one, Al, let me get another one - -

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05 12 25 47 LMP - - down about 6 inches and - looks just light gray down there. Now, in the bag, you'll find there's some darker gray material that fell in off the side.

05 12 25 59 CDR There you go.

05 12 26 00 LMP Hey, I want to - -

05 12 26 01 CDR Let's throw this little rock in that I dug up from down deep.

05 12 26 04 LMP Is that a rock?

05 12 26 05 CDR Yes, sir.

05 12 26 06 LMP Okay.

05 12 26 07 CDR Get another sample bag.

05 12 26 09 LMP All right.

05 12 26 10 CDR That's a good one, because I don't want - -

05 12 26 11 LMP Well, wait a minute; let me get a picture of it first.

05 12 26 14 CDR I dug it up out of a hole. It's hard to keep this soil in the bag. Stereopair. Okay, in bag D.

05 12 26 30 LMP There's, of course, a little of the top soil mixed in because the sides collapsed. Angle of repose is about 85 degrees, but - -

05 12 26 38 CDR The minute you bump the side, it falls in.

05 12 26 40 LMP - - it's not cohesive at all, even though it - it seems to remain nearly vertical; I guess it's the low gravity. Hey, that's a nice rock. Pete just handed me a rock from the bottom of the hole, and it's covered with gray; I can't see - anything in it other than just the gray dirt covering, soil covering. Let me get a final shot, Pete.

05 12 27 01 CDR Okay.

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05 12 27 05 LMP Okay. That's good.

05 12 27 15 LMP Okay. As you move off, Pete, every once in a while, I can see some white; but, most of the time - Hey, you kicked over a rock that had a white bottom - quite a bit different than the top. Right behind you; you might - you might want to take a picture of that. It's quite a bit different than those others.

05 12 27 47 CDR Houston. You're going to have to budget our time now. How long do you want us to spend it - in head crater?

05 12 27 53 LMP Because it looks like we could just spend all our time here if we wanted to - -

05 12 27 55 CDR That's what's bothering me; we could do that any place right here on the Moon.

05 12 28 04 CC Pete, we show that you're 58 minutes into the EVA, and we'd like to get you over to bench crater, and leaving there something on the order of 1 plus 12; we can slip that a bit. So, we suggest you finish up where you are - what you're doing there at head and move on.

05 12 28 19 CDR Okay. Al, where's the map?

05 12 28 21 LMP Got the map right here, Pete. Let you take a look at this.

05 12 28 25 CDR By the way, this is the smartest idea we came up with, Houston; this map just works great out here.

05 12 28 29 LMP Okay, let me take a picture of this rock. I'm going - -

05 12 28 35 CDR This isn't going to show much.

05 12 28 36 LMP Let me - let me use your shovel.

05 12 28 38 CDR All right. Now, I'm trying to find the triple craters they're referring to.

05 12 28 41 LMP Kick it around - be right over - -

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05 12 28 56 CC Pete, that triple crater is just south of your present position, and why don't you just go ahead and move on?

05 12 29 00 CDR Okay. I got you.

05 12 29 13 LMP Okay. Now, there's a good picture, Pete; let me get that one.

05 12 29 16 CDR Okay, now, let me see which side is which.

05 12 29 18 LMP Well, we've got it; turn over one of the rocks on the rim. The bottom part of the rock is gray, about a half of it; this rock happens to be about a 6-inch-diameter rock. I'll give you stereo of it. And the top is the same color as the - -

05 12 29 33 CDR Wait a minute. You got it in your shadow.

05 12 29 35 LMP I do. Take another one. Pete, maybe you want it.

05 12 29 43 CDR Even these rocks out in here - even the ones that are almost completely covered with the soil; if I look at them, I can see glints of crystals or something.

05 12 29 51 LMP Yes, every one of them.

05 12 29 53 CDR All right, let me have that.

05 12 29 54 LMP There's your tube.

05 12 29 55 CDR All right, we're going to head for bench crater.

05 12 29 56 LMP Okay. Now, did we - We didn't get a PAN view, did we?

05 12 30 01 CDR No, and I'm going to get it when I get to the triple craters, which is right over here.

05 12 30 05 LMP Sounds good.

05 12 30 06 CDR They think they're right over here; I can't see them; I've got to look over the hill.

05 12 30 09 LMP All right.

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05 12 30 11 CDR Here they are. Ho, ho, ho.

05 12 30 15 LMP Hey, things are quite a bit lighter gray up here on the top of the hill.

05 12 30 24 CDR Yes.

05 12 30 25 LMP The ... we're approaching - -

05 12 30 26 CDR Oh, look - look - at these craters, Al.

05 12 30 31 LMP Boy.

05 12 30 34 CDR Now, Houston, do you want head crater - from triple craters? Is that what you want or do you want the triple craters?

05 12 30 51 CC Pete, we suggest you just move on to bench - and a comment on that double core tube; if you find a spot that looks soft, go ahead and sink the double core tube.

05 12 30 59 CDR We'll do it at bench. It's really a shame, Houston - -

05 12 31 05 CC Roger.

05 12 31 06 CDR - - we could - we could work out here for 8 or 9 hours. The work is no strain at all.

05 12 31 18 LMP I took three quick pictures of triple craters, Houston.

05 12 31 25 CDR We're not going to get to that other one - bench, is it; but that looks like a real interesting area in - on the far corner of bench, Al. See all those big rocks? Some of them look as if they could be bedrock out of somewhere.

05 12 31 38 LMP I'm kind of wondering, we're passing up these here - and they got to be bedrock from somewhere; we need to get a pretty large-sized one here, before we leave this area, Pete.

05 12 31 45 CDR I'll tell you what we'll do is, I'll stop right here and take a PAN.

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05 12 31 49 LMP Okay.

05 12 31 50 CDR How's that grab you?

05 12 31 53 LMP Because these rocks obviously came out of the crater, because they're scattered more uniformly around it. There's a bunch of them on the rim and there's not many far away. We probably ought to grab a big one of them.

05 12 32 04 CDR ... 4.

05 12 32 05 LMP We're moving - straight south now.

05 12 32 15 LMP There's an interesting rock; let's - Hey, that's all right; let's get it.

05 12 32 27 LMP Let me read your camera and you can read mine, if you would. Help them out a bit down there.

05 12 32 32 CDR Just a minute. Okay, your camera right now is on 36. How about mine?

05 12 32 39 LMP That's 36 also.

05 12 32 41 CDR Okay, move.

05 12 32 42 LMP Did you copy that, Houston? Every crater you come - -

05 12 32 50 CC Roger. We got it, Al.

05 12 32 51 LMP - - every crater you come to and look in, you see the glass beads. Move out of your way, Pete.

05 12 33 10 CDR Okay, now. Back to rock-taking settings, 5 feet, f:8, 1/250th. Okay. All right, Al, where do you want to grab the sample here?

05 12 33 18 LMP Right here, I'd like to grab that rock right there, because it's got kind of a sharp edge on it and all the rest of them are - I don't know, it's got kind of a - an oblique edge on it, and you don't see many like that around here.

05 12 33 30 CDR Which one you mean?

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05 12 33 31 LMP This one right here, this gray one. It looks a little bit different than the rest.

05 12 33 33 CDR This one?

05 12 33 34 LMP No, right there, a little bit further - that one right there. I'll just grab it and put it in the box, if we can pick it up.

05 12 33 38 CDR This one, the big one?

05 12 33 40 LMP The big one.

05 12 33 41 CDR Ho, ho, ho, wait until I get the pictures.

05 12 33 42 LMP Okay. If we can do that, we can just put it in the bag. I think that's kind of a different - looking rock. This rock is different, Houston - just in the way it's shaped, and it's partly rounded and got some oblique angles on it. Maybe under all that dirt is something a little bit different.

05 12 34 03 CDR Okay. I got it.

05 12 34 08 CC Roger, Al. We copy that.

05 12 34 14 LMP Sorry.

05 12 34 16 CDR That's all right. All right. Picking it up; don't sweat.

05 12 34 20 LMP Okay.

05 12 34 21 CDR That a boy. We know you got the rock; that's what counts.

05 12 34 24 LMP Okay.

05 12 34 26 CDR Okay, put it in the bag.

05 12 34 28 LMP The thing that was giving it that unusual shape was the dirt that was adhering to it (laughter). That's okay; we'll take it back with us.

05 12 34 34 CDR Good rock.

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05 12 34 36 LMP And this is probably typical of the rocks around this crater, Houston. So, - it will be a good sample for us.

05 12 34 51 LMP I'd say in the area we're moving along now as we head south - is, what do you say, Pete, there's about 5 percent rocks?

05 12 35 00 CDR Something like that; yes, they go anywhere from 2-1/2, 3 feet all the way down to small fragments.

05 12 35 04 LMP That's right. There's even one by you there that's 3 feet that's ... - Look at the fillets around that rock.

05 12 35 10 CDR Look, that's deep fillets ... - -

05 12 35 11 LMP That's a beauty. Wait a minute; I'd better stop and get that. Hold the tongs.

05 12 35 13 CDR Okay, let's do; let's - -

05 12 35 15 LMP In fact, maybe we can take it on two or three sides. Have to watch - The trouble is - There you go; that's a - that's a good rock. Hey, look at the pits in it, too. That's obviously been struck a lot by - meteoroids; this is going to be a good rock, Houston. It's about 3 feet in diameter, about 2 feet thick - -

05 12 35 32 CDR Got to back around it.

05 12 35 33 LMP - - well-rounded, got a - lot of surface pits in it. I can see the glitter -

05 12 35 40 CDR I got to back off to 15 feet on this one.

05 12 35 42 LMP Okay.

05 12 35 43 CDR Get a good stereopair.

05 12 35 44 LMP Okay.

05 12 35 47 CDR Don't want to fall down in the crater behind me there; wait a minute.

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05 12 35 49 LMP Don't back up - -

05 12 35 50 CC Roger, Al. We copy that. Are you able to find any chips from that rock in the near vicinity?

05 12 35 55 LMP This is not unlike all the other rocks around here, Houston. All the rocks are just about -

05 12 35 59 CDR Al, did you get some off the far side - of that?

05 12 36 04 LMP Yes, let's get that. That's a good idea. All the rocks we've been looking at, Houston, in this area, seem to be the same. They seem to have a - The rock has got dirt built up on all sides of it, all directions.

05 12 36 16 CDR Sure does; looks about equal too, doesn't it?

05 12 36 18 LMP It looks about equal; that's right. Very interesting. I don't know what the means of transport, but it's - it's just built up around it.

05 12 36 26 CDR Here's something here. Go ahead. I want to look here, for a second.

05 12 36 34 LMP If you look real closely at the rock, the surface of it is coarse pitted and there's some pits that are maybe even up to three-eighths of an inch in diameter on it; however, most of them are small. It doesn't look like a basalt, although the grains are too small for me to see anything - identify any specific one. Some of the pits have glass in it, which is not too surprising; and many of them don't. That's about all we can say about that rock, Houston, and that's typical of the - of the ones in this area.

05 12 37 16 CC Roger, Al. Could you give us a sample bag number and then press on?

05 12 37 18 LMP Okay. Well, we didn't take a sample there. The couple that we did take a sample of previously are the same types, so the last couple of samples have been of the same type rocks that we're discussing.

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05 12 37 30 CDR Okay, Houston, I'm coming up on bench crater right now. I loped off and left Al. And I'll get you a PAN in bench crater. This looks like a very interesting crater; it's different. Oh, and I see some really different rocks - a big one. Hey, that looks like bedrock. Gee, what a crater. Wow. Oh, boy. Hey, Al, look at - Come on over here.

05 12 38 01 LMP I'm coming.

05 12 38 03 CDR Ought to get some of this. Let me get some cans in there.

05 12 38 10 CC Sounds interesting, Al. And, Pete, sounds as though you're getting down to bedrock. Is that affirm?

05 12 38 13 CDR Yes. They got to be bedrock, and this one in the bottom is - As a matter of fact - -

05 12 38 19 LMP Boy, there's some big fragments around here.

05 12 38 20 CDR - - get the pictures. It looks to me like stuff is melted in the bottom of it. I - can't swear that, but I'll get you some pictures. Starting right now. f:8 - B - I - fix. Okay. Let me go over on the other - little bit here. Get you a good PAN.

05 12 38 53 LMP Yes. This rock looks pretty much the same from a distance, Houston.

05 12 39 00 CDR Yes, there's - -

05 12 39 01 LMP/CDR Soil.

05 12 39 02 CDR - - we kicked out of this crater.

05 12 39 03 LMP I'm just sorry you guys - -

05 12 39 04 CDR Beautiful!

05 12 39 05 LMP - - aren't all here.

05 12 39 06 CDR What a fantastic sight. Al, look in the bottom of that crater.

05 12 39 10 LMP Hey, look at that.

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05 12 39 11 CDR Do you think that stuff melted or what? What's that look like to you?

05 12 39 18 LMP Well, it looks to me - Those rocks look - What it looks to me like is, we've got one of those central - little bitty central peaks, you know - little rebound there, like the - -

05 12 39 26 CDR Yes. But don't they look melted on the top? Don't they look like they've been - they were molten? They're not - they're not completely jagged.

05 12 39 32 LMP No, they're not; it's hard to tell. I noticed when I was looking at that rock back there, up real close, that it had been hit by meteoroids so much, I guess, it had given it a rounded appearance, something like those in the hole, except there's a couple over there, like you say, that don't look that way. We ought to grab one of these pieces of - -

05 12 39 54 CDR - - me, I want to cover the ground.

05 12 40 00 LMP Okay. I'm going to beat your ...

05 12 40 04 CDR You can baloney about it all day long in the LRL; the name of the game is to get the business done.

05 12 40 09 LMP Okay.

05 12 40 10 CDR One potato - ... potatoes; there's another one.

05 12 40 14 LMP All right.

05 12 40 15 CDR Look at that baby; that rock looks a little different.

05 12 40 19 LMP Okay. I don't think - don't think it's going to fit. Let's put it in one of these bags. It'll fit in there, Pete.

05 12 40 30 CDR Okay.

05 12 40 31 LMP It's going to go in sample bag ... 4. I think it's - -

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05 12 40 37 CDR Come here, you pesky booger. C-4. It might fit in there.

05 12 40 43 LMP Oh, it won't fit in there, Pete; that box is too big.

05 12 40 46 CDR Let's just put it in here, and we got a nice picture of it, so we can tell where it's from - -

05 12 40 49 LMP That's a super rock.

05 12 40 50 CDR - - why don't you pick up two or three others - little ones, and put them in 64 here, from that same area? Here, all this - all this stuff is from head crater - -

05 12 40 58 CC Copy. Sample 64.

05 12 40 59 CDR - - from - ... rock. Get some here that we took the picture of.

05 12 41 06 LMP Yes. Wait a minute.

05 12 41 07 CDR Okay.

05 12 41 10 LMP Yes, I don't think I got that in the picture.

05 12 41 12 CDR Okay. May not have.

05 12 41 14 LMP Hey, you notice that underneath this soil on the rim, too, it's the light gray.

05 12 41 19 CDR Look. See that stuff over - Let's go over to that corner and try to get a - break off a piece of that big rock, huh?

05 12 41 24 LMP That's a good idea.

05 12 41 25 CDR Looks like bedrock to me.

05 12 41 27 LMP Let's do that. Okay, I'm putting 64 in there, Houston. There are a couple of small rocks that we just picked up from the area we've been discussing. It doesn't - I don't think they appeared in the photo, but that won't make any difference. It's just typical of the other rocks around here.

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05 12 41 43 CDR Holy Christmas! What's this? Look at this, Al. We're kicking up the same sort of light gray.

05 12 41 50 LMP Apparently, on the rims here, you get that light gray, out in the - -

05 12 41 57 CDR No, no, look at this stuff.

05 12 41 59 LMP Hey, that's interesting.

05 12 42 00 CDR What do you suppose that is?

05 12 42 02 LMP Hey, we can't - Here's something interesting, Houston. Hey, it looks like a surface - What we got is what looks like kind of a semiburied rock. Hey, there's a small piece of it over there to the left. See it, Pete? We'll be able to catch it and put it in the bag.

05 12 42 13 CDR Yes.

05 12 42 14 LMP See that over there?

05 12 42 15 CDR Yes.

05 12 42 16 LMP What it looks like is a - a buried rock, not unlike the others around here, except it appears to have some sort of coating on it that's very iridescent. A lot of crystals shining in it - -

05 12 42 27 CDR I'll tell you what's happened is it - it - it's been laying in the ground and it's been hit by another fragment.

05 12 42 32 LMP Think so?

05 12 42 33 CDR Yes. Look at the glass beads, too. They're all over the place.

05 12 42 37 LMP I know.

05 12 42 38 CDR Okay, you want to - you want to catch that - -

05 12 42 40 LMP Yes - -

05 12 42 41 CDR - - piece over there and I'll put it - -

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05 12 42 42 LMP Yes, let me get the - let me get the - the sample of it.

05 12 42 43 CDR Okay.

05 12 42 44 LMP All right.

05 12 42 50 CDR Sample in sample bag ... - the numbers.

05 12 42 53 CC Copy, 7. And would you go ahead and give us some picture numbers, also?

05 12 42 56 LMP Okay. We'll give you some in just a minute. Pete's picking up a small piece of this rock. Maybe you could get a piece that's fractured right off the middle.

05 12 43 04 CDR That's what I wanted to do.

05 12 43 06 LMP Okay. Let me get out of your way so you can see it. Let me hand you the scoop - There it is, right there. Okay.

05 12 43 14 CDR It's got an interesting coating on it; it's different from what we've seen. Maybe this is more newly exposed - struck ...

05 12 43 21 LMP Is that all you want to put in that bag?

05 12 43 26 CDR Listen. Hand me the scoop - -

05 12 43 27 LMP Okay.

05 12 43 28 CDR - - let me get some of those glass beads and stuff there - -

05 12 43 30 LMP All right. Let me get you the scoop.

05 12 43 34 CDR Okay. How long have we been going, Houston?

05 12 43 41 LMP Got it, Pete. 1 plus 15.

05 12 43 44 CDR No, more than that.

05 12 43 47 CC Pete, we show you're 1 plus 14 into the EVA, and we'd like you to move on from this crater at about 1 plus 27. If you could, then, go on down and take a look at the bedrock on the bench.

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05 12 43 59 LMP Hey, I - I'd better not put that in there; that's what we wanted to show, was the - -

05 12 44 01 CDR Okay.

05 12 44 02 LMP Let me get you another sample bag.

05 12 44 03 CDR I hate to try and get down to the bottom of this fellow; it's awful steep.

05 12 44 07 LMP Yes, I don't think we want to do that.

05 12 44 08 CDR In fact, I couldn't get down in there.

05 12 44 10 LMP Let's forget that - -

05 12 44 11 CC Okay. Then hold off on that; don't go ahead.

05 12 44 12 CDR But - but - but I'm going to get you -

05 12 44 15 CC Negative on the request.

05 12 44 16 CDR - - We're trying to get you some of the bedrock; it looks like it's up in the lip here. All of it looks the same - on the edge, Houston.

05 12 44 20 LMP I'm working on it; I'm working on it.

05 12 44 23 CDR It's 8-D.

05 12 44 25 LMP Ridiculous, Pete!

05 12 44 27 CDR What happened to 1, 2, 3, 4, 5?

05 12 44 31 LMP (Laughter) Catch you another one, okay? What we're putting in here now, Houston, is some soil that's right next to the rock that we previously described; in fact, Pete's got a nice fragment of that rock that's going to end up in this bag, too. Oh, catch that one.

05 12 44 47 CDR Oh - ooo.

05 12 44 48 LMP That's a beauty. That thing is barely - a weak - it fractures right off - -

05 12 44 55 CDR (Laughter)

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05 12 44 58 LMP You've got to get some control there, babe; you're overpowering it. This one-sixth g up here, Houston; you lift something up in your scoop; and, when you stop the scoop, it just keeps going up in the air.

05 12 45 09 CDR I'll tong it (laughter) if I can't do it the other way.

05 12 45 14 LMP Looked good, though. Okay. Put that in the bag. There you go.

05 12 45 24 CDR We need to put more samples per - in the bag.

05 12 45 28 LMP And they're saying they can't hardly use those little ones.

05 12 45 30 CDR They won't fit in it any bigger.

05 12 45 33 LMP Here, I'll get it.

05 12 45 34 CDR Okay.

05 12 45 55 LMP Thank you. Okay?

05 12 45 57 CDR Okay. Let's go over here and get some of this good rock. Like bedrock to me.

05 12 46 01 LMP Okay.

05 12 46 03 CDR Looks a lot like the fragments we've been seeing laying all over the place, but this stuff obviously - I'll bet you we have a total of about 3 pounds of rocks right now.

05 12 46 11 LMP Okay. I'm with you.

05 12 46 12 CDR Okay. We're going to have to grab some bigger ... better ones.

05 12 46 20 CDR Got to dip down in the side of the crater there; see how it is going up and down - -

05 12 46 23 LMP Yes - it would be - down - -

05 12 46 25 CDR Boy, this is interesting here; I want to get this area right here and see if I can't sample it - -

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05 12 46 30 LMP Good move.

05 12 46 31 CDR - - if I don't fall down in the crater. Go. That's a boy. Well, this is different; look at this, Al; this is different; we'll get some of this.

05 12 46 41 LMP Okay.

05 12 46 48 CC Al, Houston. Over.

05 12 46 49 LMP Go ahead, Houston.

05 12 46 55 CC Al, we'd like you to go to intermediate flow for a minute and a half. We'll give you a call.

05 12 46 58 LMP Okay. What's the problem?

05 12 47 12 CC We're looking at a slightly lower than nominal feedwater pressure.

05 12 47 14 LMP Okay. Been cooling real fine. Look at the glass all over those rocks.

05 12 47 20 CDR Yes. I need to -

05 12 47 26 LMP I want to bring this back; look at it.

05 12 47 28 CDR Okay.

05 12 47 35 LMP Here, let me put this - put that in there.

05 12 47 38 CDR If you fall, it's going to fall.

05 12 47 39 LMP There you go.

05 12 47 41 CDR Hold it.

05 12 47 48 LMP Huh?

05 12 47 49 CDR Let me get up here. Okay?

05 12 47 50 LMP Watch it - it - You're going to -

05 12 47 54 CDR Okay. Now, you're going to - I'm going to get a bunch of these.

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05 12 47 57 LMP Let's do; let's get a bunch of them and then they'll - have any rocks to bring back.

05 12 47 59 CDR Doing the best I can.

05 12 48 01 LMP There you go; there's a good one. Put that thing in here.

05 12 48 12 CDR Oh!

05 12 48 16 LMP Except I'm closing the bag, but we'll make it work.

05 12 48 21 CDR I had to take that big piece right there. ... of it got spattered glass or something all over it.

05 12 48 27 LMP Let's take it. Why don't we take a big piece of it? And - sample bag - what's wrong with these sample bags, whether they're the - the round ones, or the square ones, or the flat ones, they're all the same size. What you need are sample bags - little ones for these and some big ones for the bigger rocks. Okay, 9-B is the sample we just picked up and described, Houston.

05 12 48 55 LMP Okay. Put this right in here, Pete.

05 12 48 56 CDR No. Wait a minute; here's a better one.

05 12 48 58 LMP Okay. Now, we are working on sample bag - 10-B.

05 12 49 05 CDR 10-B. Wait for me.

05 12 49 11 CC Roger. Copy 10-B; and, on your way out, would you get that partial PAN with a 75-foot base line?

05 12 49 15 LMP We'll sure do that, Houston - -

05 12 49 16 CDR I already got the PAN.

05 12 49 18 LMP Well, Pete says he's already got it.

05 12 49 19 CDR Got a stereo partial PAN. Okay?

05 12 49 25 CC Roger.

05 12 49 26 CDR Okay. That's a good rock, and that fills that one up.

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05 12 49 39 LMP Okay, Pete, what's your next pleasure?

05 12 49 42 CDR I don't know. What do you think, Houston?

05 12 49 53 CC You're looking in good shape. You can press on along the traverse over to sharp crater.

05 12 49 58 CDR Okay.

05 12 50 00 LMP Why don't you take your - Oh, you already got a snapshot of this, didn't you, Pete?

05 12 50 04 CDR Wait, wait - Sharp crater, that's funny; I can't locate it.

05 12 50 07 LMP Here, let me - let me - show you the map, again.

05 12 50 13 CC Pete, from your present position, that's about 400 feet southwest.

05 12 50 17 LMP Nice one, 400 feet south - -

05 12 50 19 CDR - - Al, it's got to be over that hill, right there.

05 12 50 21 LMP About right there.

05 12 50 22 CDR Right here.

05 12 50 24 LMP Okay. Let's try it.

05 12 50 35 LMP 400 feet southwest.

05 12 50 37 CDR All right. Now, we want to get the core tube and that gas sample and a bunch of good things, right, Houston?

05 12 50 48 CC That's affirmative, Pete. All those good things at sharp crater.

05 12 50 54 CDR Got to find it first.

05 12 50 56 LMP Oh, man, I got to just - -

05 12 51 01 CC Al, you can go ahead and put that diverter valve to your choice. Your feedwater pressure's holding even; looks as though it's working well. It's slightly lower than nominal.

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05 12 51 08 LMP Okay, Houston.

05 12 51 09 CDR Sharp crater, where are you?

05 12 51 13 LMP Got it pinpointed, Pete?

05 12 51 14 CDR No. I can't find it.

05 12 51 17 LMP Well, we're going in about the right direction.

05 12 51 18 CDR There's one right over here to - kind of more to your right. Trouble is, I'm looking down zero phase, you know, and that's - There it is. That's got to be it, right there.

05 12 51 32 LMP Hey, I see it.

05 12 51 35 CDR Boy, there's big fragments out here.

05 12 51 39 LMP You can say that again.

05 12 51 40 CDR Have you got the shovel?

05 12 51 41 LMP I sure do.

05 12 51 42 CDR Good boy. No, that's not it either.

05 12 51 50 LMP Why don't we stop here and look at the chart a little bit more closely?

05 12 51 58 CDR Man, does that LM look small back there. I'll tell you what. I'd better get a tie anyhow. Look at the chart.

05 12 52 06 LMP Okay.

05 12 52 07 CDR Okay.

05 12 52 09 LMP Okay.

05 12 52 15 CC Roger. Are you going to give us a back-side survey at that point, Pete?

05 12 52 16 CDR Yes. I'll make it a full PAN. So darn far out, I might as well.

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05 12 52 29 CC Okay. A full PAN over when you get to sharp. We show you are 1 plus 23 into the EVA, and we're looking to leave sharp crater around 1 plus 51, so you got lots of time.

05 12 52 39 CDR We got to find sharp crater first.

05 12 52 40 LMP Pete, I kind of agree with you; where is it?

05 12 52 42 CDR I don't know. We should be right here. I got a - How big is sharp crater?

05 12 52 53 LMP Looks pretty small. It looks to me to be about 30 meters.

05 12 52 58 CDR Okay. I got it. It's right here in front of me.

05 12 53 00 LMP Okay?

05 12 53 01 CDR Yes. That's it.

05 12 53 20 CDR Okay. Load box - ...

05 12 53 33 LMP This has got to be sharp crater right here. Let's - We'll drive that double core tube in there.

05 12 53 38 CDR All right.

05 12 53 40 LMP Yes. This has a nice white rim - a white rim on it. In fact, the rim of this looks pretty much like the area we kicked over on the previous craters. I'm not sure this is sharp crater, but it's - Let's use it anyway, because it's the only one out here.

05 12 53 53 CDR I know. I can see - nothing out here. Darnedest thing I've ever saw.

05 12 54 03 CC We're estimating a diameter of sharp crater, Pete, for about 40 feet.

05 12 54 06 LMP 40 feet, huh?

05 12 54 07 CDR Al, this may be it!

05 12 54 08 LMP This is it - it's got to be it. It's got a nice raised rim on it.

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05 12 54 11 CDR Yes. Look at that.

05 12 54 12 LMP It's raised up about - What do you say, 2 feet? This is the same color as all that subsurface material.

05 12 54 25 CDR It's awful soft in here; watch it.

05 12 54 27 LMP Okay.

05 12 54 28 CDR Holy Christmas! Look at the bottom of that.

05 12 54 29 LMP Say, you know something, Houston?

05 12 54 31 CDR Hey, Houston. This crater looks like - -

05 12 54 34 CC Go ahead, Pete.

05 12 54 37 CDR - - blast effect coming out of it. Looks like it's got blast effects radial all around. This has got to be fairly fresh to the - Look at that, Al. Isn't that neat? I - we might get some pictures of that.

05 12 54 50 LMP Okay.

05 12 54 51 CDR I don't know what to set it on - 74, I guess. We're not that far away.

05 12 54 54 LMP Boy, the - the rim is soft here, isn't it?

05 12 54 57 CDR Sure is.

05 12 54 58 LMP Quite a bit softer than the others we - -

05 12 54 59 CDR But look at the radial spray pattern. Look at that. I guess I'm supposed to drive the what - double core tube here or something?

05 12 55 07 LMP Yes. Set that baby up. Look at that - skip.

05 12 55 10 CDR We got to dig a trench? Gas sample, we're out - -

05 12 55 16 CC Al, we'd like to get the trench site sample there, and you can hold off on that double core tube until you get over to halo crater.

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05 12 55 21 LMP Okay. Good. We're supposed to look west for Copernican rays here, too.

05 12 55 38 CDR Houston, there's no way to tell the difference - from that that was there when - I mean, right on the surface before the crater was formed. There's no - there's no differentiation at all.

05 12 56 03 LMP Let's see. Which sample do you want now?

05 12 56 05 CDR That's the - deep trench - -

05 12 56 15 CC Al, we're looking for the trench site sample. That includes your environmental sample of trench and the gas analyses you can put in there, too.

05 12 56 21 LMP Okay. We'll do the whole smash here for you.

05 12 56 24 CDR You want it right in the crater rim?

05 12 56 25 LMP That's what it says.

05 12 56 26 CDR Okay. I get it. That's good.

05 12 56 28 LMP Okay, let me get out - -

05 12 56 30 CC That's affirmative. That would be perhaps the easiest and best place to do it, and you can get that one core tube down in the bottom of the trench.

05 12 56 35 CDR Yes, yes, yes.

05 12 56 37 LMP Okay. Pete, before you do that, help - you're going to have to lift this up so that I can take the sample out.

05 12 56 42 CDR Wait 1. Okay, I'll be right with you.

05 12 56 45 LMP Okay.

05 12 56 46 CDR You going to do it right there?

05 12 56 48 LMP Yes. Lift it up and I'll reach in there and grab the - put the - This will be the one for the soil here.

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05 12 56 58 CDR Hey, one thing I've noticed, Houston, carrying the - the tools and - but although your gloves - you don't feel any of the temperature here. Turns out nice and bright, but it's nice and cool in here, except when you're carrying something metal, like the handtool carrier or the shovel or something. Then your hand starts to get warm.

05 12 57 18 LMP Could you - could you get out of the -

05 12 57 19 CDR Yes.

05 12 57 20 LMP Could you just slide a little bit?

05 12 57 21 CDR Okay. Let me slide right over here. That's a new one.

05 12 57 31 LMP Oh, wait a minute. I've got to do it over here.

05 12 57 35 CDR Hey, Houston? Did you take a picture before, Al?

05 12 57 40 CC Pete, go ahead.

05 12 57 41 LMP No.

05 12 57 42 CDR Oh. No - noth - nothing, Houston; we're okay.

05 12 57 47 LMP I'll take one right now, Pete.

05 12 57 50 CDR Good spot right there, I believe.

05 12 57 56 LMP Okay. Go ahead, Pete.

05 12 58 04 CDR Dig in that stuff.

05 12 58 06 LMP Wow!

05 12 58 07 CDR You could drive three core tubes down there.

05 12 58 10 LMP You sure could; it's soft.

05 12 58 11 CDR Yes. Down about 8 inches.

05 12 58 13 LMP Yes. Pete's digging in the - digging a nice clean trench.

05 12 58 16 CDR Wait, wait, wait, wait. Let me get the trench pictures.

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05 12 58 19 LMP Okay.

05 12 58 20 CDR And I'm in the wrong setting as usual - -

05 12 58 25 CC Okay, Al. Could we have some numbers along with those pictures?

05 12 58 26 LMP Okay. We'll have to give them to you, Houston. We've been delinquent there. Fine gray. Very fine soil here.

05 12 58 39 CDR Okay, Al. Okay. I'm ready to - take - take - take a look at my - What's the number?

05 12 58 44 LMP Okay. You're on number 105.

05 12 58 50 CDR Ow.

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05 12 58 51 LMP That's okay. Well, I'll trade cameras with you because you've been ..., okay?

05 12 58 54 CDR Okay.

05 12 58 56 LMP All right. Now what do you want to - want to do? Fill that with dirt and - and rocks?

05 12 59 00 CDR We sure do.

05 12 59 01 LMP Huh?

05 12 59 02 CDR Fill the big container with dirt.

05 12 59 06 LMP Okay.

05 12 59 10 CDR Be careful now - -

05 12 59 12 CC Pete, we copy you're on 105.

05 12 59 13 LMP Wait a minute, wait. The tools didn't go in.

05 12 59 20 CDR That's okay.

05 12 59 21 LMP That stuff is really funny. Now, I can't see the trench and I know you can't.

05 12 59 26 CDR That's - that a boy. Yes. Let's get organized. Okay?

05 12 59 30 LMP Yes.

05 12 59 31 CDR And when you get it in there, try to tap it; maybe it will come out - -

05 12 59 33 LMP You got to come - got to come this way.

05 12 59 34 CDR Okay.

05 12 59 36 LMP See, what's happening is my arm is being turned by the cables. There.

05 12 59 39 CDR There.

05 12 59 42 LMP Maybe you could grab the handles closer to the thingamajig there - -

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05 12 59 47 CDR Yes.

05 12 59 48 LMP - - when you lift it up. Okay. We need some more. There you go. Wait a minute.

05 12 59 53 CDR There; that's the game.

05 12 59 54 LMP Wait a minute.

05 12 59 55 CDR That's the game.

05 12 59 57 LMP Yes, lost half of it that way.

05 13 00 03 CDR Well, you still need some more - there; one more scoop ought to do it, though. Ah, that's soft (laughter).

05 13 00 10 LMP Watch yourself; you're getting close to the crater.

05 13 00 14 CDR (Laughter)

05 13 00 15 LMP You get about 10 percent in there - -

05 13 00 17 CDR ... now?

05 13 00 18 LMP Want to do more, or is that good?

05 13 00 19 CDR Okay (laughter).

05 13 00 20 LMP One more and you'll make it.

05 13 00 23 CDR (Laughter)

05 13 00 32 LMP That soil - I'll just have to - There isn't anything holding it together. It takes me back in my childhood when I just - you know, you wanted to fling things in every direction (laughter).

05 13 00 44 CDR Okay, that's it. Bag's full. Now, let me put the lid on.

05 13 00 49 CDR I'm sorry, but I (laughter) dropped this ... for the core tube.

05 13 00 50 LMP Okay. Can I help you with that? Wait, wait, wait, wait.

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05 13 00 51 CDR Yes. Why don't you? I'll hold this and you get the lid.

05 13 00 58 CDR Right here.

05 13 00 59 LMP Okay.

05 13 01 02 CDR Let go. I got it. Okay, you put the lid on.

05 13 01 05 LMP All right. Here's the lid.

05 13 01 08 CDR Boy.

05 13 01 10 LMP Right on the top. Houston, this dirt came from about 8 inches down. Wait a minute - -

05 13 01 22 CC Copied. Eight inches down, and what's the sample bag number on that?

05 13 01 24 LMP This is the deep trench sample in the - Doesn't fit right there - All right - Okay, - Okay, on this? Now, lower it.

05 13 01 43 CDR Isn't that ridiculous?

05 13 01 44 LMP Done this a million times.

05 13 01 47 CDR I'm just jamming on it. It's not sliding.

05 13 01 52 LMP I just made ..., I know. Now, you hold it nice and tight.

05 13 01 55 CDR I'll tell you what's the matter, that thing - you're getting - getting friction. Wait, wait. Hold her tight.

05 13 02 03 LMP Here, I'll get it.

05 13 02 04 CDR Here you go.

05 13 02 07 LMP You got it.

05 13 02 08 CDR No oil. Suppose you're getting some vacuum welding? Huh?

05 13 02 15 LMP No. That's okay.

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[REDACTED]

05 13 02 17 CDR That's it. Put her down tight.

05 13 02 18 LMP A little bit more.

05 13 02 19 CDR Go ahead. That's a boy.

05 13 02 21 LMP Will you snap the top on?

05 13 02 22 CDR Okay.

05 13 02 26 LMP That's a good top in that one. Hold on. Don't let go. Good.

05 13 02 37 CDR Okay. Now, you need a core tube in the bottom of that trench. Is that right, Houston? Okay. The tube's here - -

05 13 02 43 CC That's affirmative. And, Al, when you get a chance, can we get your photo numbers?

05 13 02 48 CDR That's right - 50. And this is core tube number 2.

05 13 02 52 LMP Core tube 2 and I'll need the - There you go. Ought to be a good place, Pete. Relatively fresh stuff here.

05 13 03 01 CDR Yes. You'd better believe it. Very good. Okay.

05 13 03 06 LMP This kind of ..., you could almost drive it without a hammer; but, if you'll hand it to me, I'll get - -

05 13 03 09 CDR Just a second. I want to take a couple more shots of this before we leave.

05 13 03 21 LMP There. Okay.

05 13 03 26 CDR They're all in. I'll get the pictures.

05 13 03 28 LMP All right.

05 13 03 29 CDR It's driving in real easy, Houston.

05 13 03 32 LMP Go on; just drive her all the way. I can't lean down too far now.

05 13 03 37 CC Roger.

[REDACTED]

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05 13 03 38 LMP And we're driving it all the way in pretty easy.

05 13 03 40 CDR That a boy. Wait 1. Stop. That's it.

05 13 03 45 LMP Okay. Just a second; let's put this up. Let me take a picture of it, Pete - make sure we got it documented.

05 13 03 51 CDR Let's do.

05 13 03 52 LMP There's the stereopictures.

05 13 03 55 CDR Okay.

05 13 03 59 LMP All right. This dirt's gotten on my camera and I can't see the settings anymore; I'm going to have to do something about that.

05 13 04 21 LMP Okay. You ready to put the top on this core tube?

05 13 04 23 CDR You'd better believe it.

05 13 04 24 LMP Okay. Here we come. I hope that soil stays in there.

05 13 04 34 CDR See if it did.

05 13 04 35 LMP Probably did because it stayed in your scoop so well.

05 13 04 38 CDR You'd better believe it. It's full.

05 13 04 39 LMP Okay.

05 13 04 40 CDR Come over here with it.

05 13 04 41 LMP All right. There you go. Better.

05 13 04 57 CDR Good sample.

05 13 04 59 LMP Yes. It is. A good sample.

05 13 05 01 CDR There you go.

05 13 05 02 LMP Ah, got the cap on the can.

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[REDACTED]

05 13 05 04 CDR That a boy.

05 13 05 05 LMP Okay. Just a minute. Hunch. Got it.

05 13 05 10 CDR Careful - -

05 13 05 11 LMP Okay?

05 13 05 12 CDR - - put the scoop back on. All right? And I'll stow it.

05 13 05 14 CDR Okay, Houston. What else do you want here? Just a little environmental sample?

05 13 05 21 CC Okay. We show you should have gotten in the trench site sample, the core tube samples from the end - from the bottom, and also the gas analysis sample.

04 13 05 29 LMP Okay. We need some little rock fragments from here, Pete. You'll have to hold up the bag so I can reach it.

05 13 05 36 CDR Okay. Just a second.

05 13 05 37 CC Roger. That's surface rock fragments.

05 13 05 38 CDR Yes. We're going - going to get it; hold the phone.

05 13 05 39 LMP Better find it first. Do you know where the ... went?

05 13 05 47 CDR ... just a little ...

05 13 06 00 LMP I'll move it around and see if you see it.

05 13 06 03 CDR Yes. Yes. Stick your hand straight down. Towards your knee; that a boy; you ought to have it.

05 13 06 09 LMP Got it; I almost got it.

05 13 06 12 CDR Some little rocks in here - -

05 13 06 13 LMP Okay, just little rocks. ... now, push it.

[REDACTED]

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5 13 06 21 CC Roger. Copy. You got some rocks and the gas analysis and would also confirm that you've gotten the environmental sample?

05 13 06 25 LMP Pete, have you got the - -

05 13 06 26 CDR We got the environmental sample, we got the trench and core tube, and I'm trying to find a little rock. Little rock? There - there's a lot - -

05 13 06 43 LMP There's a neat one. There it is right there.

05 13 06 46 CDR Ho-ho, just right for that little can.

05 13 06 50 LMP Give me a few.

05 13 06 52 CDR Thing has shrunk.

05 13 06 55 LMP Here's a couple of nice ones right here, Pete.

05 13 06 58 CDR Where?

05 13 06 59 LMP See them?

05 13 07 00 CDR Al, your PLSS feedwater is back up to nominal and all looks good.

05 13 07 02 LMP Okay. Thank you very much, Houston. See those bright shiny ones there?

05 13 07 05 CDR Yes, yes, yes, yes.

05 13 07 07 LMP Wait. Let me get a shot of them. Just move - just a second, Pete.

05 13 07 09 CDR Okay.

05 13 07 11 LMP Okay. Got a picture of them.

05 13 07 16 LMP Careful. These - there. How about those right - right there? There. Right - there. See them shine?

05 13 07 27 CDR The little ones?

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[REDACTED]

05 13 07 28 LMP No, no. Move over this way. This way. Up - you're near about - right there.

05 13 07 34 CDR No. Hey, that's a neat - Oh, that's glass; look at that.

05 13 07 38 LMP Right next to it.

05 13 07 39 CDR Yes, here. One at a time. Be a good sample for them.

05 13 07 44 LMP And that piece right next to it, there.

05 13 07 45 CDR Okay.

05 13 07 47 LMP Houston, how far are we from the LM?

05 13 07 52 CDR (Laughter)

05 13 07 53 CC Stand by.

05 13 07 54 LMP ... tricky; wish we had -

05 13 07 55 CDR (Laughter)

05 13 07 56 LMP Hey, we need some more, Pete. Give me a bigger rock. There's not enough in there to do any - -

05 13 07 58 CDR (Laughter) Hey, come on, I'm getting tired of picking up those little things.

05 13 08 00 LMP There's nothing in there.

05 13 08 02 CDR I can't - Where is my stupid tool? There it is.

05 13 08 04 LMP Get a big one. There's one right there.

05 13 08 06 CDR Get a big what? Here, this one?

05 13 08 08 LMP Yes.

05 13 08 10 CDR I don't think that will fit.

05 13 08 12 LMP Let's try it.

05 13 08 13 CDR No, that won't - -

[REDACTED]

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05 13 08 14 LMP No - ...

05 13 08 16 CDR There's a good one.

05 13 08 19 CC Pete and Al, we show you 1200 feet from the LM.

05 13 08 20 CDR Okay. Come on, Al, we're wasting time.

05 13 08 22 LMP There you go.

05 13 08 36 CC Pete, as soon as you finish up there, you can head on back toward the east, towards halo crater. No need to go any further west.

05 13 08 41 LMP Got it, Pete?

05 13 08 42 CDR Yes. Wait; let go a minute.

05 13 08 50 CDR I'm with you, Houston.

05 13 08 58 LMP Hey, good show, Pete; good turning.

05 13 09 04 CDR There you go. The front of my lens is clean - relatively speaking. Nothing else is.

05 13 09 13 LMP Okay. Want me to put that up?

05 13 09 15 CDR Yes.

05 13 09 16 LMP Okay. We got it.

05 13 09 18 CDR Okay. Give me one gnomon and my shovel.

05 13 09 20 LMP Here's your shovel.

05 13 09 22 CDR Head for halo crater.

05 13 09 28 CC Okay, Pete. We'll give you a radar vector on this one.

05 13 09 30 CDR That's good.

05 13 09 31 CC If you'll go over - just directly east of bench crater, and you can continue on east until you're just about directly opposite the LM. And then a couple of more steps ought to take you right to halo crater.

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05 13 09 43 CDR Sounds like a pretty good vector. That also says that we're running right into the Sun. Does that agree with you?

05 13 09 53 CC That's affirmative. You will be running right into the Sun; and directly at your 9 o'clock position, you'll see the LM; a couple of more steps and you'll be right there.

05 13 09 59 CDR I've got the LM in sight to my 10 o'clock. You know what I feel like, Al?

05 13 10 09 LMP What?

05 13 10 10 CDR Did you ever see those pictures of giraffes running in slow motion?

05 13 10 14 LMP That's what I feel like.

05 13 10 15 CDR - - That's exactly what I feel like (laughter).

05 13 10 23 CC Say, would you giraffes give us some comment on your boot penetration as you move across there, what you're doing now, and what you had back there at sharp crater?

05 13 10 30 LMP Oh, it's much firmer here. We don't sink in anywheres near as much. Now, I'm crossing some of my own tracks.

05 13 10 36 CDR Yes.

05 31 10 37 LMP The toes sink in a bit, Pete, as you push off. You land flat-footed so your heels don't sink in; but, as you push off with your toes, they sink in down about 3 inches. Your heels are only sunk in - perhaps an eighth of an inch. Also, right as you kick off on your toe - -

05 03 10 54 CC Roger. Thank you, Al.

05 13 10 55 LMP - - Every time he lands he sends a - little particles spraying out ahead of him and beside him and everywhere else, and they go out to distances maybe - maybe 2 feet to 3 feet around him.

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05 13 11 10 CDR Okay. We're back at bench crater. Now, have we gone too close towards the LM?

05 13 11 25 CDR Going on the south side of bench crater, Houston.

05 13 11 28 CC Okay. Now, if you'll just go directly to the east of the center of bench crater and then continue directly east right into the Sun; and then at 9 o'clock, you'll see the LM, and a couple of more steps and you'll be there.

05 13 11 43 CDR Okay.

05 13 11 57 CDR I've got the decided feeling I'm going to sleep tonight.

05 13 12 23 CC Pete, the crater you're looking for, halo crater, is just about the same size as sharp crater and should resemble it.

05 13 12 29 CDR I think I have it in sight, but I'm not sure. There's a couple of them here. I'll tell you what I'm going to do, Houston; I'm going to take an EMU break. How you doing, Al?

05 13 12 42 LMP Okay.

05 13 12 54 CC Pete, the dimension on halo crater is about 20 feet, so that would make it half of what you saw at sharp.

05 13 13 01 CDR Okay. Now, halo. I wonder if I'm standing - You suppose this is it, Al?

05 13 13 07 LMP Well, it doesn't have any halo around it.

05 13 13 11 CDR Yes, I know. But you never can tell from here.

05 13 13 15 LMP You can look at the map when you get here.

05 13 13 18 CDR Tell you one thing I'd go for is a good drink of ice water.

05 13 13 21 LMP Quit thinking that. Let me look in the map, Pete.

05 13 13 28 CDR Okay.

05 13 13 30 LMP I can't imagine them seeing this one from - -

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05 13 13 33 CC Pete and Al, can we have an EMU check?

05 13 13 35 LMP You sure could.

05 13 13 36 CC And one way to locate it, also, is that it should be right on the rim of Surveyor crater, and you ought to see Surveyor off directly to the north-east.

05 13 13 46 CDR Okay. I - I - I know where we are. An EMU check, mine reads about 55 percent O₂, Houston.

05 13 13 55 LMP Mine reads 55 O₂ also, Houston. Just beautiful - -

05 13 14 02 CC Copy. Fifty-five both.

05 13 14 03 CDR Round glass ball they got to have, Al. Quarter of an inch.

05 13 14 12 CDR And the sample bag.

05 13 14 14 LMP Coming. Coming.

05 13 14 17 CDR Look at that.

05 13 14 22 LMP Okay; just a second. First time I've worked up a heart rate, I think.

05 13 14 32 CDR Okay.

05 13 14 33 LMP This is sample bag 11-D.

05 13 14 35 CDR I didn't take a picture. I just wanted to - -

04 13 14 37 CDR Okay. Watch that crater behind you; don't step back.

05 13 14 46 LMP Wait a minute.

05 13 14 49 CDR This is glass beads.

05 13 14 50 LMP I know. I was thinking of this. We got a total now of about 5 pounds of rocks.

05 13 14 54 CDR Okay.

[REDACTED]

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05 13 14 55 LMP I'd hate to - I'd hate to have us get back to the LM and then have to fill it up around here again.

05 13 15 00 CDR Ah, we're going to the Surveyor crater.

05 13 15 03 LMP Okay.

05 13 15 04 CDR ... get to the bottom of that baby.

05 13 15 06 LMP Why don't you take a rest here?

05 13 15 07 CDR Yes.

05 13 15 08 LMP Funny. Do - do your hands get hot holding that shovel?

05 13 15 12 CDR My hands just get hot, period. I guess - I don't know whether it is the shovel or what.

05 13 15 16 LMP You know, as long as it - like now, mine are cool. But the minute I start carrying this tool carrier, they start warming up. Wouldn't think the thing would be that hot.

05 13 15 23 CDR Yes. Yes - I - I'll tell you what - Let's see, we're cross-Sun, right? Look over here at me and smile.

05 13 15 30 LMP Okay. Have a picture. You're right there by a crater.

05 13 15 34 CDR There's the LM. Right in the background. Great. There you go.

05 13 15 47 CDR All right. Let's - let's ease off at a nice - -

05 13 15 49 LMP Okay.

05 13 15 50 CDR - - at a slower pace. Just like you're going now. I think this is halo crater right up here in front of us.

05 13 16 09 LMP Hey, Ed, you might tell Fred Haise he ought to quit working on running and start working on holding things in his hands - -

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05 13 16 17 CDR There he is.

05 13 16 18 LMP My legs don't get a bit tired, but your hands get tired carrying these tools, particularly the handtool carrier.

05 13 16 31 CC Roger, Al. Sure will.

05 13 16 32 LMP Yes. You wouldn't - -

05 13 16 33 CC I'm sure he's listening.

05 13 16 34 LMP Yes, I think that's - that's funny; it - you wouldn't think it that way.

05 13 16 38 CDR Tell Jim Lovell to practice digging (laughter).

05 13 16 43 LMP Boy, look at - look at all the texturing - Look here, Pete; now, we are crossing across something that's got a completely different texture than what we have been on.

05 13 16 50 CDR You're right.

05 13 16 51 LMP Look at all - looky here. We got all sorts of - -

05 13 16 52 CDR This is halo - Let's take some pictures here.

05 13 16 57 LMP This - We've run across a sort of a textural contact. We're suddenly on a - on an area that's quite - not so smooth; it's got dimples and wrinkles in it. You want me to take some pictures or what, Pete?

05 13 17 09 CDR Yes. Why don't you come up here - -

05 13 17 11 LMP Okay.

05 13 17 12 CDR - - and we'll take a couple of good dirt bag samples of this stuff.

05 13 17 14 LMP Okay.

05 13 17 15 CDR I'll get the - -

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05 13 17 18 LMP It's interesting. You know, I think this looks like that material that we talked about the first day in front of the LM. Maybe it runs past the LM down into this area. But it's sure different than where we've been. It - like it's more - the material is more cohesive and forms clumps, instead of being so nice and smooth. ... around behind you.

05 13 17 26 CDR I was waiting for the gnomon to damp out, but - -

05 13 17 53 LMP Okay. Right here. Good shot here, Pete.

05 13 17 56 CDR I wanted to get my foot - footprints in it too, so they could see that.

05 13 18 00 LMP Okay.

05 13 18 03 CDR Uh-oh.

05 13 18 08 LMP You know, I think I'll take some a little further away. Back up a little, and shoot a 15-foot one, if it's okay.

05 13 18 16 CDR Yes. I'm going to dig.

05 13 18 20 LMP All right. I'll be back to collect in just a second; let me get this 15 footer.

05 13 18 25 CDR It's halo crater. It has slightly big - Yes.

05 13 18 31 LMP Hey, I'm shooting about four here. Okay. Quite interesting that this - -

05 13 18 40 CDR Just get some sample bags and we'll - -

05 13 18 42 LMP Okay, Pete.

05 13 18 43 CDR - - scoop this stuff.

05 13 18 44 LMP Okay.

05 13 18 45 CDR Let me - Boy, it sure is fine; it's kind of like over at the other - at sharp crater.

05 13 18 53 LMP Yes. Looks the same, except on the surface it just seems - -

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05 13 18 56 CDR Except it looks almost finer.

05 13 18 58 LMP Yes.

05 13 18 59 CDR Wait a minute and I'll get you another bag - -

05 13 19 00 LMP It's funny though. If you saw this on Earth, you'd think it was a - a real soft dirt that had just been rained on recently.

05 13 19 08 CDR ...

05 13 19 09 LMP Not hard rain, but just a sprinkle, so that the droplets - -

05 13 19 12 CDR There you go.

05 13 19 13 LMP Now, that's a good sample bag full.

05 13 19 15 LMP That's 12-D, Houston, the sample bag number - -

05 13 19 18 CDR Is halo crater a shallow crater, Houston?

05 13 19 20 CC Copy. 12-D.

05 13 19 22 CDR With a couple or three dimple craters in the south side of it?

05 13 19 33 CC Stand by, Pete.

05 13 19 34 LMP We can collect a rock while we wait, Pete.

05 13 19 36 CDR Well, I - Well, look; I think this is halo crater right here - -

05 13 19 39 LMP All right. Let's ease over there.

05 13 19 40 CDR - - and let's go get some rocks from it and everything; we're seeing it right; we - we - we're - We've actually got the soil sample from part of it.

05 13 19 47 LMP Okay.

05 13 20 07 CDR But this isn't 20 feet in diameter. Is it right on the rim of the Surveyor crater, Houston?

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05 13 20 17 CC That's affirmative; and, from your comments on the three dimples, we show that you're there.

05 13 20 20 CDR Okay. What do you want in it?

05 13 20 24 LMP It's a 20-foot-diameter crater?

05 13 20 26 CDR About 20.

05 13 20 28 CC We'd like to get the PAN and a double core tube.

05 13 20 31 LMP I can't believe we're at the right place.

05 13 20 33 CDR I - I'm not sure that we're at the right place, either. Let me look at the top of this hill, here. This is Surveyor crater. Let me look at the chart.

05 13 20 42 LMP There's a nice rock right there.

05 13 20 43 CDR Here's Surveyor.

05 13 20 47 LMP Let me look at the map. Not even hardly a crater worth looking at where we are.

05 13 20 56 LMP Okay. ... crater.

05 13 21 01 CC Okay, Pete. It's your call there; you're the local experts. If you see a better location for that double core tube, go ahead.

05 13 21 08 CDR Yes. We're just trying to find the right - right crater, Houston.

05 13 21 13 LMP Hey, Pete. I think it's that area right over there -

05 13 21 15 CDR Where?

05 13 21 16 LMP That's the - Halo is this first one right here, the little one, and then all those others are next over, according to the chart.

05 13 21 22 CDR Okay.

05 13 21 23 LMP So we can just go over there and - -

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05 13 21 25 CDR Which one's halo? This one right here?

05 13 21 27 LMP This - no, it's right - See where I'm pointing?

05 13 21 29 CDR No.

05 13 21 30 LMP As I see it, it's that one right over there.

05 13 21 32 CDR Okay. Let's go.

05 13 21 34 LMP Okay.

05 13 21 35 CDR And I have the double core tube?

05 13 21 36 LMP All right.

05 13 21 37 CDR And you want what, Houston, a partial PAN?

05 13 21 46 CC That's affirmative.

05 13 21 47 CDR I guess we're trying to get these - -

05 13 21 49 CC We'd like a full PAN at that point, Pete.

05 13 21 53 CC And also, Al, if you could give us some sort of an estimate of how hard it is to get the core tube in. That is, what's the force you have to use; how many pounds and how much force.

05 13 21 59 LMP Sure will.

05 13 22 00 CDR Hey, look at this little neat-o crater right here. It's a good place to sample.

05 13 22 14 LMP Oh, look at all the glass in the bottom of that baby. Got a lot of that, though.

05 13 22 18 CDR Huh?

05 13 22 19 LMP Got a lot of glass.

05 13 22 20 CDR Out there?

05 13 22 21 LMP Yes.

05 13 22 22 CDR I think that's halo right there.

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05 13 22 23 LMP Which one?

05 13 22 24 CDR The one you're looking at. Right over - it's that one - that one right there.

05 13 22 27 LMP Too big.

05 13 22 28 CDR Too big, huh?

05 13 22 29 LMP Let's take this one right here.

05 13 22 32 CDR All right. That's good. ... glass out of the bottom of this baby, don't we?

05 13 22 36 LMP Okay.

05 13 22 44 CC Pete and Al, could we have a readout on the cameras at this point?

05 13 22 45 LMP Sure could. Just a second. Yes. See mine probably, Pete.

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05 13 22 49 CDR You'd better take all these pictures; I'm running out.

05 13 22 51 LMP Well, I'd better change cameras because - -

05 13 22 52 CDR Sixty - 60 for Al.

05 13 22 54 LMP You've got - 110. You still got plenty to go.

05 13 22 57 CDR Hey, I - You know what's happened?

05 13 22 59 LMP No.

05 13 23 00 CDR This thing hasn't been taking every picture.

05 13 23 01 LMP Take a picture and let's see.

05 13 23 02 CDR I - I just caught it. I - I mean, it's been doing it - intermittently.

05 13 23 05 LMP Okay. Now, get out and make the double core tube here.

05 13 23 19 CC Pete, we copy 60 and 110 on the film.

05 13 23 21 CDR That's affirm.

05 13 23 22 LMP Here, look at the chart a minute, Pete, while - -

05 13 23 24 CDR Yes. Okay. Be careful. Stay over here.

05 13 23 57 CC Pete and Al, we'd like you to go ahead and get the PAN's taken on the LMP's camera. You can either have Al do the PAN's or switch cameras. Your choice.

05 13 24 08 CDR Okay. Roger-Roger.

05 13 24 12 LMP Okay, Pete. You'll have to unscrew - pull the pin and unscrew that if you can.

05 13 24 25 CDR Okay.

05 13 24 26 LMP Good luck on unscrewing it. Hey, wait. Hold it just a second.

05 13 24 31 CDR I'll get it.

[REDACTED]

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05 13 24 32 LMP Okay. Hey, good show.

05 13 24 37 CDR Okay.

05 13 24 40 CDR Double core tube. Drive it. Give it a go.

05 13 24 45 LMP I'm going to hand you the hammer. I'm not sure that double core tube screws on as far as it should. Try it again.

05 13 24 59 CC Pete and Al, Houston. Be sure you give us the number of the lower core tube, please.

05 13 25 03 LMP Okay. The lower core tube is number 3, I think. Yes.

05 13 25 07 CDR Three?

05 13 25 08 LMP Three, and the upper one's 1. Okay.

05 13 25 11 CDR Ready to pound it.

05 13 25 12 LMP Where are you going to drive it?

05 13 25 14 CDR Where would you recommend?

05 13 25 15 LMP Well, let's go over to this crater, right here.

05 13 25 17 CDR Okay.

05 13 25 21 LMP Where it's soft around those little - craters.

05 13 25 27 LMP About right here.

05 13 25 29 CDR Yes.

05 13 25 31 LMP Want to take a picture?

05 13 25 33 CDR Yes.

05 13 25 34 LMP I can shove it in a little - I hope this is a good soft place. It seems to be. Oh, I hit something solid there. Well, I shoved it in - I used all my weight, Houston, and shoved it in about 11 inches. Now, I'll just pound on it awhile and see what we can do. It's going in okay. Yes. It's going on down.

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05 13 25 48 CDR Keep augering.

05 13 26 00 LMP No. We've got a good spot. I don't think - really think this is the right place. Some of those things aren't so obvious.

05 13 26 09 CDR Got awful solid, didn't it?

05 13 26 11 LMP Oh, it's going. Let me wiggle it a bit. It's got one core tube completely in, now. Have to hit it harder.

05 13 26 29 LMP Hey, Houston. This hammer - when you hit on the side of it, like you have to do to ... it within this suit, it knocks little chips of metal off the side of the hammer. I don't think that's too good.

05 13 26 48 CC Roger, Al. Is it damaging the hammer or the core tube?

05 13 26 53 LMP I'm afraid some of the fragments will damage the suit. It's not damaging itself. You know, it's - it's just breaking the - Hey, I'm better left-handed than right. There goes another fragment. Do you see it, Pete?

05 13 27 04 CDR Yes, I'm watching.

05 13 27 09 LMP You even hit it with the front end and some of them pop off. They're flying all over the place.

05 13 27 15 CDR Okay. He's up to the bottom of the handgrip portion of the upper tube. He's really driving that baby.

05 13 27 22 LMP Look at that ham - look at that - look at that (laughter). Looks like it's got a coating over the hammer, Pete, and I'm knocking the coating. Instead of being a steel or aluminum hammer, it's - -

05 13 27 32 CDR Yes.

05 13 27 33 LMP - - some sort of coated arrangement. Beating the heck out of it, isn't it?

05 13 27 39 CC That's affirmative, Al. There is a coating on that hammer and that's probably what you're

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knocking off. And also, we want to be sure to get the site there documented.

05 13 27 45 CDR We'll document it for you.

05 13 27 48 LMP Coming up.

05 13 27 49 CDR We almost got it.

05 13 27 50 LMP Ooh! Almost.

05 13 27 52 CDR Hit something solid there, didn't you?

05 13 27 54 LMP No. It's just getting down there, Pete.

05 13 27 56 CDR Hey, that baby is in the ground.

05 13 27 58 LMP We've got a double; now, the question is, can we pull it out?

05 13 28 00 CDR (Laughter)

LMP ... solid ...

05 13 28 01 CDR Let me take - let me get the down-Sun shot. I hope that's a good spot.

05 13 28 06 LMP I do, too.

05 13 28 13 CDR Ought to get some of these rocks nearby here.

05 13 28 19 LMP Come on. Let's see - 250, 11. All right.

05 13 28 30 LMP You give them that low PAN or something, so they can see where this came from. So they - -

05 13 28 33 CDR You - you do it; I don't have that much film.

05 13 28 35 LMP Okay. Why don't I just trade you cameras? That's probably the smart way.

05 13 28 39 CDR All right.

05 13 28 46 LMP Hey, would you lift mine off, when you're through?

05 13 28 49 LMP Sure will.

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05 13 28 50 CDR I can't pull those things right. They tend to vacuum weld a little bit or something, I think.

05 13 28 57 CDR Now, you hold that one -

05 13 28 59 LMP Hey, that's about to come apart.

05 13 29 00 CDR Be darned if it isn't; I'll fix it, hold the handle there. Back - ... come apart.

05 13 29 06 CDR Whoa!

05 13 29 07 LMP It did come apart. It did come apart.

05 13 29 09 LMP Son of a gun.

05 13 29 11 CDR Well, that kind of bombed out. I tell you what, the only thing we can - did it - -

05 13 29 16 LMP It broke!

05 13 29 17 CDR Sure did break.

05 13 29 20 LMP Well - the nut that holds the handle of the camera on broke off; and so, the handle's free, but that's okay; we'll just carry it around.

05 13 29 24 CDR Let me ask you a question. Is mine tight?

05 13 29 40 CC Roger, Al. We got you. We - we understand that the nut broke, but you - The camera is still usable, right?

05 13 29 44 LMP Yes. And your nut's loose too, Pete. Stay - stay there. Let me tighten it up for you. They work loose in one-sixth g; yet, we - we knew that; we should have - watched it more carefully.

05 13 29 50 CDR Finished?

05 13 29 59 LMP Can you help do that yourself?

05 13 30 02 CDR Yes.

05 13 30 03 LMP Because it's hard for me to do.

05 13 30 04 CDR Yes.

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05 13 30 05 LMP Let me go put the hammer up and this camera somewhere and - There goes the bracket, but that's okay. Still got the camera.

05 13 30 25 CDR But you're going to have to help me get this camera off; I can't get it off.

05 13 30 28 LMP Okay. There's no need to get it off now.

05 13 30 33 CDR Okay. I'll leave it on. No, I want to give it to you.

05 13 30 37 LMP And you're going to use this one?

05 13 30 40 CDR Al, you got to take the Surveyor pictures, so why don't I give you the camera?

05 13 30 44 LMP Okay. That's good enough.

05 13 30 47 CDR But it's still got 50 pictures or so. Now, watch it; make sure it takes a picture each time it turns.

05 13 30 52 LMP Okay.

05 13 30 53 CDR And just - Why don't you - The camera - I'll tell you what - Well, here, I'll hold it and you take this one off.

05 13 30 59 LMP Okay. You got that camera. Take this one off. Help me take it off; now, I'll tighten the nut. And I'm going to tip it down a little bit.

05 13 31 10 CDR Wait a minute; I'll hold that down.

05 13 31 11 LMP There you go. Tip it - Push - push your RCU down a little bit more.

05 13 31 16 CDR I'm trying to.

05 13 31 17 LMP A bit more, it's almost off, Pete. Push down some more.

05 13 31 23 CDR I can't.

05 13 31 24 LMP There you go. Okay, now. I can tighten this thing. Yes, I'm tightening so it'll get tight. Okay. I got enough, there; that'll be enough. Drop it right there.

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05 13 31 44 CDR All right. I'll drop that one in here.

05 13 31 45 LMP Well, why don't you - ... - -

05 13 31 46 CDR ... carry it.

05 13 31 48 LMP That's what I'd do; carry it or something.

05 13 31 50 CDR But - but I got too much other stuff.

05 13 31 52 LMP I - Let me carry part of it or something. Okay. Let me go pull out the core tube.

05 13 31 56 CDR No, I tell you what. We can always take the magazine off this and put it on the other one.

05 13 31 59 LMP That's what we can do, I guess.

05 13 32 01 CDR Yes. We just drop it in here.

05 13 32 03 LMP Okay.

05 13 32 04 CDR All right. Let's go get your core tube. I'll go get it.

05 13 32 07 LMP Okay. You go get it. Here I'll - -

05 13 32 08 CDR Get the cap off.

05 13 32 10 LMP Take the cap, right here.

05 13 32 13 CDR Okay. Hey, you sure beat on it.

05 13 32 21 LMP That's what it took to get it in the ground.

05 13 32 24 CDR It's coming up real easy.

05 13 32 26 LMP What?

05 13 32 29 CDR I say it's coming up real easy.

05 13 32 33 LMP Looked for a minute like you were going down real easy (laughter). The core tube hangs in and your feet just sink down. Okay, hold.

05 13 32 46 CDR Hey, we made a tactical error here.

05 13 32 49 LMP In what fashion?

[REDACTED]

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05 13 32 51 CDR I think we dropped an end of the tube we shouldn't have dropped.

03 13 32 54 LMP No.

05 13 32 55 CDR Yes. We got to take them apart. Remember?

05 13 32 59 LMP Okay. Well, what we'll have to do is pick it up, right over there.

05 13 33 03 CDR Where is it?

05 13 33 04 LMP It's right over here.

05 13 33 05 CDR Okay.

05 13 33 11 LMP Hold - hold on. We'll find it.

05 13 33 14 CDR It's right back there; it's someplace buried in the dirt. I see it. Ha, ha. Right here. Wait a minute. I'll get it with the - Here, you hold the core tube.

05 13 33 22 LMP Okay. Just a second. Just a second. Okay. I've got the core tube. I'll start unscrewing it.

05 13 33 31 CDR Where's my sample stir?

05 13 33 33 LMP Right there. You got it, Pete. All right. You got your hose, too. Pull - There you go. Good show.

05 13 33 51 LMP Uh-oh.

05 13 33 52 CDR What?

05 13 33 53 LMP Hey, this ain't going to work, gang.

05 13 33 54 CDR Why?

05 13 33 55 LMP Well, see the - Here, wait a minute. Reach inside the core tube. Wait. Which goes which way - There you go. Beautiful. Put that in there. You got it? You got that one? Okay?

05 13 34 09 CDR Yes.

05 13 34 10 LMP Boy, I drove a nice core tube in there.

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05 13 34 13 CDR Well, it doesn't look any different, though, to the eye - halfway down.

05 13 34 22 CDR Loan me the tweezers a moment. See that cap right there? The cap right there. Okay.

05 13 34 39 CDR Ooh. Can you haul the camera now?

05 13 34 42 LMP Sure. I can just lift - Why don't I just lift this up?

05 13 34 53 CDR Well, there goes the shovel, but we can get that in a minute.

05 13 34 56 LMP Okay. That's good.

05 13 34 59 CDR Wait.

05 13 35 03 LMP Just a little closer?

05 13 35 06 CDR Now, wait a - wait. Hold it right there.

05 13 35 14 LMP Okay.

05 13 35 16 CDR That a boy. That's the way to go.

05 13 35 26 LMP Good show there, Commander.

03 13 35 29 CDR Let me hold on to that thing.

05 13 35 31 LMP Right.

05 13 35 34 CDR Just lift it, okay? You got her?

05 13 35 39 LMP Is this on there tight enough?

05 13 35 40 CDR Yes.

05 13 35 41 LMP Okay. Put the shovel back on here? I'll get it. Okay. Looks good, Pete.

05 13 36 00 CC Pete, we copy that you finished the core tube. Is that affirm?

05 13 36 01 CDR Yes, sir. We got a double core tube and all put together correctly.

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05 13 36 10 CC Very good. Well done. Have you gotten the panorama?

05 13 36 13 CDR No, I'm going to get Al to do that right now. He's using my camera. His camera's had it. With the handle off it and everything; by the time we got done handling it, we got dirt all over the lens. We run out of film; we happen to have another magazine with us, or we could change that one - -

05 13 36 32 LMP - - Don't change that; just take that one off.

05 13 36 34 CDR Or we could do that or - -

05 13 36 35 LMP Of course, we don't want to, but if we have to, I guess we can. Okay. Let me start this PAN.

05 13 36 40 CDR Seventy-four.

05 13 36 42 LMP Seventy-four it is, f:11, 250. Okay?

05 13 36 48 CDR Okay, Houston. What else would you like here?

05 13 36 57 CC Okay, Pete. You're 2 hours and 7 minutes into the EVA. And we show you leaving halo at around 2:15. And now, that's for a 4-hour EVA. We've extended you 30 minutes for a total EVA of 4 hours. We'd like, before you go on, to have a good EMU check and sit down and regroup and figure out a plan of attack on the Surveyor. One thing we would like to make sure is that you remain away from directly below the Surveyor as you move up to it; that is, move up to it on one side or the other, either north or south.

05 13 37 30 CDR Okay. We concurred with that. We were talking about it last night. We're going to approach it from the side.

05 13 37 44 CC Roger.

05 13 37 52 LMP That's it, Pete; PAN's complete. Probably ought to get rocks - one of these rocks here; just throw it in the bag - -

05 13 37 59 CDR Yes. I think we ought to.

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05 13 38 01 LMP How about - You want to get this one?

05 13 38 03 CDR ... for a sample bag.

03 13 38 06 LMP Let's - let's sample a couple of these laying right over here.

05 13 38 08 CDR Good idea. That a boy.

05 13 38 16 LMP Oh, wow, my ears just came back down.

05 13 38 24 CDR Just a second. I shouldn't have done that.

05 13 38 28 LMP Okay. Here, take one quick picture so we can save some film.

05 13 38 33 CDR All right. Here it goes.

05 13 38 34 LMP Where it came from.

05 13 38 35 CDR Okay. Just a second.

05 13 38 51 LMP Those little holders for this - for these sample bags are ridiculous, you know. In this light gravity up here, if you put anything in the holder and move, it flips it right out of it. Come out of there, sample bag. There you go. Funny how this one - Go in there. Go in - That a boy. Give me some of that dirt around there, too, Pete. Drop it right in. This is going in sample bag 13-D, Houston. Looks pretty good, Pete.

05 13 39 24 CC Roger, Al.

05 13 39 25 CDR Al, let's move up on the rim of the Surveyor crater and start getting some rocks, gnomon, - And we'll figure out - There you go.

05 13 40 16 CC Al, could we have some sample bag numbers while you're working along there?

05 13 40 18 LMP Sure could. I thought I - Didn't I call out 13-D, Houston? I guess I didn't call it out loud enough. I think it was 13-D. Then, let me - I'll check the next one and if you - The next time we stop I'll tell you the next one for sure and then you'll know what it is.

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05 13 40 35 CC Roger. Thank you, Al.

05 13 40 39 CDR Al, look at these rocks; they look a little bit different. Let's grab some.

05 13 40 43 LMP Yes, sir.

05 13 40 48 CDR Look at that glass in the bottom of that one. They look like granites, don't they?

05 13 40 58 LMP They do; they look just like granite. Here's a beauty over - Here's a beauty.

05 13 41 03 CDR Where?

05 13 41 04 LMP Right here. That is a nice rock.

05 13 41 06 CDR Huh?

05 13 41 07 LMP Right around here. Let's get this one for sure. Right there.

05 13 41 11 CDR Okay.

05 13 41 12 LMP Won't fit in the bag, but it's sure different. It seems to have some - -

05 13 41 16 CDR Got a big glass splotch on it.

05 13 41 18 LMP Yes. That's a good one. That's a real good rock. Get some pictures - -

05 13 41 21 CDR Wait. Wait. Wait. Wait. Okay. It's in.

05 13 41 29 LMP That's a beauty. That gnomon doesn't really damp as fast as it should, you know, Pete? I think it does great in one g, but one-sixth g, it won't - doesn't seem to damp right. Let me get the cross-Suns too. Oops, got to get over where you are.

05 13 41 48 CDR Okay.

05 13 41 49 LMP We will just put that in; that's a beautiful rock.

05 13 41 57 CDR Okay. You going to scoop it up? You know, you need some tongs that will get bigger samples than we've got.

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05 13 42 10 LMP Watch that.

05 13 42 15 CDR You know, seeing that, I just thought -

05 13 42 17 LMP Hey, that's beautiful. It's got a lot of - Hold it!

05 13 42 21 CDR Don't drop it.

05 13 42 22 LMP Nearly dropped it. Tough to hold it.

05 13 42 25 CDR Okay. Now, I want some of these granites over here - or what looks like granite.

05 13 42 30 LMP Okay. Let's try that.

05 13 42 34 CDR Doesn't that LM look neat, sitting on the other side of that crater?

05 13 42 37 LMP (Laughter) Yes. It does; we ought to get a shot of that.

05 13 42 40 CDR Yes. Get a shot of home.

05 13 42 45 LMP Okay. Let me see, how many pictures have I got now, Pete?

05 13 42 48 CDR 143.

05 13 42 53 LMP 143, okay -

05 13 42 54 CDR You're getting close to the end - We ought to - -

05 13 42 55 LMP Okay. That's 14-D, Houston, is the next sample bag, so the last one was 13-D. Let me take a picture quick here.

05 13 43 05 CDR Ah-uh-ow.

05 13 43 07 CC Roger, Intrepid. We copy that.

03 13 43 15 CDR Al, why don't you step across over here?

05 13 43 17 LMP All right.

05 13 43 18 CDR Step across over there; photograph that rock right there - Wait until I drop the gnomon in - -

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05 13 43 22 LMP Okay.

05 13 43 23 CDR - - and do it in such a manner as to get this crater that it came out of.

05 13 43 26 LMP That's a good idea. Let me see if I can; I'll have to back - Let me get a 15-foot shot.

05 13 43 30 CDR Yes. That's just what I was just thinking.

05 13 43 35 LMP 15-foot.

05 13 43 36 CC Pete, could we have your present position?

05 13 43 37 CDR Roger. We're - If you were looking at the Surveyor crater and west with 12 o'clock, we're at the 9 o'clock position on the Surveyor crater.

05 13 43 52 LMP Okay, Pete.

05 13 43 57 CC Roger. Copy that. Copy you're right on the rim, and we'd like to get a good EMU check and a rest here before you proceed.

05 13 44 02 LMP That's a good idea, Houston - -

05 13 44 03 CDR Okay, Houston. That's a good idea. What - what we're going to do is I'm getting this - -

05 13 44 07 LMP Wait - wait 1 - wait, Pete; I've got an idea.

05 13 44 09 CDR What?

05 13 44 10 LMP This rock - might be good for 13. Let me reach back here and grab this strap.

05 13 44 17 CDR Okay, now?

05 13 44 18 LMP Go. Okay. Let me roll a little bit over.

05 13 44 26 CDR That a boy. Back up. Now, if they had a strap like that, they could just hold the other guy while he leaned over and picked up a rock.

05 13 44 32 LMP Hey, that's a - -

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05 13 44 33 CDR It works pretty good. It sure saves time. Look at the sheer face on that rock, something whistled by it or something.

05 13 44 41 LMP It's fractured a bit; it's got some - pretty interesting fracture marks on it. It also has got some - what looks like abrasion marks on it; maybe that's just hard-packed dirt. Boy, there's a lot of flashing crystals in that rock - crystal faces. It's a good rock.

05 13 44 59 CDR Listen, I'll tell you what I recommend we do while we're taking - -

05 13 45 01 LMP Okay. Let me get a - -

05 13 45 02 CDR - - an EMU break.

05 13 45 03 LMP Okay. Let me take the - the picture of that where the rock was. Right there.

05 13 45 09 CDR Okay. What I recommend we do is change film packs.

05 13 45 13 LMP All right. That's a good idea. We'll do that next.

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05 13 45 22 CDR Okay. Why don't I - Okay, I'll get this camera out -

05 13 45 25 LMP Stay right there just a second.

05 13 45 27 CDR Shoot a - shoot a good - shoot a PAN and get the Surveyor - use up that film.

05 13 45 34 LMP Hey, that's good. I didn't - That ought to be good. Ah, it's a bad place to shoot, but I'll try it, though.

05 13 45 59 CDR Al, what I think we can do is walk down here about 300 feet and walk straight down that slope to it.

05 13 46 04 LMP I do, too. It doesn't look so bad from here, does it, Pete?

05 13 46 06 CDR No.

05 13 46 08 LMP Okay. Want to change the cameras, now?

05 13 46 16 CC Pete, will that direction of your travel be to the northeast direction?

05 13 46 19 CDR No, what we do is go directly east and then walk directly short of north, you know, curving right around and down to it. It doesn't look bad - it's - I'll tell you, getting - -

05 13 46 33 CC Roger. Copy. You're going directly east and then you'll be curving around going up north towards the Surveyor.

05 13 46 36 CDR Yes. You get a - kind of an optical illusion, depending on where you're standing.

05 13 46 42 LMP Trade me one. Trade me magazines.

05 13 46 44 CDR Okay. Wait a minute.

05 13 46 47 LMP Careful when you undo it.

05 13 46 49 CDR I'll tell you what. You'd better put that one in.

05 13 46 52 LMP No, we want the dark.

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05 13 46 53 CDR Okay.

05 13 46 54 LMP I wanted to put it back on here, Pete.

05 13 46 57 CDR All right. I'll try.

05 13 46 58 LMP I don't think it makes any difference. We just put it in here. You're right.

05 13 47 02 CDR All right.

05 13 47 03 LMP Just put it right in there with the rocks.

05 13 47 05 CDR Yes. Yes. Thank you.

05 13 47 10 LMP Let me - let me hold the camera, see - Wait a minute. Okay. Go. Boy, these cameras got dirty, didn't they? That won't be any trouble.

05 13 47 24 CC Pete, a reminder on that film pack, cycle one frame before you start.

05 13 47 29 LMP Roger. We cycled one before we took it off, too. I think we're in good shape, Houston.

05 13 47 37 CDR Good thing we've practiced this a few times. I tell you what. Why don't you let me hold it for you? Okay?

05 13 47 44 LMP Just a second. Here, I'll show you what you need to do. Pull this out of the way. The rock is what's driving me buggy. Wait, wait. Hold the camera. Hold it there.

05 13 47 58 CDR Okay.

05 13 47 59 LMP That's - that's it.

05 13 48 10 LMP Hold the camera.

05 13 48 11 CDR Okay. Got it?

05 13 48 19 LMP ...

05 13 48 27 CDR That's it. You got it.

05 13 48 28 LMP We got it.

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05 13 48 29 CDR Good show. Hot dog.

05 13 48 32 LMP Wait a minute; wait a minute. Okay, keep the trigger pulled. Trigger pulled. Let her go. Now try it again. Try it again. That's it, babe. No strain. Okay, let me put it on.

05 13 48 45 CDR That lens is good and clean, too.

05 13 48 48 LMP Okay. Hope we didn't get anything on the reseau lens inside. I bet we got some dust on it. Where am I? Okay.

05 13 48 56 CDR Huh?

05 13 48 58 LMP Great. Got her on there, Pete.

05 13 48 59 CDR There you go. Okay. Let's wander over here.

05 13 49 09 LMP Yes. I think a strap on you or something like that so - each of you, so if you want to lean over and pick up a rock, the other guy just holds the strap; you lean over and pick up the rock and go. Some bigger sample bags. Hey, Pete, why don't I - I'll bring it back.

05 13 49 26 CDR What do you want?

05 13 49 28 LMP I was going to say as long as you're - -

05 13 49 29 CC Good thought, Al.

05 13 49 34 CDR We're moving on, Houston.

05 13 49 46 LMP A few minutes ago, Pete wanted to pick up a rock, so I held onto a - that strap of the Surveyor bag and he leaned right over and picked it up and I helped him get back up. It's not that you're heavy or anything, it's the fact that you don't - you have such poor balance.

05 13 50 00 CDR Look at that glass - ...

05 13 50 06 CC Pete and Al, Houston. Before you go much further, could you stop and have a little break there before you proceed on down the slope?

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05 13 50 13 LMP Sure can.

05 13 50 14 CDR Yes. We're just going to move to the area, where we could stop and case the joint. Al, grab a shot of that beaded glass there and we'll bag it.

05 13 50 25 LMP Okay.

05 13 50 26 CDR That's better than the Hope diamond.

05 13 50 37 LMP Set her up.

05 13 50 40 CDR Better take that.

05 13 50 44 LMP There you are in here.

05 13 50 45 CDR Okay.

05 13 50 48 LMP Okay. I got it, Pete.

05 13 50 50 CDR Got her?

05 13 50 51 LMP Yes. Got a lot of those; we've - got too many of them.

05 13 50 56 CDR Oh, you did get a lot of these?

05 13 50 57 LMP Yes. Why don't you get that? Pick it up - -

05 13 51 00 CDR Get the rock with it. Look.

05 13 51 01 LMP Okay. Get some rocks with it. That's a good id - Hey, here's some rocks right here. There's good rocks. You know, we keep collecting a lot of the same type of rocks, because there just doesn't seem to be any other kinds around. I haven't seen any microbreccia the whole day; I've looked around for it. All I have seen is some basalt; I've seen nothing that looked vesicular at all, except on the surface.

05 13 51 25 CDR I haven't either.

05 13 51 29 LMP You know, that's real strange; it's - it's not at all like Neil's rocks. Close as it comes is that gabbro - -

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05 13 51 37 CC Roger. We copy those comments. Pete and Al, we show you're 2 plus 23 into the EVA; and, based on a 4-hour EVA, you'd be leaving the Surveyor at 2 plus 50. But don't rush; we'd like to make sure you get a good rest before you go into it.

05 13 51 49 CDR Okay.

05 13 51 50 LMP Why don't you give me a rock or two, Pete, and I'll stick in there. Got any spares? There you go. Good rock. Good rock.

05 13 52 05 CDR Get a load of this crazy juggling act.

05 13 52 08 LMP Treasure. Okay. That will hit. We just made a sample of - glass bead and some local rock on the south edge of the Surveyor crater, Houston. And they're going into bag 14-D.

05 13 52 28 CDR I'm remembering back to all of our training.

05 13 52 31 CC 14-D.

05 13 52 32 CDR I'm trying to remember who the guy was that kept saying, "Whatever you do, don't get dust on the gnomon."

05 13 52 33 CDR/LMP (Laughter)

05 13 52 42 CDR Okay. We're going to jog on here for a little bit, Houston, and get a little bit closer to the Surveyor and look her over.

05 13 52 53 LMP Yes. Hey, that's coming in from the south; looks like a good way, Pete.

05 13 52 57 CDR I'll tell you what I'm going to do, Al. I'm just going to lope right around here.

05 13 53 00 LMP That's what I mean. If you stay at this level, you'll end up at Surveyor.

05 13 53 03 CDR You're right.

05 13 53 05 LMP Follow the contour lines.

05 13 53 06 CDR No problem at all, Houston. ... the scoop and you couldn't see that before. It's kind of - -

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05 13 53 20 CC Pete and Al, could you give us a comment on how far you're sinking in?

05 13 53 22 CDR Not sinking in very far at all; this is fairly firm stuff. And I'm down in the crater about the same distance down that Surveyor is. I'm just going around it radially. Wouldn't you say so, Al?

05 13 53 39 LMP Yes, I would say that - I think Houston is just concerned about us getting down in this crater. We been thinking about it, too, Houston.

05 13 53 47 CDR Okay. Don't worry about it, Houston, because it's - really, it's no strain; I'm 200 feet away from it - -

05 13 54 00 LMP That's right.

05 13 54 03 CDR - - It isn't exactly like we thought it was going to be last night, when we were talking about it.

05 13 54 05 CC Roger. Sounds good.

05 13 54 06 LMP Yes, it is. I don't think there'll be any sweat about it.

05 13 54 07 CDR Al, I'll tell you what let's do. Let's go right over here, and we'll park all our gear, take ourselves a little rest, go over your photo plan, and then we'll have at it.

05 13 54 18 LMP Okay. Let's go right over here.

05 13 54 20 CDR I'll tell you what, why don't you get a photograph of it right now?

05 13 54 23 LMP That's a good place. Okay. Will do. I can do it right here.

05 13 54 27 CDR I'm trying to see which way it landed.

05 13 54 35 CC Okay, Pete and Al, when you are looking at it there, would you also try to determine whether there is any effect from the dust during the descent? That is, could you determine whether

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there is more dust on either the west or the east side of any of the bays, and the north or the south side of the camera?

05 13 54 55 CDR Okay. We sure will. I actually flew around it; however, I probably passed closer to it than I am parked to it right now. No, that's not really true. I'll tell you, the way that dust was going, it probably went right over top of it.

05 13 55 13 LMP Yes. That's right. Any dust you hit on the edge would never go down in this crater.

05 13 55 17 CDR Yes. What happened to your volume, Al?

05 13 55 20 LMP I don't know. How does - Sounds good to me.

05 13 55 22 CDR You're just a little bit down in the mud.

05 13 55 24 LMP Okay. I'm not talking loud enough.

05 13 55 27 CC We read you both loud and clear.

05 13 55 28 CDR Okay. No problem.

05 13 55 29 LMP I'm going to mosey up here just a little, Pete, without any tools, which makes it pretty easy.

05 13 55 33 CDR Look, I'll tell you what. Let's leave the whole -
Tell you what, let's take the tool carrier with us - -

05 13 55 38 LMP Yes.

05 13 55 39 CDR - - I think we can go right up the other rim and around to - -

05 13 55 40 LMP Sure.

05 13 55 41 CDR - - and - -

05 13 55 42 LMP - - Right on out - -

05 13 55 43 CDR - - that big blocky baby there and - -

05 13 55 44 LMP - - Hey, maybe we can get that bedrock - -

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05 13 55 45 CDR - - ... right over there at that - that - -

05 13 55 47 LMP Huh?

05 13 55 48 CDR - - neat crater. Where all that rock is just - -

05 13 55 49 LMP - - ...

05 13 55 50 CDR - - back of the LM.

05 13 55 53 LMP ... - -

05 13 55 54 CDR You know, I could have landed the LM in the bottom of that crater. It would have scared me to death, but -

05 13 56 13 LMP Okay. Okay, Pete. Why don't - Would you carry the handtool carrier down there?

05 13 56 17 CDR Whoop.

05 13 56 18 LMP And let me take some pictures up here around it?

05 13 56 20 CDR Okay.

05 13 56 21 LMP Now, look. You can see which way it came in. See the way these gearpads dug in over there - -

05 13 56 25 CDR Yes.

05 13 56 26 LMP - - dug up dirt? They're still setting there.

05 13 56 28 CDR Yes.

05 13 56 29 LMP This is going to make a good shot. We're not supposed to take pictures with that MAG; we'll have to do it, though.

05 13 56 43 LMP Beautiful. Beautiful sight. You know, this one's brown and I don't remember ours being brown there at the Cape. Kind of a light tan or maybe that - maybe that's the way it's changed color. What color was this one, Houston, white? When - when it started out?

05 13 57 02 CC Stand by on that.

05 13 57 03 CDR Yes. It looks a light tan now.

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05 13 57 10 LMP Hey, this crater isn't as steep as we thought, Pete.

05 13 57 13 CDR No. I'd better be careful; I'm going to get dust on her. Yes.

05 13 57 19 LMP I'll stop here, and this'll be my last picture.

05 13 57 32 CC Al, the equipment bays were white on the side, and the scoop itself was a light blue.

05 13 57 37 LMP Well, it's kind of a - Well, we'll get down there and get closer inspection. What was the general color of all the structure? For example, all the struts and the like? Tell you what, it looks like - -

05 13 57 52 CC That's all white. The equipment bays and the primary structure was all painted with a white paint.

05 13 57 57 LMP Really turned tan or something; we'll have to look at it more closely.

05 13 57 59 CDR Yes. That's what happened. It just changed color, huh?

05 13 58 02 LMP It sure has. Something has cooked that paint brown. Can't imagine what. You know, it's funny; on the slopes here, it's just a little bit softer. But there's no tendency to slip down or anything like that.

05 13 58 17 CDR I know.

05 13 58 18 LMP I don't think it's any deeper. A little softer maybe, maybe a little deeper. Why don't I move this down here just a little bit closer, Pete?

05 13 58 25 CDR Okay.

05 13 58 26 LMP Then we'll take the rest down here where we can see it better.

05 13 58 28 CDR Okay. Let's just make sure we don't get any dirt down there on it.

05 13 58 30 LMP Okay. We'll walk real slow.

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05 13 58 34 CDR Hey, you can see - Look at there where it dug those scoops. You can still see the - -

05 13 58 38 LMP Boy, that's going to make some beautiful pictures on the way that's weathered since - -

05 13 58 42 CDR Doesn't look like the pictures we saw of this a long time ago.

05 13 58 48 LMP That's going to be good.

05 13 58 49 CDR Oh, that is interesting! What in the hell?

05 13 58 50 LMP Look at how it's kind of made them into - Once again, it looks like something has rained on it. They've taken on a little - -

05 13 58 56 CDR Wonder if that was from us?

05 13 58 58 LMP Oh, no. I don't think so. As you notice, there's a general trend of lines along here from the north - that would be the northeast or the southwest - See those little lines running along through the crater here?

05 13 59 13 CDR Yes.

05 13 59 14 LMP I'll take a picture of that. Boy, this thing is dusty. ... 8. Just do this.

05 13 59 31 CDR Yes, this has those lineal patterns here, Houston. Right down inside the crater; and they're not - they're not laying at all in the same direction - I mean, it's not from us - not from the LM.

05 13 59 42 LMP No.

05 13 59 48 CC Roger.

05 13 59 49 CDR Hey, Al, did you get a picture right across there?

05 13 59 51 LMP Yes, I did, Pete.

05 13 59 52 CDR Why don't - why don't you go ahead and put this together?

05 13 59 55 LMP Okay. - your tongs while you're there. Just a second. I'll give them back to you.

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05 14 00 08 LMP Good place to rest.

05 14 00 22 LMP I may not - -

05 14 00 23 CDR Is that the way that thing goes?

05 14 00 25 LMP Yes. I'll check.

05 14 00 30 CDR Let me hold one end of it.

05 14 00 31 LMP There you go. Push it; there you go. I think that's it.

05 14 00 48 LMP Pete, could you hold - hold that a minute?

05 14 00 50 CDR Wait just a second.

05 14 00 51 LMP Okay. What are you trying to get?

05 14 00 53 CDR - I dropped something down in there. Okay, there. Now, I can hold it. What do you want me to hold?

05 14 01 00 LMP Hold that camera a second. Got it?

05 14 01 04 CDR Why don't we just throw that camera away?

05 14 01 06 LMP Well, I was thinking of that earlier and decided that, since this one broke, we might have to put that one on.

05 14 01 11 CDR ... - -

05 14 01 12 LMP The reliability ... not to make it.

05 14 01 42 LMP Makes me kind of mad.

05 14 01 44 CDR Huh?

05 14 01 45 LMP Look down there just once more.

05 14 01 55 LMP There you go.

05 14 02 09 CDR Oh, boy.

05 14 02 18 LMP ...

05 14 02 20 CDR Yes. I'm holding it with this post.

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05 14 02 22 LMP Okay.

05 14 02 23 CDR Wait a minute. What's in your bag, here?

05 14 02 36 LMP There's a film magazine.

05 14 03 20 LMP Let me borrow your little thing, here, while we rest.

05 14 03 52 CDR Move that handle and throw it away.

05 14 03 55 LMP Okay. That's a good idea.

05 14 03 57 CDR ... out of there we don't need.

05 14 04 15 LMP Turn this in.

05 14 04 31 CDR Bad. Had it.

05 14 04 34 LMP Huh? I'll get it.

05 14 04 44 CDR I'll tell you what, why don't you mosey down there and start taking some photographs?

05 14 04 48 LMP That's a good idea. Got you cuff checklist there?

05 14 04 51 CDR There.

05 14 04 52 LMP Okay.

05 14 04 54 CDR The first thing is photo bay A, 11, 15 feet, one picture.

05 14 05 01 LMP 11, 15; let me get a check. 11, 15. Boy, that's turned just kind of a light tan, hasn't it, Pete?

05 14 05 09 CDR It sure has.

05 14 05 10 LMP And some of the things are even a dark brown.

05 14 05 12 CDR Now, you're closer than 15; don't go any closer.

05 14 05 14 LMP Yes. Maybe I'd better back up a little.

05 14 05 15 CDR That a boy.

05 14 05 16 LMP How's that?

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05 14 05 17 CDR That a boy - -

05 14 05 19 LMP Photo bay A - 11, 15, one picture.

05 14 05 22 CC Hey, Pete, do you think there's a chance you're at the wrong Surveyor?

05 14 05 24 CDR No, sir.

05 14 05 26 LMP Boy, it sure dug in the ground, didn't it? Oh, look at those pad marks. They're still there. Still the waffle imprints on it. Okay. What's next?

05 14 05 34 CDR Photo TV sector, f:8, 15, three pictures.

05 14 05 39 LMP Okay. Let me move down.

05 14 05 41 CDR Hey, this cuff checklist sure helps do the job.

05 14 05 45 LMP It sure does.

05 14 05 48 CDR Cadet Gibson checklist. Okay, Al. Look at, that dirt's still on the footpad. It's going to make a great - -

05 14 05 54 LMP - - and compliments to the CAP COMM.

05 14 05 57 CDR Hey, we got a nice brown Surveyor here, Houston. Even the tanks which were - -

05 14 06 03 LMP Yes. Raise the visor and it's not so brown, but it's tan.

05 14 06 07 CDR The glass is still on the top.

05 14 06 09 LMP Not a bit of it is fractured.

05 14 06 10 CDR Yes.

05 14 06 11 LMP Amazing.

05 14 06 12 CDR Okay. Shovel is gray. Take the Surveyor scene here.

05 14 06 18 LMP I don't want to kick any of this dirt up because I'd like to get a picture of the compacting of the dirt there.

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05 14 06 22 CDR Yes.

05 14 06 23 LMP It's going to be a tough shot.

05 14 06 25 CDR That's photo TV sector, f:8, 15, and three. Now, I have photoscoop imprints, f:8, 5, two in stereo.

05 14 06 35 LMP Okay. Wait. I'm not, I'm not finished yet.

05 14 06 43 LMP Boy, that color chart has sure changed colors these days.

05 14 06 47 CDR Okay.

05 14 06 48 LMP Let me get a quick shot here. About 15 feet and I'll shoot.

05 14 06 53 CDR Okay. Now, I want the footpad photoscoop imprints f:8, 5 feet, two in stereo.

05 14 07 02 LMP Okay. Those scoop imprints look different than I imagined.

05 14 07 06 CDR Okay.

05 14 07 07 LMP Let me try them. And a little closer.

05 14 07 11 CDR You have to really bend over.

05 14 07 13 LMP You do.

05 14 07 14 CDR Back up. Say, where you're shooting, Al?

05 14 07 19 LMP Shooting right there where the scoops made the scoops.

05 14 07 20 CDR Oh, I'm sorry. Yes. The next one is photo the footpads: two prints, f:8, 5, two in stereo.

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05 14 07 30 LMP Wait just a second; I'll get it. I'm going to - I know what I'm going to do.

05 14 07 37 CDR Okay.

05 14 07 38 LMP Okay. I'll get the footpads now. And I'll also get the dirt that's on them. That looks good. Okay. What's next, Pete?

05 14 07 51 CDR Disturbed surface by the footpad-2 area. Okay. Then take photo. FP-2 area, f:8, 5, in stereo.

05 14 08 01 LMP Okay. Will do. Did it - yes, that disturbed it all right. Well, we'll be able to get the rocks that the Surveyor's on - No strain. Get a bunch. There's one. Okay. Next one, Pete.

05 14 08 24 CDR Photo vernier engine bay A, f:11, 5 feet, one picture.

05 14 08 31 LMP Okay. A little bit to the east of - - *** pretty good. The engine is still green.

05 14 08 34 CDR Yes.

05 14 08 35 LMP In fact, that green seems to have had less change than most of the rest. Okay, Pete. That's complete.

05 14 08 47 CDR Photo large box A, f:8, 5 feet, one picture.

05 14 08 53 LMP Okay. Say that again now. I was checking something else real quick.

05 14 09 00 CDR Okay. The big box.

05 14 09 02 LMP Okay.

05 14 09 03 CDR At 5 feet.

05 19 09 04 LMP Five feet.

05 14 09 05 CDR f:8.

05 14 09 07 LMP Okay. Will do.

05 14 09 11 CDR Okay. Now be careful about the glass.

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05 14 09 15 LMP Okay.

05 14 09 17 CDR And they want you to smoke that over carefully and photo wipe and then photo the - -

05 14 09 24 LMP Now be careful. Let me look and see what it looks like. Houston, not a bit of this glass is cracked. One little piece down here looks like it no longer reflects, but other than that, it's in perfect condition. A little warped - segments warped, but other than that, it looks pretty much the same. The thing that's the most amazing to me is how it's turned so brown. I want to wipe it a little bit, Pete.

05 14 09 51 CDR Wipe it with my - -

05 14 09 52 CC Roger. We copy that, Al.

05 19 09 53 LMP I'm going to wipe it, but not with my glove. I'm going to wipe it with this little cloth that protects my wrist ring. It doesn't have any structural thing - anything structurally associated with it.

05 14 10 04 CDR It wipes off just like you'd expect us to wipe off glass.

05 14 10 09 LMP *** wipe a couple of spots, so it might be - It's going to be tough to show this, Pete. It's in the shadow. Give it a go, though. I don't think the pictures are going to show you much, Houston. Because it's - Well, we'll give it a go, but - -

05 14 10 23 CDR They're better than no pictures at all.

05 14 10 24 LMP That's right. That's exactly right. Okay. Got it there, Pete. Ready for the next one.

05 14 10 32 CDR Okay. Photo small box f:8, 5, one.

05 14 10 36 LMP Okay. Now, that's pretty much in the shadow. I'm going to open it up a little bit.

05 14 10 40 CDR That's my shadow.

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05 14 10 41 LMP No, no, no. It's in the shadow of the landing radar or the - instrument box.

05 14 10 45 CDR I think you ought to photo that scoop there, the way it dug in.

05 14 10 48 LMP I did.

05 14 10 50 CDR There's no way that thing can slide down the hill on us the way it's dug in.

05 14 10 57 LMP Okay, now let me get that footpad. That's a beautiful shot there. We're going to do footpad 3, I guess it is, or is that 1?

05 14 11 03 CDR That's 3.

05 14 11 04 LMP Okay. And that's going to be in f:8, probably. It's pretty low; let me try 5.6.

05 14 11 12 CDR That aft honeycomb shock absorber struck the dirt and looks like it took some of the shock. Other than that, the front one didn't appear to do that.
...

05 14 11 24 LMP Sure isn't going to slide down the hill though, that's for sure. Okay, Pete. What's next? Back up 15 feet and take it.

05 14 11 30 CDR Photo bay B - -

05 14 11 32 LMP Okay. Let me get over here.

05 14 11 33 CDR f:11, 15, 1 - -

05 14 11 35 LMP It's going to be a tough shot, because it's in the Sun, but I'll get - let it go. Get over here; that might help it.

05 14 11 51 LMP Back up a little bit more. How's that for 15 feet, Pete?

05 14 12 02 CDR You're more than 15.

05 14 12 03 LMP Okay?

05 14 12 06 CDR Now, you're good.

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05 14 12 07 LMP Okay.

05 14 12 12 CDR *** too high.

05 14 12 13 LMP I know it. I'm trying to shoot the top ... again. Give them a few extras. Okay. Go ahead.

05 14 12 20 CDR Okay. Photo solar array; got photo, footpad 3. Those solar arrays are not blue anymore; they're black.

05 14 12 31 LMP Hey, how do you do that? Let me try it from here. Oops - what's the solar array setting?

05 14 12 39 CDR 5.6, 15 feet, one photo.

05 14 12 42 LMP Right on track. Okay, shot.

05 14 12 50 CDR Okay, move around to the front.

05 14 12 56 LMP Next one?

05 14 12 59 CDR Photo, footpad 3, f:11, 5 feet, one photo.

05 14 13 04 LMP All right, got it in sight. It dug in real well, too. It's probably - it's right, in fact, it's right - dug in right to the top of the - -

05 14 13 13 CDR And another thing we're going to photo is the scoop trenches, f:8, 5 feet, at 2.

05 14 13 21 LMP Okay.

05 14 13 23 CDR There's the Canopus seeker.

05 14 13 25 LMP God! There's some - Hey, let me get the top of this little instrument box, because the glass is fractured there.

05 14 13 30 CDR Okay.

05 14 13 31 LMP They're interested in that, if I can get it. See up the hill here. Oh, look! There's where it hit. See?

05 04 13 41 CDR Is that your warning tone or something else?

05 14 13 43 LMP No. Nothing I know of.

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05 14 13 45 CDR That's that noise again that we had yesterday, remember?

05 14 13 50 LMP Okay. Now I photograph the trenches, right?

05 14 13 55 CDR Yes.

05 14 13 56 LMP Okay.

05 14 13 57 CDR Hey, this is - this is so much easier working around than in one g in our practice; it's unbelievable.

05 14 14 06 LMP Pete, can you move? You're shadowing the situation.

04 14 14 07 CDR Yes, sir.

05 14 14 10 LMP Trenches at 5 feet?

05 14 14 12 CC Roger, Pete. Good way to have it.

05 14 14 14 LMP Five feet or 15 feet?

05 14 14 16 CDR What are you photoing, Al?

05 14 14 17 LMP The trenches.

05 14 14 19 CDR Photo the scoop trenches at 5 feet, f:8, in stereo. Watch it - watch it now; you're going to get dust on us.

05 14 14 28 LMP I'm watching real close.

05 14 14 31 CDR Now, you're farther than 5 feet.

05 14 14 32 LMP ... You're right.

05 14 14 35 CDR That a boy. That's it.

05 14 14 40 LMP Camera's moving all the time, so I guess we're getting it.

05 14 14 47 CDR Okay. Photo the TV mirror.

05 14 14 49 LMP Okay.

05 14 14 51 CDR Now, the TV mirror is - -

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05 14 14 53 LMP f:8, 5 ...

05 14 14 57 CDR The TV mirror is brown.

05 14 14 59 LMP Yes.

05 14 15 01 CDR It's no longer a mirror.

05 14 15 03 LMP No, it's brown because it's looking at brown, isn't it?

05 14 15 05 CDR No, it looks like - -

05 14 15 06 LMP Maybe it's got some coating on it. Yes. It does.

05 14 15 09 CDR Why don't you stay right there, and I'll come in and wipe it?

05 14 15 13 LMP Okay. Come on in and wipe it. Look it over close.

05 14 15 16 CDR See the mechanical components down inside it.

05 14 15 19 LMP Okay.

05 14 15 27 CDR It's just got a fine dust on it.

05 14 15 28 LMP Fine dust on it. I'll be darned! Yes. Get a shot of that; that will be a good - Let me see if I'm set right. No, I'm not set right! Did you tell me 5.6?

05 14 15 40 CDR No. Photo TV mirror: f:8, 5 feet - -

05 14 15 47 LMP Oh, no! Okay, I goofed it. I'll take it again. Hey, get over here, Pete. Get one more shot.

05 14 15 54 CDR Okay.

05 14 15 57 LMP You don't get a chance like this every day, now. Shoot up the extras; we've got lots of film.

05 14 16 03 CDR There you go. Okay? Why didn't you get yourself in the photo, too?

05 14 16 12 LMP Okay. Just a second. Back up just a little, Pete. Try for 15 feet. Okay. That ought to be good. How's that look to you?

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05 14 16 37 CDR Good. Come in just a foot.

05 14 16 41 LMP You got a calibrated eye? Oh, that camera is not right on the money; it's out of focus.

05 14 16 52 CDR Okay. Okay, Houston. I - I'm jiggling it. The Surveyor is firmly planted here. That's no problem. Okay, Al. We're ready to start getting the TV camera.

05 14 17 01 LMP Okay.

05 14 17 07 CDR Now, do you want to do something for me first?

05 14 17 09 LMP Yes, sir. Okay. I sure will.

05 14 17 28 CDR I'll be darned. All soft dirt.

05 14 17 39 LMP Give me a big smile.

05 14 17 40 CDR Okay.

05 14 17 41 LMP Okay.

05 14 17 43 CDR Okay. Get him back on the front. I'll tell you what I'm going to do. Okay. Let's go - Wait a minute. ... can you get the tool off my back?

05 14 18 07 LMP Yes, just a second.

05 14 18 13 CDR All right, we're going to have to start moving out.

05 14 18 16 LMP I know it. Okay. Retrieve cutter and can. Okay. Here we go. There's the cutter. Hey, this is easier in one-sixth g. Here comes your cutter, babes. Okay. You still don't have a cutter. Now, let me get the can.

05 14 18 43 LMP Okay. One cutter. Okay. Looking good. Houston, can you hear us okay?

05 14 18 58 LMP Suppose they can't hear us anymore?

05 14 18 59 CC Al, say again.

05 14 19 01 LMP Okay. ... under a white. We just wondered - -

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05 14 19 04 CC Negative, Al. We read you loud and clear.

05 14 19 05 LMP Okay. I thought so, but that cable's arranged a little bit differently from the one we trained on.

05 14 19 11 CDR Yes. It looks it.

05 14 19 15 LMP ... ready to capture that cable.

05 14 19 24 CDR Yes, ready.

05 14 19 25 LMP Okay. Now, this cable here - It's not a Y-cable at all, is it?

05 14 19 35 CDR No. Well, it is a Y-cable but it's of a different manner. Hey, here's something else they didn't tell us either. Look at that.

05 14 19 48 LMP A few extra ones.

05 14 19 49 CDR Yes.

05 14 19 50 LMP I'll tell you what. You're just going to have to get that - reach in under enough to cut it on the other side.

05 14 19 55 CDR Just wait a second. Let me get in there.

05 14 19 57 LMP Okay.

05 14 19 59 CDR Drop that in the can. That's the only piece they're going to get that way. Okay. ... Watch it.

05 14 20 07 CDR Yes. I've got to cut the cable back here, though. Okay.

05 14 20 11 LMP Why don't you - Why don't you give that a cut right there, Pete? Give them a couple of pieces. There you go.

05 14 20 18 CDR All right, back off.

05 14 20 20 LMP Okay, you've got to - Hey, you've got to cut this cable, too, Pete.

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05 14 20 23 CDR No, it goes around the camera.

05 14 20 25 LMP All right. Oh, no, it doesn't either. Under those tubes, isn't it?

05 14 20 29 CDR Yes.

05 14 20 31 LMP And here's a few extras. And it's wired entirely different - -

05 14 20 35 CDR Wait a minute. You've got to cut the other side of that little hole.

05 14 20 36 LMP Yes, I know.

05 14 20 37 CDR There you go.

05 14 20 38 LMP Now, you've got it.

05 14 20 48 LMP Gosh, did you see that material disintegrate? Hey, that cuts easy. Now, which tube did you want to give me, Pete? Do you want me to hold one of those tubes?

05 14 21 02 CDR Yes.

05 14 21 03 LMP Let me get in there close.

05 14 21 14 CDR I got it.

05 14 21 15 LMP Yes. Okay. Go. Got to be careful.

05 14 21 28 CDR Got it?

05 14 21 29 LMP No, it's too big.

05 14 21 31 CDR Too big? Wait, wait, wait, wait, wait!

05 14 21 36 LMP Okay.

05 14 21 42 CDR Okay. Let me put the top on.

05 14 21 56 CDR It has sort of weathered a little bit in 3-1/2 - 31 months, hasn't it? ... here, though.

05 14 22 04 LMP Hey, what?

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05 14 22 06 CDR That antenna is still pointed right to Earth.
... normal, though. It never had to move.

05 14 22 16 CDR Okay, that's done. Captured that.

05 14 22 21 LMP Okay, we've got the - got the sample, Houston.
The sterile sample, the cable, and tube. Okay,
that's in there good; let me make sure that's in
there tight, Pete.

05 14 22 38 CDR Okay, one shiny tube coming up. Okay, wait a
minute. Be around there in a minute. Look at how
all that stuff fractured and fell on the ground.

05 14 22 49 LMP Yes.

05 14 22 50 CDR The paint's flaked off.

05 14 22 51 LMP Yes. That looks like a shiny mirror, some kind of
thermal coating.

05 14 22 57 CDR I hate to tell you this, but the Surveyor tool is
giving me - -

05 14 23 02 LMP Hey, that's a tougher tube than we're supposed to
have, gang. I'd say forget that tube and find
another one.

05 14 23 07 CDR Yes, or I'm going to break the tool.

05 14 23 09 LMP I know it. That's - -

05 14 23 10 CDR That tube on the back we are supposed to collect,
Houston, is just a little bit stronger than it's
supposed to be, for a glass mirror.

05 14 23 19 LMP Okay. We're going to have to pick another tube.
How about right here, Pete?

05 14 23 20 CDR Wait a minute.

05 14 23 22 CC Roger. We copy.

05 14 23 23 LMP That's a shiny tube; that would be a good one if
we could cut it.

05 14 23 27 CDR Where?

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05 14 23 28 LMP Right there.

05 14 23 29 CDR Oh, that's even thicker.

05 14 23 30 LMP Yes, I guess it looks it, doesn't it?

05 14 23 31 CDR Get the camera. Forget the tube.

05 14 23 34 LMP Why don't you bang your way out of that glass?

05 14 23 36 CDR ... or break the tool, no kidding.

05 14 23 41 LMP Hey, Pete.

05 14 23 42 CDR Huh?

05 14 23 43 LMP Why don't you bang that glass one?

05 14 23 46 CDR Won't even break (laughter). That's pretty good glass, Houston. Can't even break it with our - -

05 14 23 53 LMP There you go. Take a piece off, and I'll collect it and put it in.

05 14 23 58 CDR Kind of crunches, doesn't it? Man, that's not glass. Terrible! Man, forget it.

05 14 24 04 LMP I don't know what it is.

05 14 24 06 CDR That's sure not what we tried out in Houston - I mean at the Cape. That's metal with glass on top of it.

05 14 24 13 LMP You'd better take a picture of it.

05 14 24 21 LMP Amazing. That's a tough shot, too. Let's get over on this side of it.

05 14 24 26 CDR Okay.

05 14 24 27 LMP Okay, that'll be a good shot, I think. Just a minute. Okay, Pete.

05 14 24 41 CDR Come on, boy; we got to move.

05 14 24 43 LMP Wait a second.

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05 14 24 50 CDR Got it? Okay, whip around the other side of that scoop and let's get that camera.

05 14 24 53 LMP All right. All right. Wait, I got to open your bag.

05 14 24 57 CDR I'm not going anywhere.

05 14 24 59 LMP Okay. I just got to open your bag.

05 14 25 03 LMP That one's good. All the parts are working.

05 14 25 17 CDR Okay. Thanks to Joe Roberts, this bag's going to do the job, I think. There. He worked hard on this thing. Let me reach down in there and open it up now.

05 14 25 37 LMP Okay?

05 14 25 38 CDR Yes, it works great. Thing popped out wide open.

05 14 25 42 LMP That's ...

05 14 25 43 CDR Uh-oh.

05 14 25 45 LMP What's the matter?

05 14 25 47 CDR Well, it's not - Get a little open here. Every second I spend opening it up is worth about 2 minutes when you try to put it in the bag. Okay. I think it's open now.

05 14 25 58 LMP Hey, I got a shiny tube for you.

05 14 26 00 CDR Okay. Let me get it. Let me get it. You sure do. That's a good one, too. Here. Wait a minute. Watch your hand.

05 14 26 08 LMP Okay.

05 14 26 09 CDR Cut. That a boy. Good cut. Good cut.

05 14 26 17 LMP Little more, Pete.

05 14 26 19 CDR Okay, two more tubes on that TV camera and that baby's ours.

05 14 26 37 LMP Okay?

[REDACTED]

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05 14 26 38 CDR Good.

05 14 26 40 LMP All right. Let's get them.

05 14 26 45 CDR There's one.

05 14 26 49 LMP Let me get a grip on him now.

05 14 26 50 CDR Okay. It's ours!

05 14 26 58 LMP (Laughter) ... we got her.

05 14 27 02 CDR Beautiful.

05 14 27 03 LMP Turn around.

05 14 27 04 CDR Let me lay it on you, man (laughter). It'll fit right in that sack. Hey, is this ever lighter than that one in Houston?

05 14 27 14 CDR Let's get the scoop while we're at it.

05 14 27 16 LMP Okay. I think I can hold that thing with one hand and open the bag. Get in there. Get in that bag.

05 14 27 22 CDR There you go.

05 14 27 24 LMP In the bag. In the bag.

05 14 27 25 CDR In the bag?

05 14 27 27 LMP Here, wait a second. Now, I've got to zip it up.

05 14 27 29 CDR Good show.

05 14 27 33 CC Copy. It's in the bag.

05 14 27 34 LMP It's in the bag.

05 14 27 48 LMP Okay, let me get around to the other side of you. It's a little hard to zip. This is one of the hard parts.

05 14 27 53 CDR Okay. Want me to bend over a little bit?

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05 14 27 55 LMP Yes. I sure would. Okay. And lean back. That'll do it. Just like that.

05 14 27 59 CDR Don't turn it over.

05 14 28 01 LMP I won't. I won't. That'll do right there. One more pull and I've got it.

05 14 28 09 CDR Okay.

05 14 28 11 LMP I've got lots of oxygen.

05 14 28 13 CDR Yes, same here. Okay. Now, let me put the covers down on it.

05 14 28 18 LMP Before you get that thing buried too deep, how about letting me cut this scoop off?

05 14 28 22 CDR Well, okay, scoop goes right in here.

05 14 28 24 LMP Oh, you've got a place for it.

05 14 28 26 CDR Well, sure. You didn't think you were going to leave without a scoop, did you?

05 14 28 28 LMP No.

05 14 28 33 CDR Okay, grab the scoop.

05 14 28 35 LMP Man, there - that's the problem.

05 14 28 36 CDR That's what they said, but - Let me hold it. Maybe - -

05 14 28 39 LMP Wait a minute. Wait a minute. Let me - let me help.

05 14 28 42 CDR You got it.

05 14 28 43 LMP Broke.

05 14 28 45 CDR That's good.

05 14 28 46 LMP Oh, smooth as silk.

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05 14 28 47 CDR Cut it apart right here. Now, that's right. They wanted it - No, they wanted it just after that joint. So cut it right there.

05 14 28 55 LMP Okay. Good cut, but they wanted that joint if they could get it. Are you at the root? No, you're okay.

05 14 29 07 CDR That's it. That's it.

05 14 29 10 LMP One scoop.

05 14 29 13 CDR That's dandy! It's even got dirt in it. Bring back some of the original dirt. Okay. Got an extra sample for you, Houston. The scoop's got dirt in it. Okay.

05 14 29 23 CC Well done, troops. Say, when you move out from here, right? - Well, first of all, we show you're 3 hours into the EVA; and you're about 10 minutes behind nominal traverse we had figured out for a 4-hour EVA. However, your PLSS consumables are holding out real well, so we suggest you go on with the nominal traverse. We may want you to cut down to perhaps just one sample at blocky crater.

05 14 29 47 CDR Okay, that's what I wanted to do is go to blocky crater if you agree - -

05 14 29 48 LMP Hey! Hey, look - look at this, Pete.

05 14 29 49 CDR What?

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05 14 29 52 LMP We thought this thing had changed color, but I think it's just dust. Look, we rubbed into that battery, and it's getting shiny again. Let me get a shot on it.

05 14 29 58 CDR Okay, go ahead.

05 14 29 59 LMP I think that's what - maybe this thing's just collecting all this red dust.

05 14 30 06 CDR Well, they'll know when they get that TV camera back ...

05 14 30 08 CC Okay, Pete and Al, before you leave there, also, would you get some of those geosamples which we've discussed, as well as some of the loose soil from that area?

05 14 30 16 CDR Will do. We'll do it right now.

05 14 30 19 LMP Okay.

05 14 30 20 CDR Let's do it.

05 14 30 21 LMP Here's this rock right here. Let me give the Surveyor tool a heave.

05 14 30 25 CDR Okay.

05 14 30 26 LMP We don't need it for anything, do we?

05 14 30 29 CDR Houston, we don't need this Surveyor tool anymore, do we?

05 14 30 36 CC If you've got the TV back at the LM already cut off, then there is no more need for it.

05 14 30 39 CDR/LMP Okay.

05 14 30 40 CDR That TV's ... Okay. Al, have I got my scoop on?

05 14 30 49 LMP Do you?

05 14 30 51 CDR You've got your full measure of rock right here. Okay. Let me go get the sample bags.

05 14 31 00 LMP Hey, that's a good one.

[REDACTED]

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05 14 31 02 CDR I don't think the TV could see that one, though, I figure it was too close. How about this one?

05 14 31 09 LMP ... down with you.

05 14 31 13 CDR Okay. All right, now. Trying to remember where that - they got a ... one.

05 14 31 23 LMP Here's a square one. I see one up there, right now.

05 14 31 26 CDR Where's the one that had the lines in it?

05 14 31 29 LMP I think it's right over - right up here on the - There's a crater, right up - I'll show you. Looks like a brick over there.

05 14 31 34 CDR Come on, I've got these two rocks over here. Let me dump them - -

05 14 31 38 CC Pete and Al, Houston. Before you leave the area of the Surveyor, would you take a look back at the Surveyor and see whether the direction of the sunlight has any effect on the colors which you see?

05 14 31 49 LMP Direction of the - -

05 14 31 50 CDR Wait, wait! Let me get this in the bag, too.

05 14 31 52 LMP Sorry. Didn't know you had it, Pete.

05 14 31 55 CDR Okay. No, it's light brown wherever you look at it, up-Sun, down-Sun, or cross-Sun.

05 14 32 03 LMP But, strangely enough, that light brown rubs off. That's the funny part.

05 14 32 04 CDR Yes.

05 14 32 06 LMP That's funny, because the dirt here is not brown.

05 14 32 09 CDR Look, is that the rock right there? You know, these rocks, as they showed in the Surveyor pictures, all have this soil buildup around them.

05 14 32 23 LMP Yes, they're still there - all the fillets around them.

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[REDACTED]

05 14 32 26 CC Roger, Pete.

05 14 32 28 CDR I'm trying to remember where - I can't orient myself to the pictures, can you?

05 14 32 33 LMP No, there's - I think it's about - -

05 14 32 35 CDR Should we grab this one right here?

05 14 32 37 LMP That's a good rock right there.

05 14 32 39 CDR I don't know whether I can get that or not. Let me see.

05 14 32 49 LMP We'll get it. That a boy. There you go.

05 14 33 04 CDR Okay, let's head for blocky crater; pick up a couple of more of these enroute.

05 14 33 09 LMP Sounds good to me.

05 14 33 10 CDR Let's get that brick-looking one over there. I think that's one of them they saw there. Up the hill a little bit - ways. That was one they saw.

05 14 33 20 CC Pete and Al, we have comment on what you just said about brushing up against the battery case.

05 14 33 24 CDR Yes.

05 14 33 25 CC Would you make sure that anything which you picked up against that battery case you clean off your EMU?

05 14 33 30 LMP Yes. We're thinking about that - -

05 14 33 32 CDR There wasn't any signs of KOH anywhere. - -

05 14 33 34 LMP Yes. We've looked, and - -

05 14 33 35 CDR The battery case was tight. Nice and tight and brown.

05 14 33 39 LMP Right here's the one, the square one, Pete.

05 14 33 43 CDR Where?

05 14 33 44 LMP There.

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[REDACTED]

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05 14 33 46 CC Roger.

05 14 33 47 CDR Okay. That's about enough rocks, pal.

05 14 33 53 LMP I think it is, that is, for here. Let me get it. Okay, you got it. Good show.

05 14 34 05 CDR Okay, let's head for blocky crater.

05 14 34 07 LMP Okay. And go to the - -

05 14 34 11 CC Al, do you have a sample bag number on that last one?

05 14 34 13 LMP ...

05 14 34 14 CDR All those rocks are too big for sample bags - -

05 14 34 17 LMP They are big rocks, Houston. They're all at least 6 inches in diameter, and I think these are some of the ones you wanted. It's kind of hard to tell without having a photograph on hand or something that's standing there and studying it for a lot longer than I think we care to do it, just which rocks are which.

05 14 34 42 CC Roger.

05 14 34 43 CDR It's pretty easy to move along on this slope. It's just a little bit deeper and it a little bit softer.

05 14 34 49 LMP I'm going to take a break here, Pete, for just a few seconds.

05 14 34 52 CDR All right. I'm right with you. Can't get up your pace when you're running on the side of a slope.

05 14 35 02 LMP No.

05 14 35 03 CDR You don't have a chance to go from side to side, like on level ground. Look at that huge boulder out there at - boy, I wish we could go over there.

05 14 35 08 LMP Where?

05 14 35 09 CDR Look at that boulder.

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05 14 35 11 LMP Where?

05 14 35 13 CDR Straight ahead. See it there? Alan?

05 14 35 18 LMP No, where?

05 14 35 20 CDR Over the top of the hill.

05 14 35 23 LMP Don't see where you are looking.

05 14 35 25 CDR Right on the other side of the - about 200 yards that way. See that big boulder sitting up there; the biggest one we've seen since we've been here.

05 14 35 35 LMP I don't see which one you're referring to - that one right there?

05 14 35 38 CDR Yes.

05 14 35 41 LMP Yes. Oh, these down in here are bigger than that. Look at that right here. Look at that right there on your left. Look.

05 14 35 48 CDR Let me turn around and look.

05 14 35 50 LMP Gigantic right there. There's a big one.

05 14 35 52 CDR What?

05 14 35 53 LMP Come further left. That's a pretty good sized one.

05 14 35 58 CDR I've got it. Let's get up out of the crater where we can get up on the level ground. Okay.

05 14 36 08 LMP Hey, Pete.

05 14 36 09 CDR Huh?

05 14 36 11 LMP This - There it was kind of hung up on the gnomon. Let me get the gnomon and pick it up. It's not usually on there - no gnomon.

05 14 36 32 CDR There you go. Okay, let's document up a sample here, and I think you ought to photo that whole blocky crater right there. That thing's spectacular.

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05 14 36 51 LMP It is. What is it?

05 14 36 54 CDR Bed - That's got to be bedrock there, babe. Yes. Let's get some samples of that.

05 14 36 58 LMP Got to be.

05 14 37 01 CDR Hey, Houston - is the dimple crater right behind the LM? Is that - it's a big blocky impact crater.

05 14 37 19 LMP That may be cool enough back in MIN cooling.

05 14 37 30 CDR It's funny. I don't have any - I kind of thought it would be tough down in the crater, losing your balance, but it doesn't seem to be; it's just harder walking, that's all.

05 14 37 40 CC Pete and Al, could we have EMU check?

05 14 37 45 CDR Sure could. We're right at the top of the rim, we can get a good place to rest. I am reading 36 percent oxygen.

05 14 37 52 LMP We're okay.

05 14 37 54 CDR We're going to sample - I'll tell you what we're going to do, Houston. We're going to get an EMU check here; we're going to pick up one sample out of this blocky crater; give you a partial PAN of it because it's a pretty fantastically interesting crater with a lot of bedrock. Big chunky rocks blown up out of it - -

05 14 38 09 LMP Very angular. Very sharp.

05 14 38 11 CDR - - and get a sample of the double craters on the side of the Surveyor crater, and then my recommendation is, we've got so much gear and so many rocks, that we head for the LM and start packing it all up.

05 14 38 27 CC Roger. We concur; that's a good idea. Al, could you give us your percent?

05 14 38 30 LMP I sure could. Looks like about 36 percent.

05 14 38 38 CC Copy. 36 on both, and how are you doing on that film?

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05 14 38 40 LMP My camera is completely dust-covered, Houston. I just hope that the lens is open - ... 121. How's the lens? - -

05 14 38 50 CDR Your lens is in good shape. Now, why don't you stand right here and get a partial PAN while you're resting on this crater? Either side.

05 14 38 56 LMP Hey, wait a minute. Look at this.

05 14 38 57 CDR What?

05 14 38 59 LMP I can't - Forget it. I thought I saw something.

05 14 39 08 CDR I'm beginning to think that these rocks that look red to us, if we'd just crack them open, we'd find they're plain old basalt rock on the inside. We just don't ever have any cracked. We ought to pound one of those things with a hammer in a minute.

05 14 39 20 LMP Okay, you want me to do a PAN of this little part or the whole crater, Pete?

05 14 39 23 CDR No, get the whole crater. Get about four shots across it and then move over and get another four.

05 14 39 28 LMP Okey-doke. 74.

05 14 39 35 CDR Funny, I can notice that TV camera on my back. It moves my c.g. further in.

05 14 39 41 LMP Does it feel okay back there?

05 14 39 43 CDR Oh, it feels okay; sure the way to carry gear; it sure beats that thing. That's a pain. Now, wait a minute; where are you shooting, Al? I want you to shoot down in that crater right there.

05 14 39 53 LMP Sorry, that's what I - Okay, read you.

05 14 39 57 CDR Shoot way down into it; get a stereo of that thing with those big blocks down there.

05 14 40 01 LMP Okey-doke. It's kind of dark, but I think we can get something good. Okay, move over here. This is probably the most spectacular crater we've

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come to, I think. It must have just - The original craters took it down to bedrock and then, I guess, more recently then, this one came in here and really banged it out. These blocks are a lot more sharp cornered than any we've seen anywhere else. I guess this must be the most recent one we've been around.

05 14 40 38 CDR

No. I got the idea that the bedrock's not too deep, and that this was a big crater, but it's very, very, very, very old. And then this thing came along and hit it - -

05 14 40 48 LMP

That's right.

05 14 40 49 CDR

- - and broke into the side of the bedrock that's been sticking out into this ... - -

05 14 40 53 LMP

Yes, and then threw it all out again.

05 14 40 57 CDR

I think - Let's get a sample of that rock.

05 14 41 02 LMP

Yes. Let's do. I think it's going to be the same - -

05 14 41 03 CDR

And then let's get out of here.

05 14 41 04 LMP

Okay. Want to get a docu - We document and a couple of the big pieces. How's that?

05 14 41 10 CDR

Yes. That's a good idea. Let's see. What looks like all the same. Right here?

05 14 41 14 LMP

Yes. Let me get a shot at it, Pete, cross-Sun.

05 14 41 17 CDR

Okay. Get a stereopair right here. We don't need the gnomon; I'll put the - -

05 14 41 20 LMP

By the way, when I shot that crater down there, I had my distance set on 30 feet. I thought that would be right, but that's the only one we haven't shot on the numbers.

05 14 41 34 CDR

Get further back, Bean.

05 14 41 36 LMP

Okay. Let me get some rocks. Okay. This is going to be sample bag number - number 15-D, Houston.

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05 14 41 54 CC 15-D, A1.

05 14 41 55 LMP Okay. Pete, you ought to put two or three rocks in here, just generally; and I'll photograph them, and we can see what you took. Couple of more. Those are good. Okay. You know, most of the rocks we've seen today is exactly like this. Going to pound one of these with a hammer in a minute.

05 14 42 14 CDR Hey, there's some of that light-colored undersoil.

05 14 42 18 LMP You're right. Okay. You want me to get another sample bag?

05 14 42 28 CDR No. I want to start moving out.

05 14 42 31 LMP Okay. Go.

05 14 42 33 CDR All right.

05 14 42 41 LMP I'll just pick up this one big rock here, Pete, and stick it in the bag.

05 14 42 45 CDR Okay.

05 14 42 46 LMP Good. That's a good rock.

05 14 42 48 CDR Okay, Houston. Now, I'm going to go pack up the doc'ed samples box, and I'll understand you're going to allow me 20 pounds of other rocks. Is that right?

05 14 43 01 LMP Pete, I've got a pretty good load here, so I'm just going to trail along behind - -

05 14 43 07 CC Pete, what we'd like to do is to get an estimate from you of how much you think you've got in the first SRC in terms of volume or weight.

05 14 43 14 CDR Well, in comparison to the zero-g airplane, let's see, the maximum load is 80 total pounds, right? I'm going to guess that the mass that I sent up was about a 60-pounder. Just the box.

05 14 43 39 CC Roger, Pete. From what you said in the first EVA and basic calculations on Apollo 11 data, we come up with about 54 pounds.

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05 14 43 46 CDR Very good. I think that we're fairly close.

05 14 43 55 LMP I just bet you everything we got here is really black basalt. All been colored just like that Surveyor. Hey, that bag is bouncing a little bit too much back there, Pete.

05 14 44 04 CDR Huh?

05 14 44 06 LMP Surveyor bag is bouncing.

05 14 44 07 CDR Well, that's okay. It's not hurting anything.

05 14 44 34 CDR Al, you've got to get that closeup stereocamera going.

05 14 44 37 LMP Okay.

05 14 45 00 CDR Okay, Houston. ... is back in the LM.

05 14 45 15 CC Roger, Pete. You're 3 plus 16 into the EVA, and for a 4-hour EVA, you're right on.

05 14 45 19 CDR Okay. Very good.

05 14 45 38 LMP Hey, did you know that our EVA antenna didn't go straight up? It's on a - -

05 14 45 43 CDR I noticed that when I was running back. I'll tell you. - -

05 14 45 58 CC Roger, Al. Copy. How far off the nominal position was it?

05 14 46 00 CDR Looks like - -

05 14 46 01 LMP It's sticking up about 65 degrees.

05 14 46 03 CDR This thing is driving me buggy.

05 14 46 10 CC Roger, Al.

05 14 46 39 LMP Hey, I think all this stuff is just fine-grain basalt, Pete. We haven't seen anything else but that. We haven't seen anything at any of the places that we've gone except the same type of fine-grained basalt. It's been different colors

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because of how long it's been out on the surface or where it's been. It'll be interesting when we get them to Houston and they crack them open.

05 14 47 05 CDR Hopefully.

05 14 47 10 LMP Take a rest here a moment. I used to have to push the legs down in that lunar handtool carrier, but I don't have to anymore. He just pushes his own legs; got enough rocks in there.

05 14 47 32 LMP Hey, Houston. Here's where that engine moved some dirt. You can see it here.

05 14 47 46 CC Where are you on that, Al?

05 14 47 47 LMP I'm right to the left rear of the - It looks like I'm between the plus Y and minus Z strut, and it looks like it really washed a lot of dirt off in this direction. If I look back behind me, - -

05 14 48 01 CDR Hey, Al? Al? Let's get the - -

05 14 48 06 LMP Need some rocks?

05 14 48 07 CDR Get the rocks over here. Come on. We can't baloney all day. We've got to get out of here. Okay. I want you to put the - put the tool carrier right here.

05 14 48 19 LMP There it is.

05 14 48 20 CDR Stick your camera in the ETB and get the film can out of there, and I'm going to start packing up the gear.

05 14 48 36 LMP Okay, here is the camera.

05 14 48 39 CDR I'm not sure - I wonder - Yes, I guess all this will fit in here; our cameras and everything, complete with this TV camera.

05 14 48 46 LMP Okay.

05 14 48 50 CDR Don't lift it up, Al, or my rock box to go.

05 14 48 51 LMP Okay.

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05 14 48 54 CDR That a boy. Okay. Do you want to take my saddle-bag off?

05 14 49 05 LMP Okay. Here.

05 14 49 09 CDR No, hammer.

05 14 49 11 LMP Okay.

05 14 49 19 CDR Got it?

05 14 49 20 LMP No. Okay. Now I'll go do stereo closeup photos.

05 14 49 32 CDR I'll tell you what, you go get me the solar wind, first.

05 14 49 35 LMP Solar wind first? I'll go get it for you.

05 14 49 36 CDR That a boy.

05 14 49 38 LMP You want me - Let me take that little bag out there with me.

05 14 49 41 CDR There it is, right there. Wait. Al, wait a minute - wait, wait, wait! You're all tangled up in the TV cable. I'll tell you, that TV cable is going to be - is really making me mad. There you go. That - wait, wait, wait. Wait, wait. Let's take the Surveyor - TV camera.

05 14 50 05 LMP Huh?

05 14 50 06 CDR Put it at the footpad.

05 14 50 09 LMP Is that what you want to do with it?

05 14 50 10 CDR I want you to put it at the footpad.

05 14 50 14 LMP Oh, okay.

05 14 50 15 CDR All right.

05 14 50 17 LMP Let me set this down, then I'll go get it. Just a second.

05 14 50 21 CDR Thank you. You're all tangled up again. I'll tell you, that's a trap. Okay.

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05 14 50 33 LMP Put this on the bottom one, Pete. It fits better.

05 14 50 49 CDR Go ahead and turn this way, would you? Okay. We're much lighter. We're not going to have any trouble running this one up the LEC.

05 14 51 10 LMP Okay. That's off there.

05 14 51 13 CDR Where'd you put it?

05 14 51 15 LMP Got it right here. Where would you like it?

05 14 51 17 CDR Don't - don't drop this LEC. Oh boy, I made a mistake. I should have brought the - -

05 14 51 29 LMP Want me to take it and move it out of the area?

05 14 51 33 CDR I just tried to throw it under the LM now -

05 14 51 36 LMP I can grab one end and just pull it out if you want. Why don't I do that?

05 14 51 39 CDR It's all tangled up in the LEC, now. This happens every damn time.

05 14 51 44 LMP Okay, I'll put this - Where do you want me to put this? Right here - right in the footpad.

05 14 51 47 CDR I'm going to straighten this LEC out right now.

05 14 51 51 LMP There you go.

05 14 51 53 CDR Now, look, when I disappear with the LEC, you get that TV cable and get it out of here.

05 14 51 57 LMP Okay.

05 14 52 00 CDR There you go. Now, just throw the TV cable under the spacecraft.

05 14 52 10 LMP Okay. Just a second.

05 14 52 17 CDR There we go. That's better. Thing cost me 10 minutes!

05 14 52 48 CDR Okay, I want you to get the solar wind.

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05 14 52 51 LMP Okay. Let me get this TV cable out of the way.

05 14 52 57 CDR I could be packing some rocks.

05 14 53 09 LMP Pete, would you hold this just one second, and then we'll get rid of this cable forever? Pull that.

05 14 53 17 CDR Where do you want me to go with it?

05 14 53 18 LMP Just stand right there. Then I can get this out over here, see. Before that, I couldn't.

05 14 53 31 CDR There, now you've only got one place - -

05 14 53 33 LMP That's right.

05 14 53 35 CDR Is that right? ...

05 14 53 37 LMP Okay.

05 14 53 38 CDR Leave the door ...

05 14 53 52 CDR Okay.

05 14 53 55 LMP Tell me when. This bag - This the bag you want me to use, Pete?

05 14 54 03 CDR Yes.

05 14 54 05 LMP Okay.

05 14 55 24 LMP Solar wind doesn't like to roll up much. Little rascal - doesn't want to roll up. Just wrap it around here best I can without getting any dirt on it.

05 14 55 46 CDR This is really ridiculous. I got dust all over the rock box, and I'm trying to blow it off. You going to manage that.

05 14 56 11 LMP Okay. We got that solar wind.

05 14 56 15 CDR Good boy!

05 14 56 18 LMP Houston, we got that solar wind, but it didn't roll up in a very neat package.

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05 14 56 28 CC Roger, Al. We copy. That's all right.

05 14 56 44 CDR Hey, it sure didn't, did it?

05 14 56 46 LMP No. It just didn't. It split right near the top.

05 14 56 48 CDR Can I help you?

05 14 56 49 LMP Yes. You can hold that, and I'll just try to roll it up as best I can without getting any - I already got a little dirt on it ... You know what I mean?

05 14 57 00 CDR Yes.

05 14 57 01 LMP Not a lot I can do about it. I'm sure it's a good experiment. That thing is fragile.

05 14 57 07 CDR Here, let me hold this end, and you just wrap it tight. That a boy.

05 14 57 12 LMP I'll squeeze it down.

05 14 57 13 CDR That a - -

05 14 57 14 LMP And chase down any of those noble gases or whatever ... Okay. Got that in there? Looks bad, but I think it will do the job, Houston. We squashed it in so it's right - Let me get this right now, babe. There you go.

05 14 57 32 LMP Okay. It just doesn't look so good, Houston.

05 14 57 34 CC Roger, Al.

05 14 57 36 CDR Give me a hand getting this rock box closed.

05 14 57 38 LMP Okay. Will do. Hey, that's a nice full box.

05 14 57 46 CDR That's what I'm afraid of right there in the top of it.

05 14 57 50 LMP Now, just what we need. Wait.

05 14 57 55 CDR Now, I've got to get this dirt off it somehow. Hey, I know. Reach right in there. There's a brush and a scribe.

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05 14 58 04 LMP Wait a minute.

05 14 58 08 CDR Oh, why didn't I think of that earlier.

05 14 58 10 LMP Got it? Then you can just take out the seal -
There you go. Good show, Pete.

05 14 58 19 CC Pete, that glass brush should be over there on
the handtool carrier if that will be of use to
you.

05 14 58 25 CDR We're using it right now. Works good, too. That's
it. Okay, Al. Put that back in.

05 14 58 32 LMP Back in.

05 14 58 36 CDR Now.

05 14 58 41 LMP Okay. Okay. Go. Got it made.

05 14 58 57 LMP Looks like you did it.

05 14 59 00 CDR Yes. I hope so.

05 14 59 02 LMP Okay. Got it, Pete. It looks good. Rock box 2
is closed, Houston.

05 14 59 12 CDR Al, I want all the big ones. That looks like
about 1 inch to me.

05 14 59 17 LMP Yes.

05 14 59 18 CDR That's it. The extra bag.

05 14 59 22 LMP Okay, you got some of those bedrock ones in there,
didn't you?

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05 14 59 26 CDR Yes.

05 14 59 27 LMP Good show.

05 14 59 29 LMP Okay. What do you want me to do with that?

05 14 59 31 CC Pete, Houston.

05 14 59 32 CDR Yes. Put that up in the - -

05 14 59 37 CC Okay. We'd like to give you a little weight summary for the rock boxes. If - We estimate you probably got about the same in rock box 2 as you did in rock box 1. No problem there. The Surveyor parts and TV camera will show a nominal 25 pounds in 15. What you could put in your bag that goes on the floor is about 15 pounds worth of rocks.

05 14 59 56 CDR That's it, Houston.

05 14 59 57 CC And in the left-hand side stowage bag, you can put about 25 pounds of rock. So I guess those are the two you are working for now. Fifteen pounds' worth of rocks in the bag on the floor, and 25 pounds on the left-hand side stowage bag.

05 15 00 12 CDR We - we don't have that many rocks, Houston. I'll tell you what we've got. We've got - SRC 2 is full and closed. It's - gosh, I hope I got it all in there, let me see: Solar wind, core tubes, environmental gas sample, documented samples all made it in. And the box is full, and I closed it, and I've got about - What's 1 inch on my scale? - I've got about 1 inch worth of rocks in another bag. And that's it; that's all the rocks we've got. A bunch.

05 15 00 44 CC Roger, stand by for that number, Pete. Pete, that 1-inch displacement is about 10 to 15 pounds. No problem, pack it up.

05 15 00 59 CDR Okay. That's good. Okay, now, let me ask you another question. I can get some more rocks. Why don't I do that? While Al is taking stereophotos. We'll see if I can get myself - -

05 15 01 19 LMP Okay, I'm going to - I don't have a camera to go along with this, so I'll just tell Houston when I'm taking a picture and then they'll know. So

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they can keep up with it. Okay, Houston. On this stereocamera, I'm taking a picture now, about 10 feet from the LM between the plus Y and minus Z strut, and I am hoping to show the effects of the engine exhaust on the lunar surface. I'm going to - That was number 800. There's one at 801. It's moving around here ... I'm going to take another one. The little counter doesn't seem to be working. Everything is working okay but the little counter. And I am taking the fourth picture right up next to the engine, here. Okay, another one close to the engine. About 2 feet from the engine. Okay, Houston. The little counter on top of the experiment's not working, so I'll just tell you what I take next. And the light and everything seems to be working so I assume it's probably taking pictures. I'm going to go look for a crater that is undisturbed and take a picture down inside it. Here's one of the - -

05 15 02 57 CC Roger, Al.

05 15 02 68 LMP Okay. Here's one of a rock. Take two of the rocks. Now, I am taking a picture of Pete's footprint in the soil. You can take a look at the interaction of that. Take another one.

05 15 03 52 LMP I'm in an area now, Houston. It looks like -

05 15 03 55 CC Pete, Houston.

05 15 03 56 CDR Yes, go ahead.

05 15 04 01 CC Okay, we recommend that you pack up where you are and start trying to pack up the excess rocks you just got and think about ingress.

05 15 04 09 CDR Okay, very good. Houston, I'd like to comment to all the people who are involved in this EVA, my congratulations.

05 15 04 32 CC Well, I think you two folks did an excellent job.

05 15 04 42 LMP I'll take some of these pictures until you give me a call, Pete.

05 15 04 46 CDR Why don't you just start working your way over here, Al? And we've got an awful lot of gear, and we will start getting her up.

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05 15 04 53 LMP All right. Will do.

05 15 04 55 CDR We've got about 22 minutes by my clock - 23 minutes.

05 15 05 01 LMP All right.

05 15 05 03 CDR And we got a long day in front of us. - -

05 15 05 05 LMP Okay. Okay. Oh, this is so much fun. I can jump up about 3 feet and do a - 180. You might do a - 360!

05 15 05 24 CDR You got to watch it though. You get all that mass going around and you get in trouble.

05 15 05 28 LMP Okay.

05 15 06 09 CDR What's up with Yankee Clipper this morning, Houston?

05 15 06 20 CC Pete, Yankee Clipper looks real good. He's been doing P22's and rolling right off.

05 15 06 24 CDR Good.

05 15 06 25 LMP Okay, Pete, I'll take this as my last one.

05 15 06 27 CDR Okay. If he can see the Surveyor, has he been able to see us out there?

05 15 06 33 LMP Okay, that did it, Pete.

05 15 06 35 CDR All right. I don't know how many we've got there, and - -

05 15 06 40 CC No report on that, Pete.

05 15 06 44 CDR All right.

05 15 06 46 LMP Here's a red one.

05 15 06 51 CDR Got it.

05 15 06 53 LMP Okay.

05 15 06 56 CDR Okay, lift her up. Now we - I'm going to put it in the ETB.

05 15 07 01 LMP Okay. There goes.

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05 15 07 05 CDR Hey, wait. I want to watch.

05 15 07 06 LMP Ready?

05 15 07 07 CDR Yes.

05 15 07 16 LMP Okay.

05 15 07 19 CDR Okay.

05 15 07 23 LMP Okay. I think we got all the film in, didn't we, Pete?

05 15 07 28 CDR Yes.

05 15 07 29 LMP I tell you what. Let's send the ... and, okay, clean me, and I'll get in there, and we'll start pulling this thing because we've got quite a load.

05 15 07 35 CDR Yes. Now, one thing I need to do is - hand me the Surveyor - Surveyor bag. Surveyor bag coming up.

05 15 07 43 LMP ... out of the way, babe. Here you are right here. Here's the two hooks.

05 15 07 50 CDR That solves that one. All right. That's one.

05 15 07 53 LMP Yes, it is.

05 15 07 54 CDR Don't lock them. They never need locking anyway. I don't think we need to lock anyway. Just leave well enough alone.

05 15 07 59 LMP That's right. Damn things are getting jammed. Okay? Is that it?

05 15 08 04 CDR Yes.

05 15 08 05 LMP Let's see, put it back on the footpad. Okay? Not supposed to get too dirty.

05 15 08 07 CDR Okay. Now, let's brush you off.

05 15 08 08 LMP Okay.

05 15 08 11 CDR Why don't you hop up on the ladder, and let me brush you off from the ladder?

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05 15 08 14 LMP Okay, why don't you brush me off up high here and then I'll hop up and you can get me.

05 15 08 16 CDR Okay. I'm not getting much off.

05 15 08 24 LMP Okay.

05 15 08 25 CDR It's a start.

05 15 08 29 LMP Let me try you, babe.

05 15 08 30 CDR Okay.

05 15 08 37 LMP Oh, that isn't as hard to get off. Let me get up here. Now, I'm going to kick my feet, so it's going to get this Surveyor bag dirty.

05 15 08 52 LMP Ow! They shock.

05 15 08 55 CDR Okay. Let me hit you.

05 15 08 58 LMP All right. Okay. Let me kick my shoes.

05 15 09 03 CDR Climbing up ... I think I'm making myself dirtier. Boy, I tell you something. These lanyards get grimy black.

05 15 09 11 LMP Is that it?

05 15 09 13 CDR Yes.

05 15 09 15 LMP Okay, I'll go in.

05 15 09 17 CDR Man the camera.

05 15 09 18 LMP Okay.

05 15 09 31 CDR Okay, I'll watch you in the hatch.

05 15 09 33 LMP Okay. Okay, just a second. Just let me get the door open. There's door wide open. You want my golden buzzer?

05 15 09 44 CDR Get in.

05 15 09 47 LMP Am I lined up okay?

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05 15 09 48 CDR You might want to turn off your PLSS feedwater when you get all the way in.

05 15 09 51 LMP Pretty good thinking. Okay.

05 15 10 01 CDR That a boy.

05 15 10 04 LMP ... does it.

05 15 10 07 CDR Roll a little left. Yes, that's it. That's it. Okay, just a second. No rush. Take your time.

05 15 10 30 LMP I've got to get this sequence camera out of the way; I don't want to leave it in here when I'm in here.

05 15 10 42 CDR Did you ever get the picture of the LM and Earth?

05 15 10 45 LMP No.

05 15 10 46 CDR Oh, that's a shame.

05 15 10 47 LMP I know it.

05 15 10 48 CDR Hi, Earth; I can see us. It's up over the LM now. It's the first time I've had a chance to look. You're about a quarter Earth.

05 15 11 03 LMP Let me mount the bag. Hey, you got to give me a little slack, Pete.

05 15 11 08 CDR Oh, okay. More?

05 15 11 13 LMP Just a second; I'll be okay. Don't put any weight on it yet. Can you hold the weight - -

05 15 11 18 CDR Wait, wait, wait - Just a second. There you go.

05 15 11 35 CDR Now hold on. Wait, wait, wait, wait.

05 15 11 41 LMP There you go.

05 15 11 42 CDR Now, heave away.

05 15 11 43 LMP Okey-doke.

05 15 11 44 CDR It's all yours.

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05 15 11 54 LMP Okay, babe, you just pull in like this. All right. Got it.

05 15 12 13 CDR Hey, Houston, the Surveyor gear is up, coming back for SRC 2.

05 15 12 23 CC Roger, Pete. Copy Surveyor parts bag in.

05 15 12 35 LMP Okay, Pete. Take them. Wait a minute - Oh, no; not yet - not yet. Not yet - hand out. Uh-oh. That's okay. That's beautiful. Oh, boy. Okay. Take her.

05 15 12 56 CDR Huh?

05 15 12 57 LMP Take it away.

05 15 12 58 CDR Okay. And the game is don't rush and do it right.

05 15 13 02 LMP Okay.

05 15 13 05 CDR Here I go get you the rock box. Okay. Like a rock box?

05 15 13 18 CDR I need some more line, Al.

05 15 13 23 LMP Okay. I've got that much more. That's the end. You may have it tangled on something, Pete.

05 15 13 32 CDR I see what the problem is.

05 15 13 35 LMP There, it's on the hatch; there you go.

05 15 13 53 CDR Okay. Lift away, you've got a rock box.

05 15 13 55 LMP Okay. Feel how heavy this thing is.

05 15 14 01 CDR Wait a minute, wait.

05 15 14 03 LMP Okay.

05 15 14 04 CDR Wait a minute. There you go.

05 15 14 08 LMP All right. Now do it.

05 15 14 10 CDR I'm going to have to use the pull-in feature; just a second. All right, ready?

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05 15 14 24 LMP Go.

05 15 14 26 CDR Give her one big heave.

05 15 14 28 LMP Made it.

05 15 14 30 CDR Okay. I can't see. That darn Sun is in - -

05 15 14 32 LMP Can you take up some tension and I'll pull it in?

05 15 14 35 CDR Got it.

05 15 14 36 LMP That's it.

05 15 14 37 CDR Rock box 2 is in, Houston.

05 15 14 44 CC Roger. Rock box 2 in.

05 15 14 45 CDR And am I filthy dirty from that LEC. Wow, wow, wow!

05 15 15 22 LMP Okay, Pete. Go ahead.

05 15 15 54 CDR (Humming) ... getting in and out of these shadows really gets eerie looking. Okay, Al, if you'll wait just a minute. There you go.

05 15 16 39 LMP Okey-dokey.

05 15 16 40 CDR Coming in. Okay, just a second. Passing over the thing.

05 15 16 54 LMP You'd better believe it.

05 15 16 56 CDR I can't see.

05 15 16 57 LMP Okay, pull up a little bit and I'll bring it in.

05 15 16 59 CDR The Sun's shining right in my eyes.

05 15 17 00 LMP That's it.

05 15 17 01 CDR In?

05 15 17 02 LMP It's in.

05 15 17 04 CDR Beautiful job; just throw the LEC out. Okay, Houston. ETB is in with the camera and all the film, and so forth and so on.

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[REDACTED]

05 15 17 18 CC Roger, Pete. Copy you got the ETB in with the TV camera, closeup stereo, and the film packs.

05 15 17 23 LMP Okay, now, Pete, here comes the LEC, so watch out.

05 15 17 26 CDR All right (laughter).

05 15 17 28 LMP Man, that really comes out, doesn't it? Gee, that went 50 feet.

05 15 17 36 CDR Okay, let's see. Have I forgotten anything? Forgotten anything?

05 15 17 50 CC Pete, you didn't roger the film pack. Do you have all the film packs and the closeup stereofilm, as well as the TV in that ETB?

05 15 17 57 CDR Okay. Closeup stereofilm was in the ETB, two black-and-white magazines and one camera. I threw the other camera away because it was broken - went up. And the TV camera went up, so I believe we've got everything, Ed.

05 15 18 17 CC Okay. You got the - Also the one camera which had the third film pack on?

05 15 18 22 CDR The third film pack never got used.

05 15 18 24 LMP Yes, it did too, Pete.

05 15 18 26 CDR Oh, did you?

05 15 18 27 LMP Yes.

05 15 18 28 CDR Oh, I'm sorry. Okay, we got three film packs and one camera up there right now. How's that?

05 15 18 34 LMP Did you send the film back up?

05 15 18 36 CDR Yes.

05 15 18 38 LMP Okay, we sent all three film packs back up. Oh, oh, oh, oh. There is something I wanted to - That's my low water pressure, Houston. I just turned off my water. That's good.

05 15 18 53 CC Stand by on that, Al. Pete, also how about the tools?

[REDACTED]

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05 15 18 58 CDR Yes, sir.

05 15 19 21 LMP You might want to turn off your water too, Pete.

05 15 19 24 CDR Yes, I was sitting here thinking there was something I ought to do. Mine's off.

05 15 19 40 LMP Okay. Out of your way.

05 15 19 43 CDR Okay. Houston, I guess you can mark me off the lunar surface; I'm on the footpad.

05 15 19 59 CC Roger. We got that, Pete, at 3 hours and 50 minutes into the EVA.

05 15 20 09 CDR Okay, up on the ladder I come, Hi-ho, hi-ho, hi-ho. Boy, I'll tell you, Al, that LEC really got me dirty.

05 15 20 22 LMP Yes, it flips that dirt all around.

05 15 20 46 CDR Hi-ho. Oh, wait a minute; I know what I want to do. There we go.

05 15 21 06 LMP You want to give me that piece of paper?

05 15 21 08 CDR I couldn't get it up. I dropped it.

05 15 21 10 LMP That's too bad.

05 15 21 12 CDR Okay, Houston, that's my PLSS feedwater, no sweat.

05 15 21 15 LMP Head down, come down. That's better. Move to your left slightly.

05 15 21 20 CC Roger, Pete.

05 15 21 21 LMP That's it; come on in. Come to your left a little bit. Okay, come on up. Little more to the left. Just right.

05 15 21 34 CDR Huh?

05 15 21 35 LMP You're just right. Scoot in there. Got to kind of scoot a little bit further in. You got it made. Bump into me, now. Okay. Okay.

05 15 21 53 CDR ... let me close the hatch.

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[REDACTED]

05 15 21 55 LMP ... out of the way, and I wonder what that's from.

05 15 21 59 CDR What?

05 15 22 00 LMP That little - ... maybe ...

05 15 22 04 CDR I think that came from off of the landing.

05 15 22 17 LMP Lock her up, babe; you are nice and clean. Gordon will be glad to see you.

05 15 22 30 CDR One hatch closed.

05 15 22 31 LMP Okay, check that for AUTO; I think it is, but you can see it down there.

05 15 22 36 CDR Yes. I'm flipping. You just - Go to hatch AUTO.

05 15 22 39 CC Yankee Clipper, Houston.

05 15 22 42 LMP Okay, let me move out of the way.

05 15 22 44 CDR Both to AUTO? Tell me when - lighting: ANUNCIATOR and NUMERICS, BRIGHT.

05 15 22 50 LMP Wait a minute.

05 15 22 55 CDR Okay. CABIN REPRESS valve, AUTO. AUTO.

05 15 23 04 LMP PRESS REG's A and B, CABIN; MASTER ALARM will come on, and cabin warning light. Okay, here comes the O₂. And the pressure is rising. Looks good right this minute. Okay, that's normal. PLSS O₂, OFF.

05 15 23 22 CDR Say again.

05 15 23 24 LMP PLSS O₂, OFF, when you get to 3.1.

05 15 23 32 CDR I can't get mine. Can you get it?

05 15 23 35 LMP Let me see if I can.

05 15 23 38 CDR I can't get it, Al.

05 15 23 40 LMP Just a second. Let me get mine, too.

05 15 23 51 CDR Okay? Could you get mine off?

[REDACTED]

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05 15 23 55 LMP Roger. ... Just a second.

05 15 23 58 CDR I can't hear you.

05 15 24 12 CDR Your O₂ is OFF.

05 15 24 14 LMP Everything's off, Pete. And the cabin pressure is - -

05 15 24 20 CDR Cabin, 4 pounds.

05 15 24 21 LMP Okay, you want me to turn the ... off?

05 15 24 31 CDR That's it, that's it, babe. ... the checklist.

05 15 24 35 LMP I hope that seal is good.

05 15 24 37 CDR Say again.

05 15 24 39 LMP I didn't check that seal real closely.

05 15 24 41 CDR I didn't either.

05 15 24 48 LMP Okay. It says here: Verify cabin pressure increasing. Now, let me tell you. PLSS O₂, OFF; activate OPS PURGE valve to DEPRESS, suit as required.

05 15 25 02 CDR Ah, that's better. Hey, don't take your helmet off!

05 15 25 11 LMP That's right.

05 15 25 12 CDR Just your gloves.

05 15 25 14 LMP Do we do that?

05 15 25 17 CDR Yes, we do, because we have to put on our other ones.

05 15 25 22 LMP Okay. Okay, let me read you.

05 15 25 31 CDR Yes. Okay.

05 15 25 32 LMP Cabin REPRESS valve closes at 4.4. Verify cabin pressures stable at 4.6. Looks good to me, Pete. Post-EVA systems CONFIG: Verify EV cir - look over there and make sure SUIT FAN 1 is closed. Now, make sure that SUIT FAN DELTA-P is closed.

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05 15 25 50 CDR Okay, just a second. SUIT FAN 1 is closed.

05 15 25 59 LMP SUIT FAN DELTA-P, closed. Okay. They're going to get some ECS CAUTION and H₂O SEP component lights out.

05 15 26 06 CDR I can't hear you. What?

05 15 26 08 LMP ECS CAUTION and H₂O SEP component lights will go out in a minute. Doff your glove.

05 15 26 13 CDR Everything's out.

05 15 26 14 LMP Okay. That H₂O valve open? Okay, that's a good idea boy. Purge valves - -

05 15 26 35 CDR Now, we don't have anything left but a little rendezvous (laughter).

05 15 26 39 LMP Ascent and rendezvous, babe.

05 15 26 52 CDR Give me your purge valve fitting; I'll put it in the TSB. Okay, let me give you my purge valve. Okay?

05 15 27 06 LMP You got it.

05 15 27 14 CDR This suit stuff has got all that dirt on it; I think it's - is this mine?

05 15 27 23 LMP There you go, Pete.

05 15 27 24 CDR I can't turn it ...

05 15 27 25 LMP Sure, sure. ... purge valve because it has to rotate with the other. Got your ...? Let's find it.

05 15 27 53 LMP I know. Here somewhere. Is that H₂O valve open? Turn it over.

05 15 28 07 LMP Purge valve and OPS O₂ hose, stow purge valves in TSB.

05 15 28 13 CDR Just throw it in there, I'll find the ball.

05 15 28 16 LMP Oh, may have thrown it over. May be behind you.

05 15 28 22 CDR ..., these things won't come undone.

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05 15 28 24 LMP I think they got a lot of that dust on them.

05 15 28 26 CDR Here, would you turn this, please?

05 15 28 27 LMP Yes, I sure will. There you go.

05 15 28 34 CDR I don't understand why I can't ... there.

05 15 28 37 LMP Okay.

05 15 28 41 CDR They're sticking.

05 15 28 42 LMP Connect your LM hoses. Red to red; blue to blue.
... so I'll hand you your hoses, Pete.

05 15 28 55 CDR So far, we haven't touched one of those circuit
breakers as far as I can tell, around in here.

05 15 29 08 LMP There's your hoses, Pete. Got them?

05 15 29 11 CDR Yes. Okay. Here's mine. Okay.

05 15 29 49 LMP Red to red; blue to blue; ISOLATION, both to SUIT
FLOW.

05 15 29 55 CDR Okay, would you turn mine on? Thank you.

05 15 30 00 LMP Got it.

05 15 30 02 CDR Does that feel good!

05 15 30 04 LMP Okay. Let's get to the PLSS PUMP, OFF; and FAN,
OFF; and the backpressure in your fan.

05 15 30 11 CDR Okay, that's good.

05 15 30 13 LMP Disconnect PLSS H₂O from PGA; connect LM H₂O.

05 15 30 17 CDR I'll get yours and you get mine.

05 15 30 21 LMP Lift up your RCU a little bit, Pete. RCU, there
you go.

05 15 30 34 LMP That did it. That did it. ...

05 15 30 48 CDR Okay?

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[REDACTED]

05 15 30 49 LMP Okay.

05 15 30 50 CDR LCD PUMP, in.

05 15 30 53 LMP Okay. You're going to get two of them, probably.
Do you see them?

05 15 30 55 CDR PLSS MODE, both of them 0, up.

05 15 31 01 LMP Okay. Hello there.

05 15 32 06 LMP Okay, turn your VHF A, OFF, and B, OFF.

05 15 32 09 CDR A, OFF and B is OFF.

05 15 32 10 LMP MODE, ICS/PUSH-TO-TALK.

05 15 32 14 CDR ICS/PUSH-TO-TALK.

05 15 32 16 LMP Okay, RELAY, OFF.

05 15 32 17 CDR My RELAY is OFF.

[REDACTED]

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05 15 32 18 LMP You're out of VOX, right?

05 15 32 19 CDR Yes, sir.

05 15 32 20 LMP Okay.

05 15 32 21 CDR Hello, Houston. How do you read?

05 15 32 25 LMP COMM, Okay? VHF, OFF, OFF.

05 15 32 31 CDR OFF. Hello, Houston; Intrepid hooked up on the Intrepid system. How do you read?

05 15 32 39 LMP They never told us to turn our tape recorder on.

05 22 21 31 CDR Okay. You're on your way.

05 22 21 33 LMP Okay.

05 22 21 43 CC We got it, Dick. Go ahead.

05 22 21 45 CMP Roger. I've got some good torquing angles here. I guess you really don't need them, do you?

05 22 21 54 CDR We read you, Dick. Do you read us?

05 22 21 56 CC Negative. We don't need them.

05 22 21 58 CMP That's affirm. I read you now, Pete, loud and clear.

05 22 22 03 CDR Okay, he should be looking. He should be looking right at it - -

05 22 22 05 LMP I'm ready when you are, babe.

05 22 22 08 CDR Okay. There's a - an ENTER. There's a PRO, 54.

05 22 22 16 LMP Okay.

05 22 22 20 CDR What do you want?

05 22 22 21 LMP I'm letting it drift just a minute. Okay. Pitch up and left.

05 22 22 27 CDR That's enough. That's enough. Now that's one pulse; that's it.

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[REDACTED]

05 22 22 31 LMP I know it. Down and right.

05 22 22 45 LMP Up and left.

05 22 22 55 LMP That did it.

05 22 22 56 CDR Okay. There you go. Beautiful, Al.

05 22 23 03 LMP Stick with me, babe.

05 22 23 04 CDR Okay, Houston. Are you looking at the DSKY?
There are the torquing angles.

05 22 23 14 CC Roger. We're looking at them, Pete. Sterling.

05 22 23 18 CDR Okay. Okay. We're going to PRO.

05 22 23 23 CC Yankee Clipper, Houston. Over.

05 22 23 26 CMP Go ahead.

05 22 23 27 CDR Turn up the lights, Al. Floodlights in, please.

05 22 23 30 LMP Coming on, babe.

05 22 23 31 CC Roger, Dick. How about turning down your S-band
thumbwheel and make a VHF check? And, if you're
in good shape on VHF, we're going to break down
this relay again.

05 22 23 38 CMP He's breaking now, Jerry; I can hear them now.

05 22 23 42 CDR Okay. Which one you hearing us on, Dick? A or B?

05 22 23 47 CMP Are you supposed to be on RANGING right now? I
thought you were supposed to be transmitting on A.

05 22 23 53 CDR That's where we were a while ago. Nothing's
changed.

05 22 24 03 CDR Let's get them the antenna.

05 22 24 21 LMP You get one of these straps on, babe?

05 22 24 39 CDR There we go. Keeps me in my corner.

05 22 24 45 LMP Be with you in a minute, Pete.

[REDACTED]

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Day 6

05 22 25 07 CMP Intrepid, Clipper. I have you in my big eye.

05 22 25 16 CDR Okay. That's good.

05 22 25 23 CDR Okay. Now you've got - -

05 22 25 24 LMP Can you put that thing down so I can read it, Pete? Thank you.

05 22 25 45 LMP Okay. Would you pull the AOT LAMP, Pete?

05 22 25 51 CDR Huh? Oh, AOT LAMP. Yes.

05 22 25 58 LMP Okay. ... your radar.

05 22 26 05 CDR Okay.

05 22 26 06 LMP Okay.

05 22 26 14 CDR Dick, I hold you at 351 feet a second at 200 miles.

05 22 26 30 LMP Okay, Pete. There's going to be a noise. I'm go -

05 22 26 32 CMP I concur on that, Pete.

05 22 26 34 CDR Say - say again, Dick.

05 22 26 36 CMP I concur. I concur.

05 22 26 38 CDR Okay. I'm just starting P20.

05 22 26 41 LMP Go back in EGRESS, Pete.

05 22 26 43 CDR Okay.

05 22 27 02 CDR 417 plus 1.

05 22 27 05 LMP 1.6 and nothing.

05 22 27 08 CDR Okay. Excuse me.

05 22 27 10 LMP Just a minute. 2.6, that's a nothing.

05 22 27 21 CDR What do you need?

05 22 27 23 LMP You'd have to see it, Pete (laughter).

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05 22 27 24 CDR I'm sorry. You're - get - get a number. It's got to be here.

05 22 27 27 LMP We're in good shape.

05 22 27 29 CDR I know it; we're in good shape.

05 22 27 30 LMP Okay.

05 22 27 35 CDR Stand by for an ARM. Got your CSI PAD? You got it right there, right?

05 22 27 42 LMP Right there, babe.

05 22 27 45 CDR Okay. Let me get one more mark in and see what happens. VERB 37, ENTER, 32, ENTER - -

05 22 27 52 LMP Looks like ...

05 22 27 53 CDR VERB 25, ENTER. Plus 0014.2.

05 22 27 59 LMP Wait, wait, wait, wait.

05 22 28 00 CDR No. You're running. Plus 0014.3.

05 22 28 05 LMP 3. 1?

05 22 28 07 CDR That's right. And 050 - -

05 22 28 12 CDR/LMP 05060 - -

02 22 28 15 LMP That's it, babe.

05 22 28 16 CDR ENTER. Okay. When do we lose the high gain?

05 22 28 26 LMP Just a few seconds. Houston, Intrepid. We're going to go over to OMNI's now.

05 22 28 35 LMP There's PCM in LOW.

05 22 28 37 CDR Down.

05 22 28 39 LMP Antenna -

05 22 28 47 CC Intrepid, Houston. You've about 45 seconds from LOS.

05 22 28 52 CDR That's good.

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05 22 28 55 LMP I was glad I reminded them. S-band - -

05 22 29 00 CC Intrepid, Houston. We'll see you at 143:16.

05 22 29 05 CDR Roger-Roger.

05 22 29 09 CDR Okay.

05 22 29 11 LMP Excuse me, Pete.

05 22 29 12 CDR Now, I need the TPI time minus - TPI time. 144 - -

05 22 29 20 CC Intrepid, Houston. Your - -

02 22 29 22 LMP 38.

05 22 29 23 CC - - CSI DELTA-V is going to be about 46.5. Over.

05 22 29 27 CDR Roger. 46.5. Just write it anywhere.

05 22 29 32 LMP Okay.

05 22 29 33 CDR Okay. Now. 144:38 - -

05 22 29 37 LMP 38, 00.

05 22 29 40 CDR Okay. ENTER. All zips.

05 22 29 43 LMP Okay.

05 22 29 44 CDR And we're on our way.

05 22 29 46 LMP ... plus 19.

05 22 29 49 CDR We are on our way. Want to get a clock countdown there?

05 22 29 53 LMP Okay, if you'll do that, I'll get one of these marks in I've heard so much about.

05 22 29 58 CDR (Laughter) I'll get the clock. Go ahead.

05 22 30 01 LMP VERB 83, set ORDEAL.

05 22 30 03 CC Houston, Intrepid - -

05 22 30 04 CDR Okay, VERB 83 - -

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[REDACTED]

05 22 30 05 CC - - We've got LOS on the Clipper, and we'll see him at 13.

05 22 30 09 CDR Okay. Say again our AOS time?

05 22 30 17 CC Your AOS time is 143:16.

05 22 30 21 CDR 143:16, By-by.

05 22 30 24 CC Roger. Nominal in the flight plan.

05 22 30 28 LMP Okay; 415 plus 10 000; 31 - -

05 22 30 35 CC Intrepid, Houston. Go LOW BIT RATE.

05 22 30 40 LMP LOW.

05 22 30 45 LMP Okay, Pete. When this thing drifts through there, I'm going to punch an ENTER.

05 22 30 49 CDR ENTER.

05 22 30 50 LMP Six degrees. There you go.

05 22 30 52 CDR Clear. Now I need a range, which happens to be 186.

05 22 30 57 LMP 316 plus 01860.

05 22 31 02 CDR ENTER. Can I do this?

05 22 31 09 LMP What is it?

05 22 31 10 CDR Oh, yes, sorry.

05 22 31 11 LMP Okay, I had it.

05 22 31 13 CDR On my mark.

05 22 31 14 LMP Okay. We're on the schedule here.

05 22 31 16 CDR Six more minutes - which will be 24. We're right on it.

05 22 31 18 LMP Okay.

05 22 31 22 CDR Hey, that was a beautiful alignment.

[REDACTED]

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05 22 31 25 LMP We can do it, babe (laughter).

05 22 31 27 CDR I'm just sorry that damned thing stuck.

05 22 31 29 LMP You'd never know I hit it three times and it didn't, and all of a sudden it just did, when I was up there just doing the other.

05 22 31 33 CDR That's okay. I backed off 32 feet, that's all. Cost us a little gas. So I got interested - I had to stop and think, "What did it mean?"

05 22 31 41 LMP I need to chart the R-dot.

05 22 31 43 CDR And I went right through that 100 feet per second, that's all.

05 22 31 45 LMP What's the R-dot?

05 22 31 47 CDR R-dot? 288, 288.

05 22 31 55 LMP There you go.

05 22 31 56 CDR What straps are holding you down? All of them?

05 22 31 58 LMP Yes. What ...

05 22 32 03 CDR You got this thing back in EGRESS - in EGRESS again?

05 22 32 04 LMP Yes, sir.

05 22 32 05 CDR Something smells terrible in here. You notice that?

05 22 32 07 LMP Probably in this - Probably all this stuff flying this around, maybe.

05 22 32 12 CDR Well, but the suit loop's buttoned up.

05 22 32 13 LMP Yes.

05 22 32 15 CDR It smells like ammonia.

05 22 32 18 LMP I don't smell it and I got a real good sniffer.

05 22 32 21 CDR Okay.

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[REDACTED]

05 22 32 22 LMP Okay, I'm going to go ahead and take her - a mark here and get on this schedule.

05 22 32 25 CDR Yes.

05 22 32 26 LMP 415 plus 10 000. ENTER. 80 - -

05 22 32 33 CDR Say, Clipper.

05 22 32 35 LMP 280 - -

05 22 32 36 CDR We're smoking right along; it looks like - -

05 22 32 37 LMP 50 - -

05 22 32 38 CDR - - We got a good solution. Tell you what happened to us there. Al went to close the main shutoffs and system A indicated barber pole, and I started to do something with him and I didn't shut off the ascent engine and we smoked overburned about 32 feet, but I backed it all out and looks like we're nominal. What did they give us for a nominal CSI before? 49, right?

05 22 32 58 LMP Yes, 49.2. The others had a 46 - 503 and that's - minus 273; 5030 - -

05 22 33 09 CDR Look, is our recorder off?

05 22 33 10 LMP - - 27330. No, it's on.

05 22 33 14 CDR Okay.

05 22 33 17 LMP ...

05 22 33 18 CDR Well, I'll tell you; we're bringing you a dirty, grubby spacecraft.

05 22 33 27 LMP MARK.

05 22 33 28 LMP 178, CLEAR, 316, plus 01780. I hope we make a good AGS solution here. Like to do it. CLEAR. 415, plus 10 000. Standing by to make the next set of marks. Okay, Pete. Things are looking good. Man, it was spectacular looking out. You should have seen that descent stage - that - all that jazz.

[REDACTED]

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05 22 34 07 CDR I saw it.

05 22 34 09 LMP Did you? And then it - when we pitched over, I could see the descent stage like you said.

05 22 34 12 CDR Yes, I couldn't see it. That camera stopped. It would've been fantastic. I don't know when it stopped - -

05 22 34 18 LMP Son of a bitch - -

05 22 34 19 CDR File of junk.

05 22 34 21 LMP Really pisses you off, doesn't it?

05 22 34 22 CDR It does, that's a fantastic thing to show somebody.

05 22 34 35 LMP 27. I'm going to take an R-dot right here. Clipper, that'd be 253, 254, 252, CLEAR, 503, minus 0, 2540.

05 22 35 17 LMP Two more marks and I'll get a look at a solution for you.

05 22 35 20 CDR Okay.

05 22 35 29 LMP ENTER. 173, 873 miles, 73 miles, CLEAR.

05 22 35 41 CDR What'd you do, break lock, Dick?

05 22 35 44 CMP ...

05 22 35 51 CDR You see us lift off?

05 22 35 56 CMP Negative.

05 22 36 16 LMP Hey, ... See that? It is working.

05 22 36 20 CDR Okay.

05 22 36 31 LMP That main shutoff valve has done it again.

05 22 36 48 CDR I got to ask Dick something and see if he'll do something for me. Hey, Dick. Call me back when you got - have about 2 or 3 minutes.

05 22 37 01 CMP ...

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05 22 37 02 CDR How about giving me a long count?

05 22 37 04 CMP Roger. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10; 10, 9, 8, 7, 6, 5, 4, 3, 2, 1. Over.

05 22 37 12 CDR Okay. Do you hear me okay?

05 22 37 13 CMP Yes. I hear you fine.

05 22 37 14 CDR Roger. Is your ranging on?

05 22 37 16 CMP Yes. It's okay.

05 22 37 18 CDR Okay, babe.

05 22 37 19 CMP How's ... down there; I'm locked on again.

05 22 37 22 LMP 168.2, CLEAR, 503, minus 1682, ENTER. I did that wrong. I bombed that damn AGS right there.

05 22 37 44 CDR What did you do?

05 22 37 48 LMP I entered a RANGE instead of a RANGE RATE. Let me see what it says - let me see what it says. R-dot. See, bombed the hell out of it.

05 22 38 03 CDR Well, put it right back in again. It won't bomb it. Hurry. Put in - push a right RANGE RATE in.

05 22 38 08 LMP It won't work.

05 22 38 09 CDR Why?

05 22 38 10 LMP Watch it. It drives it way out, there's no way to bring it back. Just give me an update.

05 22 38 14 CDR All right. I can't do it right now.

05 22 38 16 LMP Whenever you can.

05 22 38 17 CDR All right, here, let's copy this down; 16.8 DELTA-H.

05 22 38 21 LMP Wait a second. 16.8.

05 22 38 25 CDR 58:11.

05 22 38 26 LMP 58:11.

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05 22 38 28 CDR 37:59.

05 22 38 31 LMP Okay.

05 22 38 32 CDR PRO.

05 22 38 37 CDR 47.0.

05 22 38 38 LMP 47.0.

05 22 38 40 CDR Okay, Dick. My first solution is 47.0.

05 22 38 43 CMP

05 22 38 47 CDR Okay, my CSI-CDH looks like minus 7.9 and minus 8.3.

05 22 38 57 CDR Okay, we're counting.

05 22 38 58 LMP Okay.

05 22 38 59 CDR Okay, I'll looksee.

05 22 39 07 CDR Where'd that - G VERB 90 at 15. Okay.

05 22 39 09 LMP Give me - give me an update, would you? Just a second, just a second.

05 22 39 15 CDR HIGH BIT RATE. What a dope!

05 22 39 19 LMP Okay, go. If we start new, maybe I can do better.

05 22 39 29 CDR All right. I can't hardly tell the difference between one-sixth g - -

05 22 39 40 CMP Okay. Sounds good. I'll be working on out-of-plane here for you.

05 22 39 48 CDR Okay, Dick. You say you're working on the out-of-plane. You're very garbled.

05 22 39 55 CMP Roger. Give me the CSI time again.

05 22 39 58 CDR CSI time, 143:01:50.60.

05 22 40 07 CMP Okay. I - I got my attitude.

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05 22 40 21 LMP Can you look here, Pete?

05 22 40 38 LMP Do it right this time if it hurts. 162,
Son of a bitch, beat you yet. Going to get a ...

05 22 41 16 CDR Coming up on 20.

05 22 41 27 LMP Guess if we really did run it on AGS alone, I'd
have to do the charts right now.

05 22 41 50 LMP VERB 67.

05 22 42 03 CDR Okay.

05 22 42 04 CMP Hey, Pete, your out-of-plane is plus 1.8 feet per
second.

05 22 42 09 CDR Okay. Well, forget it.

05 22 42 39 LMP 59, CLEAR, 6 plus 0, 590. Hit her.

05 22 42 51 CMP And I had to circle ... AUTO ...

05 22 42 54 CDR How much?

05 22 42 56 CMP A third of a mile.

05 22 42 58 CDR A third of a mile?

05 22 42 59 CMP That's affirmative.

05 22 43 00 CDR Okay. You're very garbled.

05 22 43 09 CMP How do you read me now?

05 22 43 11 CDR Just a little bit better, but you're still - -

05 22 43 12 LMP Check RCS, EPS, and the whole smash.

05 22 43 14 CDR - - garbled.

05 22 43 15 CMP

05 22 43 18 CDR Okay.

05 22 43 20 LMP Hey, why are we using so much system B?

05 22 43 23 CDR Probably because that's what we're on.

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05 22 43 26 LMP Okay.

05 22 43 27 CDR We're on - we're on 11.

05 22 43 31 LMP Are we in the right DAP, you suppose?

05 22 43 34 CDR System B. I'll switch it. Can't switch it?

05 22 43 40 LMP ...

05 22 43 42 CMP ..., Pete.

05 22 43 46 CDR You're hard to read, Dick, babe.

05 22 43 50 CMP What did you ... after CSI?

05 22 43 52 CDR It had 46.5, Dick.

05 22 43 58 CMP It did?

05 22 44 27 LMP Where'd we go?

05 22 44 28 CDR Huh? Oh, no, I just let it - I'm flying it. I was just trying to save some gas.

05 22 44 39 LMP Yes, well, we're off ... Wonder why it's using so much?

05 22 44 45 CDR I don't save a hell of a lot of gas. That system was low when we started.

05 22 44 57 CDR I'm going to go back into AUTO here.

05 22 44 58 LMP I think the thing to do - I think one of the things we might want to do - -

05 22 45 02 CDR I'm in the 1-degree deadband.

05 22 45 17 LMP Bugs me.

05 22 45 22 CMP I'm ... in ... 38.8 ...

05 22 45 29 CDR How much, 48.8?

05 22 45 32 CMP 38.8.

05 22 45 33 CDR 38.8. That's not very good, Dick.

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[REDACTED]

05 22 45 39 CMP Just a minute there.

05 22 45 48 CDR We - we agree almost exactly with the ground.

05 22 46 34 LMP DPS and ECS; CPS and ECS. What a dope.

05 22 47 16 CDR You're sure doing a lot of thinking. Forget it. I show 0.26 miles out of plane, Dick, and minus 0.4, so I'm going to forget them.

05 22 47 38 CMP Got that.

05 22 47 41 CDR Hey, I'm going to let this go to 8 minutes.

05 22 47 44 LMP Okay.

05 22 48 06 CDR I was dumbhead for letting that son of a bitch overspeed, wasn't I?

05 22 48 10 LMP Both of us were dumbheads.

05 22 48 13 CDR Huh?

05 22 48 15 LMP Both of us - -

05 22 48 16 CDR Hey, that was a no sweat. You know that?

05 22 48 18 LMP Sure, it was a no-sweat.

05 22 48 19 CDR And you know what we should have done - -

05 22 48 22 LMP We should have briefed for just that.

05 22 48 25 CDR All you had to do was close them anyhow and leave that crossfeed open.

05 22 48 29 LMP But I said - you didn't hear me say it?

05 22 48 30 CDR Yes. I - I just freak. That's me - I freaked up. I should have left you alone over there and stayed on my own business. My fault.

05 22 49 19 CDR Turn down the floods out a minute.

05 22 49 20 LMP Just a second, please.

05 22 49 32 LMP Boy, is that him?

[REDACTED]

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05 22 49 36 CDR Got a goddamn star out there.

05 22 50 26 CDR We're not in bad shape. What have we got?
80, 66.

05 22 50 41 CDR Tell you what, if you want to even them up, we
can crossfeed during this burn.

05 22 50 45 LMP Okay.

05 22 50 54 CMP

05 22 50 57 CDR Darn it, Dick, you're unreadable. Say again.

05 22 51 01 CMP Loud and clear. I was just ... to Houston, right
now.

05 22 51 04 CDR Oh, okay. You got a flashing light on or anything?

05 22 51 13 CMP No. I've got the overhead EVA lights and the
rendezvous lights on.

05 22 51 17 CDR And we're still 150 miles away or something.

05 22 51 23 LMP Give me an R and R-dot, would you, Pete, in
10 minutes.

05 22 51 26 CDR R and R-dot in 10 minutes - -

05 22 51 27 LMP That's right.

05 22 51 28 CDR Okay.

05 22 51 33 CDR R's going to be - -

05 22 51 34 LMP Hey, I like this.

05 22 51 36 CDR Yes.

05 22 51 42 CDR R-dot's going to be 1 - Let's see, it's going to
be 71; no, it might be 70.

05 22 51 48 LMP Well, let's hope the old probe works.

05 22 51 51 CDR MARK.

05 22 51 52 CDR 148.2 at 70 feet per second.

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[REDACTED]

05 22 51 57 LMP I'm doing it. I've got a thru - 70, 76.

05 22 52 01 CMP Okay, Pete. I got 45.9 feet.

05 22 52 06 CDR 45.9. That sounds a lot better. Okay.

05 22 52 13 CMP

05 22 52 16 LMP Okay. I'm going to final COMP in one more mark; just a second, it's coming up now.

05 22 52 24 CDR That'd be 44.9 converted.

05 22 53 03 LMP I get 45. - 45.0 off the chart.

05 22 53 09 CDR Okay.

05 22 53 15 LMP That's not too bad.

05 22 53 16 CMP Al, am I supposed to maneuver?

05 22 53 18 LMP What? Yes, go ahead and maneuver.

05 22 53 21 CDR Maneuver yourself - -

05 22 53 22 CMP Okay.

05 22 53 27 LMP Eight minutes.

05 22 53 42 CDR There it is. 17.5 DELTA-H, 58:11 - -

05 22 53 47 LMP Wait, wait - -

05 22 53 48 CDR - - and 3758.

05 22 53 50 LMP Wait.

05 22 53 51 CDR Got it?

05 22 53 52 LMP No.

05 22 53 53 LMP 5811?

05 22 53 55 CDR Yes.

05 22 53 56 LMP 3758. Go ahead.

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05 22 54 00 CDR Okay, Dick, I got 45.3 feet per second.

05 22 54 04 LMP Okay.

05 22 54 09 CDR Okay. Minus 9 and minus 11.4. Do you want 82?

05 22 54 15 LMP Yes, I do. One minute.

05 22 54 17 CDR Minus 9.7, minus 11.4.

05 22 54 21 LMP/CDR Okay.

05 22 54 22 CDR Better get ready for the burn.

05 22 54 24 LMP Okay. Seven minutes.

05 22 54 27 CDR I like to get ready.

05 22 54 28 LMP 410 plus 50 000 ... both DELTA-V's.

05 22 54 41 CDR Did you get any NOUN 86's? There you go.

05 22 54 48 CMP How you're doing?

05 22 54 50 CDR Oh, we're okay, 45.3. We'll be burning in about 6 minutes, got a good system, no reason to think we're not going to burn.

05 22 54 57 CMP How you doing down there?

05 22 54 59 CDR We're doing fine. How are you? You read me, Dick? Hello, Dick. Do you read me?

05 22 55 12 LMP He doesn't read. He - -

05 22 55 14 CDR Hey, should we be on some other antenna?

05 22 55 18 LMP Forward.

05 22 55 20 CMP

05 22 55 21 CDR Oh, okay. Very good. I'm about to lose my radar on you.

05 22 55 33 LMP Do you mind if I have NOUN 85 back?

05 22 55 36 CDR I don't mind a bit, if that's what you need.

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05 22 56 06 LMP Pretty full one.

05 22 56 16 CDR Why, you want to crossfeed?

05 22 56 19 LMP Yes.

05 22 56 21 CDR Open the crossfeed.

05 22 56 23 LMP Close system B.

05 22 56 25 CDR Close system B.

05 22 56 26 LMP Now, just hope like hell system A is really and truly on. Let's watch these pressures.

05 22 56 46 CDR How you read me, Dick? Okay?

05 22 56 48 CMP Loud and clear, Pete.

05 22 56 49 CDR All right. Five minutes to the burn.

05 22 56 51 LMP Okay.

05 22 56 52 CMP Okay.

05 22 57 03 CDR Boy, I really like to watch those thrusters fire out there. That's neat-o. When do we - when do we come out in the sunrise?

05 22 57 14 CMP Right after - right after we see the Sun.

05 22 57 17 LMP Okay. I'm not so mad at myself anymore.

05 22 57 20 CDR Why?

05 22 57 21 LMP I've written those down, and I solved this thing.

05 22 57 23 CMP ... for my P56.

05 22 57 27 CDR Say again.

05 22 57 28 CMP

05 22 57 32 CDR 45.3, is that right, Al?

05 22 57 34 LMP That's right, 45.3.

05 22 57 38 CMP That's a plus 45.3, zips in, huh?

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05 22 57 42 CDR That's right. I think you got to add one to it or something. I know we have to subtract one from yours.

05 22 57 47 CMP I already did.

05 22 57 48 CDR Not bad. ... - -

05 22 57 50 CMP on mine, though.

05 22 57 55 LMP 144.

05 22 57 56 CMP ... - minutes to the burn in 7 seconds.

05 22 58 44 CDR Three.

05 22 59 01 CMP How are - you look about half a degree.

05 22 59 03 CDR Oh, yes. We're all set to go. No sweat, it says here in fine print.

05 22 59 13 LMP I did the DELTA DELTA-T and got 45.1, by using the DELTA DELTA-T thing.

05 22 59 20 CDR Not too bad for a dope.

05 22 59 22 LMP I'm going to do better next trip.

05 22 59 25 CDR Well, you been lonely without us?

05 22 59 28 CMP Well, just a little bit. I've been cleaning up for you.

05 22 59 34 CDR Man, we're going to dirty it up, pal. I'll tell you, we'll do our best, but we are filthy. I don't really think it's that bad, though. Most of it will stay in the LM.

05 22 59 48 LMP I hope to heck it does.

05 22 59 50 CDR Okay, Dick, 2 minutes to burn.

05 22 59 52 CMP I hear you.

05 22 59 57 CDR I see your flashing light out there, now.

05 23 00 07 CDR No, I don't either.

05 23 00 17 CDR Look at that ORDEAL; it's right on the money.

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05 23 00 20 LMP Look at your inertial ball; it's showing right on the money, too.

05 23 00 22 CDR Yes. Everything's look good right this minute.

05 23 00 28 CMP ... you're breaking up.

05 23 00 29 CDR Say again. We're breaking up?

05 23 00 46 CDR Oh, I know. You know, I spotted what I think is Dick. There's a piece of Kapton or something floating in front of the spacecraft and our flashing light flashes off it. Okay, Dick, I'll be burning in about -

05 23 01 00 CDR MARK -

05 23 01 01 CDR - 50 seconds.

05 23 01 16 CDR DSKY's blank. Aver - average g. Twenty seconds. How do you read me?

05 23 01 31 CMP ...

05 23 01 34 CDR Not yet. No. Another 15 seconds. Wait a minute; here we come. 10, 9, 8, 7, 6, 5, 4, 3, 2, 1.

05 23 01 50 CDR We're burning; we're burning. We're burning now, Dick. How do you hear? Burning good.

05 23 02 03 CMP How are you doing?

05 23 02 04 CDR Just fine. Just fine. Burn is good, Dick. Burn is good. How do you hear? Half done.

05 23 02 13 LMP We agree.

05 23 02 14 CMP

05 23 02 15 CDR Just fine. Just fine.

05 23 02 18 CMP

05 23 02 19 CDR That fine, Dick. Fine. Very good.

05 23 02 23 LMP You're nearly there, babe. You just let me burn them out.

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05 23 04 00 CDR God damn it! Write this time down. 144, all zeros - -

05 23 04 07 LMP Okay. Just a second.

05 23 04 09 CDR Hello, Dick. How do you read? Over.

05 23 04 11 CMP Loud and clear.

05 23 04 12 CDR Okay. Now, look, something's screwy on this COMM - -

05 23 04 13 LMP Burn's complete.

05 23 04 14 CDR Burn's complete.

05 23 04 15 LMP We got the burn's complete.

05 23 04 16 CDR Our burn's complete. Our burn's complete.

05 23 04 19 CMP Okay, you're cutting in and out pretty bad. ...

05 23 04 23 CDR Say again.

05 23 04 24 CMP You're cutting in and out pretty badly.

05 23 04 27 CDR Okay. Now, look, I'm transmitting to you - - Now, come on, god damn it.

05 23 04 30 LMP Look, let me get the COMM right. Do you want me to get the COMM right or not? Something's wrong with it. Okay. I'll just leave it like it was.

05 23 04 39 CDR Just - just all I want to do - 521 alarm. What's that? Freaking son of a bitch.

05 23 04 46 LMP It's in your G&N - -

05 23 04 47 CDR I got it, never mind. Could not read radar. All right. God - god damn, I know what the hell's the matter here.

05 23 05 01 LMP Lost lock, no?

05 23 05 04 CDR No, I know what's the matter. Shit, I - freaking around with that stupid COMM. Now, he's got it. All right, will you write this number down?

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05 23 05 18 LMP I sure will.

05 23 05 21 CDR Three, six, ... 144, all zips, 1.53, that's CSI time.

05 23 05 32 LMP Okay.

05 23 05 38 CDR Dick, how do you read?

05 23 05 40 CMP I'm through, now.

05 23 05 41 CDR I'll be goddamned if I know what's wrong with it. Stupid son of a bitch. All right, we're in sunlight. Our CS - CDH time is 144:00:1 - -

05 23 05 52 LMP 5.2.

05 23 05 53 CDR No. One second point 53. 1.53.

05 23 05 59 CMP Say it again. 1 point zero - -

05 23 06 02 CDR 00:01.53.

05 23 06 09 CMP What time do you want the ...?

05 23 06 14 LMP Just a second. I'll figure it out.

05 23 06 28 CDR What in Christ's name is this?

05 23 06 30 LMP How about - -

05 23 06 32 CDR What the hell happened to the reset - the - We're not going back to 10 010, are we?

05 23 06 43 LMP Pete, do you want me to put 143:30 as the plane-change time?

05 23 06 47 CDR That's fine, if that's what it's supposed to be.

05 23 06 50 LMP Okay. Well, that's rounding off to the nearest - -

05 23 06 52 CDR Now, what happened to the damn - Hey, Dick, how about a plane change time of 143:30? Over.

05 23 07 00 CMP That sounds good.

05 23 07 02 CDR Okay. That's the one. Oh, there it is. I'm looking on the wrong page.

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05 23 07 25 LMP Okay.

05 23 07 31 CDR Boy, that COMM makes me mad.

05 23 07 34 LMP Does me too. That's why I wanted to try to figure it out there for you.

05 23 07 36 CDR No, but see, I got a PROGRAM ALARM and a TRACKER LIGHT - -

05 23 07 41 LMP Okay.

05 23 07 42 CDR - - and a bunch of other crap.

05 23 07 43 LMP How about giving me an AGS update?

05 23 07 46 CDR Just 1 - -

05 23 07 47 LMP When you can.

05 23 07 48 CDR - - 1 second.

05 23 07 49 CMP Are you in ...?

05 23 07 51 LMP Yes, we are.

05 23 07 52 CDR Yes. Sure are, Dick.

05 23 07 55 LMP Now, look, I got the VHF in FORWARD and that's where we've been flying it, and it worked great. Only today, it ain't working so great. Why, I don't know.

05 23 08 02 CDR VERB 47, ENTER. There you go.

05 23 08 06 LMP Wait a second. Wait a second. Go.

05 23 08 21 CDR Hey, Dick, it never fails to do that. I'll be goddamned if I know. We're talking to you fine up until 1 minute, and then you can't hear me. Now, it could be that, when I'm burning, my thrusters are doing something that's blocking that VHF.

05 23 08 37 LMP The only trouble is, he goes out even before you start burning.

05 23 08 40 CMP ... too, Pete.

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05 23 08 44 CDR But I think you and I have very poor COMM with one another, today. I can hardly understand - understand you; you're so garbled. Hey, pull that thing to PUSH/CABIN and let me - I want to blow my ears a minute.

05 23 09 02 LMP I can't PUSH/CABIN be - -

05 23 09 04 CDR Well, yes, I go to ear. Never mind, stand up. I get it. I'm sorry. I'm asking you to do too much. You play with your AGS. I'll do it. I shouldn't get spastic over here, but that freaking PROGRAM ALARM pissed me off. They come up in the middle of that thing.

05 23 09 42 CDR Okay. Now. What time do we burn - CSI was 1 - 143:03, right?

05 23 09 58 LMP Yes.

05 23 09 59 CDR 01 - -

05 23 10 00 LMP No, let me tell you.

05 23 10 01 CDR So, you came up with a time of - for the plane change of - -

05 23 10 07 LMP 143:01:50. Okay. Then you told me CDH was going to be 144:00:01.53, right?

05 23 10 14 CDR Yes.

05 23 10 15 LMP I subtracted 30 minutes and rounded it off to 140 and asked you 140 - -

05 23 10 19 CDR Okay.

05 23 10 20 LMP 330.

05 23 10 21 CDR Yes. Say, let me - let me just - let me just check something.

05 23 10 31 LMP No. Wrong book.

05 23 10 53 LMP Do you want me to set your clock counting down?

05 23 10 56 CDR Yes. We got plenty of time. This is a long haul.

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05 23 10 59 LMP Yes. I know it. This is a good one. Just trying to get organized, here.

05 23 11 01 CDR Yes. Now, I'm - No sweat.

05 23 11 07 LMP This job is a son of a bitch, yet. Don't knock the time; I've - I've set it for you.

05 23 11 19 CDR Oh, wait a minute. Wait. Go ahead.

05 23 11 21 LMP Okay. I'll be setting it in 8 seconds, 48:30, counting down. Boy, that Sun is hot. You got sort of stay out of the way, don't you? The other ... - -

05 23 11 32 CDR You ought to put my window heater back in. See what's happening, here, is we're running on CABIN - we're running on SUIT LOOP.

05 23 11 51 LMP That's right.

05 23 11 52 CDR If we went to - if we get out of this dumb EGRESS mode, we're not going to - Certainly the cabin isn't going to fail, now. We've been in and out - let's get. I'm in CABIN right now.

05 23 12 03 LMP No, you just went to CABIN. Here - -

05 23 12 05 CDR When you pull this - -

05 23 12 07 LMP PUSH/CABIN. There you go.

05 23 12 09 CDR Of course, we could screw up the - we could screw up the suit loop, couldn't we? If we - -

05 23 12 15 LMP Yes.

05 23 12 16 CDR - - don't follow this crap, and I'd better go back to EGRESS.

05 23 12 20 LMP We need those window heaters, though, just like you say.

05 23 12 22 CDR Yes. It's funny; the other guys never had to use them.

05 23 12 30 LMP Oh. We maneuvering somewhere, huh? No? Okay.

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05 23 13 06 CDR There you go; thats - see that's the T_{ig} at
at CDH, 1.53. Okay.

05 23 13 12 LMP Yes.

05 23 13 36 CMP ... see you in the telescope.

05 23 13 41 CDR You - you see us in the telescope?

05 23 13 43 CMP Yes.

05 23 13 44 LMP ENTER, 136.5.

05 23 13 45 CDR Damn, Dick. Do you - I - I just don't know what
in the hell is wrong with this VHF COMM. We should
have super COMM. And I'll tell you, it really
makes me mad.

05 23 14 12 LMP Hey, look at this book just a second.

05 23 14 13 CDR Okay.

05 23 14 14 LMP All right, I don't even know what I want to look
at. I want to look at this - -

05 23 14 21 CDR When you did your P76, Dick, with my burn in it,
did you get any NOUN 49's afterwards, or did it
come right up with a good state vector?

05 23 14 30 CMP No. I got a good one. ...

05 23 14 38 CDR I can't understand you. God darn, you're garbled.

05 23 14 42 CMP So are you.

05 23 14 46 CDR Hey, Al, what's - Let's screw around with some-
thing over there. How about the VHF squelches or
something? Why don't we try that?

05 23 14 57 LMP No, the squelch only applies to us hearing him.
And we always hear him.

05 23 15 01 CDR Well, he's got squelch over there, too - -

05 23 15 03 LMP That's right, so he should screw with his. It
doesn't have anything to do with our transmitter.
Since we always hear him, - -

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05 23 15 08 CDR Yes. Well - -

05 23 15 09 LMP ...

05 23 15 10 CDR - - he's transmitting to us on what, A?

05 23 15 11 LMP He's coming to us on B.

05 23 15 13 CDR Okay. Okay, Dick, give us a count, will you?

05 23 15 17 CMP Roger. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

05 23 15 22 CDR Give us a longer one than that, Dick.

05 23 15 26 CMP ... 5, 6, 7, 8, 9, 10; 10, 9, 8, 7, 6, 5, 4, 3, 2, 1. Over.

05 23 15 41 LMP It's just bad, that's all.

05 23 15 48 CDR Man, oh man, it's taking a long time thinking this over.

05 23 15 53 LMP I'll be with you in a second. ...

05 23 15 58 CDR When do we get AOS, pretty quick?

05 23 16 02 LMP AOS is due right - there.

05 23 16 07 CDR 16. Should be right now.

05 23 16 10 LMP FORWARD, verify COMM. What's our pitch attitude? 147?

05 23 16 17 CDR Pitch attitude is 145. Gosh, I think there is something wrong with my CSI program - CDH program. That baby has really been thinking.

05 23 16 28 LMP Sure you got the right numbers in there? You could - -

05 23 16 30 CDR There's no numbers, you know, it just comes up with it. There it is. Look at that. Dick, it shows me 17. mi - 17.1 mile DELTA-H, 38 minutes and 58 seconds to DPI, and it's only a slip of - Well, it makes it 50 - No, it makes it 59 seconds early.

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05 23 16 54 CMP Okay. Sounds good. How are you looking on the out-of-plane ...?

05 23 16 58 CDR Okay. And it's minus 9 point - -

05 23 17 04 CMP ...

05 23 17 05 CDR - - minus 9.4 feet (cough).

05 23 17 11 LMP Dirty in here, isn't it?

05 23 17 14 CMP ... 45.3 feet per second, ... 1345.9.

05 23 17 26 CDR My CDH, Dick, looks like minus 9.4 and minus 8.3.

05 23 17 31 LMP Why don't you call a NOUN 75, if you could?

05 23 17 46 CDR There they - No, we're on FORWARD S-band - No, they didn't come, I thought were.

05 23 18 36 CMP Okay, this plane change is minus 0.4.

05 23 18 39 CDR Okay, I guess we'll just skip it, Dick.

05 23 18 54 LMP There we go.

05 23 18 55 CDR ... S-band.

05 23 18 56 LMP Just got her. Go to SLEW - -

05 23 18 58 CDR Here comes earthrise.

05 23 19 00 LMP ...

05 23 19 01 CDR Too bad we don't have a camera.

05 23 19 02 LMP We do. Where is the earthrise?

05 23 19 05 CDR Right out your window.

05 23 19 06 LMP You take it. I got - My window's got - soaked in. Just punch the button. Put it on 20 - here, lean over here just a minute. Okay, now take it. Just punch the button on the front.

05 23 19 18 CDR It would be better if you took it out your window.

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05 23 19 20 LMP It's all frosted, Pete.

05 23 19 26 CC Intrepid, Houston. How do you read?

05 23 19 28 LMP I'll get them. Loud and clear, Houston. The burn was good.

05 23 19 33 CC Roger, Al. Read you the same.

05 23 19 39 LMP Residual PGNS were plus 0.1, minus 0.1, and minus 0.3.

05 23 19 50 LMP You didn't trim those to zero, did you?

05 23 19 52 CDR Yes, I guess I did. I trimmed to - -

05 23 19 55 CC Intrepid, Houston. We'd like to know what your DELTA-V's were that you loaded.

05 23 19 58 LMP Okay.

05 23 20 01 CDR What do you mean, what the DELTA-V's we loaded? We loaded 45.3 feet per second. Is that what you mean? That was our CSI solution.

05 23 20 08 CC Affirm.

05 23 20 11 CDR Okay. And I've run CDH, here; and it looks like minus 9 and minus 8, roughly. Shows me 59 seconds early at TPI. Okay, and we're not going to make the - That doesn't look like we need to make the out-of-plane. So, we are down in the noise level on out-of-plane. Dick's showing 0.4 foot per second; and I haven't looked at it yet, but I will in a minute.

05 23 20 48 CC Roger. Intrepid, Houston. Can you give us a HIGH BIT RATE, please?

05 23 21 08 CDR That's Charlie.

05 23 21 13 LMP Do you want me to look at this? 38. ...

05 23 21 37 CDR Say, Houston, I sure do enjoy flying this thing. It's - Both the ascent stage and the descent stage are both nice. Hey, - -

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05 23 21 52 CC Roger, Pete.

05 23 21 53 CDR - - let's square that away, now.

05 23 21 54 LMP I did.

05 23 21 55 CDR Oh, you did. I'm sorry.

05 23 21 56 LMP I'm squared away when they ... - -

05 23 21 58 CDR For - for your information, I crossed on the CSI burn and that sort of evened me up, and I also switched my DAP load to system A.

05 23 22 19 CC Roger. Copy.

05 23 22 22 LMP Let's - no.

05 23 22 25 CDR And my out-of-plane shows 0.31 miles at 0.3 foot per second, so I think we'll forget her.

05 23 22 37 CC Okay, Pete. That sounds good. While you got a minute, we've got a question about the sequence camera. Did that camera stop right after lift-off?

05 23 22 49 CDR Apparently it did, and then it stopped again, several times.

05 23 22 53 LMP That's affirmative. It stopped, and I started it, and it stopped two or three times.

02 23 23 00 CC Roger.

05 23 23 03 LMP That's the way it goes.

05 23 23 38 LMP Clock should be happy.

05 23 23 42 CDR Huh?

05 23 23 43 LMP Let me write this R-dot down.

05 23 23 46 CDR Say, I guess nobody else has - anybody else had to use these window heaters before? Our windows keep fogging over, and I have to run the window heaters all the time.

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05 23 24 05 CC Intrepid, Houston. The folks down here say that was pretty nominal for Apollo 11.

05 23 24 10 CDR Oh, I didn't remember that. Okay. Very good.

05 23 24 15 LMP Here we go.

05 23 24 41 CMP Hey, Pete.

05 23 24 42 CDR Go ahead, Dick.

05 23 24 43 CMP My CDH time on my computer is 143:59:46.70 - 47.

05 23 24 53 CDR Okay. We're within a couple - about 15 seconds of one another.

05 23 24 58 CMP Okay. We're going to use yours.

05 23 25 00 CDR Okay. 144:00:01.53.

05 23 25 07 CMP I got it. Thank you.

05 23 25 14 CC Intrepid, Houston.

05 23 25 15 CDR Go.

05 23 25 21 CC Roger, Pete. I sent you bum dope. 11 did not use their heaters.

05 23 25 23 CDR Yes. I don't remember anybody having to use them, and both my docking window and - and both Al's window and my window - We've collected moisture on the lunar surface, and we've started collecting it, here, in flight; so, I put the window heater back on.

05 23 25 43 CC Roger.

05 23 25 53 LMP You in po - are you in VERB 76, Pete?

05 23 25 58 CDR What do you want?

05 23 25 59 LMP Yes, I want to do it - just - -

05 23 26 00 CDR Okay.

05 23 26 01 LMP Do you have the needles for me?

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05 23 26 04 CDR They're just - have them pass through zero to get it. Here you go.

05 23 26 12 LMP ENTER, 127. CLEAR, 316, plus 01270, and seven 9's.

05 23 26 40 CDR Sure do apologize, Houston, for the overburn. I got my head looking at Al there, and I just shut her off late.

05 23 26 51 CC Roger. No sweat, Pete.

05 23 27 03 CMP What did he do this time, Pete?

05 23 27 05 CDR Say again?

05 23 27 07 CMP What the devil did he do this time, Pete?

05 23 27 09 CDR He didn't do anything. We had one main shutoff valve stay barber poled over here, and it turned out to be an indicator, but I got interested in that, and I didn't dearm the engine soon enough, and we shut down about 30 feet per second over. That's the reason I had to back her out. No big deal.

05 23 27 30 LMP You on hot mike? ... Okay.

05 23 27 59 CMP Okay, Pete. My first try at it is 18 miles ...

05 23 28 08 CDR S-band what?

05 23 28 11 CMP ...

05 23 28 15 CDR Okay, Dick. You're almost unreadable.

05 23 28 20 CC Clipper, Houston. Your S-band is getting pretty ratty.

05 23 28 44 CDR You got a big clip? Give me a big clip.

05 23 28 47 LMP Okay, just - Take that clip?

05 23 28 56 CDR I'm going to hold that stupid shade from unrolling every time I turn around. Okay.

05 23 29 02 LMP Yes.

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05 23 29 04 CDR Let me look at something here. It took a little jump here, didn't it? Just like - Huh?

05 23 29 08 LMP - - The simulator.

05 23 29 18 LMP ... 24.5 CLEAR, 316, plus 128:45. AGS is doing good, now. Hey, Pete. Hey, Pete.

05 23 29 53 CDR Okay, Dick, I'm showing 17.6 with a 36 minute 20 seconds along; and now, it shows me a minute and 39 seconds early. Third magnitude's about the same, minus 10 and minus 8.8. You looking at that recycle on the DSKY, Houston?

05 23 30 31 CC We're checking, Pete.

05 23 30 37 CDR It's minus 10 and minus 8.8.

05 23 30 44 CC Intrepid, Houston. We're watching.

05 23 31 10 CDR How are you doing with your AGS?

05 23 31 12 LMP Great.

05 23 31 13 CDR Good.

05 23 31 14 LMP Thanks for salvaging me.

05 23 31 15 CDR No problem.

05 23 31 16 LMP But I got to see it ...; it kept going on those charts. That was great (laughter).

05 23 31 23 CDR You got to have a recovery mode.

05 23 31 26 LMP If you tell Jim ... that, he'll flip.

05 23 31 29 CDR As soon as the Sun gets back over our head, here, which would fill up - shining down in our window - Ah! I see him, now.

05 23 31 37 LMP Did you see him?

05 23 31 38 CDR Yes, I think so. Yes. I finally - finally have a visual on Yankee Clipper, I think.

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05 23 31 48 LMP What - what are we? We're 120 ... - -

05 23 31 51 CDR Yes, I got you visually, Yankee.

05 23 31 53 LMP - - 22.3 CLEAR; 16 plus 0 -

05 23 32 02 CMP Pete, I'm still leading by 122 miles.

05 23 32 05 CDR Okay, I show 122 on mine, closing at 95 feet a second.

05 23 32 44 CDR I've done this so many times, I'm getting bored.

05 23 32 48 LMP I'm not.

05 23 32 49 CDR (Laughter)

05 23 32 57 LMP It's doing okay.

05 23 32 58 CDR That's a great guidance system on that out-of-plane, huh, Dick?

05 23 33 02 CMP Yes. ... the best. Man, I'm pulling so many marks, I don't know what to do with them all.

05 23 33 16 CDR I'm the same way.

05 23 33 17 LMP 88.

05 23 33 18 CDR I got 20 marks in, right now, and 26 minutes to go.

05 23 33 22 LMP ... minus 00980.

05 23 33 25 CMP ...

05 23 33 41 CMP ... meal last night?

05 23 33 43 CDR Say again.

05 23 33 45 CMP Did you enjoy your hot meal last night?

05 23 33 47 CDR Hot meal? We didn't eat any hot meal.

05 23 33 50 CMP Ah, come on. ... hot water.

05 23 33 53 CDR ... your hot water? Wish we did.

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05 23 34 07 LMP ... 20 minutes.

05 23 34 08 CDR Kind of fun to fly, isn't it?

05 23 34 10 LMP CLEAR, over, 120.

05 23 34 14 CDR Hey, we're getting up out of the lunar environment or something. The water's beginning to cool off.

05 23 34 23 CDR Well, I tell you, we got all the gear. Did they tell you?

05 23 34 30 CMP Yes, ...

05 23 34 32 CDR I can't hear you.

05 23 34 33 CMP ...

05 23 34 35 CDR Good.

05 23 34 38 CMP ...

05 23 34 44 LMP 74. (Laughter). Just laughing. Look at this dirt in here, would you?

05 23 34 56 CDR I know. It's phenomenal, isn't it?

05 23 34 57 LMP You'd ... - you know what - what happened is - -

05 23 34 59 CDR Remember how clean and neat this spacecraft was? (Laughter)

05 23 35 04 LMP A pile of junk - If those guys - Hey, I better get on the ball here. Minus 102.3, 903, minus 0102.3, ENTER. 415 plus 10 times - Show R-dot at 23 - I've got it. I'll do that. You going to - I - I need to get this thing -

05 23 35 41 CDR Ole Bean-0's over here updating his AGS, and he's all over -

05 23 35 45 LMP 118.2, 816 plus - -

05 23 35 50 CMP ...

05 23 35 53 CDR Yes, they'd probably die in Houston (laughter).

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05 23 35 56 CMP ...

05 23 36 01 LMP Wait until I get ahold of you, Dick Gordon
(laughter).

05 23 36 03 CMP ...

05 23 36 04 LMP (Laughter)

05 23 36 11 CDR Wait until you see - wait until we tell you where
we landed.

05 23 36 15 CMP I saw the ...

05 23 36 17 LMP (Laughter)

05 23 36 18 CDR (Laughter) Well, I don't think it looked - You
don't know - -

05 23 36 19 LMP Good luck, babe.

05 23 36 21 CDR You don't know exactly where we were.

05 23 36 24 LMP (Laughter)

05 23 36 27 CMP ... close to that rim.

05 23 36 28 LMP Oh, yes (laughter).

05 23 36 29 CDR Yes. That's like 20 feet. He's catching on.

05 23 36 36 CMP ...

05 23 36 39 CDR Can't hear you. You're really bad COMM. It's a
shame.

05 23 36 44 CMP ...

05 23 36 48 CDR Yes. Hey, can you back away from your mike a little
bit or something? Maybe that's it.

05 23 36 54 CMP ... COMM ...

05 23 36 58 LMP Yes, it's the COMM. Very bad, aren't I?

05 23 37 02 CDR Yes.

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Day 6

05 23 37 03 LMP 106 - -

05 23 37 04 CDR All right, tell Houston that we let - you going to burn the AGS CDH?

05 23 37 07 LMP No (laughter). Scare the hell out of them.

05 23 37 10 CDR Say - say, Houston, Al's working so hard keeping his AGS updated here, why don't we let him burn CDH? (Laughter)

05 23 37 18 LMP Those guys will die (laughter). They're down there - -

05 23 37 26 CC ...

05 23 37 28 CDR Say again, Jer?

05 23 37 32 CC ...

05 23 37 35 LMP They said you got to be kidding. 21.

05 23 37 42 CC Intrepid, Houston. Stand by on (laughter) that. We're consulting our oracle, right now.

05 23 37 46 CDR (Laughter) I'm only kidding, but he's all over the cockpit with that RANGE/RANGE RATE in.

05 23 37 54 CMP ...

05 23 37 58 LMP ENTER. Come on, babe; do a good one. I got the dope. If I muff it again, I can - go to the charts again (laughter). I covered all bets. I think I'll take a look at a recycle here.

05 23 38 18 CDR (Yawn)

05 23 38 19 LMP I think I'll take a look at a range rate of 10-110. CLEAR, 543, minus 0110. 503's range rate is minus 110, ENTER, CLEAR. 115 plus 10 000. Going for 21. I'm going to get this in here. ...

05 23 38 56 CDR I think we ought to rename the Intrepid the Flying Junk Pile. You ought to see it inside this spacecraft, Houston.

05 23 39 03 LMP ... ENTER. 115 miles. CLEAR. 316 - -

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05 23 39 09 CC Roger. Copy.

05 23 39 13 LMP 316 and 115 miles. It's in there.

05 23 39 28 LMP It's done. Going for 18 now. I'll check the RCS and everything for you. Looks beautiful, Pete. You know, it's very interesting; every time the thrusters fire, those REG's bounce.

05 23 39 44 CDR They do. They sure do.

05 23 39 46 LMP But I didn't notice that before.

05 23 39 48 CDR I didn't either (yawn). May be just because we're light.

05 23 39 53 LMP You're right. It maybe just a - be a gage problem. You know the - the needle may just jump.

05 23 39 59 CDR Do you see him out there?

05 23 40 05 LMP I'll be darned if I don't.

05 23 40 08 CDR You don't see him.

05 23 40 09 LMP I do. I do. I do. It's 18. Okay. Let me check the EPS for you, Pete.

05 23 40 15 CDR Okay. RCS is good. Show 100 percent on - no, we don't - we show 85 on both ... - -

05 23 40 30 LMP Hey, we really haven't used much. You're right. We used most - most of that at launch and the rest of that was just nothing.

05 23 40 36 CDR Yes, I used it backing out - -

05 23 40 38 LMP That's right.

05 23 40 39 CDR - - that 32 feet.

05 23 40 40 LMP That's what did it. 30 feet - whatever it was. Let me look. 18.

05 23 41 00 LMP It's changing. ... down. Wait a minute; let me get it.

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Day 6

05 23 41 18 CDR Still roughly the same burn, I think.

05 23 41 20 LMP Let - let - let me get in the - -

05 23 41 22 CDR What?

05 23 41 24 LMP 117.

05 23 41 26 CDR Yes, minus 10.3.

05 23 41 27 LMP ... minus 01170.

05 23 41 33 CMP ... 10.3 and 7.3.

05 23 41 37 CDR Okay, I'm minus 10.3 and minus 9.4.

05 23 41 42 LMP Coming up on 18 minutes.

05 23 41 43 CMP ... TPI.

05 23 41 47 CDR My TPI's 2-1/2 minutes early.

05 23 41 51 CMP I got about five more marks ...

05 23 41 54 LMP Okay. I'm going to let her run until 10 minutes.

05 23 42 08 LMP 111 miles. 111 miles.

05 23 42 22 LMP 111 miles. CLEAR, 316, plus -

05 23 42 37 LMP Okay. I'm done.

05 23 42 39 CDR Boy, am I going to be glad to get out of this suit. Whew!

05 23 42 43 LMP I'm almost afraid - Look at that dirt all over the cabin.

05 23 42 46 CDR Yes.

05 23 42 47 LMP Sticking on the windows.

05 23 42 48 CDR No, that's all right, though. That is good, it'll - it'll all get - I'll tell you what, we really ought to let the ECS system suck some of it up. ...

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05 23 42 53 LMP Yes, you're right, because it won't hurt to haul - -

05 23 42 56 CDR Yes, go ahead and go to CABIN on that baby for a while.

05 23 43 00 LMP I think you're right, Pete, because otherwise we're going to give it to the command module. We don't want that for sure.

05 23 43 05 CDR Say, Houston, with - Put it back in EGRESS for a minute. With your concurrence, we'd like to go over into the CABIN mode for a while, stay suited though, but in the CABIN mode, and try and get rid of some of this dirt before we dock. I don't think it's going to hurt the ECS.

05 23 43 27 CC Roger, Pete. Stand by.

05 23 43 31 CDR Don't tell me those filters and canisters get - -

05 23 43 34 CC Intrepid; Houston. Go ahead. Use the CABIN mode.

05 23 43 36 CDR Yes. Okay. I'll get it. CABIN, CABIN.

05 23 43 44 CC Intrepid; Houston. I have a PIPA bias update to read up for you.

05 23 43 48 CDR Okay, just a minute.

05 23 43 52 LMP Are you going to get it?

05 23 43 53 CDR Yes.

05 23 43 54 LMP Okay.

05 23 43 55 CDR Go ahead.

05 23 43 59 CC Okay. VERB 21, NOUN 01, ENTER, 1452, ENTER. 77423, ENTER, ENTER, 1454, ENTER, 00406, ENTER, ENTER, 1456, ENTER, 00777, ENTER. Over.

05 23 44 48 CDR Okay, let me see if I got those numbers all right. VERB 21, NOUN 01, ENTER, 1452, ENTER, 77423, ENTER, ENTER, 1454, ENTER, 00046, ENTER, ENTER, 1456, ENTER, 00077?

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05 23 45 14 CC Intrepid, Houston. That's negative. Address 1454 should read 00406, and address 1456 should read 00777. Over.

05 23 45 34 CDR Okay. 1454 is 00406, and 1456, 00777.

05 23 45 45 CC That's affirmative, Pete.

05 23 45 48 CDR Okay.

05 23 46 13 CDR Okay. That didn't work.

05 23 46 19 LMP Let me help you. Can I read it to you or anything?

05 23 46 23 CMP Hey, Al. ...?

05 23 46 26 LMP Yes, I don't think so, Dick, babe.

05 23 46 29 CMP ...

05 23 46 31 LMP (Laughter)

05 23 46 33 CDR That sounds good.

05 23 46 35 CC Clipper, Houston. Over.

05 23 46 37 CMP Go ahead, Houston.

05 23 46 41 CC Roger. I've got some high gain angles for you, Dick.

05 23 46 48 LMP I wish I knew what was wrong with him.

05 23 46 51 CMP Go ahead ...

05 23 46 56 CC Roger. Pitch is minus 23 and yaw is plus 171. Over.

05 23 47 17 CMP ... I'm going on the HIGH GAIN.

05 23 47 19 LMP Okay.

05 23 47 43 LMP Can I read it to you Pete while you do it? Help you any way?

05 23 47 47 CDR I'm just getting antsy.

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05 23 47 49 LMP Boy, so am I.

05 23 47 51 CMP ...

05 23 47 56 CDR Say again, Dick.

05 23 47 57 CMP I said ...

05 23 48 03 CDR Boy I just flat can't understand you.

05 23 48 05 LMP ... CLEAR, 316 ...

05 23 48 09 CDR If everything's okay just say, "Okay."

05 23 48 11 CMP Okay.

05 23 48 12 CDR Very good. Now there's - don't - don't sweat it if you don't hear from me during this burn.

05 23 48 19 CMP Okay.

05 23 48 20 CDR Because it's - everything's stickypoo. I got 32 marks, it ought to be, if this thing's ever going to do anything ...

05 23 48 31 LMP This AGS is doing pretty damn good, too. Let me look at that book just a minute. Just a minute.

05 23 48 45 CC Yankee Clipper, Houston. We're going to have a handover, here, now, in your case, from Honeysuckle to Madrid. Over. At 143:50.

END OF TRANSCRIPT

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