419 pp.

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MSC-04559

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

APOLLO 15 COMMAND MODULE ONBOARD VOICE TRANSCRIPTION

(U)

Classification changed to U

By authority of JSC Security Class. Officer

Date 11/9/73 - 2/10/78 - Lesly Letter

RECORDED ON THE DATA STORAGE EQUIPMENT (DSE)

AUGUST 1971

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

CLASSIFIED DOCUMENT - TITLE UNCLASSIFIED

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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INDEXING DATA

DATE	OPR	#	T	PGM	SUBJECT	SIGNATOR	LOC
08-20-71	MSC	MSC-04559	R	APO	(Coll)	MSC	JSC 69

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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 transcription of the Apollo 15 flight crew communications as recorded on the command module (CM) data storage equipment (DSE) and subsequently transmitted (dumped) to Manned Space Flight Network stations. Magnetic tapes containing dumped voice and onboard-recorded ground elapsed time (GET) were forwarded to the NASA Manned Spacecraft Center, Houston, Texas. Transcription of these tapes was managed by David M. Goldenbaum, Test Division, Apollo Spacecraft Program Office, to whom inquiries regarding this document should be referred.

The transcript is divided into three columns — time, speaker, and text. The time column consists of four two-digit pairs representing 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.

The time used by Mission Control Center (MCC) and indicated as GET in the flight plan may be updated to both the spacecraft and MCC computers but will not be updated to the telemetry downlink pulse-code-modulated bitstream or other time-recording devices. This GET updating will be performed only to correct significant changes in flight-plan time occurring as the result of delayed lift-off, midcourse corrections, or spacecraft burn-time differences (trajectory dispersions).

Should these updates occur, the Apollo elapsed time (the true mission-elapsed time) may not agree with flight-plan and MCC times. Users of this transcript are cautioned to apply the appropriate time-update deltas for the updated periods.

Speakers in the transcript are identified as follows:

Spacecraft:

CDR	Commander	David (Dave) R. Scott
CMP	Command module pilot	Alfred (Al) M. Worden
LMP	Lunar module pilot	James (Jim) B. Irwin
SC	Unidentifiable crewmember	
MS	Multiple speakers	

Mission Control Centers:

CC	Capsule communicator (CAP COMM)
LCC	Launch control center

In the text, a series of three dots (...) is used to designate those portions of the communications that could not be transcribed because of garbling. One dash (-) is used to indicate a speaker's pause or a self-interruption. Two dashes (- -) are used to indicate an interruption by another speaker or a point at which a recording was abruptly terminated. Words given unusual emphasis by the speaker are underlined.

The Apollo 15 mission was flown July 26 to August 7, 1971; lift-off occurred at 13:34:00.79 G.m.t. (9:34:00.79 a.m. e.d.t.) on July 26. The CM was designated Endeavour and the lunar module was called Falcon.

DAY 1

Day	Hour	Min	Sec		
-00	00	00	10	LCC	10, 9, 8, 7, 6, 5 -
-00	00	00	04	LCC	IGNITION, 3, 2, 1 -
00	00	00	01	LCC	LIFT-OFF!
00	00	00	02	CDR	And the clock is running.
00	00	00	04	CMP	Okay. ... lift-off ...
00	00	00	12	CC	Clear the tower!
00	00	00	13	CDR	Roger dede [sic]. Clear the tower, and we have a roll program. ...
00	00	00	18	CC	You have good thrust on all five engines.
00	00	00	21	CDR	Thanks, Gordo. Roll's complete. And we have a pitch program.
00	00	00	29	CC	Pitch.
00	00	00	39	CC	Stand by for Mode I Bravo.
00	00	00	42	CC	MARK. I Bravo.
00	00	00	44	CDR	Roger. I Bravo.
00	00	00	45	CMP	PROPELLANT DUMP, RCS COMMAND, Dave.
00	00	00	46	CDR	Okay.
00	00	00	54	CDR	Okay. Going through the air. (Laughter)
00	00	00	55	CC	... 15 ...
00	00	00	56	CMP	Cabin pressure decreasing.
00	00	00	57	CDR	Okay. Good.
00	00	00	58	LMP	Looks good over here.
00	00	01	00	CMP	High at 20,000.
00	00	01	01	LMP	Dead [redacted]

[redacted]

00 00 01 02	CMP	One minute.
00 00 01 03	LMP	Here ...
00 00 01 04	CC	..., Houston. Everything looks perfect down here.
00 00 01 06	CDR	Okay. Looks smooth up here, Gordo. Okay, the altimeter is six zero.
00 00 01 12	CMP	Well, how about that?
00 00 01 28	LMP	Exciting!
00 00 01 30	CDR	Okay. We're through MAX q.
00 00 01 34	CMP	Okay. 1:32. Program looks good, Dave. Out at 11 miles.
00 00 01 40	CDR	Okay. Good shot. Two and 1/2g.
00 00 01 44	LMP	Roger.
00 00 01 47	CDR	Pitch profile looks good.
00 00 01 50	LMP	Roger.
00 00 01 52	CMP	1:50.
00 00 01 55	CC	Stand by for Mode I Charlie.
00 00 01 58	CC	MARK. I Charlie, now.
00 00 02 00	CDR	Roger. I Charlie.
00 00 02 02	CMP	EDS AUTO to OFF.
00 00 02 06	CDR	Okay, we're at 3g's. Stand by for inboard.
00 00 02 14	CMP	Okay. The program's looking good.
00 00 02 18	CDR	Inboard.
00 00 02 19	CC	... Inboard.
00 00 02 30	LMP	A little high hum, there.
00 00 02 31	CMP	Yes.

[redacted]

00 00 02 32	CDR	Okay, 10 seconds to staging. Hang on.
00 00 02 34	CMP	Okay.
00 00 02 36	CDR	Five seconds.
00 00 02 43	CMP	Man, you aren't kidding.
00 00 02 44	LMP	Boy.
00 00 02 48	CDR	Good stage.
00 00 02 49	CC	...
00 00 02 56	CC	... Houston. You have good thrust on the S-II. All five are good.
00 00 02 59	CDR	Okay.
00 00 03 00	CMP	Okay, Dave. You got TFF 3:26.
00 00 03 02	CDR	Good show. We'll go on time.
00 00 03 12	CMP	Second plane SEP.
00 00 03 15	CC	...
00 00 03 17	CDR	Good show.
00 00 03 18	CMP	Tower JETT.
00 00 03 19	CC	We confirm the skirt SEP. You're Mode II.
00 00 03 22	CDR	Roger. Mode II. Guidance initiate.
00 00 03 29	CC	...
00 00 03 37	CDR	How we doing, Al?
00 00 03 38	CMP	We're doing fine; 63 miles.
00 00 03 41	CDR	Good.
00 00 03 48	LMP	Everything looks good over here.
00 00 03 50	CDR	Okay.

00 00 03 51	CMP	Just - looks just about a hundred feet per second down on the H-dot, but everything else looks fine.
00 00 03 56	CDR	Okay, I got the big fireball going by at staging. I don't know whether you saw it or not. That beauty really goes.
00 00 03 59	CMP	Yes - -
00 00 04 01	CC	..., Houston. At 4, the guidance has converged, the CMC is GO, and everything looks good.
00 00 04 07	CDR	Okay, Gordo. Looks good up here.
00 00 04 09	LMP	Man, I got the Moon in my window.
00 00 04 11	CMP	Yes, sir. It's out there.
00 00 04 19	CDR	Thrusters are stable; the ball's stable.
00 00 04 23	CMP	We're at a V_I of 11,000 and right on the money.
00 00 04 27	CDR	Good show. Let me check here at 4:30 just to make sure.
00 00 04 36	CMP	That sucker's right on - right on.
00 00 04 45	CMP	Little high on altitude. I bet you they're going to give you the ... here in a minute.
00 00 04 53	CDR	I hope so by now.
00 00 04 59	CC	..., Houston. Five minutes. Everything looks nominal. You're GO.
00 00 05 03	CDR	Okay, Gordo; thank you. Looks good up here. Got a smooth ride so far.
00 00 05 10	CC	...
00 00 05 12	CMP	Yes siree, looks good.
00 00 05 20	CDR	See, we're getting just a little teeny bounce. You feel it now?
00 00 05 23	CMP	Uh-huh.
00 00 05 24	LMP	Every once in a while?

00 00 05 25	CMP	Yes.
00 00 05 30	CDR	Very low amplitude.
00 00 05 41	CDR	Okay, be watching for the S-IVB for COI.
00 00 05 44	LMP	Okay.
00 00 05 45	CC	..., Houston. Times are nominal. The level sense arm will be 8 plus 34, and S-II cut-off at 9 plus 09. Over.
00 00 05 53	CDR	Roger; 8 plus 34 and 9 plus 09.
00 00 05 57	CDR	Okay, Jimmy; gimbal motors.
00 00 05 58	CC	Stand by for S-IVB to COI.
00 00 06 00	CC	MARK. You have S -
00 00 06 02	CDR	Roger. S-IVB to COI. Jim?
00 00 06 04	LMP	Ready. 1, 2, 3, 4.
00 00 06 11	CMP	On and trimmed.
00 00 06 22	CDR	Okay, we're right - right down the line.
00 00 06 26	LMP	Okay.
00 00 06 27	CMP	Coming up on 15,000 V_I, 260 H-dot. That's right

[redacted]

00 00 28 58	CDR	... Okay, there's tool E.
00 00 29 02	CMP	Now, let's see. You want to do that EMERGENCY CABIN PRESSURE thing?
00 00 29 08	LMP	Yes, let me - I've got a - I'm confirming normal suit and cabin pressure.
00 00 29 12	CMP	Okay.
00 00 29 13	CDR	Here's your Lexan, Jim.
00 00 29 15	LMP	Okay.
00 00 29 16	CDR	Got it?
00 00 29 17	CMP	Be very careful of that Lexan, because I - I'm going to need to take some pictures through it.
00 00 29 21	LMP	Yes, okay.
00 00 29 25	CDR	Make sure you get everything tied down when you get through using it, because we got one more little g-level thing to go through here.
00 00 29 32	CMP	Yes, right.
00 00 29 46	CDR	Okay. Helmets and access - helmet bags and accessory bags.
00 00 29 50	CMP	Right here.
00 00 29 55	LMP	Okay. The Lexan shade is on.
00 00 29 57	CMP	And grab the TSBs while you're there, too. Dave.
00 00 30 01	CDR	Okay.
00 00 30 02	CMP	Okay, Jim. I guess we could do the - -
00 00 30 06	CDR	Where are the TSBs, Al? They're not up here. They're down in one of those other things.
00 00 30 19	MS	...
00 00 30 22	CMP	Must be in U-1.

[redacted]

00 00 30 23	CDR	Really?
00 00 30 24	CMP	Yes.
00 00 30 27	CDR	In U-1 - I was looking in U-2?
00 00 30 30	CMP	Oh, okay.
00 00 30 32	LMP	Let's see. The O_2 FLOW is high.
00 00 30 34	CMP	What's the cabin pressure - -
00 00 30 35	LMP	Oh, it - it just dropped down.
00 00 30 36	CDR	Yes. Okay.
00 00 30 37	CMP	What's - what's the cabin pressure? We still got the waste stowage vent - -
00 00 30 38	LMP	Yes. It's ...
00 00 30 39	CDR	It's 6.
00 00 30 40	LMP	Well, it was just high for a little bit.
00 00 30 41	CMP	Yes.
00 00 30 42	LMP	Okay. CABIN PRESSURE - EMERGENCY CABIN PRESSURE valve to BOTH, Al.
00 00 30 48	CMP	Okay. EMERGENCY CABIN PRESSURE going to BOTH.
00 00 30 50	LMP	And SUIT CIRCUIT RETURN VALVE, open, Dave.
00 00 30 55	CDR	Yes, sir. It's open.
00 00 31 00	LMP	Okay. We can - I got the window cover on. We can remove helmet and gloves and stow in PGA bag.
00 00 31 05	CDR	Don't we - don't we do a check first?
00 00 31 08	LMP	No, we don't. That MAIN REG check's on the next page.
00 00 31 11	CDR	Well - -
00 00 31 12	LMP	As long as you're in position though, Al, let's do it.

00 00 31 13	CMP	Yes.
00 00 31 14	CDR	Let's do it.
00 00 31 15	LMP	Okay. MAIN REG B valve, closed.
00 00 31 17	CMP	MAIN REG B, closed.
00 00 31 18	LMP	EMERGENCY CABIN PRESSURE, select to 1.
00 00 31 20	CMP	1.
00 00 31 21	LMP	PUSH TO TEST pushbutton, push for O_2 FLOW increase.
00 00 31 23	CMP	Okay.
00 00 31 30	CMP	Don't see anything.
00 00 31 31	LMP	There it goes - -
00 00 31 32	CDR	Okay. There it goes.
00 00 31 33	CMP	Okay.
00 00 31 34	LMP	Okay. MAIN REG B valve, OPEN.
00 00 31 35	CMP	OPEN.
00 00 31 36	LMP	MAIN REG A valve, closed.
00 00 31 37	CMP	Closed.
00 00 31 38	LMP	EMERGENCY CABIN PRESSURE, select to 2.
00 00 31 40	CMP	To 2.
00 00 31 41	LMP	PUSH TO TEST pushbutton, push for O_2 FLOW increase.
00 00 31 44	CMP	Okay. Pushing. I got it.
00 00 31 47	LMP	Okay, MAIN REG A valve, OPEN.
00 00 31 49	CMP	OPEN.
00 00 31 50	LMP	EMERGENCY CABIN PRESSURE, select to BOTH.

00 00 31 52	CMP	BOTH.
00 00 31 53	LMP	Okay. That's complete.
00 00 31 55	CDR	Okay.
00 00 31 56	LMP	So, we - you want to take off helmets and gloves now?
00 00 31 58	CDR	Yes.
00 00 31 59	CMP	..., yes.
00 00 32 01	CDR	Cabin pressure look good?
00 00 32 02	LMP	Yes.
00 00 32 03	CDR	Okay. Let's get into our little home. Shall we do it?
00 00 32 23	CMP	The accessory bags inside here, Dave?
00 00 32 25	CDR	Yes.
00 00 32 26	CMP	Let's see, you're C.
00 00 32 27	CDR	Okay, thank you.
00 00 32 28	CMP	And let's see what kind of label you got on yours today. Jim, you got an R - for you today.
00 00 32 36	LMP	R, okay.
00 00 32 40	CDR	R, C, and L. Guess we can keep track of that.
00 00 32 52	LMP	It's so pretty out here, Dave, I'd almost settle for an Earth-orbit mission.
00 00 32 56	CDR	Don't you say that.
00 00 32 57	CMP	(Laughter)
00 00 33 00	CDR	Well, you'll get one, maybe someday. Who knows?
00 00 33 18	CMP	Boy. Sure doesn't take much to scratch these helmets.
00 00 33 23	CDR	No. Sure doesn't.

00 00 33 30	CMP	Oh, it's quiet.
00 00 33 32	LMP	Sure is.
00 00 33 34	CMP	Let's see, what have we got going, just the suit fans?
00 00 34 09	LMP	It's so quiet, it's kind of eerie -
00 00 34 11	CMP	Yes.
00 00 34 12	LMP	Almost like a space flight.
00 00 34 18	CMP	(Singing)
00 00 34 19	CDR	Okay. We got to snap these things ...
00 00 34 24	CMP	Yes. We're supposed to try to keep them up there where we can get them ...
00 00 34 29	CDR	You give me a hand here, will you?
00 00 34 30	CMP	Yes, we'll give you one.
00 00 34 32	LMP	... onboard ...
00 00 34 40	CDR	... convenient place ...
00 00 34 45	CMP	Yes.
00 00 34 47	LMP	...
00 00 34 53	CMP	...
00 00 35 08	LMP	You want to ... them all?
00 00 35 10	CDR	I guess - -
00 00 35 11	CMP	... all ... put them up.
00 00 35 20	CMP	I'll never do this again.
00 00 35 28	CDR	I'll bet you would (laughter).
00 00 35 30	CMP	Oh, what a joy! (Laughter) Oh, what a joy!
00 00 35 34	CDR	You don't ... to mind it.

[redacted]

00 00 35 35	CMP	What a joy! Too much ...
00 00 35 40	CDR	Let's see. If you're going to do that, hand me the checklist - -
00 00 35 42	CMP	Okay. What do we - what do we need, Dave? Why don't you read it out to me now? ...
00 00 35 47	CDR	DAC.
00 00 35 48	CMP	Got magazine Able.
00 00 35 50	CDR	Able. Okay.
00 00 35 51	CMP	Okay, which lens?
00 00 35 52	CDR	Power cable, 18-millimeter lens.
00 00 35 54	CMP	18-millimeter lens. Okay, 18 lens.
00 00 36 09	CDR	Right-angle mirror.
00 00 36 10	CMP	Right-angle mirror.
00 00 36 12	CDR	Assemble and mount in the left-hand window ...
00 00 36 16	CMP	Left hand ... Okay, ... need to get out of here ...
00 00 36 29	CDR	Here's the mirror.
00 00 36 31	CMP	... the power cable.
00 00 36 39	LMP	Okay, Dave, when you get a chance, you want to monitor SECONDARY ACCUMULATOR QUANTITY.
00 00 36 45	CMP	Now - do you want to get the Hasselblad out?
00 00 36 49	CDR	Oh, yes. Yes, we want - -
00 00 36 51	CMP	It's got a MAG.
00 00 36 53	CDR	Well, better cross it out. ...
00 00 36 55	CMP	MAG M. Oh, it is crossed out?
00 00 37 00	CDR	... EL. Oh, okay. Spotmeter. Stow in the LMP TSB. I guess you better get the TSBs out ... - -

00 00 37 08	CMP	Yes.
00 00 37 10	CDR	And the TSBs are up behind Jim.
00 00 37 12	CMP	Yes. Yes. They're behind you, Jim.
00 00 37 15	LMP	What, the TSBs?
00 00 37 16	CMP	Yes.
00 00 37 17	LMP	Up over here?
00 00 37 22	CMP	Guess that's all we need out of here for now. ...
00 00 38 04	LMP	Boy, you really get a Coriolis effect by looking at that ... in here.
00 00 38 08	CDR	Yes; that's why I say, just go slow, because it will all go away here in a few hours. Won't even notice it. ... - -
00 00 38 14	LMP	... always felt we'd parted some company, didn't you?
00 00 38 17	CMP	Yes.
00 00 38 18	CDR	No, but it's nice to just go slow.
00 00 38 20	CMP	Yes. Oh, yes, it's - -
00 00 38 21	LMP	Are you ready for some TSBs?
00 00 38 23	CMP	Yes, you need yours most of all.
00 00 38 25	LMP	I - I need mine?
00 00 38 26	CMP	Yes, because you need to put these two cameras in it.
00 00 38 29	LMP	Okay.
00 00 38 43	LMP	Okay. You want to hand me the camera, Al?
00 00 38 46	CMP	Okay, Jim, that's the - Yes, here you go.
00 00 38 49	LMP	Is that for my UV work?
00 00 38 51	CMP	Your EL with magazine M in it.
00 00 38 54	LMP	For the UV?

00 00 38 55	CMP	Yes. Okay. And here's your spotmeter.
00 00 39 00	LMP	Spotmeter go in here, too?
00 00 39 02	CMP	Yes. Got it? Okay. I'll get the TV camera out.
00 00 39 36	LMP	Okay, I'm going to do the - Dave, are you ready for that leak - -
00 00 39 39	CDR	Yes.
00 00 39 40	LMP	- - that secondary RAD leak check?
00 00 39 41	CDR	Yes, sir.
00 00 39 42	LMP	Okay. If you'll - put the SECONDARY GLYCOL TO RAD valve, NORMAL, for 30 seconds.
00 00 39 48	CDR	Have, you got tool E?
00 00 39 50	CMP	Yes. Yes, it's right up in front of you there, Dave.
00 00 39 53	CDR	Oh, thank you. Jimmy? Can you reach here?
00 00 39 57	LMP	No. And it's starting to get dark.
00 00 40 02	CDR	Really? I've got to get going on the P52.
00 00 40 05	CMP	Yes.
00 00 40 08	CDR	Okay. I can't get that, Jim, until Al closes the door there.
00 00 40 11	CMP	Yes; okay.
00 00 40 13	LMP	I'll do this ECS Postinsertion Configuration.
00 00 40 16	CDR	Okay.
00 00 40 17	LMP	Okay. GLYCOL RESERVOIR BYPASS valve to OPEN.
00 00 40 20	CDR	Okay, OPEN.
00 00 40 21	LMP	GLYCOL RESERVOIR OUT valve, CLOSE.
00 00 40 23	CDR	CLOSED.

00 00 40 24	LMP	GLYCOL RESERVOIR IN valve, CLOSED.
00 00 40 25	CDR	CLOSED.
00 00 40 26	LMP	And the PRIM quantity, let me check it - 25 to 50 at - It's good.
00 00 40 34	CDR	Okay.
00 00 40 35	LMP	Al, let's - Can you reach the PRIM ACCUMULATOR FILL valve?
00 00 40 38	CMP	Yes.
00 00 40 39	LMP	Okay, put it ON.
00 00 40 47	CMP	Here, Jim, can you reach the cable? ...
00 00 40 51	LMP	Yes. I've got it now.
00 00 40 52	CMP	Okay.
00 00 40 57	LMP	You working on that one, Dave?
00 00 40 59	CDR	Sure am.
00 00 41 02	CMP	Can you get to it there, Dave?
00 00 41 06	CDR	Haven't yet. No. Can you get to it?
00 00 41 12	CMP	Well, what do you need? PRIMARY ACCUM?
00 00 41 15	CDR	Yes.
00 00 41 16	CMP	Yes, sure. Which way do you want it?
00 00 41 22	CDR	Well, it was the PRIMARY ACCUMULATOR FILL valve -
00 00 41 25	CMP	PRIMARY ACCUMULATOR FILL; okay.
00 00 41 26	CDR	...
00 00 41 28	LMP	Put it ON. I'll tel. when to - put it back - -
00 00 41 34	CMP	Turn it ON?
00 00 41 35	LMP	Okay - -

[redacted]

00 00 41 36	CMP	It's ON.
00 00 41 37	LMP	- - you can turn it back OFF.
00 00 41 38	CMP	Okay, it's OFF. Is that all?
00 00 41 40	CDR	Yes. Why don't you get the secondary while you're there? Jim, do you have that?
00 00 41 43	LMP	Yes. SECONDARY GLYCOL TO RAD valve, NORMAL, A1, if you're in that position. Let me know when you - when you get it in NORMAL.
00 00 41 50	CMP	Yes, I can't quite reach that.
00 00 41 51	CDR	Okay.
00 00 41 52	MS	...
00 00 41 54	CMP	Can you get it there, or - -
00 00 41 55	CDR	Yes.
00 00 41 56	CMP	If you'll wait a minute, I'll be able to get it.
00 00 41 57	CDR	I can get it. Thank you.
00 00 41 58	CMP	Okay.
00 00 42 00	LMP	Let me know when you get it to NORMAL.
00 00 42 04	CDR	Okay, going NORMAL now, Jim.
00 00 42 06	LMP	Okay.
00 00 42 07	CDR	It's in NORMAL.
00 00 42 15	CMP	Okay, Jim. Here are the lines to the TV.
00 00 42 20	LMP	Wish I had a place to set that thing.
00 00 42 22	CMP	Yes. ...
00 00 42 23	LMP	Okay. ... the monitor.
00 00 42 26	CDR	Okay. How long you want this thing in NORMAL?

00 00 42 28	LMP	Oh, I'll give you a hack here.
00 00 42 29	CDR	Oh.
00 00 42 36	LMP	Okay -
00 00 42 37	LMP	MARK. It's - SECONDARY, looks okay.
00 00 42 40	CDR	Okay, I'm back to BYPASS.
00 00 42 41	LMP	Okay.
00 00 42 42	CDR	Is that right?
00 00 42 43	LMP	Right. BYPASS.
00 00 42 46	CMP	Dave, can I hand you the monitor over there?
00 00 42 48	CDR	What - Oh, yes - -
00 00 42 50	CMP	For the TV.
00 00 42 52	LMP	Let me - Let's see, I got ECS RAD FLOW CONTROL to POWER; PRIM GLYCOL TO RAD valve, NORMAL.
00 00 42 58	CDR	GLYCOL TO RAD valve, NORMAL. ...?
00 00 43 05	CMP	I got that. ECS RAD FLOW CONTROL, POWER.
00 00 43 08	CDR	Oh. Okay, it's NORMAL.
00 00 43 10	LMP	Okay. You've got PRIM GLYCOL TO RAD valve, NORMAL - -
00 00 43 13	CDR	Okay.
00 00 43 14	LMP	- - RAD HEATER going to PRIM 1.
00 00 43 15	CDR	Okay.
00 00 43 17	LMP	ECS RAD talkback is gray. GLYCOL EVAP TEMP IN going AUTO.
00 00 43 26	CMP	Okay, who can give me a checklist so I can do these optics?
00 00 43 28	CDR	Here you go.

[redacted]

00 00 43 29	CMP	Okay, I - -
00 00 43 30	LMP	POTABLE WATER HEATER to MAIN A. Okay. ECS Post-insertion Configuration complete.
00 00 43 36	CDR	Okay.
00 00 43 37	CMP	...
00 00 43 38	LMP	Give you this monitor, Dave.
00 00 43 41	CDR	Okay.
00 00 44 03	CDR	What else you got on there, Jim? Oh, the TSBs.
00 00 44 08	LMP	Yes, do you want a TSB?
00 00 44 09	CDR	Yes.
00 00 44 10	LMP	I'll get them out. Do you want to put one up on the - -
00 00 44 14	CDR	That'll do. ... - -
00 00 44 15	LMP	Down there, Al. You - -
00 00 44 16	CDR	... Okay.
00 00 44 17	LMP	Okay. I've got an EPS monitoring check here; secondary glycol loop check, and we've got the cameras out already.
00 00 44 27	CDR	Al, you want to check that?
00 00 44 29	LMP	I'm going to go through a secondary glycol loop check here.
00 00 44 31	CDR	Okay.
00 00 44 41	CDR	Hey, Al?
00 00 44 42	CMP	Yes.
00 00 44 43	CDR	See that little - see that funny little switch they put on here?
00 00 44 46	CMP	Oh, really?

00 00 44 47	CDR	It came off.
00 00 44 48	CMP	How about ... - -
00 00 44 49	CDR	Well - -
00 00 44 50	CMP	I've got a pocket down here.
00 00 44 51	CDR	I got a pocket, no sweat, I just don't want to forget it and have it floating around.
00 00 44 54	CMP	Yes.
00 00 44 56	LMP	SECONDARY GLYCOL PUMP - -
00 00 44 57	CMP	Okay. Optics eyepieces are in, G/N OPTICS POWER going on. OPTICS, ZERO OFF, then ZERO. Okay.
00 00 45 22	CMP	Okay, that's 15 seconds. The OPTICS ZERO, OFF - MODE, MANUAL. ... Here we go.
00 00 45 51	CMP	Hallelujah!
00 00 45 54	CDR	Getting stars?
00 00 45 55	CMP	Yes, sir!
00 00 45 56	CDR	Oh, okay.
00 00 45 59	CMP	Whoops. A good mark there.
00 00 46 06	CDR	Okay.
00 00 46 07	CMP	Who gave you permission to write ... out here? ...
00 00 46 21	CMP	Okay. ...
00 00 46 29	CDR	Yes. That's true. Oh, dear. ...
00 00 46 35	CMP	Okay. Okay, old PICAPAR, let's see what you can do.
00 00 46 47	CMP	Okay; 33. Antares. ... Okay. And ...
00 00 47 01	CDR	...

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00 00 47 10	LMP	Boy, at night, you might - might as well be in the simulator (laughter).
00 00 47 14	CDR	Yes, except for the physiological change.
00 00 47 17	LMP	Yes. Okay, the EPS monitoring check is complete, Dave.
00 00 47 25	CDR	Okay.
00 00 47 26	LMP	Except for the battery relay bus read-out down there in SYSTEMS TEST meter 5-B.
00 00 47 33	CMP	You can pick that up.
00 00 47 35	CDR	Yes.
00 00 47 40	LMP	Yes.
00 00 47 45	CMP	Okay. It doesn't look too good ... down in there.
00 00 47 53	LMP	EPS monitoring check now.
00 00 47 56	CDR	Okay. Did - did you do your fuel cell purge check, or ... - -
00 00 47 59	LMP	No, I couldn't do the H_2.
00 00 48 01	CDR	Oh.
00 00 48 14	CMP	Doublecheck ... Forty-one. Okay, Dabih.
00 00 48 24	CDR	Forty-one, right.
00 00 48 45	CMP	... Five in. ...
00 00 48 56	CDR	Forty-one is what?
00 00 48 57	CMP	Dabih.
00 00 48 58	CDR	Dabih. ... okay?
00 00 49 00	CMP	Yes. I got it.
00 00 49 30	LMP	Okay, EPS monitoring check's complete.
00 00 49 11	CMP	Okay. Let's see how we did. (Cleared throat)

00 00 49 15	CDR	Well, pretty good.
00 00 49 17	CMP	... all four ...
00 00 49 19	LMP	About another 3 minutes for AOS.
00 00 49 23	CDR	Okay. I'll tell you what I'd like to do here ... the pass.
00 00 49 27	CMP	Do?
00 00 49 28	CDR	Check out the RCS real quick.
00 00 49 30	CMP	Here's the torquing angles, David.
00 00 49 32	CDR	Okay. ...
00 00 49 33	CMP	Go back to zero, and I think I have to get the optics back out. Right? Did you stow the optics, Jim?
00 00 49 42	CDR	Okay. Here, do you want to torque at 40? What do we torque at rendezvous?
00 00 49 46	CMP	Yes, did - did you stow the optics eyepiece, Jim?
00 00 49 50	CDR	Should we torque about 50?
00 00 49 51	CMP	Yes.
00 00 49 52	CDR	Okay. Good deal.
00 00 49 53	CMP	Okay. You got the numbers written down?
00 00 49 55	CDR	Yes.
00 00 50 02	CMP	Very good, Dave.
00 00 50 03	CDR	Okay.
00 00 50 04	CMP	Very good ...
00 00 50 07	CDR	Okay, Al, and you might - Why don't you come up here and let me show you what the jets look like when we fire the ...

00 00 50 14	CMP	Oh, okay. Yes. Let me - let me check out a quick star here.
00 00 50 17	CDR	Well, we got to do - I want to do this before AOS.
00 00 50 23	CMP	Okay.
00 00 50 32	CMP	Well, let me climb up here. ...
00 00 50 34	CDR	Oh, I'm sorry. Okay. It's - it's good.
00 00 50 38	CMP	Yes. I ...
00 00 50 40	CDR	Yes.
00 00 50 45	CMP	Well -
00 00 50 51	CDR	Okay. You can probably look out my window.
00 00 50 54	CMP	Oh, yes. Very good - -
00 00 50 56	CDR	I lost my watch.
00 00 50 57	CMP	Jim, you got my - -
00 00 50 58	LMP	Yes.
00 00 50 59	CMP	- - stopwatch?
00 00 51 00	LMP	I'm looking for one.
00 00 51 05	CMP	Did you see that?
00 00 51 06	LMP	Yes, I saw a flash.
00 00 51 07	CDR	Saw a flash? You did? Couldn't hear it - I didn't hear it. Huh, I'll be darned!
00 00 51 16	CMP	Could sure see a flash.
00 00 51 17	CDR	Yes. Saw a flash, but I didn't hear it. Gosh, I used to hear them all the time. Huh!
00 00 51 26	CMP	You know, it's amazing what ... outside that window ...
00 00 51 34	LMP	Well, yes - -

00 00 51 35	CDR	That's because you got your ... lights on in here.
00 00 51 37	CMP	Yes.
00 00 51 43	CDR	Okay, ... here.
00 00 51 47	LMP	Okay, the secondary glycol loop check's complete.
00 00 51 50	CDR	Okay.
00 00 51 57	CC	15, Houston through Carnarvon. Over.
00 00 52 00	CDR	Roger, Houston; 15. You're loud and clear.
00 00 52 04	CC	You're loud and clear also.
00 00 52 07	CDR	Okay; the insertion checks are coming along - -
00 00 57 54	CMP	We should have MAG - -
00 00 57 55	CC	15, Houston. About 15 seconds to LOS. Estimating United States at 1:30 GET.
00 00 58 06	CDR	Roger. 1:30.
00 00 58 09	LMP	Al, my doggone checklist says MAG M ought to be on here for the UV.
00 00 58 14	CDR	MAG N?
00 00 58 15	LMP	MAG M, man.
00 00 58 16	CMP	Yes, that's right - -
00 00 58 17	LMP	Yes - -
00 00 58 18	CMP	That - that - -
00 00 58 19	LMP	...
00 00 58 20	CMP	- - has the color stuff there, too.
00 00 58 21	LMP	Oh.
00 00 58 22	CDR	- - ... take a picture ... - -

[redacted]

00 00 58 23	LMP	Yes. ... better get two of these. ...
00 00 58 26	CMP	Davy?
00 00 58 27	CDR	Yes.
00 00 58 28	CMP	You want to put that on there?
00 00 58 30	CDR	... monitor?
00 00 58 31	CMP	Yes.
00 00 58 33	CDR	Yes. I don't know what we're going to do with this thing. I guess Jim has to hold this during TLI. Or something like that.
00 00 58 44	LMP	Why - why can't I put it on the bracket?
00 00 58 47	CMP	You can.
00 00 58 48	CDR	... Okay. Where's the bracket?
00 00 58 56	CMP	It's down in - A-1.
00 00 59 00	CDR	Okay.
00 00 59 03	LMP	Bracket's in A-1.
00 00 59 04	CDR	Okay. ... get it.
00 00 59 20	CMP	Man, that was some fantastic ride! Gaa!
00 00 59 26	CDR	Something you're not likely to forget for a while.
00 00 59 32	LMP	And when you get a chance, Al, I need the - the UV bracket.
00 00 59 36	CMP	Okay.
00 00 59 46	CMP	The UV bracket, and the UV ..., and the UV lenses.
00 00 59 50	LMP	Yes.
00 00 59 51	CMP	Yes.
00 00 59 54	LMP	Am I supposed to be ... you, Al?

00 00 59 56	CMP	No.
00 00 59 57	LMP	Okay.
00 01 00 02	CMP	Here's the UV lenses.
00 01 00 18	CMP	Here's the UV bracket.
00 01 00 25	CDR	Camera checkout. Can I have the ... up here, Jim?
00 01 00 32	LMP	Yes.
00 01 00 33	CDR	Yes.
00 01 00 34	LMP	Okay, Al. Where'd it go? Let me trade you. Hold the lens for me. While you're holding the lens - If you'll hold that, I'll get you the bracket.
00 01 00 42	CMP	Okay. I'm holding it.
00 01 00 58	CMP	Okay. ... UV bracket.
00 01 01 06	LMP	Could you put this - here, I guess - can you put this lens away? Up there, or do you want me to keep it up here?
00 01 01 12	CMP	... You'll - you'll need it if you take any color pictures. ... lots of ... already. What's the matter, Davy?
00 01 01 30	CDR	(Laughter) You got to have the pyro arm circuit breakers in to turn the RCS command on.
00 01 01 36	CMP	How about that?
00 01 01 38	LMP	We're going to keep you honest.
00 01 01 40	CMP	Okay, where do you want it?
00 01 01 41	LMP	I'll take the - -
00 01 01 42	CMP	Oh!
00 01 01 43	LMP	I'll take the lens now.
00 01 01 44	CMP	Hmm. Okay. ...

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00 01 01 53	CDR	...
00 01 01 58	CMP	Okay, your pitch rate.
00 01 02 01	CDR	Why don't you - -
00 01 02 03	CDR	Good ...
00 01 02 04	CMP	Okay, pitch?
00 01 02 05	CDR	Yes. Pitch, roll; roll, pitch. Good ...
00 01 02 11	CMP	Good.
00 01 02 14	CDR	And quad D going open.
00 01 02 21	CMP	...
00 01 02 22	LMP	Let me know when you all are - -
00 01 02 24	CMP	... in the way.
00 01 02 26	LMP	- - ready for your TSBs, and I'll hand them to you.
00 01 02 28	CDR	Okay. Hey, you can give me mine, Jim. He's taking yours.
00 01 02 31	LMP	Then when you get a change - -
00 01 02 33	CDR	Okay, ... TV bracket.
00 01 02 34	LMP	- - you can give it back.
00 01 02 51	LMP	Okay, Al, here's your TSB.
00 01 02 53	CMP	Okay. ...
00 01 02 56	LMP	Dave, here's yours.
00 01 02 58	CDR	Gee, thanks a lot, Jim.
00 01 02 59	LMP	Any time.
00 01 03 07	CDR	... but the University of Michigan was well represented.

00 01 03 11	LMP	Is that right? (Laughter)
00 01 03 14	CDR	Yes. Couple of little calling cards here.
00 01 03 16	LMP	You know, I keep going up to the top of the vehicle.
00 01 03 18	CDR	Well, that's a common phenomenon.
00 01 03 20	LMP	Up toward that hatch.
00 01 03 21	CDR	Everybody always has.
00 01 03 22	CMP	... funny.
00 01 03 24	CDR	That's exactly right. We did that for 10 days and never figured out why.
00 01 03 38	LMP	Shoot! ... somebody ... this hatch. ...
00 01 03 45	CDR	Al, I'm going to give you the ... to put back up there.
00 01 03 47	CMP	Okay.
00 01 03 48	CDR	So we don't lose track, here.
00 01 03 51	CMP	That's the name of the game for the next 12 days, gang. Put it back.
00 01 03 56	CDR	...
00 01 04 14	CDR	Okay. Let's see, Al. Do you have the -
00 01 04 17	CMP	What? The TV lens? Where's the TV?
00 01 04 20	CDR	Right on the couch.
00 01 04 23	CMP	... back here and see if I can bump into it.
00 01 04 26	CDR	Okay.
00 01 04 27	LMP	Do you have the right settings on it? Want me to read them to you?
00 01 04 29	CMP	Yes, what are they?
00 01 04 34	LMP	I don't know why we've been putting that TV up so early.

00 01 04 37	CMP	Just to get it out of the way.
00 01 04 46	LMP	Okay. We want ALC to peak. And f/44.
00 01 04 55	CDR	Peak - and average.
00 01 05 02	LMP	ALC to peak.
00 01 05 03	CMP	No, wait a minute; f/44.
00 01 05 10	CDR	Okay, f/44.
00 01 05 12	LMP	Yes.
00 01 05 30	LMP	Guess we - we might as well leave the - the lens cover on until we're ready to use it.
00 01 05 35	CMP	Dave, did you do - do that SCS attitude reference - reference check?
00 01 05 38	CDR	I'm doing it right now.
00 01 05 39	CMP	Okay.
00 01 05 52	LMP	Sunrise in about 16 minutes.
00 01 05 57	CDR	Okay, f-stop at 44, with about - ...
00 01 06 04	CMP	Get the - Judge that - -
00 01 06 07	CDR	Okay.
00 01 06 08	CMP	- - ground direction.
00 01 06 09	CDR	- - ... f-stop, 30, and the focus at - at infinity. ...
00 01 06 20	CMP	That's right.
00 01 06 21	CDR	I'll take those. I guess it doesn't really matter ...
00 01 06 25	CMP	Yes.
00 01 06 26	CDR	Okay, Jim, if you want to stick that in the -
00 01 06 31	CMP	... back you up.
00 01 06 35	CDR	And I'll plug it in.

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00 01 06 56	CMP	Okay. Attitude reference check.
00 01 07 00	CDR	Okay.
00 01 07 15	CDR	Hey, Jim. You got the SPS monitoring check all right? ECS monitoring check? EPS?
00 01 07 23	LMP	Yes. I've taken care of all those checks, Davy. ... come up to the - docking probe.
00 01 07 35	CDR	Yes.
00 01 07 37	LMP	After that SCS reference.
00 01 07 42	CDR	Okay, Jimmy, you're all hooked up.
00 01 07 44	LMP	Okay. If I can just get my bracket in here. Pointed in the right dir - -
00 01 07 49	CMP	Do we need anything else out of A-1, before I close it?
00 01 07 53	LMP	When you get a chance, Al, out of R-12, I think I need that - probably need - ...
00 01 08 01	CMP	Just like that cardboard - for the window.
00 01 08 12	CDR	You - you want - you want to pull R-12 out?
00 01 08 15	LMP	Yes, that whole brack - that temporary sto - that bracket? Yes. Yes, I think I'll probably stow the cardboard in there.
00 01 08 26	CMP	Okay. We really don't have a place to put this if you got the TV up ...
00 01 08 38	CDR	That's what you got a Flight Plan volume for.
00 01 09 07	CMP	Whoops.
00 01 10 03	CDR	How you doing, Jim?
00 01 10 06	LMP	All right - -
00 01 10 07	CMP	What do we have in there?
00 01 10 08	CDR	Flight Plan, Malfunctions, and all that jazz is in there.

[redacted]

00 01 10 11	CMP	Okay.
00 01 10 12	LMP	The card - is my cardboard window shade in there, or something else?
00 01 10 15	CDR	We didn't find it here ...
00 01 10 18	LMP	Thank you.
00 01 10 19	CDR	Probably ... supposed to be with the cue cards.
00 01 10 25	CMP	Okay, I didn't find it.
00 01 10 38	CDR	I don't know. Our Flight Data File boxes up here, they're almost empty.
00 01 10 44	LMP	Maybe they just happened to fall open.
00 01 10 46	CDR	No, there's just very little in here.
00 01 10 47	CMP	That's all we need, is that Flight Plan. I talked to Ted Guillory ... all we really need. Up there is Volume I?
00 01 10 56	CDR	Yes. I've already ... all through these containers.
00 01 10 58	CMP	Oh.
00 01 10 59	CDR	Well, we got all our data - got all that -
00 01 11 03	CMP	It just doesn't take up a whole container. All those checklists ...
00 01 11 14	LMP	... There I need MAG N.
00 01 11 19	CMP	You need MAG N. (Cleared throat) Okay, coming up.
00 01 11 22	CDR	Where are the rest of the cue cards?
00 01 11 25	CMP	I think we got the ... in the pocket.
00 01 11 27	CDR	Do we?
00 01 11 28	CMP	Yes, I think so.
00 01 11 29	CDR	... reversed hoses here ...

00 01 11 41	LMP	...
00 01 11 51	LMP	...
00 01 11 52	CMP	Hmm, ORDEAL.
00 01 11 54	CDR	ORDEAL?
00 01 11 56	CMP	Yes, man. ... seems like it can be just a hell of a ...
00 01 11 59	CDR	Well, don't hurry.
00 01 12 00	CMP	Yes, let me - get my coffee here.
00 01 12 04	CDR	Yes.
00 01 12 10	LMP	Did you finish that check, Dave?
00 01 12 14	CDR	Yes, the attitude reference check is complete.
00 01 12 22	CMP	Goddam ...
00 01 12 25	CDR	The what?
00 01 12 26	CMP	... the whole spacecraft.
00 01 12 41	CMP	Yes, the red one.
00 01 12 44	CDR	Here's MAG M, Jim.
00 01 12 48	LMP	Okay. ...
00 01 12 50	CMP	Okay, coming down to ORDEAL, David.
00 01 13 11	CMP	Oh! ... can't - we can't do this - ... I can see ... hoses ...
00 01 13 15	CDR	Al, don't ... - -
00 01 13 16	CMP	Okay, there we go, Dave.
00 01 13 17	CDR	No, that's all right.
00 01 13 18	CMP	I just got my hoses ... If you - if you can - -
00 01 13 24	CDR	Yes, I can get it.

[redacted]

00 01 13 28	CMP	..., Dave. There we go.
00 01 13 29	CDR	Good. We got it.
00 01 13 38	CDR	Okay. Got it?
00 01 13 40	CMP	Yes. Thank you.
00 01 13 55	CDR	Need some help?
00 01 13 58	CMP	Okay.
00 01 14 06	CMP	Well, this is going to be a backroom brawl.
00 01 14 09	CDR	What?
00 01 14 11	CMP	It's always your fault, Dave.
00 01 14 13	CDR	...
00 01 14 14	CMP	Got to be ...
00 01 14 17	CDR	But it's all of that?
00 01 14 24	CMP	... get myself hooked up on everything here.
00 01 14 32	LMP	Hey, Al, if you get a chance on this - Did you find my cardboard window covering?
00 01 14 37	CMP	No.
00 01 14 39	LMP	Data Card Kit?
00 01 14 41	CDR	Which part of the Data Card Kit?
00 01 14 43	LMP	Well, I don't know. I don't know.
00 01 14 47	CMP	Here, let me look some more.
00 01 14 49	CDR	Yes. I don't even see where the cue-card part of the Data Card Kit is.
00 01 14 54	CMP	Uh-huh.
00 01 14 55	CDR	...
00 01 15 08	CMP	... Data Card Kit.

00 01 15 13	CDR	Okay. ...
00 01 15 45	CMP	UV Card Book ...
00 01 15 49	LMP	Okay. I guess I don't need it.
00 01 15 56	CMP	... Okay.
00 01 16 06	CMP	Whoop!
00 01 16 12	CDR	Bet that ought to be ...
00 01 16 18	CDR	(Coughing) Hey, you know, I got your meal, Al?
00 01 16 21	CMP	Do what?
00 01 16 24	CDR	... chow.
00 01 16 25	CMP	Oh, yes. Yes.
00 01 16 40	LMP	Hey, I think I'm pretty well caught up with the UV photography here.
00 01 16 44	CDR	Good, Jim.
00 01 16 45	LMP	Getting around with the - -
00 01 16 47	CMP	Goody, goody. Read over the procedures.
00 01 16 51	LMP	Want me to read them to you?
00 01 16 52	CMP	No, why don't you read them to yourself?
00 01 16 54	LMP	Well, that's what I'm doing.
00 01 16 55	CMP	..., Jim.
00 01 16 56	CDR	I - I - Did you get the - Oh, you're looking for the cue cards, is that right?
00 01 16 59	CMP	Yes, I'm just trying to get them all sorted out.
00 01 17 02	LMP	And - -
00 01 17 03	CMP	...
00 01 17 05	LMP	Who has the tape?

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00 01 17 07	CDR	Just a second, Jim, and I'll get it.
00 01 17 11	CMP	I can reach it. Have to push these back - Watch your foot!
00 01 17 17	LMP	Oh!
00 01 17 18	CDR	(Laughter)
00 01 17 19	LMP	Man, you hit my foot; it really - -
00 01 17 21	CDR	Did it really bug you?
00 01 17 22	LMP	Yes.
00 01 17 35	CMP	I don't think we need the Data Card Kit out right now.
00 01 17 38	LMP	May - maybe we could - Is there a good place to stow this down there?
00 01 17 40	CMP	Uh, I - I think you'd be better off if you stuck it right back in the window pouch, there.
00 01 17 45	CDR	Is this just for this pass, Jim?
00 01 17 46	CMP	Shade.
00 01 17 47	CDR	Yes.
00 01 17 48	LMP	Uh - -
00 01 17 49	CDR	Are you going to - -
00 01 17 50	LMP	Yes.
00 01 17 51	CDR	- - take it down?
00 01 17 52	CMP	I think - Yes, that's probably - -
00 01 17 53	CDR	When?
00 01 17 54	CMP	- - that's probably true. The next pass is at about ...
00 01 17 59	LMP	Yes, I'll have the cardboard up for it.
00 01 18 01	CMP	Yes.

00 01 18 02	LMP	I need the - probably the ...
00 01 18 04	CMP	I guess we could put - we put that back up before we do TLI, don't we?
00 01 18 07	CDR	Yes.
00 01 18 09	CMP	You need what, Jim?
00 01 18 11	LMP	Yes - -
00 01 18 12	CDR	Oh, look at the horizon.
00 01 18 13	CMP	Okay, you guys, let that thing be - let it be.
00 01 18 15	LMP	Oh, boy!
00 01 18 16	CDR	Come on up here and look at this. ... switches.
00 01 18 22	CMP	Okay; all right. All right, have you got - have you got ... This is unreal to watch.
00 01 18 31	CDR	You've got to watch this, boy. This is one of the beauties that few people ever - -
00 01 18 36	CMP	Ah!
00 01 18 37	CDR	- - get to see.
00 01 18 38	LMP	... Ooo!
00 01 18 39	CMP	Gaa.
00 01 18 40	CDR	... Look at the clouds.
00 01 18 41	LMP	Yes.
00 01 18 42	CDR	Just watch it, there. Watch this for a few minutes. ...
00 01 18 47	CMP	Look at that. You can see lightning. Looks like streaks of lightning around there?
00 01 18 54	CDR	See the little light thing out there?
00 01 18 57	LMP	... Oh, yes.

00 01 18 59	CDR	Oh, yes. I didn't see that.
00 01 19 00	CMP	I didn't either.
00 01 19 01	LMP	...
00 01 19 04	CMP	Ooo, like - Oh, that - that's fantastic.
00 01 19 06	CDR/LMP	That's a - -
00 01 19 07	CMP	Yes.
00 01 19 08	CDR	That's a satellite.
00 01 19 09	CMP	Hey, you're right! That's got to be.
00 01 19 11	CDR	Yes.
00 01 19 13	LMP	Sure it's a sat - satellite, not a - a planet?
00 01 19 16	CDR	That's a satellite, Jim.
00 01 19 18	CMP	Well, look.
00 01 19 20	LMP	Come on. ... planets are like -
00 01 19 21	CDR	Son of a gun.
00 01 19 22	CMP	I'm backwards.
00 01 19 25	CDR	Huh, I guess it is a planet. It's sure bright, though, isn't it?
00 01 19 28	LMP	Yes. ... rest.
00 01 19 32	CDR	It's sure bright, but it's a planet.
00 01 19 39	CMP	Is it going to be black like this all the way out?
00 01 19 46	CDR	Look at those clouds.
00 01 19 47	LMP	Yes.
00 01 19 48	CMP	Yes, ...
00 01 19 50	CDR	I've got something like ...

00 01 19 54 LMP ... see a damn thing.

00 01 19 55 CMP ...

00 01 19 56 CDR No.

00 01 19 57 CMP ...

00 01 20 00 CDR By golly, it's getting bright and early.

00 01 20 02 LMP I've got ... 8. ... about like this.

00 01 20 14 LMP ...

00 01 20 20 CMP That Earth is a big mother.

00 01 20 23 CDR Yes, it looks pretty big, but I think it's probably going to be small.

00 01 20 25 LMP (Laughter)

00 01 20 26 CMP Yes (laughter).

00 01 20 28 CDR I hope it does.

00 01 20 30 CMP (Cough) Yes, that must be a planet, Dave, because - -

00 01 20 36 CDR You were right.

00 01 20 37 CMP - - it's staying in inertial, and we're going ORB RATE now.

00 01 20 42 CDR ...

00 01 20 44 CMP ...

00 01 20 47 LMP Boy! Get your sunglasses.

00 01 20 49 CDR Yes, it's bright, isn't it?

00 01 20 50 LMP Boy, oh, boy!

00 01 20 55 CMP Yes. ... Let's see, I'm going to start getting up around ...

00 01 21 10 LMP I don't think you can ...

00 01 21 11	CMP	I can. ...
00 01 21 13	LMP	I hear you. ...
00 01 21 15	CMP	Too much trouble for me to get - for you to get ...
00 01 21 16	CDR	(Cleared throat)
00 01 21 18	CMP	Looks like Aquarius coming up back there.
00 01 21 20	CDR	Yes. How about your rendezvous window, Jim?
00 01 21 24	LMP	It's fine. Yes.
00 01 21 30	CDR	Okay. ... load it with ...
00 01 21 37	LMP	Yes.
00 01 21 40	CDR	... You think you need a ... there, Jim?
00 01 21 42	LMP	I've got it, man. It shouldn't.
00 01 21 43	CDR	I couldn't prove it to you.
00 01 21 47	CMP	... Oh, I see ...
00 01 21 51	CDR	Beautiful!
00 01 21 52	CMP	...
00 01 21 53	CDR	Check that.
00 01 21 54	CMP	...
00 01 21 55	CDR	I've got to get that ... to dock.
00 01 22 00	CMP	So you're going to ...
00 01 22 01	CDR	...
00 01 22 02	CMP	Which reminds me, I've got my own docking checklist.
00 01 22 05	CDR	Oh, you did?
00 01 22 06	CMP	Got your ...?
00 01 22 08	CDR	What's the matter with this other one?

00 01 22 10	CMP	Well, the one - the one I found, it's the one that doesn't have any, you know, any references in it.
00 01 22 15	LMP/CDR	(Laughter)
00 01 22 17	CDR	You never got the other one changed?
00 01 22 21	CMP	There ain't no way I could do that.
00 01 22 22	CDR	Okay.
00 01 22 25	CMP	... okay.
00 01 22 26	CDR	...
00 01 22 29	CMP	...
00 01 22 33	CDR	We'll be watching you.
00 01 22 34	CMP	Hand controller, not a ... control. Okay.
00 01 22 37	CDR	Okay. Why don't ... the program?
00 01 22 39	LMP	(Cleared throat)
00 01 22 40	CMP	...
00 01 22 41	CDR	What do we have to do?
00 01 22 42	LMP	Where are we stowing the tape?
00 01 22 43	CMP	Just ... it.
00 01 22 44	CDR	We should be stowing it back where it goes.
00 01 22 47	LMP	Here's the tape, Al. Where are you putting it, down there?
00 01 22 49	CMP	Okay. ...
00 01 22 57	LMP	Well, we got 8 more minutes.
00 01 22 59	CMP	...
00 01 23 00	CDR	Are you ready for the UV, Jim?
00 01 23 02	LMP	Yes, ... It says 1:35.

[redacted]

00 01 23 05	CDR	Yes.
00 01 23 07	LMP	I - I guess - I guess I might as well wait until then.
00 01 23 10	CDR	Yes, I think you should. Let's do everything right on the money.
00 01 23 14	CMP	The UV is on time ...
00 01 23 17	LMP	Yes, sir.
00 01 23 18	CDR	When do we shut it off? Do you shut it off ...?
00 01 23 21	CMP	Yes. I agree with you.
00 01 23 22	CDR	I just want to - -
00 01 23 23	LMP	Do you want to wait until we get - -
00 01 23 25	CDR	...
00 01 23 27	LMP	- - AOS before we do the docking probe, don't you?
00 01 23 29	CDR	Oh, I don't know.
00 01 23 30	CMP	(Cough)
00 01 23 31	LMP	Do you want to go through it now?
00 01 23 33	CDR	Yes, let's go through it.
00 01 23 34	LMP	Okay, CB DOCKING PROBE, two, close. Two, verify.
00 01 23 36	CDR	Two, verify.
00 01 23 37	LMP	DOCKING PROBE EXTEND/RELEASE to EXTEND/RELEASE until full probe extension.
00 01 23 41	CDR	Okay, ready.
00 01 23 43	CMP	Okay, here it goes. You've got it, man.
00 01 23 46	LMP	Yes.
00 01 23 47	CMP	Pretty good. Okay, got a barber pole to gray.

00 01 23 50	LMP	Okay. DOCKING PROBE EXTEND/RELEASE to RETRACT. Talkback gray.
00 01 23 53	CMP	RETRACT. Talk back gray.
00 01 23 55	LMP	Okay.
00 01 23 56	CDR	Okay, let's get ... here.
00 01 24 01	LMP	There are a lot of clouds out there, huh?
00 01 24 03	CDR	Sure are. ...
00 01 24 18	CDR	Hey, Al, you got the - the Hasselblad down there?
00 01 24 21	CMP	Yes, it's in the TSB. The Hassel - Well, the Hasselblad's set up for the UV window.
00 01 24 25	LMP	Yes.
00 01 24 26	CDR	The spotmeter. Did you get ...?
00 01 24 27	CMP	Yes.
00 01 24 28	LMP	Yes. Yes, it's - -
00 01 24 29	CMP	Sure did.
00 01 24 30	CDR	The TV is all ready.
00 01 24 31	LMP	Yes.
00 01 24 34	CMP	...
00 01 24 37	CDR	... the pad. You got your updates. PYRO ARM ...
00 01 24 45	LMP	...
00 01 24 47	CMP	... the TLI Prep Book.
00 01 24 48	LMP	Yes, ...
00 01 24 49	CDR	Hey, now, do you have the TLI card in your pocket?
00 01 24 52	CMP	No, I have it.
00 01 24 54	LMP	No use in finding mine. I did look.

00 01 24 56	CDR	Okay.
00 01 24 59	LMP	...
00 01 25 01	CDR	It must be in my ...
00 01 25 03	CMP	It must be in your ...
00 01 25 05	CDR	Oh, yes? You get a better ... (laughter).
00 01 25 12	CMP	You carried my lunch; I carried your card.
00 01 25 16	LMP	Did you really get it?
00 01 25 17	CMP	Sure.
00 01 25 20	CDR	... S-IVB/TLI.
00 01 25 22	LMP	...
00 01 25 33	CMP	...
00 01 25 34	CDR	Yes, I -
00 01 25 36	CMP	Well, I got a ... here ... a little culture.
00 01 25 48	LMP	When we get past this cloud bank, I think I might take some of these UV pictures.
00 01 25 53	CMP	They want some clouds for the UV.
00 01 25 55	LMP	Yes, I know. But I didn't want - -
00 01 25 57	CMP	Oh.
00 01 25 58	LMP	- - solid clouds.
00 01 25 59	CMP	What are you all looking at out there? Can you tell?
00 01 26 01	CDR	Oh -
00 01 26 03	LMP	You mean what part of the world?
00 01 26 07	CMP	No - about where the camera's pointing. ... They didn't care what time, but we need to correlate it. ...

00 01 26 33	CMP	(Cleared throat)
00 01 26 39	LMP	...
00 01 26 43	CMP	Hey, look. There's ... out there, I think.
00 01 26 44	CDR	Where?
00 01 26 45	CMP	Huh?
00 01 26 46	CDR	Yes.
00 01 26 47	CMP	...
00 01 26 48	CDR	Yes.
00 01 26 49	LMP	Oh, yes.
00 01 26 50	CDR	Hey, man.
00 01 26 51	CMP	Can you see ... over there?
00 01 26 52	CDR	Oh, that must be it.
00 01 26 53	LMP	Yes.
00 01 26 54	CDR	Man. That must be it.
00 01 26 55	CMP	...
00 01 26 56	LMP	I'll take some UV pictures of it.
00 01 26 57	CMP	Okay.
00 01 26 58	CDR	That's good, Jim. Good deal.
00 01 26 59	CMP	Except I don't think we know the right time. ...
00 01 27 02	CDR	Yes.
00 01 27 03	LMP	Oh, you can see some of that pattern. ...
00 01 27 06	CDR	... far-reaching pattern.
00 01 27 08	CMP	Hey, yes. We know where it is.
00 01 27 15	CDR	...

00 01 27 28	CMP	... Is that the right thing?
00 01 27 40	CMP	This thing is really, really weird.
00 01 27 47	LMP	... I didn't even notice the S-IVB flashes, but you can see them now.
00 01 27 52	CDR	Yes. The S-IVB - -
00 01 27 54	CMP	Yes, I noticed them. (Cleared throat)
00 01 28 02	CDR	Well, let's see. I guess somebody's got to be ready to copy pads.
00 01 28 07	CMP	Yes.
00 01 28 08	CDR	Jim, I guess you're going to be busy with the - -
00 01 28 11	LMP	No, no, I'll be doing that. It won't take long to do this.
00 01 28 13	CDR	All right. I'll get the pyro arm check when we get the comm back.
00 01 28 19	LMP	...
00 01 28 22	CDR	Al, why don't you get the - -
00 01 28 24	CMP	Yes.
00 01 28 25	CDR	Why don't you get this thing ...?
00 01 28 27	CMP	...?
00 01 28 28	CDR	...
00 01 28 29	CMP	Okay.
00 01 28 30	CDR	Okay.
00 01 28 31	CMP	Do you - do you want me to ... the ...
00 01 28 35	CDR	Yes. Yes, I've already scratched mine ...
00 01 28 50	CMP	Get the ... quantity - -
00 01 28 54	CDR	The glycol pump? Get the glycol pump?

00 01 28 59 CMP (Cleared throat)

00 01 29 11 CC 15, Houston. Over.

00 01 29 13 CDR Hello, Houston; 15.

00 01 29 15 CC Would you put the - You're loud and clear, Dave. Would you put the IU UP TEL - -

TIME SKIP

00 01 53 35 LMP - - ..., INJECT.

00 01 53 36 CDR INJECT.

00 01 53 37 LMP EDS POWER, on, up.

00 01 53 42 CDR Okay. Well, I checked the DELTA-V on the EMS; and, I guess, you might as well just hold on until we get all the way around here - until we get the ... again. There's nothing else really to do.

00 01 53 57 LMP Okay. You got EDS POWER, on, up?

00 01 53 58 CDR No, hold - -

00 01 53 59 LMP You want me to hold off?

00 01 54 00 CDR Yes.

00 01 54 01 LMP Okay. ...

00 01 54 02 CDR Really not much more to check. GDC aline; I'll wait until we get a little bit farther down the road to do that.

00 01 54 10 LMP Okay. Where is my kitchen timer, Al?

00 01 54 13 CMP Down below. You want it?

00 01 54 15 LMP Yes, I guess I ought to put it to use when I start cycling on the cryo fans here shortly. You know, we - actually, we have plenty of time. I could put that 105 lens on again and take a colored picture.

[redacted]

00 01 54 33 CMP Yes.

00 01 54 34 CDR Colored picture? ...

00 01 54 36 LMP ... there's a requirement to do it.

00 01 54 38 CDR Yes.

00 01 54 39 LMP ... - with the 105 lens.

00 01 54 41 CDR Good idea. Why not do it?

00 01 54 43 LMP It's - it's not the same place, but -

00 01 54 47 CMP Yes, yes - Well, there's no - no - If you want to take a color picture, they - what they want is a color picture to back up the scene you're seeing in the UV. So, if you can't get a color picture of that area, there's no sense taking it. But you might go ahead and take some pictures with the 80 millimeter. There's nothing wrong with that. On the - ...

00 01 55 22 CDR Have you got the Update Book out, Jim?

00 01 55 25 LMP No, I don't.

00 01 55 26 CMP Did you log - you didn't log the UV pictures in here, did you?

00 01 55 29 LMP Yes.

00 01 55 30 CMP Where did you log them?

00 01 55 31 LMP Oh, on - in the photo procedures here. ... - -

00 01 55 32 CMP No, we want to log them on the - on the ...

00 01 55 58 CMP Photo Log - 70 millimeter, MAG N, was it?

00 01 56 05 LMP Yes, MAG N.

00 01 57 27 CDR Ohh! ...

00 01 58 13 LMP (Laughter) Get the - get the ... out.

00 01 58 17 CMP (Laughter) Yes, I reckon. How's old Davy?

[redacted]

00 01 58 22	CDR	Oh, we're muttering along, flying across the sea.
00 01 58 32	CMP	...
00 01 58 34	CDR	...
00 01 58 40	LMP	...
00 01 58 50	CDR	...
00 01 59 22	CMP	Do you have yourself strapped in the seat there, Dave?
00 01 59 24	CDR	Yes. I do that most of the time, I think.
00 01 59 26	LMP	Yes, I like to do - -
00 01 59 27	CDR	It's a lot more comfortable. ... relative position.
00 01 59 30	CMP	Yes.
00 01 59 31	CDR	Because, otherwise, you're fighting the panel all the time.
00 01 59 33	CMP	Yes. My problem.
00 01 59 39	CDR	...
00 01 59 40	LMP	Why?
00 01 59 45	CDR	...
00 01 59 48	CMP	We could take these lifevests ...
00 01 59 50	CDR	Yes, we could.
00 01 59 55	CMP	...
00 02 00 01	CDR	...
00 02 00 11	CMP	Should we stow the lifevests?
00 02 00 14	CDR	Yes.
00 02 00 16	LMP	Yes. ...
00 02 00 17	CDR	Get that in there somewhere?

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00 02 00 20	CMP	...
00 02 00 38	LMP	Not nearly as loud at 5 psi.
00 02 00 40	CDR	Yes.
00 02 01 12	CDR	Get your lifevest put away, Jim?
00 02 01 15	LMP	Yes.
00 02 01 51	CDR	... things on?
00 02 01 52	LMP	Okay.
00 02 02 34	CDR	Got your ...?
00 02 02 40	CMP	Yes, I ...
00 02 02 50	CMP	Can't get it quite as tight as ...
00 02 02 59	LMP	Where would you keep the Update Book?
00 02 03 07	CDR	R-3 is a pretty handy place for all those books up there.
00 02 03 15	LMP	Do we have a strap?
00 02 03 18	CMP	Velcro ...
00 02 03 21	CDR	Is there a snap up there?
00 02 03 25	LMP	No, ...
00 02 04 38	CMP	I think I see it now.
00 02 04 47	CDR	Ah, it'll be dark pretty soon. We'll get to see the never-never land. There's no horizon.
00 02 04 58	CDR	We got to have some place to put the ...
00 02 05 02	LMP	Well, we could unhook it. Maybe - -
00 02 05 05	CDR	Matter of fact, why don't we get everything stowed for TLI? ... couple helmets - Why don't you put it down in the LEB somewhere, and we'll just leave them there until after TLI - -

00 02 05 15	LMP	The helmets?
00 02 05 17	CDR	Yes.
00 02 05 18	LMP	Yes.
00 02 05 19	CDR	Let's - let's just leave them until we get docked and start getting up into the tunnel - -
00 02 05 23	CMP	Yes.
00 02 05 24	CDR	- - put them on.
00 02 05 25	CMP	Okay.
00 02 05 36	CMP	Could just stick these PGA bags in there.
00 02 05 40	CDR	Yes.
00 02 05 41	CMP	Whoops! Did I do it again?
00 02 05 43	CDR	I don't know, did you?
00 02 05 44	LMP	You're pretty consistent down there, Al.
00 02 05 47	CDR	I can't imagine you did that twice in a row.
00 02 05 56	CMP	...
00 02 05 57	CDR	Huh?
00 02 05 58	CMP	...
00 02 06 01	CDR	The emergency cabin regulator check book.
00 02 06 05	CMP	...
00 02 06 06	CDR	Huh?
00 02 06 07	CMP	...
00 02 06 08	CDR	Must have been.
00 02 06 14	LMP	We're getting a good check at that, Al.
00 02 06 18	CDR	... Watch your big feet.

[redacted]

00 02 06 54	LMP	Are we going to eat before TLI?
00 02 06 57	CMP	You're kidding.
00 02 07 00	CDR	No, ...
00 02 07 06	LMP	We need an emergency ...
00 02 07 12	CMP	Sort of an early time.
00 02 07 42	CMP	Okay, give me your helmet back there, Dave, and I'll stash it away.
00 02 07 46	CDR	Okay.
00 02 08 03	LMP	Gets dark fast, doesn't it?
00 02 08 04	CDR	Yes, it does. Yes, you see never-never land out there?
00 02 08 06	CMP	...
00 02 08 16	LMP	Yes. No - no horizon at all.
00 02 08 25	CMP	Anything else you want ...?
00 02 08 27	CDR	No, that's all right.
00 02 08 28	LMP	Let's just take a look at this ... Sort of interesting.
00 02 08 33	CMP	...
00 02 08 35	CDR	Yes.
00 02 08 36	CMP	...
00 02 08 50	CMP	...
00 02 09 00	CDR	What, that over there?
00 02 09 04	CMP	...
00 02 09 06	CDR	...

00 02 09 16 LMP Boy, that's - Look at that planet, how orange it is out there, Dave? Directly ahead.

00 02 09 21 CDR Yes, it is. Isn't it? How come we saw the same planet in the sunlight, Jim? Huh? Tell me that.

00 02 09 41 CMP ...

00 02 09 43 LMP It wasn't the same one.

00 02 09 44 CDR Huh? Tell me that.

00 02 09 46 LMP Oh, you're - you're still saying it's a satellite, huh?

00 02 09 48 CDR Well, I - I don't know what I'm saying now, because you convinced me it's a planet. But now, it's in the same position it was - -

00 02 09 55 LMP Yes?

00 02 09 56 CDR - - when we had sunrise as we go into sunset. So that tells me something.

00 02 10 01 CMP ...

00 02 10 08 CDR Two hours 10 minutes and 7 seconds. Turn the lights out. ... never-never ... Now I can put the COAS on it. And for the COAS, ... It's right on it. It's depressed - just about 18 degrees. ... Here we are. Here we are at ORB rate. Time's going to be 10 - 2:10. Okay, I'm going to mark it. ... Get a writing pad. Two hours and 11 minutes exactly.

00 02 11 01 CDR MARK. Two hours and 11 minutes. COAS is on - 7 degrees depressed below our image - our attitude towards the Earth.

00 02 11 24 LMP ... that flash out there ...

00 02 11 27 CDR Oh, that's the S-IVB.

00 02 11 28 CMP ... the S-IVB ...

00 02 11 31 LMP Okay.

[redacted]

00 02 11 34	CMP	Well, you know, that's got to be Saturn. Saturn is over by Scorpio.
00 02 11 44	CDR	Yes, it could be.
00 02 11 45	CMP	Yes, and Antares ...
00 02 11 57	CMP	...
00 02 12 00	CDR	Look at all the ...
00 02 12 05	LMP	..., Al. The Earth?
00 02 12 08	CDR	Yes.
00 02 12 19	CDR	Okay, let's see. We got everything stowed now?
00 02 13 13	CDR	Anybody want to eat anything now?
00 02 13 15	CMP	I'm going to wait until we get everything squared away after docking.
00 02 13 20	LMP	... docking ...
00 02 13 23	CDR	What did you say?
00 02 13 24	LMP	... Al ... How about yours?
00 02 13 33	CDR	Okay. Is your suit dry today, Jim?
00 02 13 36	LMP	Well, you haven't smelled too much urine, have you?
00 02 13 38	CDR	No.
00 02 13 39	LMP	Okay, it must have worked then.
00 02 13 40	CDR	Good.
00 02 13 43	LMP	Well, I'll tell you, I used it three or four times ... (laughter).
00 02 13 46	CDR	Did you really?
00 02 13 47	LMP	Yes. Three times before launch and once in orbit.
00 02 13 52	CDR	God, you really ...

00 02 13 55	LMP	I really drank the Gatorade yesterday.
00 02 14 15	CDR	Twenty-six minutes to go before ignition.
00 02 14 20	LMP	Yes, I have ignition at 2:50:31.
00 02 14 33	LMP	You want to wait until we get AOS and then start through it?
00 02 15 11	CMP	We should have gotten ...
00 02 15 13	CDR	What?
00 02 15 14	CMP	...
00 02 16 47	LMP	We changed ...
00 02 16 49	CDR	We have?
00 02 16 58	SC	(Cough)
00 02 17 18	CDR	Getting ready to go to sleep?
00 02 17 20	CMP	No, lot of work to do ...
00 02 17 22	CDR	(Laughter) Yes. About time.
00 02 17 27	CMP	Yes, it is.
00 02 17 37	CDR	I've been feeling a little more full in the head all the time.
00 02 17 40	CMP	Yes.
00 02 17 41	CDR	And -
00 02 17 42	LMP	You mean it gets more and more?
00 02 17 43	CDR	Well, for - it's up - everybody's a little different. For me, it gets a little more and more after the first - like 7 or 8 hours. And then it stabilizes, and you don't even notice it after the first night. I didn't. Ever - everybody's a little different. Your - your body adjusts - adjusts to the whole thing.

[redacted]

00 02 18 16	CMP	... feel tired quicker because we don't have anything to push against. Seems like ... - -
00 02 18 26	CDR	No.
00 02 18 27	CMP	- - suddenly you don't have anything ...
00 02 18 29	CDR	No, I didn't feel any muscle fatigue. ... Well, Jim, why don't we go through this thing now? We're going to be ...
00 02 18 37	LMP	TRANSLUNAR to INJECT.
00 02 18 39	CDR	...
00 02 18 40	LMP	Verify.
00 02 18 41	CDR	That's a verify.
00 02 18 46	LMP	EDS POWER, on, up.
00 02 18 47	CDR	EDS POWER, on, up.
00 02 18 50	LMP	Perform EMS DELTA-V test and null bias check.
00 02 18 52	CDR	Complete.
00 02 18 53	LMP	Set DELTA-V_C.
00 02 18 55	CDR	Set to 10401.1.
00 02 18 59	LMP	10401.1.
00 02 19 01	CDR	Okay.
00 02 19 02	LMP	EMS FUNCTION, DELTA-V.
00 02 19 04	CDR	DELTA-V.
00 02 19 05	LMP	GDC ALIGN.
00 02 19 07	CDR	Okay, I'm ... check that.
00 02 19 16	CDR	... your ... box, it's real loose.
00 02 19 18	CMP	Oo-wee! That is.
00 02 19 20	CDR	...

00 02 19 21 CMP ...

00 02 19 30 LMP ... get that ... right.

00 02 19 54 CDR Three degrees on the GDC at 2 hours.

00 02 20 00 LMP What was it? What?

00 02 20 05 CDR Take 3 and a half degrees for 2 hours.

00 02 20 08 CMP Three and a half in 2 hours ...

00 02 20 10 CDR Yes.

00 02 20 27 CMP ...

00 02 20 29 CDR Ah. Yes, pitch and -

00 02 20 36 CDR What was the pitch? But that makes sense because we're ... in pitch.

00 02 20 41 CMP Yes.

00 02 20 43 CDR Okay. The GDC's alined.

00 02 20 46 LMP Okay. Check the - check the DAP.

00 02 20 55 CDR 31102.

00 02 20 58 LMP Good.

00 02 20 59 CDR 01111.

00 02 21 00 LMP Good. Okay, key VERB 83, at ORDEAL.

00 02 21 16 LMP You want to set ORDEAL, 90 and EARTH.

00 02 21 19 CDR It's 90 and EARTH, and it's tracking very nicely.

00 02 21 22 LMP Okay. SEQUENCE PYRO ARM, two, to on, up.

00 02 21 25 CDR PYRO ARM, two, on, up. Two on, up. Okay.

00 02 21 36 CMP You didn't get P31 after you get - -

00 02 21 40 LMP Might be a ...

00 02 21 41	CMP	Get started.
00 02 21 42	CDR	Yes.
00 02 21 45	LMP	Do you want to wait?
00 02 21 46	CDR	Yes. Let's do.
00 02 21 47	CMP	... on the angle ... a good shape.
00 02 22 13	LMP	... to put that on and watch it?
00 02 22 14	CMP	Mm-hmm.
00 02 22 15	LMP	Turn it?
00 02 22 16	CMP	Yes.
00 02 22 18	LMP	It looks to me like you could turn it first.
00 02 22 20	CMP	No, do it yourself. It's running ...
00 02 22 27	CDR	Yes. Right on the money.
00 02 22 30	LMP	I just don't believe we're here.
00 02 22 32	CMP	Yes. It's the greatest, for sure.
00 02 22 50	CDR	...
00 02 22 52	CMP	That's for sure.
00 02 22 53	CDR	Yes.
00 02 22 54	LMP	You think we'll ...?
00 02 23 22	CDR	It's not bad up here in zero g either, is it?
00 02 23 24	CMP	No, hell no, it's not too bad at all.
00 02 23 27	LMP	Don't even feel supper.
00 02 23 28	CDR	Did you - did you this morning?
00 02 23 31	CMP	Yes.
00 02 23 32	CDR	I can't imagine why people - some people suffer.

00 02 23 37	CMP	...
00 02 23 38	CDR	Make sure you take your timer down, Jim, before we start the burn.
00 02 23 43	LMP	Ah - -
00 02 23 44	CMP	How about putting it up in there? Okay. Set it right before ...
00 02 23 50	CDR	As a matter of fact, get - get all that stuff secured. The S-IVB hasn't got much, but when we get down to the SPS stuff, why it's got a pretty good kick.
00 02 23 57	CMP	Yes.
00 02 23 58	LMP	Sure. Well, it ought to be all right on the girth shelf, won't it?
00 02 24 04	CDR	I guess.
00 02 24 12	CMP	Well, the seat's kind of tight right underneath there.
00 02 24 14	CDR	Huh?
00 02 24 15	CMP	Just passed through the ...; we're in good shape.
00 02 24 23	CDR	Yes, should be right here.
00 02 24 25	CMP/LMP	There it is.
00 02 24 27	CDR	Yes.
00 02 24 35	CDR	Roger, Houston; 15 here, 5 by.
00 02 24 39	CC	Five by also.
00 02 24 41	CDR	Okay.
00 02 30 45	CMP	FUNCTION DELTA-V is on.
00 02 30 48	CDR	Mm-hmm. Don't bump your head on those lights ...
00 02 30 55	CMP	Yes, right.

00 02 30 57	CDR	Put your head back here in that little old cubbyhole.
00 02 31 00	CMP	Think that will help?
00 02 31 01	CDR	It might.
00 02 31 30	CDR	... It's daylight. Think we can see this pretty burn?
00 02 31 33	LMP	Yes, I'm sure we will.
00 02 31 38	CMP	You ready?
00 02 31 39	CDR	Yes.
00 02 31 40	CMP	809 ... 58.
00 02 31 41	LMP	Sunrise at 2:48.
00 02 31 42	CDR	58, VERB 48.
00 02 31 51	SC	(Cleared throat)
00 02 31 57	LMP	Okay. LAUNCH VEHICLE GUIDANCE, IU.
00 02 32 01	CDR	Verified.
00 02 32 03	LMP	Okay. We're standing by for time base 6.
00 02 32 06	CDR	Okay.
00 02 32 15	CMP	What's EPS?
00 02 32 16	CDR	Burn time - 5:55. And, when you get the shutdown, you got a 2-second thruster V_I. Right?
00 02 32 27	CMP	Right.
00 02 32 29	CDR	... degrees per second rate. The first one is at 59. Make sure you got that. 45 degrees pitch and yaw.
00 02 32 39	CMP	That's 48 deg - degrees.
00 02 32 42	CDR	... degrees per second roll. The S-IVB guidance function ... Okay.

00 02 33 14	CDR	Do we have Hawaii all the way through the burn?
00 02 33 18	LMP	I don't think so.
00 02 33 20	CMP	No, we haven't. ... No, we have - -
00 02 33 23	LMP	AOS at 2:5 ...
00 02 33 24	CDR	We go through a keyhole - -
00 02 33 25	LMP	LOS at - -
00 02 33 26	CMP	No. We have LOS at 49:52 for ... minutes.
00 02 33 30	LMP	No, we get them back at 2:55.
00 02 33 49	CDR	Ooh.
00 02 34 12	SC	(Cleared throat)
00 02 34 32	CDR	Yes, well, we tried it the other day.
00 02 34 34	CMP	Yes.
00 02 34 35	LMP	I hope so.
00 02 34 36	CMP	If you did, you can change your DELTA-V ... 20 feet per second.
00 02 35 07	CDR	There's ullage.
00 02 35 08	CMP	Yes.
00 02 35 09	LMP	I bet you it's from the S-IVB.
00 02 35 15	SC	(Cleared throat)
00 02 35 17	CDR	Huh?
00 02 35 20	LMP	You're running about an 80-amp load.
00 02 36 16	LMP	... what that was?
00 02 36 25	CMP	...
00 02 36 39	LMP	We're down to 5 on the cabin.

00 02 36 43	CDR	Get that waste vent closed.
00 02 36 47	CMP	When do we close that?
00 02 36 48	CDR	When we get ready to dock, and the cabin's up to 5 pounds.
00 02 36 52	CMP	I thought we were supposed to leave some pressure for that.
00 02 36 57	LMP	I think we do.
00 02 36 58	CMP	Right after - -
00 02 36 59	CDR	Right after TLI?
00 02 37 00	LMP/CMP	Yes.
00 02 37 01	CMP	I think we do it.
00 02 37 04	LMP	Right after WASTE STOWAGE VENT, CLOSED.
00 02 37 14	SC	(Cleared throat)
00 02 37 57	CDR	There's ARIA.
00 02 38 00	LMP	Keep - keep looking.
00 02 38 02	CMP	...
00 02 38 29	AA	...
00 02 38 31	CDR	You don't have the S-band squelch on, do you?
00 02 38 35	LMP	Yes, yes, I thought it was - -
00 02 38 36	AA	...
00 02 38 37	CDR	... we ought to be able to get that ...
00 02 38 39	AA	...
00 02 38 40	CDR	Oh, that's pretty - that is loud. Isn't it?
00 02 38 42	LMP	Yes.
00 02 38 45	CC	Apollo 15, this is Houston through ARIA. Over.

00 02 38 51	CDR	Roger, Houston; 15. You're about 1 by 1 through ARIA.
00 02 38 57	CC	Roger. You're about 3 by; clear enough to understand.
00 02 39 04	CDR	What'd he say?
00 02 39 05	CMP	He said we're clear enough - -
00 02 39 06	AA	...
00 02 39 07	CMP	- - ..., I think.
00 02 39 09	CDR	Roger. We got somebody else on the loop with us, too.
00 02 39 18	AA	...
00 02 39 22	CMP	...
00 02 39 24	AA	...
00 02 39 25	CDR	- - ... UP-LINK ACTIVITY light.
00 02 39 27	CMP	Okay.
00 02 39 50	AA	...
00 02 40 02	CDR	It's a familiar sound, and I can't remember what I - what it is.
00 02 40 07	CMP	Just a minute ... - -
00 02 40 08	CDR	You can't change the frequency there. You might hook up -
00 02 40 12	CMP	It seems to ...
00 02 40 19	LMP	It's a bull's-eye.
00 02 40 20	CMP	Why don't we hook up the speakers, and let's do some checking. ...
00 02 40 25	CDR	Don't count too far.
00 02 40 27	CMP	S-II SEP light.
00 02 40 28	LMP	Yes.

[redacted]

00 02 40 29	CMP	It just came on, Dave.
00 02 40 30	CDR	We have the S-II SEP light.
00 02 40 33	LMP	You stand - -
00 02 40 34	CC	... SEP LIGHT.
00 02 40 37	CDR	Okay.
00 02 40 43	LMP	The UP-LINK ACTIVITY light went out.
00 02 40 45	CDR	Okay.
00 02 41 05	AA	...
00 02 41 08	LMP	Okay. Monitor launch-vehicle tank-pressure sequence.
00 02 41 11	CDR	Very well. It should come on now. Come on, baby.
00 02 41 34	CDR	Here it comes. Come on.
00 02 41 44	CMP	It might fool you ...
00 02 41 46	CDR	Yes.
00 02 41 49	AA	...
00 02 41 53	CDR	And coming up on 52 minutes.
00 02 41 57	LMP	Okay. ORDEAL FDAI 1 to ORB RATE; 2 to INERTIAL.
00 02 42 05	CDR	Okay, stand by 1. Okay, Houston. It looks like we have a slow repress start. We're up to about - 22 or 23 on the fuel pressure. Okay; ORB RATE, INERTIAL.
00 02 42 17	LMP	Okay; ORDEAL MODE, HOLD/FAST.
00 02 42 20	CDR	HOLD/FAST. Go on.
00 02 42 22	LMP	All right.
00 02 42 23	CC	... getting a normal repress. We're - -

00 02 42 26	CDR	Okay; normal repress. Go, Jim.
00 02 42 30	AA	...
00 02 42 34	CDR	Okay; 300 on the LUNAR.
00 02 42 36	LMP	And RH - -
00 02 42 37	AA	...
00 02 42 39	CDR	Armed.
00 02 42 40	LMP	UP TELEMETRY, CM and IU, both to BLOCK.
00 02 42 43	CDR	BLOCK's on.
00 02 42 44	LMP	Standing by for 56 minutes.
00 02 42 48	CDR	At 54, we go 25 degrees.
00 02 42 51	AA	...
00 02 42 53	LMP	What - what was that on repress that you ... normal?
00 02 42 57	CDR	It's - it's just something that's a little slow in here.
00 02 42 59	LMP	Oh.
00 02 43 00	CDR	It's normally quite fast. ... At 54 minutes, we want to be at 25 degrees.
00 02 43 11	AA	...
00 02 43 36	AA	...
00 02 43 39	CDR	Wonder who all that is?
00 02 43 40	CMP	Yes, I wonder?
00 02 43 42	SC	(Cleared throat)
00 02 43 45	AA	...
00 02 44 05	AA	...
00 02 44 22	AA	...

00 02 44 30	AA	...
00 02 44 44	AA	...
00 02 44 52	AA	...
00 02 45 01	CDR	Coming up on 55 minutes.
00 02 45 04	LMP	...
00 02 45 08	CDR	Okay. Coming up ...
00 02 45 10	LMP	Okay; at 56, slew FDAI 1 to pitch at 17.
00 02 45 19	AA	...
00 02 45 59	CDR	Okay. ...
00 02 46 00	LMP	Seventeen.
00 02 46 04	LMP	Okay; at 56:45, it should be 14 degrees.
00 02 46 10	CC	... through ARIA number 2. Over.
00 02 46 11	CDR	- - ... talking to him. Houston, 15; say again.
00 02 46 20	CMP	We lost him, Dave.
00 02 46 21	CC	15, Houston. You're way down in the static, but I can hear you transmit. Over.
00 02 46 28	CDR	Okay; we'll pick you up at the keyhole. 56:45, you ought to be ORDEAL, OPERATE. Right?
00 02 46 36	LMP	Yes, OPERATE/SLOW.
00 02 46 38	CDR	What angle? 14 degrees?
00 02 46 42	LMP	Fourteen degrees.
00 02 46 46	CMP	...
00 02 46 49	CDR	Minus.
00 02 47 13	CMP	Daylight?
00 02 47 15	LMP	Yes.

00 02 47 30	LMP	Why don't they have a picture like that in the simulator?
00 02 48 01	CMP	Two hours and 48 minutes.
00 02 48 17	CDR	... BLANK. ...
00 02 48 21	LMP	TVC SERVO - SCS TVC SERVO POWER 1 to AC 1/MAIN A.
00 02 48 27	CDR	Average g is on.
00 02 48 28	LMP	Two, off.
00 02 48 29	CC	Roger; average g.
00 02 48 30	CDR	- - ... yet.
00 02 48 32	LMP	TAPE RECORDER's going HIGH BIT RATE.
00 02 48 44	CDR	THRUST mode, NORMAL.
00 02 49 33	CDR	Put it in between the camera, Al. No, don't force it.
00 02 49 37	CMP	... Jim.
00 02 49 38	CDR	Can you get it up there?
00 02 49 48	CDR	Okay. Get ready, gang.
00 02 49 57	CDR	Okay, 8 seconds. Three -
00 02 50 04	CDR	Fire is on. We have ignition.
00 02 50 06	CC	Roger; ignition.
00 02 50 15	CDR	Okay. We're pitching now.
00 02 50 17	CMP	... full, high.
00 02 50 20	SC	...
00 02 50 22	CDR	Okay. Yes.
00 02 50 24	SC	...
00 02 50 27	CDR	Its tracking's real good.

[redacted]

00 02 50 36	CDR	Load's about a half a g. ORDEAL ... should be tracking with it.
00 02 51 03	CDR	Well, it had a little surge right at this ...
00 02 51 05	CMP	Picked up right there.
00 02 51 14	CDR	Okay. S-IVB pressure is 40 and 30, and we had a little surge at about 1 minute.
00 02 51 20	CC	...
00 02 51 25	CDR	Okay.
00 02 51 33	CDR	You feel a very slight amount of bumping ...
00 02 51 37	CMP	Yes, it does.
00 02 51 39	LMP	Could have been vibration.
00 02 51 41	CMP	Or trouble.
00 02 51 52	CDR	Yaw's tracking at about 1 degree.
00 02 51 53	LMP	ORDEAL's right on the money.
00 02 52 02	CMP	Track is GO. ...
00 02 52 16	CDR	Coming over the Hawaiian Islands.
00 02 52 40	CMP	Pressures are steady. ORDEAL's tracking.
00 02 52 55	CDR	Okay, Houston; 15. We're about halfway through. Pressures are steady at 40 and 30, and ORDEAL is tracking right on through.
00 02 53 02	CC	..., 15. At 3 ...
00 02 53 07	CDR	Roger.
00 02 53 22	CDR	DELTA-V_{CG}.
00 02 53 24	CMP	My countdown's going to be off probably 2 seconds here. Let's start my watch and ... it again. I want to be sure the engines ... start.
00 02 53 36	CDR	You can feel it, can't you?

00 02 53 38	CMP	Yes.
00 02 53 41	LMP	Converter's started.
00 02 53 42	CMP	Pitchover's -
00 02 53 43	LMP	I get the little surge before the bang.
00 02 53 47	CDR	Okay, we're on P45.
00 02 53 50	CMP	Pressure's looking good. ORDEAL's tracking. A quarter g - a half g. ...
00 02 54 00	LMP	That computer has ... DSKY ...
00 02 54 04	CMP	That computer ...
00 02 54 06	CDR	Really?
00 02 54 14	CMP	31,925.
00 02 54 37	LMP	... pressure.
00 02 54 39	CDR	Okay.
00 02 54 41	LMP	... Houston.
00 02 54 56	CDR	Hey, Houston. We have about a minute to go. We're tracking 39 and 30 on the pressures, and ORDEAL's about 0.
00 02 55 04	CC	15, Houston; Roger. Looks good here.
00 02 55 06	CMP	0_2 flow, high.
00 02 55 14	CDR	That should be on for cut-off.
00 02 55 17	LMP	Yes, that's right.
00 02 55 19	CC	...
00 02 55 29	CC	...
00 02 55 32	CMP	I'll give you a countdown to 55.

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00 02 55 42	CDR	Go ahead. ... Go to ...
00 02 55 46	CMP	Okay. Here's the countdown.
00 02 55 47	CDR	Okay.
00 02 55 48	CMP	10, 9, 8, 7, 6, 5, 4, 3 - -
00 02 55 55	CDR	Okay -
00 02 55 56	CDR	SHUTDOWN, 5 plus 51. Okay. Cameras - -
00 02 56 02	CMP	... stuff down here.
00 02 56 07	CDR	Okay. Al, get the data there.
00 02 56 09	CMP	Yes.
00 02 56 10	CDR	Check S-IVB tank pressures.
00 02 56 12	CMP	Okay. S-IVB tank pressure's about 32, coming down, on the oxidizer; and about 28, coming down, on the fuel.
00 02 56 22	CC	Roger.
00 02 56 23	CDR	SCS TVC SERVO POWER went OFF - went OFF. PCM BIT RATE going LOW.
00 02 56 49	LMP	FDAI 1 to INERTIAL.
00 02 56 52	CDR	Yes.
00 02 56 53	CMP	RHC number 2, locked.
00 02 56 55	CDR	INERTIAL and locked. Okay, when Al gets through with ...
00 02 57 02	LMP	Okay, it's time to switch around.
00 02 57 04	CDR	Okay.
00 02 57 12	CMP	...
00 02 57 17	CDR	Okay, Gordo. Got some data for you, if you're ready to copy.

00 02 57 23	CC	15, Houston. We're getting a lot of static for some reason. Say again, please.
00 02 57 28	CDR	Roger, Gordo. I've got the cut-off data for you, if you're ready to copy.
00 02 57 33	CC	Go ahead.
00 02 57 36	CDR	Okay. We cut off on a V_I of 35,614. TFC was plus 02; V_G was plus 145; DELTA-V_C was minus 14.9. And I've got the H-dot now, if you want it. H-dot was 4353, and altitude was 167.4.
00 02 58 08	CC	15, Houston. Most of your readback is blocked by static. Let's wait a little while and try it again.
00 02 58 14	CDR	Okay, Gordo. Okay, you got all your data, Al?
00 02 58 17	CMP	Yes. The EMS is off.
00 02 58 19	CDR	Okay. Let's switch over. Okay. Switchy, switchy.
00 02 58 23	LMP	Okay, when the COMP ACTIVITY light's out, you're just supposed to ..., Al.
00 02 58 27	CMP	... switchy, switchy.
00 02 58 30	CDR	I need a VERB 66.
00 02 58 31	CMP	Okay.
00 02 58 35	CDR	Then when you all get down in the LEB, get that waste storage vent valve closed.
00 02 58 40	CMP/LMP	Yes ...

TIME SKIP

00 03 21 14	CMP	Coming up.
00 03 21 20	CDR	Okay.
00 03 21 21	CMP	I have a GDC ALIGN.

[redacted]

00 03 21 33 CDR Okay. That's a pretty good ...

00 03 21 35 LMP ...

00 03 21 39 CDR Okay.

00 03 21 41 CMP GDC ALIGN's complete?

00 03 21 42 CDR Yes.

00 03 21 43 CMP Okay, EMS FUNCTION, DELTA-V. That's a verify.

00 03 21 45 CDR Verified.

00 03 21 46 CMP EMS MODE, NORMAL.

00 03 21 47 CDR NORMAL.

00 03 21 48 CMP Okay, got the DET set at 59:30.

00 03 21 49 CDR Right.

00 03 21 50 CMP Start that whenever you want.

00 03 21 51 CDR Okay. ...

00 03 21 53 CMP Okay.

00 03 21 55 CDR Okay, Houston; 15. 30 seconds. Okay. We're counting, Jim.

00 03 22 05 CMP Okay. At 50, we'll go to BMAGs, ATT 1/RATE 2; CMC, AUTO; and come off in CMC. There is ATT 1/ RATE 2; CMC, AUTO, at 58, we'll get plus-X.

00 03 22 31 CMP One, 2, 3. Okay.

00 03 22 32 CDR Okay.

00 03 22 33 CMP Okay.

00 03 22 34 CDR Now get your valves, D. They look good.

00 03 22 35 CMP Okay. Engine valves going to SCS.

00 03 22 36 CDR ... eight, gray.

00 03 22 39 CMP Okay. I'm going to pitch over.

00 03 22 43 CDR Okay.

00 03 22 44 CMP Here we go.

00 03 22 51 CDR Okay, Houston. We got a good SEP.

00 03 23 02 CMP Got PRIM PROPELLANT B, SECONDARY, and Delta PRIM and SECONDARY - went barber pole, and they're both gray now. ...

00 03 23 12 CDR ... panel?

00 03 23 15 CMP Yes. There goes the panels, right out to the side. Right outside.

00 03 23 18 CDR Yes, I see them now.

00 03 23 19 LMP Yes.

00 03 23 20 CDR See it?

00 03 23 21 LMP Yes.

00 03 23 22 CDR It's spinning out there. You see the - -

00 03 23 25 CMP What a view! You see the S-IVB?

00 03 23 27 LMP Not yet.

00 03 23 28 CMP ... We're at 270, now. Oh, ooops. Where is it. ... - -

00 03 23 33 LMP Right over Florida.

00 03 23 34 CMP Okay. Good shape, man ... - -

00 03 23 36 CDR Are we?

00 03 23 37 CMP You look good, good, good, good. Good job. Right in there, babe. Yes, that's good. Oh, look at that.

00 03 23 46 CDR Take pictures with the cameras.

00 03 23 50 LMP Yes.

[redacted]

00 03 23 53	CMP	... on the TV.
00 03 23 55	CDR	No, forget the TV. The TV looks okay. Get the camera over here and take some pictures.
00 03 24 23	CC	- - Houston. Would you give us OMNI Bravo?
00 03 24 25	CDR	OMNI Bravo.
00 03 24 27	CMP	Okay, I'm going to give it a little plus-X.
00 03 24 29	CDR	Okay.
00 03 24 30	CMP	Going to CMC first.
00 03 24 33	LMP	Got a T - good TV picture, Dave?
00 03 24 35	CDR	Yes. ... just a little off to the side, Al?
00 03 24 38	CMP	Hum? ... Okay.
00 03 24 44	CDR	Don't want to get too far away, now.
00 03 24 46	CMP	One, 2, 3, 4.
00 03 24 51	LMP	... TV picture is ...
00 03 24 53	CDR	To the right.
00 03 24 55	CMP	Back on CMC.
00 03 24 57	CDR	Okay. ...?
00 03 24 59	CMP	Yes.
00 03 25 11	CDR	Okay, Houston. It looks like we've got a good LM in there, and we're rolling now, and the opening rates are stopped. You should have the TV.
00 03 25 21	CC	Roger. We haven't got the picture up here yet. Stand by, and I'll give you a check on that.
00 03 25 26	CDR	Okay.
00 03 25 38	LMP	I can shift that camera if you want, Dave.
00 03 25 39	CDR	No. It would just be ... the orientation the LM has for the attitude.

00 03 25 47	CMP	Yes, that is a big bang when you come off of there, isn't it?
00 03 25 50	CDR	Yes.
00 03 25 58	LMP	Guess we're - what, 50 feet?
00 03 26 04	CMP	Take it at f/8.
00 03 26 06	CDR	All I've got to look at it is the TV picture.
00 03 26 24	CC	- - Houston.
00 03 26 26	CMP	Go, Houston.
00 03 26 27	CC	Goldstone is receiving the carrier, but we're not getting any signal on the carrier for the TV. Over.
00 03 26 34	CDR	Okay, we've got a good picture on the monitor up here. You got the TV switch in the right spot, Jim?
00 03 26 40	LMP	Well, it's not in TRANSMIT.
00 03 26 43	CDR	What?
00 03 26 44	LMP	This switch here should probably go to TRANSMIT.
00 03 26 46	CDR	Well, put it -
00 03 26 48	LMP	Let's try ...
00 03 26 51	CMP	Check those ...
00 03 26 53	LMP	Do what? How about S-BAND AUX TV to TV?
00 03 26 57	CDR	Yes, sir. ...
00 03 27 08	CDR	Hey, we need HIGH GAIN, don't we?
00 03 27 10	LMP	You have. I've got ... use HIGH GAIN ... - -
00 03 27 11	CMP	HIGH GAIN.
00 03 27 12	LMP	- - ...
00 03 27 15	CDR	Okay.

00 03 27 16	CC	15, Houston. We're getting a picture now, and the LM is coming in in the lower right-hand corner of our field of view.
00 03 27 26	CDR	Okay. Slew antenna to verify oper - Do you want to do all that, Jim? That's your - Yes, go ahead; take your pictures.
00 03 27 33	LMP	Well - -
00 03 27 34	CDR	Of course, ... your pictures. Take your pictures. ...
00 03 27 45	CMP	It was a lot slower than I thought it would be.
00 03 27 46	CDR	Strange.
00 03 27 47	CMP	Yes.
00 03 28 02	CMP	...
00 03 28 05	LMP	As long as they're getting the picture on the OMNI, I guess there's no hurry to - that we get the high gain up.
00 03 28 13	CDR	Okay, Houston. It looks like we've got a good high-gain antenna. Do you want us to give you the high gain or stay on the OMNI?
00 03 28 20	CC	*** by.
00 03 28 29	LMP	There's sure a lot of crap flying out - -
00 03 28 31	CC	*** take the high gain, Dave.
00 03 28 33	CDR	Roger. Going HIGH GAIN.
00 03 28 58	CDR	Okay, Houston. We're in AUTO and MEDIUM. Looks like we got a good lock.
00 03 29 03	CC	Roger. And we're getting a very good picture here.
00 03 29 05	CDR	Okay.
00 03 29 06	CC	...
00 03 29 07	CMP	Get the DAC going.

00 03 29 08	CC	*** on the right-hand side of the field of view.
00 03 29 19	LMP	Shall I put the TV ... long, Dave.
00 03 29 22	CDR	Huh! I think it looks good, Jim.
00 03 29 26	LMP	I can adjust it and get it in center.
00 03 29 29	CDR	No, it's - ... How're you doing?
00 03 29 39	LMP	How many pictures - -
00 03 29 40	CC	*** Houston. Request WIDE BEAM width, please.
00 03 29 42	CDR	WIDE BEAM.
00 03 29 43	CMP	I find I'm working the stick a lot more than I thought I would.
00 03 29 47	LMP	Yes.
00 03 29 48	CDR	Just play it cool. We've got plenty of time.
00 03 29 51	CMP	Yes.
00 03 29 52	LMP	Play it cool.
00 03 29 54	CDR	Six on your camera would be right where you'd want it.
00 03 29 56	LMP	Okay.
00 03 30 29	LMP	...
00 03 30 35	CDR	Okay. I would say we were - what, Jim? 20 feet? 15? 10?
00 03 30 40	LMP	I have 15 feet on the camera.
00 03 30 46	LMP	Did we forget anything on that checklist, Dave?
00 03 30 49	CDR	...
00 03 30 54	CMP	Okay. We're sliding in there, David.
00 03 30 56	CDR	Okay. I think we're about a couple feet away.
00 03 31 03	CMP	Yes.

00 03 31 05	CDR	What do you want to do?
00 03 31 07	LMP	Put it at 12 frames per second.
00 03 31 08	CDR	Okay, I'd go now if - -
00 03 31 09	CC	*** Houston. The centering on the picture is good now, and we're getting an excellent quality picture.
00 03 31 13	CDR	Very good. We're almost there. I'll be watching above the ... over here.
00 03 31 20	CMP	Okay.
00 03 31 45	CMP	Okay.
00 03 31 56	CDR	..., Jim.
00 03 32 01	CMP	Feel it.
00 03 32 05	CDR	Got it?
00 03 32 08	CMP	About there.
00 03 32 36	CMP	...
00 03 32 49	CDR	Help you?
00 03 32 50	LMP	...
00 03 32 51	CMP	Capture. FREE.
00 03 32 57	CDR	Okay?
00 03 32 58	CMP	Read the checklist, Jim.
00 03 32 59	CDR	Okay; let's go down the checklist. You get ... Okay. On capture, changing FREE, to damp, aline pitch and yaw -
00 03 33 09	CMP	Still got a little pitch rate going.
00 03 33 11	LMP	...
00 03 33 12	CMP	Huh?
00 03 33 13	CDR	You're fine. Just aline pitch and yaw.

00 03 33 19	CMP	Okay.
00 03 33 20	CDR	They're all alined and damped out?
00 03 33 22	LMP	... on the chart. ...
00 03 33 26	CMP	Okay. Looks like we're damped.
00 03 33 27	CDR	Okay; ready?
00 03 33 29	CMP	We're off at a little bit of an angle.
00 03 33 30	LMP	Here. I can hold this a minute. ...
00 03 33 33	CMP	Okay, Dave.
00 03 33 34	CDR	Yes. ... Ready to retract?
00 03 33 38	CMP	Okay.
00 03 33 40	CDR	Your rate's going? Don't mess around.
00 03 33 51	CDR	Hard dock, Houston. Hard dock.
00 03 33 53	CMP	Great!
00 03 33 54	CDR	Man alive!
00 03 33 55	CMP	Boy! (Laughter)
00 03 33 56	CDR	I should have told you about that. I forgot about it.
00 03 33 57	CMP	Yes. I'm - -
00 03 33 58	LMP	I didn't think we were - it was going to ... that much.
00 03 33 59	CDR	Okay. Let's - -
00 03 34 01	CMP	I was expecting it.
00 03 34 02	LMP	Okay; DOCKING PROBE, EXTEND/RETRACT, and talkback's gray.
00 03 34 06	CMP	Gray.

00 03 34 07 LMP SEQUENCE PYRO ARM, two, to SAFE.

00 03 34 10 CMP PYRO ARM, SAFE.

00 03 34 11 LMP SEQUENCE LOGIC, two, OFF.

00 03 34 13 CMP LOGIC, OFF.

00 03 34 14 LMP EDS POWER, OFF.

00 03 34 16 CMP EDS POWER's OFF.

00 03 34 18 LMP CB EDS, three, open.

00 03 34 21 CMP EDS, three, open.

00 03 34 24 LMP DOCKING PROBE EXTEND/RELEASE to OFF.

00 03 34 27 CMP OFF.

00 03 34 28 LMP DOCKING PROBE RETRACT, two, OFF.

00 03 34 30 CMP Two, OFF.

00 03 34 31 LMP CB DOCKING PROBE, two, open.

00 03 34 34 CMP DOCKING PROBE, open. TAPE RECORDER's going off.

TIME SKIP

00 04 11 55 LMP Okay; I'll cycle the cryo fans.

00 04 11 59 CDR Is that ON and OFF?

00 04 12 01 LMP Yes, ON for a minute.

00 04 12 03 CDR That's right, we got a change for that.

00 04 12 04 CMP You don't need the checklist. You got that silly bunch of junk. Garbage, rather.

00 04 12 15 CDR Okay; load RCS DAP. Al, you want to load your DAP?

00 04 12 20 LMP Oh, let's see. We need to load - -

00 04 12 21 CMP Yes.

00 04 12 22 CDR ... 21101.

00 04 12 31 CDR And X1111.

00 04 12 33 CMP Yes.

00 04 12 35 CDR Load NOUN 22 attitude. Monitor APS maneuver, ...

00 04 12 40 LMP Okay; what's the attitude?

00 04 12 42 CDR 090?

00 04 12 46 CMP Yes.

00 04 12 47 CDR 257. Okay. ...

00 04 12 51 CMP I don't think you can - -

00 04 12 52 CDR Okay; 354.6. Okay; VERB 60 ENTER.

00 04 13 01 CMP VERB 60?

00 04 13 02 CDR Sixty.

00 04 13 04 CMP Okay.

00 04 13 05 CDR VERB 63 ENTER.

00 04 13 07 CMP Okay.

00 04 13 08 CDR GDC ALIGN.

00 04 14 08 CMP GDC's alined.

00 04 14 09 LMP Okay; DET, RESET.

00 04 14 14 CMP Whoops! RESET.

00 04 14 16 LMP CB, SEQUENCE ARM, two, closed.

00 04 14 18 CMP ARM is closed.

00 04 14 19 LMP Okay. Cue MSFN, because we'll be getting the LOGICs on the ARM pretty soon.

00 04 14 24 CMP Okay. Houston, 15.

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00 04 14 31	CC	...
00 04 14 32	CMP	Roger, Gordo. We're ready to get the PYRO ARMs and LOGICs on now.
00 04 14 37	CC	...
00 04 14 38	CMP	Okay; LOGICs coming on. LOGIC 1. LOGIC 2.
00 04 14 50	CC	...
00 04 14 51	CMP	Roger. Okay?
00 04 14 54	LMP	SEQUENCE PYRO ARM, two, go to ARM.
00 04 14 56	CMP	PYRO ARM coming on. They're on.
00 04 15 01	LMP	Okay; TVC SERVO POWER number 1 to AC 1/MAIN A.
00 04 15 04	CMP	AC 1/MAIN A.
00 04 15 05	LMP	RHC and THC armed.
00 04 15 08	CMP	RHC and THC armed.
00 04 15 12	LMP	Okay; call P47.
00 04 15 13	CMP	Yes. Okay. Let me put a belt on here to just strap myself down a little bit.
00 04 15 20	CDR	Yes. That's a good idea.
00 04 15 23	LMP	Yes, we're going to be right on that time, at 4:16.
00 04 15 25	CDR	Got much left to do?
00 04 15 27	CMP	...
00 04 15 39	CMP	Here it is.
00 04 16 01	CDR	... - -
00 04 16 02	CMP	Yack!
00 04 16 03	CDR	You hold that side, and I ... - -
00 04 16 04	CMP	Can you see it?

00 04 16 07	CDR	... this side. ... Here ... get these to your side.
00 04 16 16	CMP	Yes.
00 04 16 29	CMP	...
00 04 16 31	CDR	Okay, Jimmy.
00 04 16 32	LMP	Okay; call P47.
00 04 16 39	CMP	Okay.
00 04 16 41	LMP	EMS MODE, NORMAL.
00 04 16 43	CMP	NORMAL?
00 04 16 49	LMP	Okay. And whenever we get P47 eliminated there, we're ready for S-IVB/LM SEP, on, up.
00 04 16 54	CMP	Okay.
00 04 16 55	LMP	Start the DAC.
00 04 16 56	CMP	What?
00 04 16 57	CDR	The DAC. Yes.
00 04 16 58	CMP	How about the settings on the DAC?
00 04 16 59	CDR	... okay; we won't need ...
00 04 17 01	CMP	All right.
00 04 17 03	CDR	Jim, let's turn the page here ... see what we're going to do.
00 04 17 06	LMP	Oh, okay.
00 04 17 07	CDR	Now you're going to go over and start the DET.
00 04 17 09	CMP	Right.
00 04 17 10	CDR	CMC MODE - We do SEP; start the DET; CMC MODE, AUTO; and, at 5 seconds, thrust minus-X for 3 seconds.
00 04 17 18	CMP	Okay. Coming up ...?

[redacted]

00 04 17 20	CDR	5 seconds.
00 04 17 22	CMP	Yes, 5 seconds. ...
00 04 17 27	CDR	I'll hit the SEP, and you get the DET started.
00 04 17 28	CMP	Okay; when you're - when you're - on my mark, you hit the SEP and I'll hit the DET. Ready?
00 04 17 35	CDR	I don't think I am.
00 04 17 36	CMP	Okay.
00 04 17 37	CDR	Okay.
00 04 17 39	CMP	Want to do it on the minute?
00 04 17 40	CDR	Yes, do it on the minute.
00 04 17 42	CMP	All right.
00 04 17 44	CDR	Okay, Houston, we'll SEP at 4:18.
00 04 17 47	CC	... Stand by.
00 04 17 54	CMP	Boy, look at that.
00 04 17 55	CDR	Five - 5 seconds.
00 04 18 01	CMP	Okay. Okay.
00 04 18 03	CDR	We got a SEP.
00 04 18 05	CMP	We're in AUTO.
00 04 18 07	CDR/CMP	Five seconds -
00 04 18 08	CDR	How much now?
00 04 18 09	LMP	One foot - -
00 04 18 10	CMP	Three seconds. ... Okay.
00 04 18 11	CDR	Yes.
00 04 18 12	CMP	We've done it.
00 04 18 15	CDR	Okay, Houston. We got a good SEP.

00 04 18 19 LMP Okay; you can PRO on that display.

00 04 18 22 CDR Okay.

00 04 18 23 LMP You have to go into POO. Then when the activity light's out, you can key VERB 66. Okay, Al, you ready to clean it up?

00 04 18 31 CMP Yes.

00 04 18 32 LMP SEQUENCE PYRO ARM, two, to SAFE.

00 04 18 34 CMP SAFE.

00 04 18 36 LMP SEQUENCE LOGIC, two, OFF.

00 04 18 37 CMP LOGIC's OFF.

00 04 18 39 LMP CB SEQUENCE ARM, two, open.

00 04 18 41 CMP ARM is open.

00 04 18 42 CDR Okay; Al, check and see if it's clear.

00 04 18 45 CMP Okay. I can't see a thing except the LM there.

00 04 18 56 LMP I can't either, Dave.

00 04 18 57 CDR Okay.

00 04 19 02 LMP You got SEQUENCE ARM, two, open?

00 04 19 03 CMP ARM is open.

00 04 19 04 LMP CB S-IVB/LM SEP, two, open. That's my side, not yours.

00 04 19 05 CDR Yes.

00 04 19 20 LMP Now verify O_2 TANK ISOLATION valve move to gray.

00 04 19 25 CDR Hey, I can see the Rover, Jim.

00 04 19 27 LMP Can you?

00 04 19 28 CDR Yes.

00 04 19 29 CMP You mean it's there?

[redacted]

00 04 19 30 CDR Yes, man.

00 04 19 31 LMP Is it really? Okay.

00 04 19 37 CDR Okay. Keep it moving.

00 04 19 41 CMP What, Jim?

00 04 19 42 LMP Give me your checklist.

00 04 19 44 CMP Oh, yes, I can't get this doggone thing ...

00 04 19 48 CDR Just put it down there and let's keep it going.

00 04 19 50 CMP Okay.

00 04 19 55 LMP Okay - Read to me. I've got to get down in the SIM bay. ...

00 04 20 00 CMP Here, I can probably do that easier than you can.

00 04 20 02 LMP Let me take - Why don't we configure our helmets and gloves off?

00 04 20 05 CDR Huh - -

00 04 20 06 CMP Yes, why not?

00 04 20 07 CDR Well, we do a maneuver here, don't we?

00 04 20 08 CMP Yes. We've got to do a maneuver to the S-IVB.

00 04 20 09 CDR Let's get through this thing.

00 04 20 11 CMP We're already doing attitude.

00 04 20 13 LMP Okay.

00 04 20 14 CMP That should take only a VERB 49, since we've already loaded it.

00 04 20 17 CDR O_2 tank 3 ISOLATION valve talkback gray.

00 04 20 19 LMP That's verified.

00 04 20 21 CDR Okay, MAP, PAN, and SM/AC POWER should be OFF. I'll get them. You're in all of that junk - -

00 04 20 27	LMP	No. Well, now -
00 04 20 29	CDR	You've got all that junk on; I don't want you to scratch your helmet.
00 04 20 32	LMP	Okay. Yes, take care of my helmet for me.
00 04 20 35	CDR	You've got to.
00 04 20 36	LMP	Yes.
00 04 20 37	CDR	So you can see.
00 04 20 38	LMP	That's right. Here, if you're going to get down, I'll read to you.
00 04 20 45	CDR	Okay.
00 04 20 49	CMP	I'm going to take my helmet off.
00 04 20 51	LMP	The first one is MAPPING CAMERA, ON, to OFF.
00 04 20 58	CDR	MAPPING CAMERA, ON, to OFF. Okay.
00 04 21 03	LMP	And the PAN CAMERA POWER, OFF.
00 04 21 07	CDR	PAN CAMERA POWER to OFF. Okay.
00 04 21 17	LMP	SM/AC POWER, OFF. Down on 181.
00 04 21 26	CDR	POWER to OFF.
00 04 21 28	LMP	And, Al, LAUNCH VEHICLE SPS INDICATOR switch to GPI.

TIME SKIP

00 09 27 26	CDR	Okay. GROUP 5, MAIN A and MAIN B on 226 ...
00 09 27 33	LMP	Okay. Both those are open.
00 09 27 59	CDR	Okay. Stand by.
00 09 28 16	CDR	Okay. Count.
00 09 28 42	CDR	Okay. I understand. Standing by.

[redacted]

00 09 28 49	CDR	Eight - 8.983.
00 09 29 02	CDR	HIGH GAIN, MEDIUM.
00 09 29 22	LMP	...
00 09 29 28	CDR	No. No. It's not under EMS.
00 09 29 30	LMP	...
00 09 29 31	CDR	What?
00 09 29 33	LMP	...
00 09 29 37	CDR	No, we're not. We're talking about GROUP 5, on 229.
00 09 29 42	CMP	...
00 09 29 47	CDR	No, he's also - he's talking about pilot valves.
00 09 29 49	CMP	Oh, he is? ... circuit breakers ... That light.
00 09 30 05	CDR	Huh! EPS GROUP 3. He said GROUP 5.
00 09 30 14	LMP	He said GROUP 5?
00 09 30 15	CDR	GROUP 5. It's GROUP 3 here. That's not what he's working on. He's working on the DELTA-V thrust. 8.983.
00 09 30 24	CMP	229, GROUP 3.
00 09 30 37	CDR	Huh!
00 09 30 57	CDR	Okay. We'll do a - we - we note that drawing 8.9 Echo 3 doesn't seem to fit what you're doing.
00 09 31 25	CDR	Oh, okay. Okay. Shoot!
00 09 31 36	CDR	Okay. Here goes DELTA-V A now. Okay. A is up in on, and the SPS THRUST light is off.
00 09 31 51	CMP	It is? Gee! Good grief!
00 09 32 07	CDR	That's correct. It's still in the up and on position, and when I went to the on position, up, the light went out. I'll just leave it there while you think about it.

00 09 32 28	CMP	Wonder why it'll do that?
00 09 32 30	CDR	(Snicker) I can only think of one reason — that it's really in backwards. Did you cycle those switches ..., Jim?
00 09 32 39	CMP	Aah -
00 09 32 41	CDR	Yes, you did - pulled the circuit breakers out to see if the light would change any.
00 09 32 45	CMP	Yes.
00 09 33 04	LMP	I think I would've, too. But he - -
00 09 33 06	CDR	... contact ... that contact - (laughter). That's amazing. No. In either position, though, the light should come on.
00 09 35 02	CDR	A is OFF, and the light remains off. Momentary.
00 09 35 12	CMP	Huh! Is the light still off?
00 09 35 22	CDR	It's a switch problem. Yes, the light's still off. I bet it was a - when we did that SEP, bet we got a little solder ball in that switch or something.
00 09 35 31	CMP	Bet we did, too.
00 09 35 47	CDR	Roger. Bravo is up and on; the light is off. Now Bravo is OFF and the light remains on [sic].
00 09 36 24	CDR	Change out the switch.
00 09 36 25	CMP	Huh?
00 09 36 26	CDR	All we got to do is change out that switch.
00 09 36 28	CMP	Yes. All we got to do is bring that bank on late, and turn it off early.
00 09 36 39	CDR	Yes, unless you get a contact in there, we wouldn't have the ignition signal, though.
00 09 36 50	CMP	(Snicker) Roger.
00 09 37 39	CDR	The good thing about it, though, is that apparently the SPS THRUST light - THRUST light works okay.

[redacted]

00 09 37 44 CMP Yes.

00 09 37 45 CDR And that's - your cue. You know, all you need, I guess, is the ignition signal - when the light's on.

00 09 38 00 CMP Yes. Right now ... give guidance the ignition signal.

00 09 39 50 CMP Aaah - Whooo! ...

00 09 39 54 CDR I think you're about checked out.

00 09 39 59 CMP I'll do one more.

00 09 40 17 CMP O_2 FLOW.

00 09 41 12 CMP Whoo. ... much of that crap.

00 09 41 16 CDR You feel pretty good about those?

00 09 41 17 CMP Yes.

00 09 41 19 CDR Good.

00 09 41 23 LMP He's doing all that.

00 09 41 24 CMP You better believe it!

00 09 41 25 CDR You want that optics calibration, don't you?

00 09 41 27 CMP Uh-huh. What's the attitude?

00 09 41 35 CDR Okay, the attitude is - well, wait until you get to POO and you can do a little work on it.

00 09 41 48 CDR Okay, now, the attitude of VERB 49 to - it's 210, 339, 330. Okay. Going CMC, AUTO.

00 09 42 07 CMP Okay.

00 09 42 20 CDR A long way to go. 142 ... up to ... start the UVs. ...

00 09 42 39 CMP Yes, we've got several of those.

00 09 42 55 CMP ...

00 09 43 07	CMP	You ready for the UV stuff there, Dave? Well, I'm not quite through (yawn) with my stuff though. ...
00 09 43 36	CMP	So you have black on one side and white on the other.
00 09 43 39	CDR	Yes, ...
00 09 44 33	CDR	Roger. It'll work. Good. It just came on. Would you believe? It came on.
00 09 45 01	CDR	That's good. Okay. Cycling Bravo.
00 09 45 17	CDR	Okay. Don't change it all, Al, to Bravo 1. Cycling several times through the middle.
00 09 45 32	CDR	Roger.
00 09 45 42	CDR	Okay; right in the center of the contacts with A, right between the two, I can get the light to go out. But now, when I go on up to up and on, the light comes on again. And, now I've come back to the OFF position and the light's off. So, I think you've isolated your problem.
00 09 46 03	CMP	Think so, too. That just says we're going to have to use - ban - bank B this time.
00 09 46 16	CDR	It says you're going to have to pull the circuit breakers on A.
00 09 46 20	CMP	Yes.
00 09 46 21	CDR	Before the shutdown.
00 09 46 22	CMP	Yes. Well, either that or - yes, that's right, see.
00 09 46 25	CDR	Because if it doesn't, there's no guarantee the switch is going to do you any good.
00 09 46 30	CMP	That's right. Okay, we got an ap - optics calibration here? What - what star is it?
00 09 46 49	CMP	We're at that attitude now.
00 09 46 51	CDR	Oh, okay. That's - star number 1.
00 09 46 53	CMP	Star number 1 again, huh? Okay.

00 09 47 08	CMP	Okay; we should be looking right at it.
00 09 47 46	CDR	Why do we get -
00 09 48 07	CDR	I don't - I don't know why I get an ignition. We got the light on, but that doesn't say we have an ig - ignition signal. Threw that switch. How could that switch affect the ignition signal unless it was there from someplace else?
00 09 48 24	CMP	Yes. Hey, that's right.
00 09 48 27	CDR	The switch can't produce an ignition signal without something else producing the ignition signal. It sounds to me like the light circuit breaker switch.
00 09 48 37	CMP	Yes.
00 09 48 38	CDR	You know they took the FCSM out.
00 09 48 40	CMP	I know it.
00 09 48 41	CDR	... they really got a complicated system.
00 09 49 05	CDR	Okay. DELTA-V THRUST verified OFF. PILOT VALVES verified open, and we'll close the GROUP 5s.
00 09 49 14	CMP	Okay. We're done - 20C.
00 09 49 17	CDR	Okay, let's go to UV then. Jim, watch the Itek.

TIME SKIP

00 10 35 43	CDR	Roger. Houston. Stand by.
00 10 35 47	CMP	What are the angles in the Flight Plan? Isn't that where we're supposed to do this?
00 10 35 59	CMP	Says "OMNI D, HIGH GAIN, minus 33 and 213."
00 10 36 13	CMP	Check out 1, 2. Minus 33 and 214. 211 is what the DSKY says. Close enough.
00 10 36 37	CMP	That's real.

00 10 36 38 CDR Yes, ... Ooooh.

00 10 36 46 CMP There, David.

00 10 36 52 CDR All I got to say, Al, is good luck.

00 10 36 56 CMP Good luck with what?

[redacted]

DAY 2

01 08 03 06	CMP	Yes. And where's the Hasselblad that's got another - got another adapter on it? Oh, it's just this - son of a bitch right through here.
01 08 03 42	LMP	Where you going to plug that other end in, lineman?
01 08 03 44	CMP	Huh?
01 08 03 45	CDR	Where you going to plug that other end in? You have a place down there?
01 08 03 50	CMP	Oh, yes, yes, yes, yes, yes.
01 08 03 53	CDR	Where?
01 08 03 55	LMP	That's such a longer cable, though, ... Put - -
01 08 03 58	CMP	Yes. Hmm.
01 08 04 05	LMP	The only place that plugs in is over here in the girth bay, isn't it?
01 08 04 09	CDR	Yes.
01 08 04 10	CMP	Well, how the hell do we put a PCM cable in this thing, then?
01 08 04 14	CDR	But your MAG isn't on your - You haven't got a MAG on right now.
01 08 04 18	LMP	Be very - -
01 08 04 19	CMP	Okay.
01 08 04 20	LMP	- - careful then.
01 08 04 21	CMP	I have been, too.
01 08 04 25	CDR	Look it over.
01 08 04 26	LMP	Oh, my God.
01 08 04 31	CDR	Fooling with your pocket's not ...

[redacted]

01 08 04 34	LMP	Another thing you've got to check in getting this thing on is maybe procedures.
01 08 04 37	CDR	That's right. You always find - -
01 08 04 40	CMP	Yes.
01 08 04 41	CDR	- - operations to verify.
01 08 04 42	CMP	Okay.
01 08 04 44	CDR	Yes. You got to crank it around once.
01 08 04 54	CDR	Well, we should now make contact.
01 08 04 59	LMP	Press on.
01 08 05 02	CMP	Found ... TV ...
01 08 05 08	CDR	Which one?
01 08 05 18	CMP	There?
01 08 05 20	CDR	...
01 08 05 23	CMP	Okay.
01 08 05 28	CDR	Okay. That's all right.
01 08 05 30	CMP	Hmm!
01 08 05 33	CDR	There you go. ...
01 08 05 37	CMP	Tool.
01 08 05 41	LMP	Hmm?
01 08 05 47	CDR	Here. ... Let's see your MAG. Looks all right. Not going in that sprocket.
01 08 06 09	CMP	Yes, it looks like it's tight back here.
01 08 06 11	LMP	...
01 08 06 13	CDR	It wasn't - it wasn't before.
01 08 06 14	CMP	No, I guess it - again.

01 08 06 16	CDR	Egad.
01 08 06 21	LMP	... I've never put that thing - -
01 08 06 23	CMP	God damn it - there - I -
01 08 06 26	LMP	Must be another cable ... - -
01 08 06 27	CMP	Connector right here.
01 08 06 28	LMP	There must be another cable.
01 08 06 29	CDR	Yes, there is.
01 08 06 34	LMP	You remember that fit check?
01 08 06 35	CMP	Oh, shit.
01 08 06 36	LMP	The vehicle with the - -
01 08 06 38	CMP	Yes.
01 08 06 39	LMP	- - with the camera down there on the sextant?
01 08 06 40	CMP	Yes?
01 08 06 42	CDR	You remember who took - -
01 08 06 43	CMP	I didn't - No, I didn't do that.
01 08 07 01	CMP	Yes, this is the EL - -
01 08 07 03	CDR	Jim, don't you want to - -
01 08 07 04	CMP	- - PCM.
01 08 07 05	CDR	- - use the cables we've got?
01 08 07 08	LMP	...
01 08 07 16	LMP	Will those cables hit - hook together?
01 08 07 20	CMP	No.
01 08 07 21	LMP	Fit together.
01 08 08 27	CDR	Maybe we better do it without PCM.

01 08 08 29	CMP	Yes, it's a shame. That PCM thing. (Sigh) That's -
01 08 09 04	CMP	That's really something.
01 08 09 22	CMP	Could have sworn that goddam thing was right - right here.
01 08 09 25	CDR	No, there's never been one there. The only place they've ever been - -
01 08 09 27	CMP	Let me have it.
01 08 09 28	LMP	Yes.
01 08 09 29	CDR	- - was down behind the rock boxes, but you won't reach that either.
01 08 09 30	CMP	No, you just don't reach that either.
01 08 09 33	CDR	There's - there's one behind each rock box.
01 08 09 35	CMP	Yes?
01 08 09 37	CDR	But that's - that's too long for that cable, too.
01 08 09 39	CMP	That's too - Yes, that's right. Too long for the cable.
01 08 09 50	LMP	Too long for that one. ...
01 08 09 58	CDR	In there?
01 08 10 00	CMP	No.
01 08 10 03	CDR	Look behind the screen.
01 08 10 07	CMP	CDR's food locker! No. We don't have a CDR's food locker, do we?
01 08 10 37	CMP	Well, that's one of those little things I just never had - for one reason or another, never had checked out, I guess.
01 08 10 44	CDR	I thought you had.
01 08 10 45	CMP	I thought I had, too.
01 08 10 46	CDR	What?

01 08 10 47	CMP	Thought I'd looked at everything.
01 08 10 48	CDR	Not the cameras. ... camera up.
01 08 10 57	LMP	Well, maybe we better press on through.
01 08 10 59	CMP	Yes, okay. Let's do without it.
01 08 11 01	LMP	Okay. Exposure's supposed to be here on 1/500th.
01 08 11 13	LMP	... PCM.
01 08 11 15	CDR	How do you get PCM out of the DAC?
01 08 11 17	CMP	Okay. 1/500ths.
01 08 11 18	LMP	Twenty-four fra - frames per second?
01 08 11 20	CMP	Right; 24.
01 08 11 22	LMP	You want to shoot 5 percent of the MAG? You got MAG H on there?
01 08 11 26	CMP	MAG H. That's correct.
01 08 11 29	LMP	You want to record the percentage. I guess, right now, it's 100 percent.
01 08 11 34	CDR	Can't even see 5 percent on that thing.
01 08 11 38	CMP	Yes, it's about 95 percent.
01 08 11 41	CDR	You can time it, Al. Take 5 percent of the total, times the 24 frames per second.
01 08 11 45	LMP	Yes, you got it - -
01 08 11 46	CMP	Okay.
01 08 11 47	LMP	- - for 2 seconds.
01 08 11 48	CMP	Okay. Yes.
01 08 11 49	LMP	You got it for 2 seconds.
01 08 11 50	CMP	Huh?
01 08 11 51	LMP	It calls for 2 second's worth at 24.

[redacted]

01 08 11 52 CMP Two seconds?

01 08 11 53 LMP Yes.

01 08 11 54 CMP Oh, okay.

01 08 11 55 LMP No, the next step is UTILITY POWER, ON.

01 08 11 58 CMP Okay - -

01 08 11 59 LMP ...

01 08 12 00 CMP - - UTILITY POWER is ON. Okay.

01 08 12 03 LMP I guess you need that. Roger.

01 08 12 04 CMP You want 2 seconds at 24 frames.

01 08 12 06 LMP Well, let me read - Yes, that's what it calls for.

01 08 12 08 CDR ... That's not 5 percent. Where do you get the 5 percent?

01 08 12 17 LMP Twenty-four ... is this here. ...

01 08 12 21 CDR Oh, about ... seconds ... We got a bunch of brange - a bunch of changes to make here, Al.

01 08 12 27 CMP Oh, okay.

01 08 12 28 LMP You're not ready to run.

01 08 12 29 CMP Okay.

01 08 12 30 LMP What you want next is disable jets A-3, B-3, C-4, and D-4.

01 08 12 35 CMP Okay. That gets the - the dark stuff out of the way. Okay, yes, that's - -

01 08 12 40 CDR Okay, here we go, A -

01 08 12 41 CMP - - protective.

01 08 12 42 CDR Read them again.

01 08 12 43 LMP A-3.

01 08 12 44	CDR	Yes.
01 08 12 45	LMP	B-3.
01 08 12 47	CDR	A - A-3 and B-3?
01 08 12 50	LMP	Yes, Bravo 3.
01 08 12 51	CDR	B-3.
01 08 12 52	LMP	C-4?
01 08 12 56	CDR	Bravo or Delta?
01 08 12 58	LMP	No, the last one was Charlie 4.
01 08 13 01	CDR	Okay, Alfa 3, Bravo 3, Charlie 4 -
01 08 13 04	LMP	And Dog 4.
01 08 13 06	CDR	Dog 4. Okay, they're disabled.
01 08 13 09	LMP	Then we call P52.
01 08 13 11	CDR	Oh, okay. Okay.
01 08 13 17	LMP	We have to PROCEED there until we get the NOUN 70 display.
01 08 13 21	CDR	Yes.
01 08 13 22	LMP	We want all zeros in there.
01 08 13 23	CDR	Want to set all zeros in there? Okay.
01 08 13 29	LMP	And then we have some - a load for NOUN 88.
01 08 13 31	CDR	Yes, right. Okay.
01 08 13 38	LMP	Okay, NOUN 88.
01 08 13 40	CDR	Yes. Read them off.
01 08 13 41	LMP	Minus 10820.
01 08 13 46	CDR	Go.

01 08 13 47	LMP	Minus 79037.
01 08 13 51	CDR	All right.
01 08 13 52	LMP	Minus 60300.
01 08 13 59	CMP	Before we blow it, let's make sure that there's no PCM cable that'll really -
01 08 14 05	LMP	Okay, we - we got a few more steps to do here anyway. Verify the - -
01 08 14 08	CMP	Houston, 15.
01 08 14 10	LMP	Wait a minute.
01 08 14 18	CMP	Okay. With the sextant photo test here, we have a call for a PCM cable, and the only ones we have on board will not reach the connectors over by the right-hand girth shelf. Do you have any suggestions on how we can get the DAC connected to the PCM?
01 08 14 42	CMP	Okay.
01 08 14 45	LMP	Okay, Al, you can verify through the sextant, if you can, that the optics are boresighted on the target.
01 08 14 53	CDR	Okay. We want to proceed on this display, right? Okay.
01 08 15 15	CDR	Okay, now I'm going down to the station there and see if I can see that -
01 08 15 58	CDR	Yes, that one's right.
01 08 16 06	CMP	Okay, Jim.
01 08 16 08	LMP	Okay, G&N POWER AC on panel 5 comes off.
01 08 16 12	CDR	Yes, you want to turn G&N POWER off?
01 08 16 15	LMP	It's off.
01 08 16 16	CDR	Okay.

01 08 16 17	LMP	And mount the DAC on the sextant.
01 08 16 18	CMP	Okay.
01 08 16 19	LMP	Then we're ready to dim interior lights; then you can turn the DAC on, 24 frames per second for 2 seconds.
01 08 16 25	CMP	Twenty-four frames per second for 2 seconds, you want? Let's wait until we get an answer from them on the PCM.
01 08 16 30	LMP	Yes.
01 08 16 31	CDR	Yes. Here's a cap comes right here. It's ...
01 08 16 38	CMP	That came out of the - that's the electrical connector for the suit.
01 08 16 41	CDR	Yes.
01 08 16 42	CMP	The cover. If you'd just find my spoon, I'd be a lot happier.
01 08 16 45	CDR	Yes.
01 08 16 46	CMP	Why don't you put that in your pocket and then put on suits when we get the PRDs up.
01 08 16 49	CDR	Yes.
01 08 16 50	LMP	Okay, Al. Another thing after this - Then you change the time and, 1/60th of a second, you take one frame at 60 - 60 seconds exposure time, one frame at 20, one frame at 5, and one frame at 1.
01 08 17 06	CMP	Okay.
01 08 17 11	LMP	Let's see. You want - Let's see. You want ...?
01 08 17 16	CMP	I don't care.
01 08 17 20	CDR	... seconds ... watch.
01 08 17 24	CMP	Yes. We want to turn out as many lights as we can.
01 08 17 26	LMP	Yes, let me put the shades up then.

01 08 17 28	CDR	Okay.
01 08 17 30	CMP	Put all the shades up and turn out all the lights inside.
01 08 18 18	CDR	We came all the way out here for some poor guy, we might as well try and do his experiment right.
01 08 18 27	CMP	Is this for "Dim Light" Dunkelman?
01 08 18 29	CDR	Yes. Bob Mercer.
01 08 18 31	CMP	Oh, yes.
01 08 18 33	LMP	Try and do it right.
01 08 18 57	LMP	You sure that other cable won't work on that camera? The one for the EL?
01 08 19 03	CMP	No.
01 08 19 04	CDR	Let's try it.
01 08 19 05	CMP	Try it and see. It's -
01 08 19 12	CDR	This here?
01 08 19 13	CMP	It's always been my understanding that it wouldn't. It's not long enough anyway, I don't think.
01 08 19 19	LMP	We really can't do a thing.
01 08 19 32	LMP	See if it'll hook to the bottom one.
01 08 19 54	LMP	No, it's too short.
01 08 19 55	CMP	Certainly.
01 08 19 56	LMP	Shit, it's not even close.
01 08 19 58	CMP	Sure.
01 08 19 59	LMP	...
01 08 20 00	CMP	Sure.
01 08 20 01	CDR	You can't - can't fit them together.

01 08 20 03 CMP God damn it, there's an outlet down here somewhere.

01 08 20 07 CDR Maybe that'll go behind the - rock box, Al.

01 08 20 10 CMP Huh?

01 08 20 11 CDR Fit - will that fit on the camera though? Will this piece go onto the camera?

01 08 20 19 CMP I think that's the same kind of connection as on the - on the Hasselblad.

01 08 20 23 LMP Yes.

01 08 20 24 CDR There you go, behind the rock box. Jawohl. Yes.

01 08 20 29 CMP That seems like a -

01 08 20 34 CDR That's a hell of a thing to have to do, but I think there's one in - back there. I remember seeing it during checkout. Right there. There's one way back in there.

01 08 21 04 CDR Well, there used to be one back here.

01 08 21 06 LMP Yes.

01 08 21 12 CDR SCIENCE INSTRUMENTATION, 162.

01 08 21 15 LMP How about that.

01 08 21 18 CDR That's - see? It's not long enough to go there. (Laughter).

01 08 21 27 CMP You're kidding.

01 08 21 28 CDR Uh-uh.

01 08 21 29 LMP How about just - Isn't there one on the other side, Dave?

01 08 21 31 CDR Yes, but it's - There is, but if it's not long enough to go on this side, it certainly won't go on the other side. Does that look that kind like - -

01 08 21 39 CMP That's the G&N.

01 08 21 40 LMP Yes.

01 08 21 41	CDR	Does that look like the right kind of plug, anyway, Al?
01 08 21 42	CMP	Yes. Yes, it does.
01 08 21 45	CDR	Houston, 15.
01 08 21 49	CC	I guess we have to agree that the cable doesn't reach all the way over to 227, and the request down here is that you voice-record shutter opening and closing on the S - on the DSE.
01 08 22 01	CDR	Okay, I'll voice-record shutter opening and shutter closing. We'll do that. What's the number of that panel down there, Al?
01 08 22 08	CMP	162.
01 08 22 10	CDR	Okay; and be advised, we also tried to get it to panel 162 without success. It was too short for that one, too.
01 08 22 19	CMP	... panel 162.
01 08 22 26	CDR	Well, we did everything we could.
01 08 22 30	CMP	Move the rock box for me, please.
01 08 22 34	CDR	Nothing else you can do? You tried.
01 08 22 39	CMP	Yes, I never thought about the - juice that thing down here in the LEB.
01 08 23 15	CMP	Okay, Jim, let's get on with it here.
01 08 23 18	LMP	Turn down the lights. Your first one'll be for 2 seconds.
01 08 23 28	CMP	Okay. Let me make sure I got all the right stuff set up here - 1/24th [sic] and 1/500th.
01 08 23 37	CDR	Jim, make sure your tape recorder's going. You record the starts and stops like nobody does.
01 08 23 41	CMP	That right? Yes, I will.
01 08 23 43	LMP	Tape recorder's moving.

01 08 23 45	CMP	It is moving?
01 08 23 46	LMP	Yes.
01 08 23 47	CMP	Okay; you ready?
01 08 23 49	LMP	Yes, I'm ready. Two seconds.
01 08 23 50	CMP	Okay. Okay, 2 seconds. Count now, one, 1000; two, 1000; OFF.
01 08 23 57	LMP	Okay. Change to time and - 1/60th.
01 08 24 01	CMP	Okay.
01 08 24 03	LMP	Time and 1/60th.
01 08 24 07	CMP	Okay, it's time and 1/60th.
01 08 24 09	LMP	Okay, and the first one'll be 60 seconds.
01 08 24 12	CMP	Okay. Have you got the clock running there? You can - -
01 08 24 15	LMP	Give me a mark, and I'll tell you when to stop it.
01 08 24 17	CMP	Okay, on my mark -
01 08 24 19	CMP	MARK.
01 08 24 49	CMP	I think you'd be better off if you turned that off, Jim. Just - Can you see the timer without turning that light on? Yes. You going to tell me at 1 minute?
01 08 25 11	LMP	Try it again with the kitchen timer.
01 08 25 13	CMP	Huh?
01 08 25 14	LMP	Try it again with the kitchen timer.
01 08 25 15	CMP	Oh, okay.
01 08 25 16	LMP	Stand by.
01 08 25 19	LMP	MARK.

01 08 25 21 CMP Okay.

01 08 25 22 LMP That's on the kitchen timer.

01 08 25 23 CMP Okay; let's take two of that.

01 08 25 25 LMP Yes.

01 08 25 26 CMP At - -

01 08 25 27 LMP Okay - Why don't you give me a mark, and I'll start the kitchen timer.

01 08 25 32 CMP Okay. Let me make sure I got this set up right.

01 08 25 36 CDR That would be a - Okay.

01 08 25 48 CMP Okay. You ready?

01 08 25 50 LMP Yes, I'm ready.

01 08 25 52 CMP On my mark -

01 08 25 55 CMP MARK.

01 08 26 08 LMP When you hear the "ding," why, you can release it.

01 08 26 11 CMP Okay.

01 08 26 35 CMP I must say, if that recorder's working okay, I must say that I don't think this - photography's going to come out very good because there's an awful lot of bright - great number of bright particles right out in front of the spacecraft.

01 08 26 57 LMP Ding.

01 08 26 58 CMP Okay.

01 08 26 59 CDR MARK.

01 08 27 00 CMP Now what's the next one?

01 08 27 01 LMP The next one's 20 seconds.

01 08 27 03 CMP Okay. Same - 1/60th?

01 08 27 08 LMP Yes.

01 08 27 10 CDR We want that one much.

01 08 27 30 LMP Standing by for your call.

01 08 27 31 CMP Okay. On my mark -

01 08 27 33 CMP MARK.

01 08 27 50 LMP Stand by.

01 08 27 53 LMP MARK.

01 08 27 54 CMP MARK. Okay.

01 08 27 55 LMP ...

01 08 27 59 CMP Okay. What's the next speed there, and time?

01 08 28 02 LMP Next one is 5 seconds.

01 08 28 05 CMP Okay. On my mark.

01 08 28 10 CMP MARK.

01 08 28 12 LMP Okay. Stand by.

01 08 28 16 LMP MARK.

01 08 28 17 CMP Okay.

01 08 28 18 LMP Okay, next one's - 1 second.

01 08 28 21 CMP Okay. One second?

01 08 28 25 LMP One second.

01 08 28 26 CMP Okay.

01 08 28 32 LMP Okay - -

01 08 28 33 CMP Hmm!

01 08 28 36 CDR Lucky.

01 08 28 37 CMP That sure does look funny.

[redacted]

01 08 28 41	LMP	Sounds like we got more than one frame.
01 08 28 43	CMP	Huh?
01 08 28 45	LMP	Sounded like you got more than one frame.
01 08 28 46	CMP	Yes, it did.
01 08 28 48	LMP	Do you show it time and 1/60th?
01 08 28 57	CMP	No, I'm at 1 frame per second.
01 08 29 01	LMP	You should have been on time.
01 08 29 02	CMP	All right. I'll take one on time for 1 second.
01 08 29 04	LMP	Well, how about - All the others were okay though? Yes.
01 08 29 07	CMP	Yes, all the others are okay.
01 08 29 08	LMP	Yes. Yes.
01 08 29 09	CMP	That - the last two are going to be - one's going to be maybe a couple of frames at 1 second, or one - or a couple of frames per second - yes, at 1 frame per second.
01 08 29 18	LMP	Well, why don't you just take a 5-second one then?
01 08 29 20	CMP	At 1/60th. Huh?
01 08 29 22	LMP	In other words, you want to repeat the 5 second, too?
01 08 29 25	CMP	No. No.
01 08 29 28	CDR	One frame per second's going to be a lot different from 1 second per frame.
01 08 29 30	LMP	One frame per second is a lot different than 1 - second frame.
01 08 29 33	CMP	I know it.
01 08 29 34	LMP	Yes. That's what I'm saying. Maybe we ought to repeat the 5-second exposure.

01 08 29 39	CMP	No, that should be all right. I did that on time.
01 08 29 43	LMP	Okay.
01 08 29 48	CMP	Okay.
01 08 29 49	LMP	Okay, okay, go back to 24 frames per second.
01 08 29 53	CMP	Okay. (Sneeze).
01 08 29 56	LMP	And 1/500th.
01 08 29 58	CMP	And 1/500th; oo, that's going to be a - Okay.
01 08 30 06	LMP	And then run the DAC for 2 seconds.
01 08 30 11	CMP	Okay.
01 08 30 13	LMP	And then lights up, enable jets, and do a VERB 49 to another target.
01 08 30 22	CDR	Okay.
01 08 30 23	LMP	Don't know what time it is.
01 08 30 24	CDR	I got them.
01 08 30 27	LMP	Did you get the jets enabled yet, Dave?
01 08 30 29	CDR	Coming up.
01 08 30 32	LMP	Okay, VERB 49.
01 08 30 37	CDR	Let me make sure I get the right jets, A-3, C-4, B-3, and D-4.
01 08 30 43	LMP	Right.
01 08 30 49	CDR	Okay.
01 08 30 50	LMP	Give me a VERB 49.
01 08 30 59	CDR	Okay, 239, 169, 330.
01 08 31 16	LMP	Okay, 239, 169, and 330. That's wrong.
01 08 31 23	CDR	Really?

[redacted]

01 08 31 26 CMP Is that for the sextant or the UV?

01 08 31 30 CDR We have to do another with the ...

01 08 31 42 CMP Gee. Well, that's fair enough.

01 08 31 46 LMP Go maneuver.

01 08 31 48 CDR Golly, that's a -

01 08 31 54 LMP And, Al, when we get there, we'll repeat - repeat step 3, yes.

01 08 31 59 CMP What? With the sextant and stuff?

01 08 32 00 LMP Yes.

01 08 32 01 CMP Oh, I thought we were done with it.

01 08 32 02 LMP No, no, I'm sorry. We got a whole bunch more. We've got - -

01 08 32 05 CMP Oh.

01 08 32 06 LMP - - to do the same thing on another target.

01 08 32 07 CMP Oh, okay, okay.

01 08 32 09 LMP Now that you got it all put away.

01 08 32 11 CMP Sorry about that. Speak up there, James. Okay, we got to maneuver?

01 08 32 19 LMP Yes, we're maneuvering now. Oh, boy.

01 08 32 33 LMP I didn't tell you to remove the stuff, Al.

01 08 32 36 CMP Huh?

01 08 32 37 LMP I didn't tell you to remove it. Stop.

01 08 32 39 CMP Tough. Why, we're doing the UV next, James.

01 08 32 45 CDR Time wise?

01 08 32 46 LMP We're a little behind. We're at 25.

01 08 33 03	CDR	UV. By golly. You got to hustle, man. I'll be getting some of that stuff out for you.
01 08 33 44	CDR	They want you to take all the MAGs over on this thing.
01 08 33 46	LMP	Yes.
01 08 34 11	CMP	Want to get all your MAGs out and stuff like that to take over, huh?
01 08 34 15	CDR	Yes, since you're down there - why don't you?
01 08 34 20	LMP	Get the ones in - -
01 08 34 21	CDR	R-13. They're almost all in R-13, Jim.
01 08 34 24	CMP	Okay. That's all over by Jim there.
01 08 34 26	LMP	Yes.
01 08 34 28	CMP	I think I can help.
01 08 34 29	CDR	A-8 - There are three MAGs in A-8 you can get out, Al. You can get those; S, T, and U.
01 08 34 35	CMP	They're in A-8, huh?
01 08 34 36	CDR	Yes.
01 08 34 37	CMP	Okay. Yes, that's right. Those are those - Hasselblad things, since they're in there.
01 08 34 45	LMP	You want me to take these out of R-13 now, Dave?
01 08 34 48	CDR	Yes. Let's just get them all ready.
01 08 34 52	LMP	Tie them down there on the couch some way?
01 08 34 57	CMP	Let's see. How about O, P, and Q?
01 08 35 00	CDR	No. Well, all ours are double letters, really, Al.
01 08 35 04	CMP	Yes.
01 08 35 05	CDR	So anything that's a single letter is yours. So what I'm really looking for is SS, TT, and UU.

[redacted]

01 08 35 18 CMP Hmm.

01 08 35 45 CDR Yes, and then you got to have the UV done, the TV out, and be over there for a TV pass in an hour.

01 08 35 51 LMP That's ... Okay.

01 08 36 00 CDR We need the jettison bag out of A-2, A1. If you're in that vicinity.

01 08 36 09 CMP Okay.

01 08 36 26 CMP Very strange. I don't see any SS, TT -

01 08 36 30 LMP Well, if it just says "LM S, T, and U," that's good.

01 08 36 34 CMP Oh, hey, in here. Yes, I guess this is it here. They didn't mark them double. I bet you this is it.

01 08 36 43 LMP Sorry about that.

01 08 36 49 CMP Yes, LM S, T, and U.

01 08 36 50 CDR Yes. Can you get us the jettison bag out of A-2?

01 08 36 53 CMP Yes.

01 08 37 17 CMP That your UCTA down there, Jim? Leaking all over.

01 08 37 21 CDR Is it really?

01 08 37 23 LMP Where? I don't see it.

01 08 37 25 CMP Well, I bumped it, and it's just - coming all over me. Okay. Now what do you want out of A-2?

01 08 37 36 LMP Want a jettison bag.

01 08 37 39 CMP Okay.

01 08 37 49 CDR Thank you.

01 08 38 09 LMP Okay. Now for the ...

01 08 38 15 CDR Let's see. You want 13, there.

01 08 38 21	CMP	Okay. Are we in attitude yet?
01 08 38 23	LMP	No, not yet, Al.
01 08 38 25	CDR	No, we're not there, Al. We've got a ways to go.
01 08 38 27	CMP	Okay.
01 08 38 33	LMP	... I think ...
01 08 38 44	CDR	Fine. That's got it. Okay, we got it. Going to be a ... got on your hands.
01 08 38 52	LMP	We're not there yet. We need utility straps and retainer straps.
01 08 38 57	CDR	I'll be getting those.
01 08 38 58	LMP	Okay.
01 08 38 59	CMP	From where?
01 08 39 01	LMP	Over from R-5.
01 08 39 03	CMP	Huh?
01 08 39 04	CDR	You get those ...?
01 08 39 06	CMP	R-5?
01 08 39 07	LMP	No, we don't need -
01 08 39 08	CDR	Forget it, Al.
01 08 39 09	CMP	Oh, okay. Yes.
01 08 39 10	CDR	Peanuts. Let's really get the big stuff.
01 08 39 12	CMP	Yes. Okay. You got the film? Okay.
01 08 39 22	CDR	And - Got a ways to go. We want to get the LM Data Kit, in R-3. Okay, Ac - -
01 08 39 34	CMP	Yes, that's right here.
01 08 39 35	CDR	- - Activation Checklist in R-3. Because - R-3's connected with -

01 08 39 54	CMP	The LM Data Card Kit?
01 08 39 57	CDR	Well, the whole thing. The LM Data Kit should be in there.
01 08 40 02	CMP	Oh, that's it, probably, stored back there.
01 08 40 14	CMP	Is that it?
01 08 40 15	CDR	Yes. Should be Activation Checklist.
01 08 40 21	LMP	You want this all over there, Dave?
01 08 40 23	CDR	Yes.
01 08 40 28	LMP	Activation Checklist.
01 08 40 30	CDR	Why don't we just take the Activation?
01 08 40 32	LMP	Yes, take the other thing when I'm not looking.
01 08 40 34	CDR	Yes.
01 08 40 46	LMP	Just a second.
01 08 40 53	CMP	What say? Put it back up? Yes.
01 08 41 12	CDR	...
01 08 41 15	LMP	Let's see how close we are. Let's see. ...
01 08 41 24	CMP	Yes, I can get it out for you, if you want. Here it is.
01 08 41 25	LMP	...? We got another 30 degrees to go.
01 08 41 30	CMP	All right.
01 08 42 12	LMP	...
01 08 42 15	CMP	Jim, you're absolutely unreadable. I can't make out a word you're saying, usually.
01 08 42 20	LMP	Okay. I got it, Al.
01 08 42 21	CMP	There you go. I can hear you. Got the cables?

01 08 42 29	LMP	Yes. I got them.
01 08 42 30	CMP	Okay. You want the bracket?
01 08 42 35	LMP	No.
01 08 42 36	CMP	This is going to be just hand held.
01 08 42 37	LMP	Taking it over to the LM.
01 08 42 39	CMP	Okay.
01 08 42 42	LMP	Keep watching the monitor.
01 08 42 44	CMP	Yes. Okay.
01 08 42 47	CDR	Hey! How did you ever get L-2 closed, Al?
01 08 42 51	CMP	L-2 closed. I didn't.
01 08 42 59	CDR	Somehow -
01 08 43 04	CMP	I didn't get it closed. I couldn't close it on all those cables. Could you?
01 08 43 10	CDR	No. Not unless I rewind the cables.
01 08 43 12	LMP	Here.
01 08 43 17	CDR	Too much in here.
01 08 43 18	CMP	Yes, there is.
01 08 43 44	CMP	Here.
01 08 44 03	LMP	Hmmm. I don't understand why I can't get A-1 closed.
01 08 44 17	CDR	Huh?
01 08 44 21	LMP	It's got too much in it with the strut that's in the way there. Dave, can you reach down through there and rotate that strut a little bit so that it gets - so that it's - -
01 08 44 32	CDR	Yes.

[redacted]

01 08 44 33	LMP	- - out of the way of the lid of A-1?
01 08 44 38	CDR	No, I can't. I don't know which way to rotate the darn thing here. It's got to rotate - that's right - it's got to rotate towards you.
01 08 44 44	LMP	Why don't you ... get that thing?
01 08 44 46	CDR	Mmm.
01 08 44 47	LMP	Get it ... I guess. Better than ...
01 08 44 51	CDR	No, no, it won't go that way. It won't make any difference.
01 08 44 54	LMP	... Get it - get it all the way up ...
01 08 45 06	CDR	Yes.
01 08 45 16	LMP	...?
01 08 45 17	CDR	No. It doesn't bend that way.
01 08 45 27	LMP	I don't know what there is about that strut there that - that changed.
01 08 45 39	LMP	Well, something's different there.
01 08 45 41	CDR	There sure is.
01 08 45 53	CMP	The ... attitude. Why don't you do that - -
01 08 45 54	LMP	Roger, OMNI Delta.
01 08 45 55	CDR	Okay. I want to get my su - want to get my suit back out of the way. You got to - you got to rotate that strut.
01 08 46 03	LMP	...
01 08 46 09	CMP	What are you doing?
01 08 46 10	LMP	... through there.
01 08 46 12	CDR	Yes. Get my suit back out of the way here.
01 08 46 23	CDR	Okay.

01 08 46 30	LMP	Okay, if we're at attitude, Dave, you want to disable those jets?
01 08 46 34	CDR	...
01 08 46 35	LMP	A - Able 3, Baker 3, Charlie 4, Dog 4.
01 08 46 40	CDR	Okay. They're disabled.
01 08 46 41	LMP	Okay. Call P52.
01 08 46 44	CMP	Okay. Okay.
01 08 46 51	LMP	And we want a - all zeros and NOUN 70.
01 08 46 53	CMP	Yes.
01 08 47 11	LMP	And the NOUN 88 - we want the same values.
01 08 47 14	CMP	Oh, we do?
01 08 47 15	LMP	Yes.
01 08 47 16	CMP	Oh, yes. Yes, that's right; 108. Okay. Same values, eh?
01 08 47 22	LMP	Yes.
01 08 47 23	CMP	Okay.
01 08 47 24	LMP	It says verify that, through the sextant, that the optics are boresighted on your target. Get G&N POWER on for you.
01 08 47 36	CMP	Okay, we can go to - Let me just make sure I got the same target.
01 08 47 59	CMP	Yes. That's the same one. All right. Up.
01 08 48 02	LMP	G&N POWER going off. Mount the DAC on the sextant.
01 08 48 08	CMP	Yes.
01 08 48 09	LMP	Okay, dim interior lights, and - You on 24 frames per second?
01 08 48 16	CMP	Okay. I am now.

01 08 48 18	LMP	Okay, you want to do - -
01 08 48 19	CMP	And - and 1/500th?
01 08 48 23	LMP	Uh-huh. Yes, it'll be 1/500th.
01 08 48 25	CMP	Okay. You want it 2 seconds?
01 08 48 26	LMP	Two seconds, yes.
01 08 48 29	CMP	Okay.
01 08 48 30	LMP	Okay. Change the time to 1/60th.
01 08 48 32	CMP	Okay.
01 08 48 36	LMP	You there?
01 08 48 37	CMP	Yes.
01 08 48 38	LMP	Okay. At 60 seconds, give me a mark and I'll give you a time.
01 08 48 40	CMP	1/60th.
01 08 48 50	CMP	Okay. You in what - now what do you want it now?
01 08 48 53	LMP	Sixty seconds.
01 08 48 55	CMP	First one 60 seconds, huh?
01 08 48 56	LMP	Yes.
01 08 48 57	CMP	Okay.
01 08 49 03	CMP	MARK.
01 08 49 05	LMP	Okay.
01 08 49 43	CMP	You going to give me a mark?
01 08 49 44	LMP	Mmm-hmm.
01 08 49 45	CMP	Okay.
01 08 49 46	LMP	About 20 seconds.

01 08 49 58 LMP Stand by.

01 08 49 59 CMP Okay.

01 08 50 03 LMP MARK.

01 08 50 05 CMP Okay. I want to do that one again. Ready?

01 08 50 10 CMP MARK.

01 08 50 15 LMP Why you doing it again?

01 08 50 17 CMP Hmm?

01 08 50 18 LMP Why do you want to do it again?

01 08 50 19 CMP Oh, I was a little bit leary of that last one. I didn't like the way that shutter sounded.

01 08 51 05 LMP Stand by.

01 08 51 07 CMP Okay.

01 08 51 11 LMP MARK.

01 08 51 12 CMP Okay. Okay. Next?

01 08 51 21 LMP The next one is 20 seconds.

01 08 51 23 CMP All right. You ready?

01 08 51 25 LMP Definitely.

01 08 51 26 CMP MARK.

01 08 51 42 LMP Stand by.

01 08 51 43 CMP Okay.

01 08 51 46 LMP MARK.

01 08 51 47 CMP Okay.

01 08 51 48 LMP Okay, tell me when you're ready. The next one's 5 seconds.

01 08 51 51 CMP Okay. I'm ready.

[redacted]

01 08 51 53	LMP	Yes.
01 08 51 54	CMP	MARK.
01 08 51 55	LMP	Okay. Stand by.
01 08 51 59	LMP	MARK.
01 08 52 00	CMP	Okay.
01 08 52 01	LMP	Your next one's 1 second.
01 08 52 02	CMP	Okay. Okay.
01 08 52 08	LMP	Okay. Then you change to 24 frames per second.
01 08 52 11	CMP	Okay.
01 08 52 12	LMP	And 1/500th of a second.
01 08 52 16	CMP	Okay.
01 08 52 17	LMP	Then run the DAC for 2 seconds.
01 08 52 20	CMP	Okay. Done.
01 08 52 22	LMP	Okay. Enable jets.
01 08 52 25	CDR	Okay. Coming on; A-3, Charlie 4, Bravo 3, and Delta 4.
01 08 52 32	LMP	Okay. Record the MAG - percentage. Al, did we use 5 percent?
01 08 52 38	CMP	Yes, we didn't use any more than that.
01 08 52 40	CDR	Select attitude, Jim.
01 08 52 41	LMP	Okay. VERB 49 maneuver to the UV photos. ... load them.
01 08 52 51	CDR	Okay. Go ahead.
01 08 52 54	LMP	Okay. 150, 052, and 033.
01 08 53 06	CDR	150, 052, and 033.

01 08 53 12	LMP	We maneuvering?
01 08 53 16	CDR	What did you get on percentage on the MAGs, Al?
01 08 53 38	LMP	Al, percentage on the MAGs.
01 08 53 40	CMP	Well. It looks to me like it's about - we started out at about 95 percent and we're down to about 90 percent.
01 08 53 49	LMP	Okay.
01 08 53 59	CDR	... take this ...
01 08 54 09	CMP	Okay. I'm going to put some of those cameras away here. We don't need the pictures any more here, right?
01 08 54 13	LMP	No.
01 08 54 14	CMP	Okay, Dave. Dave, you want to - stash that just for now, and -
01 08 54 19	CDR	Yes.
01 08 54 21	LMP	Still be one more left.
01 08 54 23	CDR	Oh, it'll be a long time.
01 08 54 24	CMP	Yes.

TIME SKIP

01 09 43 05	CMP	Okay. Here it is. Jettison, Jim.
01 09 43 12	LMP	I've got the drogue here, Al, if you can get the TV between my legs.
01 09 43 19	CMP	Okay.
01 09 43 24	CDR	I got the probe, Jim. Let's see, you take the jettison bag. I want to put the probe over here by the hatch.
01 09 43 32	LMP	Okay, I've got the JETT bag.

[redacted]

01 09 43 40	CC	15, Houston. We'd like to have NARROW BEAM, please.
01 09 43 48	CDR	Tell them NARROW BEAM.
01 09 43 50	CMP	Okay, Karl. You got NARROW.
01 09 43 54	CC	Thank you.
01 09 43 58	LMP	We go over there yet?
01 09 44 01	CMP	Just a second.
01 09 44 03	CDR	Not yet, Jim. We're not going anywhere yet. There. Okay, now -
01 09 44 11	CMP	Got them lashed down?
01 09 44 12	CDR	Yes, lashed down.
01 09 44 13	CMP	Okay.
01 09 44 14	CDR	Now we need the drogue.
01 09 44 15	CMP	Yes.
01 09 44 16	CDR	It seems to me that - the best thing - Give Jim back that TV. I think we can probably put his drogue also under the couch.
01 09 44 28	CMP	Under Jim's couch?
01 09 44 29	CDR	Well, that's too crowded, but I think under - under here.
01 09 44 41	CDR	Let's see how we might make out. Okay, watch your suit.
01 09 44 48	CMP	Yes.
01 09 44 50	CDR	Change ribbons.
01 09 44 52	LMP	One moment here.
01 09 50 04	CMP	Yes. Did you -
01 09 50 36	CDR	You like AUTO? Or REACQ.

01 09 50 42 CMP AUTO's fine for what we're doing.

01 09 50 46 CDR Okay, Houston, you should have the high gain now.

01 09 50 54 CC Roger, 15. Give us NARROW BEAM, please.

01 09 50 57 CDR NARROW.

01 09 51 12 CDR Anything over there, Jim?

01 09 51 24 CDR Okay, Houston. The LMP is in the LM.

01 09 51 30 CC Houston copies.

TIME SKIP

01 12 49 55 LMP ...

01 12 50 07 LMP Okay. Did you want me to continue checking? I figured after I - Stand by.

01 12 50 13 CDR Yes. I thought you checked them all, Jim. Sure. Check them all. Sure.

01 12 50 25 LMP I understand.

01 12 50 26 CDR Not yet.

01 12 50 32 LMP ... do this?

01 12 50 33 CDR Okay. TV.

01 12 50 38 LMP ...

01 12 51 09 LMP ... That's over ...

01 12 51 12 CDR Yes, when I read it out to you. Not before.

01 12 51 17 LMP ...

01 12 51 54 CDR Oh, yes.

01 12 51 58 LMP Okay, Karl. I've checked all the circuit breakers, and that's the only one that seems to be out of configuration.

[redacted]

01 12 52 43 LMP Okay, we're standing by.

01 12 52 57 LMP Yes, that's corrected.

01 12 53 02 CMP Yaw - our yaw is really ***

01 12 53 08 LMP Yes, we're in TRACK, AUTO.

01 12 53 12 CMP The yaw is ***

01 12 53 14 CDR Just let it go for a while. It's black and it's black and it's black.

01 12 53 23 LMP PITCH is minus 30, YAW is 270, and track is AUTO.

01 12 53 41 CDR ... 280.

01 12 53 42 LMP You can stop that one someplace.

01 12 53 44 CDR Okay.

01 12 54 10 LMP Okay. And right now the yaw indicator is reading about 280.

01 12 54 21 CDR Yes.

01 12 54 25 LMP The dial is 280. The thumbwheel is 270.

01 12 54 41 CMP ...

01 12 54 44 LMP Yes, go ahead.

01 12 54 47 CDR ... try to talk crazy.

01 12 56 13 CDR This is 15; I read you loud and clear.

01 12 56 22 CDR Well, nothing, other than that the pitch went to zero, and the yaw decreased just very slightly. And, of course, when you reacquired, why, I think only the pitch went back to 30.

01 12 56 35 LMP That's right. ...

01 12 56 36 CMP Take this here. ...

01 12 56 39 CDR Get it off?

01 12 56 41	CMP	Yes, I ... turn this PRD in.
01 12 56 49	CDR	Get the PRD out of there while you're at it.
01 12 56 51	CMP	Out of - where is it?
01 12 56 53	CDR	It's in the pocket with yours. ... It's in your cuff - by your - top of your right hand. Ah, I got it.
01 12 57 01	CMP	Oh, okay. ...
01 12 57 07	CDR	Is this pad you copied down, Al, is that - the next midcourse, huh?
01 12 57 10	CMP	No. That's a flyby pad.

[redacted]

[redacted]

[redacted]

DAY 3

02 07 40 01 SC (Laughter)

02 07 40 03 CDR Okay, Jim. How do you cycle those?

02 07 40 05 SC (Laughter)

02 07 40 06 CDR Okay. MAP CAMERA on to ON for 2 minutes and then OFF, and I'll set the camera.

02 07 40 10 LMP Okay. We're going to ON -

02 07 40 11 CDR Okay.

02 07 40 12 LMP MARK.

02 07 40 13 CDR The clock is running. PAN CAMERA SELF TEST to on (up). Talkback barber pole, to five frames, and then gray.

02 07 40 21 LMP Okay. SELF TEST.

02 07 40 24 CDR And then five. Then you do five frames.

02 07 40 26 LMP Okay.

02 07 40 27 CMP ... he doesn't. I think you - you'll - you'll see at 5 - about 5 seconds - and then gray.

02 07 40 34 CDR Okay. Is it gray?

02 07 40 36 LMP Not yet.

02 07 40 53 CDR Still not gray?

02 07 40 55 LMP No.

02 07 41 00 CDR It is barber pole?

02 07 41 01 LMP Yes, it's barber pole.

02 07 41 02 CDR Did it go barber pole when you put it - put it on?

02 07 41 04 LMP Yes.

02 07 41 05 CMP ...

[redacted]

02 07 41 07 CDR Oh, I see, Al. It does five frames automatically, and then it automatically goes gray.

02 07 41 09 CMP Yes.

02 07 41 10 LMP Okay. It's gray.

02 07 41 12 CDR Good. PAN CAMERA SELF TEST to HEATERS.

02 07 41 15 CMP We still don't know whether it - what - anything about the craters.

02 07 41 18 LMP Okay, PAN CAMERA SELF TEST going to HEATERS.

02 07 41 20 CDR PAN CAMERA POWER to OFF.

02 07 41 22 LMP PAN CAMERA POWER, OFF.

02 07 41 25 CDR Okay. After mapping camera - Oh, wait a minute. Stand by for the bell.

02 07 41 30 LMP Okay.

02 07 41 32 CDR And when the bell rings, you want to go MAPPING CAMERA to OFF.

02 07 41 36 LMP Okay.

02 07 41 45 CDR Oh, boy.

02 07 41 55 LMP Too bad they didn't put this panel over on Al's side.

02 07 41 59 CDR I think it'd been a lot easier for him during the flight - or during the - -

02 07 42 01 LMP Yes.

02 07 42 02 CDR - - solo time, too.

02 07 42 03 LMP Yes. Yes, it would have, too.

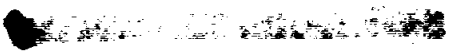
02 07 42 06 CDR Probably didn't have the wiring.

02 07 42 08 LMP Didn't have any room for it ...

02 07 42 10 CDR Well, they probably - the wire ... probably were all built for this, you know.

02 07 42 16	CDR	Yup, yup. There you go.
02 07 42 17	LMP	Okay, MAPPING CAMERA going OFF.
02 07 42 19	CDR	MAP CAMERA, OFF. Okay, and then for 1 minute, we time the MAPPING CAMERA, OFF. And after it's been OFF for 1 minute, MAP CAMERA goes - the MAP CAMERA, ON, goes to STANDBY, and we should get a gray talkback. And the clock is running.
02 07 42 43	CDR	You have another 49 maneuver, or you want to recoup -
02 07 42 46	CMP	... that other ... 49 maneuver ... again.
02 07 42 48	CDR	Oh, oh, it says - Well, you get the idea that the - Let's see - it says secure the high gain antenna.
02 07 42 56	CMP	Yes.
02 07 42 57	CDR	So why don't we wait?
02 07 43 21	CDR	Okay, Jim. MAP CAMERA, ON, to STANDBY.
02 07 43 24	LMP	Verified.
02 07 43 25	CDR	Talkback gray.
02 07 43 26	LMP	Verified.
02 07 43 27	CDR	Okay.
02 07 43 30	CDR	Houston, Apollo 15. That completes the man [sic] and pap [sic] camera operation. And, if you approve, we'll secure the high gain and maneuver to the UV attitude.
02 07 43 46	CMP	Nothing like rubbing it in. (Laughter)
02 07 43 55	CDR	Okay. On the way. Thank you.
02 07 43 56	CMP	What's the attitude there, Jim?
02 07 43 59	LMP	Uh - -

[redacted]



DAY 4

03 06 30 22	LMP	- - with a ... Minus 35.
03 06 30 25	CDR	Roger.
03 06 30 27	LMP	You guys got all your oxygen?
03 06 30 30	CDR	Yes.
03 06 30 31	LMP	Okay.
03 06 30 33	CMP	Minus 5 and a PRO, and a DELTA-V thrust of plus 5 ... Okay. PILOT VALVE, open. Everything else looks good.
03 06 30 47	CMP/CDR	One minute.
03 06 30 59	CMP	Okay. We've got ... here.
03 06 31 13	CMP	Average g is on.
03 06 31 19	LMP	EMS MODE, NORMAL.
03 06 31 20	CDR	EMS MODE's on.
03 06 31 27	CMP	And we settle down for the DELTA-V thrust.
03 06 31 29	CDR	Yes.
03 06 31 33	CMP	Sit back and ... - -
03 06 31 34	CDR	Looks good.
03 06 31 38	CMP	Clear to PRO.
03 06 31 39	CDR	Okay. 99 PRO. Ought to be okay.
03 06 31 44	CMP	And the DELTA-V THRUST is on.
03 06 31 46	CDR	Okay.
03 06 31 47	CMP	B valves.
03 06 31 48	CDR	IGNITION. 1 - -
03 06 31 49	CMP	IGNITION.

03 06 31 50	CDR	- - 2, 3, 4, 5 - -
03 06 31 53	CMP	A's coming on. Okay - -
03 06 31 54	CDR	- - ... there.
03 06 31 55	CMP	- - A valves. P_C is reading about 90.
03 06 31 59	CDR	Okay.
03 06 32 01	CMP	Looks like it's running smooth.
03 06 32 02	CDR	... Okay. The EMS and the DELTA-V and the DSKY look good. And we have tight limits. Very smooth.
03 06 32 35	CDR	Okay, the DSKY and EMS look good. Still in the tight limits.
03 06 32 51	CDR	A minute, and you're tracking PITCH 41.
03 06 32 56	CMP	Hmm! Right on, huh? Okay, the pressure's running 95; holding steady.
03 06 33 05	CDR	Okay. Keep going on tight limits.
03 06 33 17	CDR	The DSKY and the EMS agree. ... watch for the loose limits?
03 06 33 24	CMP	Yes. I should be able to ... loose limits.
03 06 33 27	CDR	Okay.
03 06 33 30	LMP	Five degrees, Dave. And the balance - unbalance is holding very well. About minus 180.
03 06 33 35	CMP	Right on the center of the roll dead band.
03 06 33 37	CDR	Dead on it - right on the side of the roll.
03 06 33 39	CMP	... on the roll.
03 06 33 40	CDR	Not even on the side. It's only at 4 degrees.
03 06 33 51	CMP	We have a PITCH 34. It'll probably stretch out after we go to the single bank insertion.
03 06 33 57	CDR	Yes.

03 06 33 59	CMP	Any ... loose limits?
03 06 34 03	CDR	DSKY and EMS agree pretty well.
03 06 34 15	CMP	The DSKY and the EMS are about 12 feet per second difference - is all. That's pretty good.
03 06 34 21	CDR	Mm-hmm.
03 06 34 23	CMP	... still no loose limits?
03 06 34 30	CDR	That view meter's not even registering.
03 06 34 50	CMP	Did you get your watch started on time, Jimmer?
03 06 34 52	LMP	We'll find out.
03 06 34 54	CMP	No, I mean, did you?
03 06 34 55	LMP	Yes.
03 06 34 57	CMP	Okay, because we need you to tell us at 6 minutes.
03 06 34 59	LMP	Yes, I will.
03 06 35 03	CDR	How are the pressures looking over there, Jim?
03 06 35 04	LMP	Beautiful. About 170 on both.
03 06 35 08	CDR	Okay.
03 06 35 09	CMP	... about 18?
03 06 35 10	CDR	No, we're about 12 - -
03 06 35 11	LMP	P_C is reading 95 and holding steady.
03 06 35 13	CMP	Are we 12 feet per second - - difference between the EMS and DELTA-V?
03 06 35 18	CDR	Somebody would chew his ass if it didn't.
03 06 35 22	LMP	P_C is creeping up just a little bit.
03 06 35 25	CMP	Okay, we're tracking PITCH 33.
03 06 35 34	CDR	Okay. Should be approaching the tight limits, Jim.

[redacted]

03 06 35 48	LMP	Okay, you're in tight limits now. About 2 and a half minutes to go.
03 06 35 51	CDR	Okay. We're looking good here.
03 06 35 55	LMP	Okay.
03 06 35 56	CMP	P_C's about to cross over.
03 06 35 57	LMP	P_C's holding about 90 - 96.
03 06 36 00	CMP	Okay, we've had cross over.
03 06 36 02	CDR	Okay.
03 06 36 03	CMP	It crossed a little, but not much.
03 06 36 05	LMP	Hey, listen. Your P_C went up about 2 - about - 2 percent, and it's up to about 98 now.
03 06 36 13	CDR	Okay, the EMS and the DSKY are about 10 feet per second difference. We're at tight limits. About 2 minutes to go. G&N's tracking 638.
03 06 36 29	CMP	Okay.
03 06 36 48	LMP	Five minutes.
03 06 36 50	CDR	Okay. EMS and the DSKY are within about 10 feet per second. Track at 638. Tight limits.
03 06 37 03	CMP	Okay. Give me a countdown at 6 minutes.
03 06 37 06	LMP	Okay.
03 06 37 09	CDR	You want Jim to count down at 6 minutes?
03 06 37 10	CMP	Yes.
03 06 37 11	LMP	You want me to give you a 10-second count?
03 06 37 13	CMP	Yes.
03 06 37 14	LMP	Okay.
03 06 37 24	CMP	A little dead band in there in the roll?

03 06 37 26	CDR	Mmhmm.
03 06 37 28	CMP	Okay, about 10 feet per second difference between the EMS and the DSKY, and we're looking good.
03 06 37 33	CDR	P_C's varying between about 96 and 98. Looking good though!
03 06 37 37	LMP	Countdown. 10, 9, 8, 7, 6, 5, 4, 3, 2, 1 -
03 06 37 47	LMP	6 minutes.
03 06 37 48	CDR	Okay.
03 06 37 49	CMP	Can you reach it?
03 06 37 51	CDR	PILOT VALVE A is out. P_C is down to 94.
03 06 37 54	CMP	Okay, we'll need another countdown to the -
03 06 37 56	CDR	Yes.
03 06 37 57	CMP	Shutdown then.
03 06 37 58	CDR	Yes.
03 06 38 00	CMP	Okay. Can you reach them there, Dave?
03 06 38 01	CDR	Yes. About 20 seconds to go.
03 06 38 06	CMP	You've got 10 seconds overburn, don't forget.
03 06 38 08	CDR	Yes.
03 06 38 15	LMP	Start the countdown?
03 06 38 17	CDR	Yes, looks good.
03 06 38 19	LMP	10, 9, 8, 7, 6, 5, 4, 3, 2 -
03 06 38 27	CDR	SHUTDOWN.
03 06 38 28	CMP	Okay.
03 06 38 29	CDR	Automatic. Okay, Jim.
03 06 38 32	LMP	Okay - -

[redacted]

03 06 38 33 CMP Oh, we log zero!

03 06 38 34 CDR Look at that.

03 06 38 35 CMP We'll burn them.

03 06 38 36 CDR - - ... Look at that, pal!

03 06 38 37 LMP Did you - -

03 06 38 38 CMP Oh, I didn't - -

03 06 38 39 CDR (Laughter)

03 06 38 40 LMP Ohh!

03 06 38 41 CMP - - dream any - -

03 06 38 42 CDR Look at that!

03 06 38 43 CMP Jim, Jim. Let's clean it up, Jim.

03 06 38 44 LMP Okay -

03 06 38 45 CDR But whoo.

03 06 38 46 LMP Stand by for gimbal motors, Al.

03 06 38 47 CDR Fantastic!

03 06 38 51 LMP Stand by for gimbal motors.

03 06 38 52 CMP I thought I just gave you one.

03 06 38 53 LMP I don't see it.

03 06 38 54 CMP I'll try it again. All right, number one coming off.

03 06 38 59 LMP One, two - -

03 06 39 02 CMP Two's -

03 06 39 04 LMP - - three, four. Okay. TVC SERVO POWER 1 and 2, OFF.

03 06 39 09 CMP OFF.

03 06 39 11 LMP MAIN BUS TIE's coming OFF.

03 06 39 12 CDR I can't believe it! I can't believe it!

03 06 39 16	LMP	Yes, sir, that was beautiful.
03 06 39 17	CDR	That was fantastic!
03 06 39 18	LMP	That was beautiful.
03 06 39 20	CDR	That is the best burn I've ever seen and I've seen 10, I mean 11. That isn't real! I've never seen one come out that good.
03 06 39 29	LMP	Well, that's just superior cunning and skill, men.
03 06 39 31	CDR	Yes. It's got to be. Certainly (laughter).
03 06 39 35	CMP	Okay, Jim. Clean up the rest.
03 06 39 37	LMP	Okay, you got all the data? Got the EMS data?
03 06 39 41	CMP	Yes, got that.
03 06 39 42	LMP	EMS FUNCTION's OFF.
03 06 39 43	CMP	Okay, OFF.
03 06 39 44	LMP	EMS MODE to STANDBY.
03 06 39 45	CMP	STANDBY.
03 06 39 46	LMP	RHC and THC, locked.
03 06 39 48	CMP	Locked.
03 06 39 49	LMP	DEADBAND, MAX.
03 06 39 50	CMP	MAX.
03 06 39 51	LMP	TRANSLATION CONTROL POWER, OFF.
03 06 39 52	CMP	OFF.
03 06 39 53	LMP	ROT CONTROL POWER DIRECT, two, OFF.
03 06 39 54	CMP	DIRECT's OFF.
03 06 39 55	LMP	BMAG MODE, three, RATE 2.
03 06 39 56	CMP	RATE 2.

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03 06 39 57 LMP CB DIRECT ULLAGE, two, open.

03 06 39 59 CMP DIRECT ULLAGE, open.

03 06 40 00 LMP CB SPS PITCH 1 and YAW 1, open.

03 06 40 03 CMP PITCH 1, YAW 1, open.

03 06 40 05 LMP SPS PILOT VALVE MAIN B, open.

03 06 40 07 CMP MAIN B, open.

03 06 40 08 LMP PCM BIT RATE going LOW.

TIME SKIP

03 08 13 49 CDR - - says it's just ... - He got word from the back room that Farouk and his boys are ecstatic. And the SIM bay stuff is all working very well.

03 08 14 06 CDR (Laughter) Good old SIM bay working up in there and he's jumping up and down. Well, the tape motion is going as planned. Even a little early. Okay.

03 08 14 36 CDR ...? No, I don't think we have time then ... have to get that ... in. ...? You'll spoil the eat period by messing with the -

03 08 14 54 CDR Okay, 10 minutes before the dump, Jim.

03 08 15 14 CDR Man, is that full.

03 08 15 20 LMP ... DOI.

03 08 15 37 CMP Hopefully, DOI is just going to be a bank B burn. Is that right?

03 08 15 41 LMP ...

03 08 16 13 CDR Houston, Apollo 15; go.

03 08 16 32 CDR Okay. Three photos - You son of a ... bitch! He always stops.

03 08 16 56 CDR I'm going to give Karl about 6 seconds every time, before I answer.

03 08 17 00	CDR	Okay, Houston, understand. Swirls on Crisium, three-photio - photo convergent stereo, f/8, 1/250th, with the 250.
03 08 17 24	CDR	Okay. We'll tell him. You wanted to be reminded about helmets and gloves as you take your shots of Ingenuity on this time. What the hell does that mean?
03 08 17 42	CDR	Okay, thank you, Karl. We will. Huh? See around what ... problem? Oh.
03 08 17 54	CDR	Rather than the glasses? Yes.
03 08 18 29	CDR	... we going to start running our clock ... then at the 180-degree point, too, don't we?
03 08 18 45	CDR	Yes.
03 08 19 42	LMP	... much time is up ...
02 08 19 46	CDR	No. Not yet.
03 08 20 00	CDR	These 250's I guess you take with the brackets, huh? Yes? Out of which window? Center window?
03 08 20 17	CDR	You got a bunch of other ones here. This one's a 33 frames at 15-second intervals. All - all this 250 stuff is - -
03 08 20 29	CDR	Yes. Okay. That's right. That's right. You asked why you brought that bracket along once, didn't you?
03 08 21 08	CMP	Just push that button underneath it, Dave.
03 08 21 11	CDR	Oh. There's a ... Look at that.
03 08 21 23	CMP	...
03 08 21 25	LMP	Anyone else have a jumney [?] bag they want dumped?
03 08 21 31	CDR	No.
03 08 21 49	CDR	1/250th.

03 08 21 53 CMP 250's already rolling.

03 08 22 23 CMP You guys want anything to eat?

03 08 22 39 CDR What?

03 08 22 40 CMP ...

03 08 22 42 CDR Yes. Eighty-five pictures, MAG M, frame number 30 which would be frame number 43.

03 08 22 57 LMP Hey, I think I shorted someone a lemon pudding. A lemon pudding.

03 08 23 02 CDR I've got one.

03 08 23 03 LMP I don't think Al has. I've got one over here opened - that Al can have.

03 08 23 10 CDR I've - I've got one in my pocket I'm going to eat. You want this one?

03 08 23 11 LMP ...

03 08 23 13 CDR ... And let's don't be hanging stuff up now because we've got another burn coming.

03 08 23 23 LMP Yes.

03 08 23 24 CDR Let's get it all taken care of.

03 08 23 31 LMP Huh? I ate mine.

03 08 23 34 CDR Then you opened another one, huh?

03 08 23 37 LMP I thought I had the - the fruit cocktail. Here, throw that in the bag. Thank you.

03 08 23 49 CDR Well, can we get the - we got to - when we get through all that stuff this evening, let's get all the garbage and take it down to the food locker.

03 08 24 00 LMP Yes. It's time to dump, isn't it?

03 08 24 03 CDR Yes. I expect it is. That's all right, we'll close.

03 08 24 09	LMP	Can I dump?
03 08 24 11	CDR	Yes.
03 08 24 13	LMP	Okay.
03 08 24 17	CDR	Dump the waste, too.
03 08 24 31	LMP	Dumped that ... dead band.
03 08 24 34	CDR	The dump?
03 08 24 56	CDR	... (laughter).
03 08 25 17	CDR	Hey, you got coming up - Sea of Ingenuity, Crisium, Keyhole Crater, The Bright One, and Ibn Yunus - ...
03 08 25 47	CDR	That's - Oh, yes. There's a possibility of 10. And - then you do the realine. You got a lot of pictures to take. Wh - where do you want to take them?
03 08 26 03	CDR	Okay. Why don't you just tell us, you know, which window, and we'll go to wherever -
03 08 26 15	CDR	Oh, okay.
03 08 26 27	CDR	... five.
03 08 28 01	CMP	Dave, did you say you're doing a waste water dump now?
03 08 28 03	CDR	Yes.
03 08 28 20	CMP	No, I've got another ... for that.
03 08 28 23	CDR	I thought there was one here.
03 08 28 28	CMP	I think you was going to put it on the Flight Plan. Okay. There's one here, Dave.
03 08 29 25	CDR	... that waste water's something that's got to go. Certainly have a lot of it.
03 08 29 34	LMP	It's probably done.
03 08 29 35	CDR	Huh?

[redacted]

03 08 29 36	LMP	It's probably done.
03 08 29 37	CDR	What - -
03 08 29 38	LMP	How can you tell?
03 08 29 39	CDR	It's slow.
03 08 29 40	LMP	Oh, I see. The waste water dump.
03 08 29 41	CDR	Yes.
03 08 30 03	CDR	... a small ...
03 08 30 40	CDR	Got a lots of things to dump?
03 08 30 46	LMP	Here, I'll put that in the bag, Al.
03 08 31 00	CMP	There it is. You got it?
03 08 31 48	LMP	Okay, the urine dump's complete.
03 08 31 50	CDR	Oh, really? All that stuff?
03 08 31 55	LMP	... Yes.
03 08 32 59	CMP	Okay.
03 08 33 04	LMP	What'd you have the timer set up for, Dave?
03 08 33 07	CDR	Waste water dump. To make sure I checked it when it went off.
03 08 33 12	LMP	You dumping down to 15?
03 08 33 14	CDR	Yes. You might just watch it if you're there. ... Al's moving over.
03 08 33 29	LMP	He's ... of you.
03 08 33 32	CDR	Yes. Time to look for more. ...
03 08 34 01	CDR	Jim, you see my scissors up there?
03 08 34 03	LMP	Yes.
03 08 34 06	CDR	Thank you.

03 08 34 16 CDR That looks good.

03 08 34 19 LMP We got sunrise. Coming up on sunrise. Yes. Oh, gee. That's bright.

03 08 34 32 CMP See, you can just barely see the horizon.

03 08 35 14 LMP See the horizon out there, see it?

03 08 35 15 CDR Oh, look at that. Isn't that something! Hey, you got to take a picture of that.

03 08 35 24 CDR Huh? Isn't that something? Oh, boy.

03 08 35 37 CDR Golly!

03 08 35 50 LMP Okay. Believe that waste water dump's done. I'll go down and get it.

03 08 35 53 CDR I'll get it. I'm right here.

03 08 35 54 LMP Okay. ... down to 20.

03 08 35 56 CDR Okay. Yes.

03 08 36 06 LMP Yes. It looks like a snow-covered prairie. And doesn't that look like a brown to you?

03 08 36 14 CDR Now it does. Yes. Hey, that's - just got to have a picture of that.

03 08 36 25 LMP Okay.

03 08 36 32 LMP Wouldn't that make a great Christmas card?

03 08 36 34 CDR Hey, wouldn't it, though?

03 08 36 35 LMP Yes, that view right from this window. Look at that.

03 08 36 40 CDR Yes, it's almost the same over here. Huh? Where's - I can't hear you, Al.

03 08 36 49 LMP Ring sight.

03 08 36 50 CDR Yes, there's one - the only one I know of right now - I can get you one. I know where there's one. There's a ridge here, Jim. A prominent

ridge - we're coming across. That's just absolutely striking. I don't believe it. Ring sight. Yes.

03 08 37 40 CDR No, I can't get to it now, Al. Buried. Too much junk. Hey, Al, use the - edge - the - the corner of the camera. Let me show you. Let me show you how to aim that thing so you hit. See this thing? See? Right along this edge here. Line that up. Just take all the parallax out and line that up, and it's a straight shot.

03 08 38 23 CDR Hey, Jim, is the waste water stopped?

03 08 38 26 LMP Yes, I turned the dump off.

03 08 38 28 CDR You did?

03 08 38 29 LMP Yes.

03 08 38 30 CDR So did I. How could you have turned - -

03 08 38 34 LMP No. Oh, I'm sorry. The urine dump.

03 08 38 36 CDR You - you're not lis - -

03 08 38 37 LMP Oh - Oh, okay. Waste water - -

03 08 38 39 CDR Yes. You're not paying attention to me again, Jim.

03 08 38 41 LMP - - 25 percent.

03 08 38 44 CDR Okay.

03 08 38 46 LMP He closed it.

03 08 38 47 CDR You're right. Yes.

03 08 38 48 LMP You wanted me to confirm that it had been closed.

03 08 38 49 CDR Yes, right.

03 08 38 50 LMP I don't see a drop anymore.

03 08 38 52 CDR ...

03 08 38 53 LMP Okay. ...

03 08 39 02	CDR	Huh?
03 08 39 04	LMP	Can't see that ridge you were talking about, Dave.
03 08 39 06	CDR	You're going across it. Right where the terminator comes out. No, that's the horizon. Okay. I'm ... Yes.
03 08 39 30	LMP	Isn't that a good boy, Al?
03 08 41 16	CDR	Hey, Jim, here's this little vent.
03 08 41 19	LMP	Okay.
03 08 42 46	CDR	Yes.
03 08 43 06	CMP	Jim, I don't see ...
03 08 43 44	CMP	I see. That's - Ingenuity over there on the -
03 08 43 58	CDR	Hey, Jim, what did you do with those tissues that were over here? Remember?
03 08 44 03	LMP	I didn't use any of them, Dave.
03 08 44 05	CDR	No, but - there wasn't any of those little - -
03 08 44 08	LMP	Those medium ...?
03 08 44 29	CDR	What?
03 08 44 44	CDR	The very subdued rille that runs aro - perpendicular to the mountain? Oh, I see what you mean. Along the edge of the - Is that on the edge of ...? Of Ingenuity, huh?
03 08 45 22	CDR	I can keep you posted here about - You take - you take photos until about 49 here.
03 08 46 00	LMP	This must be Gagarin coming up.
03 08 46 05	CDR	Yes.
03 08 46 08	LMP	Think I have better luck holding the map backwards.
03 08 48 41	LMP	That's Gagarin we're over, huh?

[redacted]

03 08 48 57	CDR	Do you know what Keyhole looks like? Geez. That's the kind of thing that would be good to explore.
03 08 49 17	CDR	There's that neat one with the very white ejecta pattern - out at 1 o'clock.
03 08 49 54	LMP	Do you want to ... the window?
03 08 50 05	SC	...
03 08 50 07	LMP	Yes.
03 08 50 11	LMP	I think we better get this - all the windows down.
03 08 50 14	CDR	Yes. I think we better leave. You know you don't have to get them all, Al. ...
03 08 51 21	CDR	Oh, yes.
03 08 51 54	LMP	... might be AUTO.
03 08 52 25	CDR	Hey, Jim?
03 08 52 26	LMP	Yes.
03 08 52 27	CDR	You got your sunglasses?
03 08 52 36	LMP	Not quite, Al. Did you just pass me some sunglasses, Dave?
03 08 52 45	CDR	Yes.
03 08 52 47	LMP	Okay.
03 08 52 48	CDR	I think they're yours. Aren't they?
03 08 52 50	LMP	Yes.
03 08 53 47	LMP	You can see that - see the canyons on it?
03 08 54 10	CDR	Find Keyhole, Al? Good.
03 08 54 18	LMP	What's distinctive about Keyhole?
03 08 54 29	LMP	Oh, really?

03 08 55 43	LMP	I can sure see a lot - lot of blocks around this one coming up. A lot of blocks on the rim. And a slump on the - the west side of it.
03 08 56 39	LMP	Okay, the next one is target number 7, Al. It's The Bright One.
03 08 56 50	LMP	That's -
03 08 57 03	LMP	The one with slump blocks in the center of it?
03 08 57 18	LMP	The one we're just coming up on, huh?
03 08 57 21	CMP	Yes. That's it. Yes, that's Dooze [?]. Bright One. Yes, that's the one we want to get a - complete - We want two pictures of the ejecta pattern all the way along through there.
03 08 57 57		(Camera click)
03 08 58 12	CDR	Yes, there's King over there.
03 08 58 32	CDR	Hey, Jim?
03 08 58 33	LMP	Yes.
03 08 58 35	CDR	Hey, Jim, ... take care of that little map. That's the only one we got - you and I.
03 08 58 38	LMP	Yes, I understand.
03 08 58 40	CDR	Take good care of it.
03 08 58 45	LMP	No, we have another set - Well, the only one of the little ones. Yes, you're right. Don't ask for ..., huh?
03 08 58 51	CMP	By golly, old Bright Crater is a bright one, too. It's got good ray pattern. Glass all over.
03 08 59 00		(Camera click)
03 08 59 17		(Camera click)
03 08 59 22		(Camera click)
03 08 59 25		(Camera click)

03 08 59 50	LMP	Geesh.
03 08 59 52		(Camera click)
03 08 59 57		(Camera click)
03 09 00 11		(Camera click)
03 09 00 18	LMP	O_2 FLOW HIGH.
03 09 00 37		(Camera click)
03 09 00 40		(Camera click)
03 09 02 00	CMP	Okay, let's see. Let's try to get this Rooster Tail.
03 09 02 07	LMP	The next target you have is Ibn Yunus.
03 09 02 10	CMP	Yes, but I'm going to try and see if I can get a shot of the Rooster Tail here if I can.
03 09 02 20	CMP	That won't go anywhere.
03 09 02 51	CDR	...
03 09 03 05	CMP	You what, Jim?
03 09 03 07	LMP	... Ibn Yunus ought to be coming up on the left side here shortly.
03 09 03 12	CMP	Yes. Should be.
03 09 03 15	LMP	Oh, look at the Earth come up - earthrise. ... all day, we ought to look at that ...
03 09 03 20	CDR	Oh, yes.
03 09 03 27	CMP	... you don't ...
03 09 03 29	CDR	Yes.
03 09 03 32	LMP	Golly.
03 09 03 33	CMP	That ought to be good for a picture, huh?
03 09 03 35	CDR	Oh, yes. Be better when you're ...
03 09 03 38	CMP	Yes. I got part of the LM in the way there.

03 09 03 54	CMP	Let me see here - let me - Yell if you see the Rooster Tail.
03 09 04 00	LMP	I'm not sure what the Rooster Tail looks like, Al.
03 09 04 02	CMP	That's that little secluded - dome on a - on a ca - on a small crater that Farouk was showing us the other day.
03 09 04 14	LMP	Yes, I think there's one - -
03 09 04 15	CMP	That a - -
03 09 04 16	LMP	- - coming up here - that -
03 09 04 18	CMP	It should be quite obvious if you see it.
03 09 04 21	LMP	Well, there's kind of an occluded area to the west.
03 09 04 22	CMP	It looks - it looks very much like a rooster tail.
03 09 04 28	CDR	...
03 09 04 30	CMP	Yes.
03 09 04 32	LMP	See the one coming up, Dave, ... in the occluded area - to the west?
03 09 04 38	CDR	Is that the one ...
03 09 04 41	CMP	Yes, I think it's very fresh.
03 09 04 49	LMP	Should it be right on track?
03 09 04 52	CMP	Yes. Right underneath.
03 09 04 56	LMP	... There's one underneath us. Big rille and ...
03 09 05 14	CDR	Could that be it - the one we're just coming up on, Al?
03 09 05 22	CMP	Yes. That's it. Must be it.
03 09 05 39	CMP	... a shot of it here.
03 09 05 49	CMP	Yes.
03 09 06 06	CMP	There's Babcock out there.

03 09 06 08 CDR Hey, Al, can I do a VERB 64 in this P20 or will it kick it back out?

03 09 06 12 CMP No. It'll keep it in.

03 09 06 14 CDR Maybe I ought to get up there and do one ...

03 09 06 17 CMP Yes. It should. It should work.

03 09 06 21 CDR ...

03 09 06 24 CMP Fifteen and 12.

03 09 06 25 CDR Fifteen and 12?

03 09 06 27 CMP Uh-huh.

TIME SKIP

03 10 27 20 CDR Okay. We were up to ...

03 10 27 26 LMP ... do that. ...

03 10 27 34 LMP Getting hungry, Al?

03 10 27 36 CMP Huh?

03 10 27 38 LMP ... seemed like the day was getting along.

03 10 27 42 CMP We've only got 12 minutes to the burn.

03 10 27 45 LMP Okay. ...

03 10 27 49 CDR Okay, that's right. We're at 12 minutes.

03 10 28 03 LMP ...

03 10 28 06 CDR Do you feel all right? You okay?

03 10 28 09 LMP ... spacecraft roll ...

03 10 28 13 CDR Okay. ... it up to 10 degrees; ... to zero.

03 10 28 55 LMP ...

03 10 29 00 CMP ... 8.

03 10 29 02	LMP	... burn ...
03 10 29 03	CMP	159.
03 10 29 05	LMP	... junk.
03 10 29 13	CMP	Yes. You're right. Why don't you ... These are yours.
03 10 29 33	LMP	... steady this ...
03 10 29 35	CDR	No.
03 10 29 58	LMP	How much time we got before the burn - 10 minutes?
03 10 30 01	CDR	Ten minutes.
03 10 30 02	CMP	Nine minutes.
03 10 30 04	CDR	Okay. GDC's alined.
03 10 30 07	LMP	Do you want to call P40? ...?
03 10 30 11	CDR	Okay. P40.
03 10 30 22	LMP	Okay. BMAG MODE, three, to RATE 2.
03 10 30 26	CDR	RATE 2.
03 10 30 28	LMP	SPACECRAFT CONTROL, CMC, in AUTO.
03 10 30 30	CDR	CMC, AUTO.
03 10 30 31	LMP	PRO.
03 10 30 34	CDR	Okay, we'll wait a little here. Maybe we ... - -
03 10 30 36	LMP	You got roll aline?
03 10 30 37	CDR	Yes. It's all alined. We're all ... - -
03 10 30 38	LMP	GDC and roll? Okay. TVC check and prep. Circuit breakers STAB CONTROL SYSTEM, all closed on panel 8.
03 10 30 43	CDR	Okay. ... going in. Okay?
03 10 30 49	LMP	CB SPS. Should be 11 closed.

[redacted]

03 10 30 53	CDR	Okay, 11 closed; MAIN A is out.
03 10 30 55	LMP	Okay. You got DELTA-V_C set.
03 10 30 58	CDR	DELTA-V_C is set; 208.4.
03 10 31 01	LMP	EMS FUNCTION, DELTA-V.
03 10 31 03	CDR	DELTA-V.
03 10 31 05	LMP	MAN ATT, three, to RATE COMMAND.
03 10 31 06	CDR	RATE COMMAND.
03 10 31 07	LMP	DEAD BAND, MIN.
03 10 31 08	CDR	MIN.
03 10 31 09	LMP	RATE, LOW.
03 10 31 10	CDR	LOW.
03 10 31 11	LMP	TRANSLATION CONTROL POWER, on.
03 10 31 12	CDR	On.
03 10 31 13	LMP	SCS TVC, two, to RATE COMMAND.
03 10 31 15	CDR	SCS TVC to RATE COMMAND.
03 10 31 19	LMP	DELTA-V_{CG} to LM/CSM.
03 10 31 20	CDR	LM/CSM.
03 10 31 21	LMP	TVC GIMBAL DRIVE, PITCH and YAW, to AUTO.
03 10 31 23	CDR	AUTO.
03 10 31 24	LMP	... Okay. ...
03 10 31 28	CDR	(Laughter) Going about it the hard way, maybe.
03 10 32 14	LMP	Did you ...?
03 10 32 16	CDR	Yes.
03 10 32 31	CMP	...?

03 10 32 33 LMP Four jets and 15 seconds.

03 10 32 35 CDR Four jets, 15 seconds on the ullage. Okay.

03 10 32 43 CDR Coming up on 7 minutes.

03 10 32 50 CDR MARK; 7 minutes.

03 10 33 09 LMP ...

03 10 33 11 CDR Right. Well, we're not going to have any overburn.

03 10 33 25 CDR Okay, Jim. Coming up on 6 minutes.

03 10 33 27 LMP Okay.

03 10 33 28 CDR Start.

03 10 33 29 LMP MAIN BUS TIES coming on.

03 10 33 34 LMP TVC SERVO POWER 1, to AC 1/MAIN A; 2 to AC 2/MAIN B.

03 10 33 39 CDR 1 is AC 1/MAIN A and 2 is AC 2/MAIN B.

03 10 33 42 LMP ROT CONTROL POWER, NORMAL, two, to AC.

03 10 33 45 CDR ROT CONTROL POWER, two, NORMAL, AC.

03 10 33 47 LMP ROT CONTROL POWER DIRECT, two, OFF.

03 10 33 49 CDR DIRECT, two, OFF.

03 10 33 51 LMP BMAG MODE, three to ATT 1/RATE 2.

03 10 33 53 CDR BMAG MODE, three of them, to ATT 1/RATE 2.

03 10 33 56 LMP SPACECRAFT CONTROL, SCS.

03 10 33 57 CDR SCS.

03 10 33 59 LMP RHC number 2, armed.

03 10 34 01 CDR RHC number 2, armed.

03 10 34 03 LMP ... at 5.

03 10 34 06 CDR Okay.

03 10 34 32	CDR	Okay. Let's go ahead.
03 10 34 33	LMP	Okay. GIMBALS MOTORS PITCH 1 and YAW 1, on.
03 10 34 36	CDR	Coming on.
03 10 34 38	LMP	1, 2.
03 10 34 41	CDR	Okay.
03 10 34 42	LMP	Verify trim control and set.
03 10 34 44	CDR	Okay. Verify the trim and set at 1.68 and minus .55. Verified.
03 10 34 53	LMP	Verify MTVC.
03 10 34 56	CDR	MTVC.
03 10 35 06	CDR	Verified.
03 10 35 07	LMP	SPACECRAFT CONTROL, CMC.
03 10 35 08	CDR	CMC.
03 10 35 09	LMP	THC, clockwise. And verify no MTVC.
03 10 35 12	CDR	Clockwise.
03 10 35 16	LMP	Getting roll out of that.
03 10 35 19	CDR	No MTVC.
03 10 35 20	LMP	Secondary TVC check. GIMBAL MOTORS PITCH 2 and YAW 2, on.
03 10 35 24	CDR	PITCH 2 and YAW 2 coming on.
03 10 35 26	LMP	2 - on. Set GPI trim.
03 10 35 36	CDR	Okay.
03 10 35 37	LMP	Verify MTVC.
03 10 35 43	CDR	Verified.
03 10 35 44	LMP	THC neutral. Verify no MTVC.

03 10 35 48 CDR No MTVC.

03 10 35 49 LMP Verify GPI returns to zero, zero.

03 10 35 52 CDR Zero, zero.

03 10 35 53 LMP ROT CONTROL POWER, NORMAL, two, to AC/DC.

03 10 35 57 CDR AC/DC.

03 10 35 58 LMP ROT CONTROL POWER, DIRECT, two, to MAIN A/MAIN B.

03 10 36 01 CDR DIRECT, MAIN A/MAIN B.

03 10 36 02 LMP BMAG MODE, three, to RATE 2.

03 10 36 04 CDR BMAG MODE, three, to RATE 2.

03 10 36 06 LMP PRO. ...

03 10 36 08 CDR Okay. ...

03 10 36 18 LMP Okay?

03 10 36 20 CDR That's okay. Yes. Looks good.

03 10 36 22 LMP Okay. Next - -

03 10 36 23 CDR Okay?

03 10 36 24 LMP - - to BMAG MODE - -

03 10 36 25 CDR Ready?

03 10 36 26 LMP - - three, to - ATT 1/RATE 2.

03 10 36 28 CDR ATT 1/RATE 2. Okay?

03 10 36 34 LMP Let's see, if I remember, the next line is ENTER. Yes. Yes, we're right there. ...

03 10 36 49 CDR Yes.

03 10 36 53 LMP Okay. FDAI SCALE, 5/5.

03 10 36 55 CDR 5/5.

03 10 36 56 LMP RATE, HIGH.

[redacted]

03 10 36 57 CDR RATE, HIGH.

03 10 36 59 LMP Update the DET, if necessary.

03 10 37 04 CDR ... we're right on it.

03 10 37 06 LMP Okay. HELIUM VALVES are AUTO; N_2 A and B are good at 2500. Okay, ... are minus 2 - you get DELTA-V THRUST B to NORMAL.

03 10 37 23 CDR Roger.

03 10 37 31 CDR Let's get this ... here.

03 10 37 41 CMP ... probably ... and follow if you can -

03 10 37 44 LMP Right. Hey, let me do the -

03 10 37 49 CDR Okay; 2 minutes.

03 10 37 51 LMP Okay. DELTA-V THRUST B to NORMAL.

03 10 37 52 CDR DELTA-V THRUST B to NORMAL.

03 10 37 56 LMP THC, armed.

03 10 37 58 CDR THC, armed.

03 10 38 00 LMP RHC, both armed.

03 10 38 02 CDR Both armed.

03 10 38 20 LMP Stand by for minus 35.

03 10 38 24 CDR Okay, that's 35 to go.

03 10 39 09 CDR Okay, it looks like we're coming up to average g.

03 10 39 11 LMP Yes.

03 10 39 13 CDR (Cleared throat).

03 10 39 16 LMP Average g is on.

03 10 39 19 CDR Okay, standing by for a 15-second ...

03 10 39 22 LMP EMS MODE, NORMAL.

03 10 39 23 CDR NORMAL.

03 10 39 35 MS Ullage.

03 10 39 40 CDR Okay. GO for the burn?

03 10 39 41 CMP You're GO.

03 10 39 46 CDR Ready for the PRO.

03 10 39 50 CMP B valves.

03 10 39 51 CDR B valves.

03 10 39 52 LMP Okay. The clock is running.

03 10 39 56 CMP Oh, she goes.

03 10 39 59 CDR Okay.

03 10 40 05 LMP 10, 9, 8, 7, 6, 5, 4, 3, 2, 1 -

03 10 40 14 CMP Zero; THRUST off; automatic. Gimbal motors.

03 10 40 21 LMP Stand by, Al. 1, 2, 3, 4.

03 10 40 30 CMP You don't trim?

03 10 40 31 CDR Uh-huh.

03 10 40 32 CMP CDR took us to within 1? Good. Now TVC - -

03 10 40 36 LMP TVC SERVO POWER 1 and 2, OFF.

03 10 40 39 CMP OFF.

03 10 40 40 LMP MAIN BUS TIES coming OFF.

03 10 40 41 CMP Roger.

03 10 40 48 CMP ... burns to within 1 foot per second.

03 10 40 51 CDR Okay.

03 10 40 52 LMP Pressure's down.

03 10 40 53 CMP Pressure's still coming ... down.

03 10 40 57	LMP	...
03 10 41 02	CMP	Okay, Jim.
03 10 41 03	LMP	Okay, you got everything?
03 10 41 05	CMP	Let's clean them up.
03 10 41 06	LMP	Okay, EMS FUNCTION's off.
03 10 41 07	CMP	Off.
03 10 41 08	LMP	EMS MODE, STANDBY.
03 10 41 09	CMP	STANDBY.
03 10 41 10	LMP	RHC and THC locked.
03 10 41 11	CMP	Locked.
03 10 41 12	LMP	DEAD BAND, MAX.
03 10 41 13	CMP	MAX.
03 10 41 14	LMP	TRANSLATION CONTROL POWER, OFF.
03 10 41 15	CMP	OFF.
03 10 41 16	LMP	ROT CONTROL POWER, DIRECT, OFF.
03 10 41 18	CMP	Two - that's two OFF.
03 10 41 20	LMP	BMAG MODE, three, to RATE 2.
03 10 41 21	CMP	RATE 2.
03 10 41 22	LMP	CB, DIRECT ULLAGE, two, open.
03 10 41 24	CMP	DIRECT ULLAGE, open.
03 10 41 26	LMP	CB, SPS PITCH 1 and YAW 1, open.
03 10 41 29	CMP	PITCH 1, YAW 1, open.
03 10 41 30	LMP	PCM BIT RATE going LOW.
03 10 41 32	CMP	A and B also open.

03 10 41 34 CDR ... by 10 miles.

03 10 41 44 LMP Let's see ... That's got to be Tsiolkovsky.

03 10 41 47 CMP ... overburned just a little bit, but the little ... was 10 seconds short.

03 10 41 52 CDR ... second burst, and we overburned just a bit.

03 10 42 09 LMP Okay, I'm going to go down and ... up the SIM bay here.

03 10 42 23 CDR Look at this ...

03 10 42 26 CMP See where it says 2 5 ... 25 ...

03 10 42 37 CMP Okay, let's see what it says here.

03 10 42 38 CDR Okay.

03 10 42 58 CDR You know what the ..., don't you? ...

03 10 43 01 CMP What?

03 10 43 02 CDR ... seconds to go. Probably ... and ... 10 seconds.

03 10 43 08 CMP That's right. We did ... over.

03 10 43 10 CDR Yes. We did - especially when ... getting ...

03 10 43 16 CMP ... I could - I could tell ... - not ... on.

03 10 43 21 CDR Yes.

03 10 43 22 CMP I thought about that, you know?

03 10 43 23 CDR Yes. Yes.

03 10 43 24 CMP It was just right after ...

03 10 43 25 CDR I could - I could see your hand start to go. And I looked at the DSKY and looked up, and then I could see it was going to shut off. But I could see your hand - you were - you were waiting for it. I knew I wasn't going to be more than half a second after.

03 10 43 35 CMP Yes. That - that's pretty close.

[redacted]

03 10 43 36	CDR	Yes.
03 10 43 37	CMP	But you could see it - I could see when (cleared throat) when it automatically shut down before I could ...
03 10 43 44	CDR	Oh, yes.
03 10 43 46	CMP	Well, you know the ball valve actually opened up ... like that ... And I usually - -
03 10 43 52	CDR	Yes.
03 10 43 53	CMP	- - can't see that. I started to watch the ... P_C started ...
03 10 44 00	CDR	... shut down ...
03 10 44 03	CMP	... I know what you mean - -
03 10 44 04	CDR	...
03 10 44 05	CMP	Yes, I know. I keep telling them it's going to be ...
03 10 44 12	CDR	Oh yes. Right ... nothing like a ..., wouldn't you say?
03 10 44 23	CMP	Yes. Okay. ... VERB ... get it in ...
03 10 44 26	CDR	All right. What do you want to do?
03 10 44 29	CMP	... a ... ...?
03 10 44 38	CDR	Yes. Yes. ...
03 10 44 54	CMP	...
03 10 44 56	CDR	Yes. Oh, here comes ... That terminator is just like something out of the movies.
03 10 45 11	CMP	Yes. ... - -
03 10 45 12	CDR	I mean it's just a - just a strip all the way across.
03 10 45 15	LMP	Yes, boy.
03 10 45 18	CDR	Hold your breath on this one, Jim?

03 10 45 21	LMP	What in the hell would you ...?
03 10 45 25	CDR	Yes. Yes, but I wouldn't say it ...
03 10 45 34	LMP	Oh, ...
03 10 45 38	CDR	Huh?
03 10 45 39	LMP	Do you know what we have to do yet?
03 10 45 41	CDR	Yes. ...
03 10 45 45	LMP	Gee. This is ... We're not even down in the ...
03 10 45 49	CDR	(Laughter)
03 10 45 51	LMP	Wait until we get down in the ..., then we're ...
03 10 45 54	CDR	240,000 miles and ... (laughter).
03 10 45 57	CMP	What do you want?
03 10 45 58	CDR	(Laughter)
03 10 45 59	LMP	... you know, but ... - -
03 10 46 00	CMP	You want me to put you on the surface?
03 10 46 02	CDR	(Laughter)
03 10 46 03	LMP	... - -
03 10 46 04	CDR	Why don't you, Al? (Laughter)
03 10 46 05	LMP	- - ...
03 10 46 06	CDR	That's true (laughter).
03 10 46 08	LMP	...?
03 10 46 09	CDR	Yes, that's right (laughter).
03 10 46 11	LMP	... - -
03 10 46 12	CDR	No. I want to be safe (laughter).
03 10 46 13	LMP	...

[redacted]

03 10 46 16	CDR	Yes, you're right, boy, you're right. ... - -
03 10 46 24	SC	(Yawn)
03 10 46 26	CDR	...?
03 10 46 28	LMP	That's right.
03 10 46 29	CDR	Go on to sleep, Al.
03 10 46 30	LMP	...
03 10 46 31	CDR	... I think you're about ready for bed.
03 10 46 55	CMP	... P52.
03 10 46 57	CDR	No.
03 10 46 58	LMP	Yes. ...
03 10 47 00	CMP	...
03 10 47 01	LMP	Let's see if we can't help Al a little bit.
03 10 47 03	CDR	Sure. Let's ...
03 10 47 06	CMP	No. ...
03 10 47 10	CDR	If you're going to be operating this ... for 3 days, we ought to try and set up a system to square it away.
03 10 47 13	CMP	...
03 10 47 15	LMP	Yes. ...
03 10 47 16	CMP	...
03 10 47 17	LMP	...
03 10 47 22	CMP	..., ..., and tomorrow night ..., except most of those pictures would be in the open. ... pictures of the lunar surface. I think it'll probably ... a couple of days ...
03 10 47 37	CDR	I think so, too.
03 10 47 38	CMP	... situation..., fill it up, and ...

03 10 47 48 CDR Yes.

03 10 47 49 CMP You really need to do that. You can't just ...

03 10 47 58 LMP If you're at all worried about the Flight Plan, ...

03 10 48 05 CMP Hey, that looks black. Wouldn't you say that's black?

03 10 48 09 CDR I'd say it's a dark gray.

03 10 48 11 LMP There's something up here that's dark gray?

03 10 48 13 CDR Well, this looks like it's ...

03 10 48 20 LMP Man, it already looks like we're lower. Whoo.

03 10 48 25 CMP ... looks black over there.

03 10 48 29 CDR Hey, that's right. It looks real dark way down there.

03 10 48 33 CMP ...

03 10 48 35 LMP They say then it looks like you're just going to dive.

03 10 48 38 CDR It sure does.

03 10 48 39 LMP ... going at 50 feet per second.

03 10 48 41 CDR Yes, siree-bob. Hey, look at that big mound over here, son of a gun. Hey, hey, check the mound ... over here.

03 10 48 51 LMP Oh, yes?

03 10 48 53 CMP That's Van De Graaff.

03 10 48 54 LMP That's bigger than Van De Graaff.

03 10 48 55 CDR The one right under us?

03 10 48 56 CMP No, the one just out there at 11 o'clock.

03 10 48 58 CDR Oh, yes.

03 10 48 59	CMP	The long - elongate one. That's Van De Graaff. And just out in the distance there, off to the left is - is the Mare Ingen-u-ity.
03 10 49 12	CDR	Oh, yes. ... to the left?
03 10 49 14	SC	(Yawn)
03 10 49 15	CMP	That's ... It's just as ...
03 10 49 16	LMP	... mountain's ..., and the ... mountain's ...
03 10 49 19	CDR	Whoo-ho-ho! Oh, ho, no. (Laughter).
03 10 49 23	LMP	He's already ... Hey, what do we - what do we have to do?
03 10 49 28	CDR	Hold on a minute.
03 10 49 29	LMP	...?
03 10 49 30	CDR	Roger. We already look low, and we got 180 degrees to go, babe.
03 10 49 39	LMP	What time do we ...?
03 10 49 41	CMP	Another 25 minutes.
03 10 49 43	LMP	Holy cow.
03 10 49 47	CDR	Hey, you can ... It's a great place to take a bunch of pictures of the - of the ... and all that. We ought to do that ...
03 10 50 01	CMP	Look at that ... down there, underneath us. About ... ... there.
03 10 50 08	LMP	...
03 10 50 17	CDR	Well, old buddy, I guess that's all very ...
03 10 50 21	LMP	Yes.
03 10 50 22	CMP	Is this ... rille that - or is this a rille?
03 10 50 28	CDR	What?
03 10 50 29	CMP	This ... flat piece we're coming up on.

03 10 50 30	LMP	No.
03 10 50 31	CDR	Hey, no, that's that rille I was talking about before.
03 10 50 32	LMP	Yes, Al.
03 10 50 33	CDR	Yes. This one ... here. ... first time ...? Where is that crater?
03 10 50 39	CMP	We ought to get a picture of that ...
03 10 50 42	CDR	... reading?
03 10 50 45	CMP	... 08. It's close to Kepler.
03 10 50 49	LMP	It almost looks like it's a ... feature rather than a rille.
03 10 50 52	CDR	The one we're going over right now?
03 10 50 54	LMP	Yes.
03 10 50 55	CDR	Yes. Who's got the 80? Is it CMP?
03 10 50 58	LMP	I'm looking.
03 10 51 05	CMP	See out here at 10 o'clock, Dave?
03 10 51 07	CDR	Yes. I do.
03 10 51 08	CMP	That's the one we picked up on the map, we called ...
03 10 51 11	CDR	The rille?
03 10 51 12	CMP	Yes, because it just kind of - slopes on the inside; looks like most of the ... turns up even though there isn't any rille.
03 10 51 21	CDR	...
03 10 51 23	LMP	Okay, Al. Here's the - the 80.
03 10 51 35	CDR	I don't ... - -
03 10 51 36	LMP	You'll get a much better picture from this attitude.
03 10 51 38	CDR	Is that right?

[redacted]

03 10 51 44	LMP	Just like a low-level flight.
03 10 51 54	LMP	... this is really ...
03 10 51 56	CMP	We must be ... here.
03 10 51 59	CDR	Oh, what's the ...? How much time we got before ...?
03 10 52 02	CMP	... showing 63 and 1 ...
03 10 52 09	CDR	... use the 250 or do you want to go to - -
03 10 52 11	CMP	Let me get - let me get one here with the 250. ...
03 10 52 23	LMP	..., Dave?
03 10 52 25	CDR	...
03 10 52 57	LMP	Yes, sir! ...
03 10 52 39	CMP	That was a ... continuous ...
03 10 52 55	LMP	... low.
03 10 53 00	CMP	...
03 10 53 05	CDR	You know, we are going ...
03 10 53 23	CDR	Look at that.
03 10 53 24	LMP	...
03 10 53 26	CDR	It's really ...
03 10 53 28	CMP	... - -
03 10 53 31	CDR	Yes - -
03 10 53 32	LMP	- - ...
03 10 53 33	CMP	- - ...
03 10 53 36	CDR	Yes.
03 10 53 40	CMP	Wouldn't that be something? ... right over there ...
03 10 53 57	CMP	...

03 10 54 05	CDR	Did you ever check those photo things for me, Jim?
03 10 54 07	LMP	Yes. ...?
03 10 54 09	CDR	Quite sure. Yes. There should be two that were like that.
03 10 54 15	LMP	Just a minute here.
03 10 54 22	LMP	Well, you're looking for ...
03 10 54 27	CDR	Sea of Ingenuity?
03 10 54 29	LMP	Yes; 5.6 at a 250th.
03 10 54 31	CDR	Okay.
03 10 54 32	LMP	And then at Keyhole, you look ... And The Bright One, you look to the left.
03 10 54 59	CDR	You know, I think this is ... down here. Look at ... - -
03 10 55 00	CMP	...
03 10 55 02	CDR	- - ... We'll get a couple of pictures here.
03 10 55 10	CDR	... though.
03 10 55 30	CDR	You got a roll in there?
03 10 55 31	CMP	Yes. P ...
03 10 55 33	CDR	...
03 10 56 07	CDR	You might say some of those craters are really ...
03 10 56 11	CMP	... navigation is a little more difficult down at this altitude.
03 10 56 14	CDR	Huh?
03 10 56 15	CMP	Navigation is more difficult at this altitude.
03 10 56 17	CDR	...
03 10 56 20	CMP	Low-level navigation.

[redacted]

03 10 56 21	CDR	Oh, I don't know.
03 10 56 24	CMP	Did you get yourself located?
03 10 56 27	CDR	... pretty well - set.
03 10 56 36	CDR	...
03 10 56 39	LMP	At least you can follow them, now that we're going forward.
03 10 56 44	CMP	You should be coming upon Gagarin ...
03 10 56 53	CDR	There's sure a good-sized one off to the north.
03 10 56 58	LMP	Well, Gagarin is very shallow, oval.
03 10 57 03	CDR	See that? Off to the north?
03 10 58 15	CDR	Have you see it yet? Jim apparently has the right idea.
03 10 58 24	LMP	Yes.
03 10 58 25	CMP	...
03 10 58 42	CDR	Well, it's in the right attitude. Can you see anything over there, Jim?
03 10 58 45	LMP	Yes. ... all right.
03 10 58 50	CMP	It looks that way, but it sure is ...
03 10 58 52	CDR	Watch the TV.
03 10 59 13	CDR	Look for the ... one over on the left side.
03 10 59 15	CMP	Yes.
03 10 59 16	CDR	Should come over the horizon.
03 10 59 18	LMP	...
03 10 59 20	CDR	...
03 10 59 22	LMP	No, I ...

03 10 59 26	CMP	Yes. That is the central peak of Tsiolkovsky, I bet you 10 dollars.
03 10 59 34	CDR	Really?
03 10 59 35	CMP	Yes.
03 10 59 36	CDR	And that is - -
03 10 59 37	CMP	... - -
03 10 59 38	CDR	- - sort of a big ...
03 10 59 39	CMP	... in the rim.
03 10 59 40	LMP	...?
03 10 59 41	CDR	Huh?
03 10 59 42	CMP	No.
03 10 59 51	CDR	Think there's ... in the ...?
03 10 59 54	CMP	Well, there's - Yes, there's parts of it that are very small, such as the peak.
03 10 59 58	LMP	But I guess it doesn't really strike home until you get down to something like this ...
03 11 00 05	CDR	Good idea. I'll ...
03 11 00 13	CMP	...
03 11 00 16	CDR	Oh, boy. I'll never sleep ... open.
03 11 00 21	LMP	No, that's a pretty good theory, though.
03 11 00 22	CMP	Yes, I want to - I want to wade through ... - go through this.
03 11 00 26	CDR	...
03 11 00 28	CMP	Yes. Yes, ...
03 11 00 41	CMP	Okay. We got two developing ... over there.
03 11 00 54	CDR	God damn, that's just like being on a poor bus!

[redacted]

03 11 00 56	CMP	(Laughter) ...
03 11 00 57	CDR	...
03 11 00 58	CMP	Hard enough?
03 11 00 59	CDR	Dark?
03 11 01 00	LMP	Yes.
03 11 01 01	CMP	... Up on the ridge line.
03 11 01 04	CDR	I think that's shadows, isn't it?
03 11 01 08	LMP	I don't think that's shadow ...
03 11 01 12	CDR	... good idea. ...
03 11 01 15	CMP	Yes.
03 11 01 37	CDR	Oops, over here ...
03 11 01 40	CMP	What the hell is it?
03 11 01 41	CDR	Two old compasses.
03 11 01 51	CMP	Oh, good grief ...
03 11 01 57	LMP	Oh, man. That sure is a great landmark.
03 11 02 08	CMP	Isn't it?
03 11 02 09	CDR	... supposed to do that, you know where we are.
03 11 02 10	CMP	Yes. Boy, you sure got a good attitude, Dave. It ...
03 11 02 17	CDR	Isn't it beautiful!
03 11 02 18	CMP	No, I couldn't - I couldn't have picked a better one myself.
03 11 02 30	CDR	I'm trying here to figure out where those two ... are.
03 11 02 33	CMP	They should be -
03 11 02 48	CMP	... - Look at that - that one right there. Right there.

03 11 02 52	CDR	...
03 11 02 53	LMP/CMP	Whoa.
03 11 02 54	CMP	Now look out.
03 11 02 55	CDR	Oh, yes. Hey, yes. That's Mount ...
03 11 02 56	CMP	Yes, yes.
03 11 02 58	CDR	... Say, you can really see, can't you?
03 11 03 49	CMP	Light's on.
03 11 04 14	CMP	Why don't you take you some pictures?
03 11 04 15	LMP	Okay.
03 11 04 20	CMP	Let's see, we're right at ... No, let's see. ...
03 11 04 27	CDR	We're heading just a little bit to the ri - to the left of our Flight Plan.
03 11 04 31	CMP	What?
03 11 04 32	CDR	And maybe a few deg - around the curve, there.
03 11 04 34	CMP	Curve?
03 11 04 35	CDR	Yes, don't you - -
03 11 04 36	CMP	You want to show me it?
03 11 04 37	CDR	Yes. My pleasure. Look. There it is. Look.
03 11 04 43	CMP	Maybe you should ... on the end there.
03 11 04 45	CDR	Oh, nothing.
03 11 04 46	CMP	... Everyone says ... that you're not allowed to do it, but you have to do it if ...
03 11 05 10	CMP	Does it look like anything?
03 11 05 11	CDR	Yes.
03 11 05 48	CMP	...

[redacted]

03 11 05 55	CDR	Move the fans over.
03 11 05 58	CMP	Will the ...?
03 11 05 59	CDR	Yes.
03 11 06 01	CMP	Okay.
03 11 06 04	LMP	Hey, you guys really ...
03 11 06 07	CMP	Yes.
03 11 06 08	LMP	That's when you ... You can feel it.
03 11 06 10	CDR	Yes.
03 11 06 12	CMP	... (coughing) ...
03 11 06 15	CDR	What?
03 11 06 16	CMP	... that long.
03 11 06 18	LMP	You going to be able to look at it through your sextant? Did you -
03 11 06 22	CMP	I'm not sure.
03 11 06 24	CDR	...
03 11 06 30	LMP	...
03 11 06 35	CMP	Yes, do you mean we got to go up through the ...?
03 11 06 37	CDR	If you're not going to make it?
03 11 06 38	CMP	No, I - I figured you'd rather do it.
03 11 06 40	CDR	No, it's up to you. You do whatever you'd like.
03 11 06 41	CMP	No. Oh, no, I'm not going ... - -
03 11 06 44	CDR	Okay, very good.
03 11 06 45	CMP	- - ...
03 11 06 46	CDR	That's right.

03 11 06 47	CMP	... you got to give a ... that you'll get over it. You - you do everything you want to do.
03 11 06 49	LMP	...
03 11 06 50	CDR	(Laughter)
03 11 06 51	CMP	I - If I'm in your way, just ... it down.
03 11 06 53	CDR	Oh, sure.
03 11 06 54	LMP/CMP	(Laughter)
03 11 06 55	CMP	... - -
03 11 06 56	LMP	You're too hard for him. You be easy on him, or he'll ... - -
03 11 06 59	CMP	Oh, yes. Very good.
03 11 07 08	CDR	Where is ..., by the way?
03 11 07 10	CMP	It's out in the middle of ...
03 11 07 12	CDR	Is it really?
03 11 07 13	CMP	Yes.
03 11 07 14	CDR	The same crater as we were ...?
03 11 07 15	CMP	Yes.
03 11 07 16	CDR	The same patterns as ... Crater?
03 11 07 18	CMP	As a matter of fact, I could have gone through ...
03 11 07 20	CDR	Why don't you do that?
03 11 07 21	CMP	Okay.
03 11 07 22	CDR	That'd give us an idea of ... ... what you're going to be looking at. ... - you know you ...
03 11 07 31	CMP	Well, I tell you, it's not a very - it's not a very colorful crater.
03 11 07 41	CDR	..., Jim. Did you see ... over there?

03 11 07 45	LMP	Yes.
03 11 07 47	CMP	It's sure going to be ... stick to the time line. Yes, that would.
03 11 07 54	LMP	One-half hour.
03 11 07 56	CDR	...
03 11 07 58	CMP	Hey, you ...
03 11 08 05	LMP	You got a ... space.
03 11 08 09	CMP	Yes, can't even see the horizon.
03 11 08 13	CDR	Yes.
03 11 08 14	CMP	... in the ORB rate. ... get back to the ...
03 11 08 32	CDR	... VERB 67.
03 11 09 50	CDR	... we can get to this ... The - Can you move that thing?
03 11 09 58	CMP	Yes.
03 11 09 59	CDR	You really don't need ...
03 11 10 00	CMP	Yes.
03 11 10 01	CDR	Isn't that the truth? You really don't need it.
03 11 10 22	CDR	There it is.
03 11 10 28	CMP	...
03 11 10 37	CDR	Wait a minute. ...
03 11 10 43	CMP	Yes, well, even that ... That's why we had trouble finding anything at all that we could use, because there isn't anything.
03 11 10 49	CDR	Nothing to change it over here at all. Nothing to change it, Al, ... that we could use.
03 11 10 55	CMP	How about a - Let's see, what kind of ... we use. 25.958?

03 11 11 01 CDR Uh-huh. And we've got ...

03 11 11 02 CMP Yes, and you got ... Five point ... here. ...

03 11 11 14 CMP ...

03 11 11 20 CMP ... here. ...

03 11 11 23 CDR Huh?

03 11 11 24 CMP ... .3 ...

03 11 11 33 CDR ...

03 11 11 35 CMP ...

03 11 11 37 CDR ...

03 11 11 39 CMP Yes.

03 11 11 41 CDR There'd be a lot more.

03 11 11 44 CMP Yes.

03 11 12 03 CMP ... And - I'm going to push these back in.

03 11 12 21 CDR ... to be all set up with your G&C Checklist ... GDC ALIGN.

03 11 12 26 CMP ...

03 11 12 36 CMP ...

03 11 12 42 CDR ...

03 11 13 05 CMP ...

03 11 13 08 CDR Yes.

03 11 13 14 CMP Got that.

03 11 13 23 CDR I get that initial downhill impression. We're supposed to be ...

03 11 13 27 CMP ... did.

03 11 13 37 CMP ...

03 11 14 56 CMP Darn it. Right there.

03 11 14 58 CDR There it was, whatever it was.

03 11 15 00 CMP Hum. ...

03 11 15 04 CDR Yes.

03 11 15 05 CMP Good. ...

03 11 15 24 CDR Did you get this ... on, Jim?

03 11 15 27 LMP Yes, but I never could tell ..., when it went on.

03 11 15 31 CDR Okay.

TIME SKIP

03 12 15 25 CMP Okay. LASER ALTIMETER, ON.

03 12 15 27 CDR Yes.

03 12 15 28 CDR MARK.

03 12 15 29 CMP Okay, let me talk to Karl here for a minute. Houston, 15.

03 12 15 40 CMP Okay, Karl. I got a few numbers for you on the extension time. We started the whole thing off at 84:06:30 and got the covers open, the mapping camera extended, and the extension was about 3 minutes instead of 4. And we deployed the gamma ray and the mass spec booms for a barber pole plus 2 seconds. The gamma ray - turned barber pole after 6 seconds, and the mass spec turned barber pole immediately. And I was suspicious of the mass spec, so we tried it again and got the same results. Turned the X-ray on at 84:15:10 and the laser altimeter on at 84:15:30.

03 12 16 30 CMP Looks like that stuff's working fine. Tch, tch.

03 12 16 32 CDR Great! Super!

03 12 16 34 LMP Good enough.

03 12 16 36	CMP	That's it. Verify DSE tape motion at 84:20, and then we get the cameras ready for terminator photos.
03 12 16 44	CDR	That a boy!
03 12 16 50	CMP	Pan camera, we go - we already got our terminator photos. Did you get - Let's see, we want MAG R. That's this MAG here.
03 12 17 07	CDR	With the Hasselblad? You got the Hasselblad over there?
03 12 17 12	CMP	Yes. And, let's see, we want the Hasselblad 80 millimeter, intervalometer - -
03 12 17 21	CDR	Let's see, intervalometer's down there, Jim, in the - Let's see - It's in the camera - It's right in front of the camera compartment.
03 12 17 36	CMP	Oh, boy.
03 12 17 38	CDR	It's right there; that's it.
03 12 17 43	CMP	Okay. What do you want to do now, get the Hasselblad?
03 12 18 01	LMP	Jim, you're all right.
03 12 18 08	CMP	Well, the way to do that is just to play it straight from now on.
03 12 18 17	CMP	... I need somebody to take care of me.
03 12 18 30	CMP	...
03 12 18 31	LMP	Yes.
03 12 18 33	CMP	... an earful of that. 15, Roger. That's verified. Is that right, Dave?
03 12 18 42	CDR	Yes.
03 12 18 46	LMP	If ... orders, I can get it.
03 12 18 49	CDR	Okay.
03 12 19 01	CMP	Man, that's really good and stuck!

03 12 19 04 LMP ... all right.

03 12 19 06 CMP Pork and scalloped potatoes!

03 12 19 15 CDR You'll have what?

03 12 19 18 CMP I'm going to order pork and scalloped potatoes; I don't whether you do or not, but I am.

03 12 19 23 CDR Okay, f - 2.8, 1/250th, and infinity. Take six frames. Okay. Right out of this window here. And we're going to get the pan camera going in there, too.

03 12 19 54 CMP ...

03 12 20 00 CDR That's frame number - 14.

03 12 20 35 CMP ...

03 12 20 36 LMP That's right (laughter).

03 12 20 38 CDR We both like to hear that (laughter).

03 12 20 46 CMP Now, I'm going to show you how I'm going to handle this stuff here. Well, it looks like we just lost them. (Cleared throat).

03 12 21 14 CMP That won't be the same from now on.

03 12 21 17 CDR It won't?

03 12 21 18 CMP No. Minus 5 and 25.

03 12 21 25 CDR ...?

03 12 21 27 CMP Yes. Because we're in SIM bay attitude now.

03 12 21 31 CDR ... A and B.

03 12 21 32 CMP That's the stowed position only. It - it's minus 5 and 25 for REACQ when we come around the other side.

03 12 21 39 LMP Okay. ...?

03 12 21 41 CMP Yes.

03 12 21 45 LMP I'll tell you, this Moon flying could be fun.

03 12 21 48 CMP This what?

03 12 21 49 LMP I said, "This Moon flying could be fun."

03 12 21 50 CMP Yes, yes, yes, yes.

03 12 21 53 CDR Hey, listen, Al, we got to get the pan camera going here, right?

03 12 21 57 CMP Okay, T-start is the (cleared throat) - -

03 12 22 01 CDR ...

03 12 22 03 CMP Yes. T - T-start is the big time, and everything's hinged around T-start, so I take that time and punch it into P30 (cleared throat). And just load NOUN 33 to that time.

03 12 22 19 CDR ...

03 12 22 23 CMP We're gaining 4 - plus 42 23, I guess.

03 12 22 40 CMP Yes, I'm going to do it like that on all of them. Now, when you come up on a thing like that, EL says T-start minus 1:40 -

03 12 22 57 CDR Yes.

03 12 22 58 CMP Well, it's right on the DSKY there.

03 12 23 00 CDR ...

03 12 23 02 CMP And the MAPPING CAMERA, IMAGE MOTION, ON. Talkback barber pole 3 to 5 seconds, then gray. That can be done anytime; that's not important. EL OFF at T-start; MAPPING CAMERA, ON, at T-start; PAN CAMERA, OPERATE, at T-start. Jesus, they got all kinds of things going on here at T-start. MOTION INCREASE - talkback barber pole plus 2 steps. I better do that mapping-camera thing.

03 12 23 26 LMP ...

03 12 23 34 CMP You got 18 minutes ... - If you'll take the EL, and all you got to do is - point the - point the

Hasselblad straight down and start the intervalometer going, and start it at - at - at minus 1:40 on the clock and stop it as zero.

03 12 23 48 LMP All right.

03 12 23 52 CMP And it would be much appreciated.

03 12 23 56 LMP ...

03 12 23 57 CMP Okay.

03 12 24 04 CDR Jim, is my spoon up there somewhere? Spoon. Yes, it should be back in there.

03 12 24 18 LMP ...

03 12 24 22 CDR Find it anywhere?

03 12 24 38 CMP (Laughter) No, I'm not. I just didn't want to get in your way, believe it or not.

03 12 24 57 CMP Ah, let's see; yes, we're ready to go over here; 84:24; at about 84:33, we better do all that business. In the meantime, grab a bite. What are we having?

03 12 25 14 CDR Pork and scalloped potatoes.

03 12 25 15 LMP It's not bad.

03 12 25 16 CDR You know, I don't know why it is, every night at this time, my nose gets stuffy.

03 12 25 18 LMP Mine does, too.

03 12 25 20 CDR Every night, my - my nose starts getting stuffy along about this time, and then it cleans up after a bit.

03 12 25 25 LMP ...

03 12 25 27 CDR Yes, give me another squirt of hot juice there - when you get a chance.

03 12 25 38 CDR Hey, Jim, you know what I do tomorrow?

03 12 25 41 LMP Can't guess.

03 12 25 42	CDR	Let's go shoot a landing. I'm ready. I'm ready to put that baby right in there, right now. I haven't had a TV flight in months.
03 12 25 59	CMP	Yes, sir, you better. You'll lose you ...
03 12 26 02	LMP	That's right.
03 12 26 56	CMP	Oooh, that one's stretched. Pork and scalloped potatoes!
03 12 27 02	CDR	Sounds good.
03 12 27 03	CMP	Just like down home.
03 12 27 06	CDR	Mm-hmm.
03 12 27 25	LMP	...
03 12 27 30	CDR	(Laughter) Yes, you - you know, it really works - works just fine if you - if you pop it and just keep pulling.
03 12 27 43	CDR	Hey, Jim?
03 12 27 47	LMP	... water here ...
03 12 28 30	LMP	... I think, the first thing I'm going to do when we get back?
03 12 28 34	CDR	What's that?
03 12 28 35	LMP	Have a beautiful night in Tahiti.
03 12 28 37	CMP	Hey, you're on, buddy. You're on - you're on! ...
03 12 28 41	LMP	No, really. You ought to really think about it.
03 12 28 44	CDR	Me, too. Big airliner.
03 12 28 47	LMP	Without the aviation.
03 12 28 49	CDR	Hey, you know what they tell you when you get to the ...?
03 12 28 50	CMP	No.
03 12 28 51	CDR	...

[redacted]

03 12 28 53	LMP	Is that right?
03 12 28 54	CDR	... They got up a special menu; it has everything that you want on it. You can eat steak and eggs ...
03 12 29 05	LMP	Is that right?
03 12 29 06	CDR	... steak and eggs, or scrambled. ...
03 12 29 12	CMP	You don't ... scrambled eggs, do you, Jim?
03 12 29 15	LMP	Yes.
03 12 29 16	CMP	...
03 12 29 18	CDR	Huh.
03 12 29 19	CMP	...
03 12 29 22	LMP	All right.
03 12 29 23	CMP	...
03 12 29 24	LMP	(Laughter)
03 12 29 27	CMP	..., Dave.
03 12 29 28	LMP	(Laughter)
03 12 29 30	CDR	You've been away too long, Jim!
03 12 29 32	LMP	(Laughter)
03 12 29 35	CDR	Golly.
03 12 29 38	CMP	Yes. ...
03 12 29 58	CDR	Is that all we get to eat?
03 12 30 01	LMP	Yes, I think so. ...
03 12 30 08	CMP	We ought to be about through with that food locker.
03 12 30 38	CDR	... pictures. Do we just take them from straight down?
03 12 30 42	CMP	...
03 12 30 54	CMP	... you want to ... You - you got that ...?

03 12 31 21	CMP	Okay, there's REV 3 ...
03 12 31 25	CDR	Take it out of window 4.
03 12 31 30	CMP	These will be the LM. You got all of them?
03 12 31 32	CDR	Yes.
03 12 31 33	CMP	And right at - the start of the ... You want to start looking out the window, window 4. ...
03 12 31 44	CDR	...
03 12 31 49	CMP	And then you want to ... off ...
03 12 31 54	CDR	That's right. Switch them back in stereo now?
03 12 32 00	CMP	Yes. ...
03 12 34 11	CMP	... now. ...
03 12 34 38	CMP	You know, that feels funny to look down.
03 12 34 41	CDR	Yes, ...
03 12 36 03	LMP	...
03 12 36 05	CDR	What's wrong, Jim. ... doing the dishes?
03 12 36 08	LMP	...
03 12 36 34	CDR	...
03 12 36 36	CMP	...
03 12 36 44	CDR	...
03 12 36 56	CDR	I got mine right over to here.
03 12 37 09	CDR	Yes, I have them.
03 12 38 44	CDR	Okay. ...
03 12 38 59	CMP	Ah, man. ...
03 12 39 15	CDR	Looks to me like we're roll.
03 12 39 18	CMP	We're roll.

03 12 39 19	LMP	Yes.
03 12 39 22	CDR	Is - is this picture supposed to be an oblique?
03 12 39 28	CMP	It's not a - a vertical picture.
03 12 39 30	CDR	It's an oblique picture, really.
03 12 39 36	CMP	Minus 1:40?
03 12 39 41	CDR	Okay. ...
03 12 39 47	CMP	Straight down?
03 12 40 50	CMP	No, you're ...
03 12 41 03	CMP	Pretty dark.
03 12 41 25	CDR	Yes. Okay. I see where we are. Okay. ...
03 12 41 30	CMP	Yes.
03 12 41 34	CDR	Yes, but I - I seem to have it located myself here.
03 12 41 37	CMP	Oh.
03 12 41 38	CDR	I don't ..., but it's dark in here.
03 12 41 51	CMP	Nassau Bay was in the dark, I'm sorry to say.
03 12 41 55	CDR	Yes.
03 12 42 05	CMP	...
03 12 42 43	CDR	I want to take one more for good measure - -
03 12 42 46	CMP	All right.
03 12 42 47	CDR	- - but now it's getting in an area where you're getting something.
03 12 43 02	CDR	Okay.
03 12 44 11	CMP	Okay, let me turn this over here on the - Let me put this back under here - the bracket; it's a good place for it to be.
03 12 44 38	CDR	Okay. ...

03 12 44 40	LMP	Your next ... - is -
03 12 44 56	CDR	... 228.
03 12 44 58	CMP	But that's a - that's a good place for it.
03 12 45 03	CDR	Yes. Good idea. Run them back in here.
03 12 45 11	CDR	Really?
03 12 45 14	LMP	Yes.
03 12 45 20	CMP	Oh, ... I'm starving.
03 12 45 29	CDR	Okay.
03 12 45 30	CMP	Give me a lunch pack, and I'll eat it.
03 12 46 08	CDR	What is it?
03 12 46 10	CMP	Meatballs and sauce.
03 12 46 37	CDR	... Need any help?
03 12 46 46	CMP	Do what?
03 12 46 53	CDR	Oh, isn't that sweet?
03 12 47 28	CDR	You want me to move? You want to get over here?
03 12 47 47	LMP	...
03 12 47 49	CMP	Meatballs and sauce.
03 12 47 51	LMP	Give me a spoon ... You got something for those?
03 12 47 59	CDR	No wonder you never lose it.
03 12 48 01	LMP	...
03 12 48 24	CDR	One thing you're going to learn how to do is fly upside down.
03 12 48 26	LMP	(Laughter)
03 12 48 45	CDR	Yes. Yes. You'll be able to fly right-side up.
03 12 49 12	LMP	...

[redacted]

03 12 49 21	CMP	Now I can see a bunch of ...
03 12 49 25	LMP	What ...?
03 12 49 27	CMP	... Put it on the ...
03 12 49 49	CDR	Okay. Let me go to the movie.
03 12 49 58	CMP	No, by golly, there are lineaments down there all over the place, going - Well, northeast - Yes, northeast, southwest. See it? Right up on the ridge. Right along all the ..., by golly. Look at that.
03 12 50 16	CDR	Look out the window, Al.
03 12 50 18	CMP	What's over there?
03 12 50 19	CDR	What? Right here. Look out the center window, right down this way. We'll be parking right over - right over the grid.
03 12 50 30	CMP	You mean right over the - the ridge here? Right along the lunar ...
03 12 51 13	CDR	As long as you ... having a - the ground track that changes every rev, you're never going to get tired of looking at new things. You know, you'll have something new to look at the whole way.
03 12 51 41	CDR	That looks dangerous.
03 12 51 42	LMP	(Laughter)
03 12 51 43	CDR	You know, I about had meatballs all over the place.
03 12 52 02	CDR	What are you waiting for 2 minutes from now?
03 12 54 12	LMP	...
03 12 54 59	CMP	Yes. I'll ... a couple ...
03 12 55 04	LMP	...
03 12 55 10	CMP	I didn't mean to.
03 12 55 24	CMP	One minute to go.

03 12 55 42	CDR	You want me to get the mass spec and do what?
03 12 55 43	LMP	No, the boom out.
03 12 55 44	CDR	Oh.
03 12 56 25	CDR	Well, I was just thinking about that. I think what we need to do - is - You might take a little bath ... By golly, let's go do some around the Moon ...
03 12 56 42	LMP	One.
03 12 56 48	CDR	Huh?
03 12 56 49	CMP	... putting them on.
03 12 56 57	CDR	I figure we're far enough ahead - now. You can stop it - if you want to, you know, to live it up. Really live it up. Get clean, fresh -
03 12 57 42	LMP	...
03 12 57 45	CMP	Oh, you might ..., I guess.
03 12 57 48	LMP	Okay.
03 12 58 50	CDR	...
03 12 58 58	CDR	Oh, look at - look at the one coming up, Al. Look at the debris in the bottom of that crater and over at the side there. Look at that!
03 12 59 10	CMP	... a tree stump ...
03 12 59 13	LMP	Yes.
03 12 59 14	CDR	It's got a big ... on the side.
03 12 59 17	CMP	...
03 12 59 19	CDR	... Check The Bright One? Boy, look at the junk coming out of it.
03 12 59 54	CDR	See this one wall here - how it's completely collapsed, straight down, and a bunch - bunch of little benches go down even farther - towards the bottom.

03 13 00 23 CMP The way that one ...

03 13 00 25 CDR Which direction?

TIME SKIP

03 22 05 20 LMP Your candy, Dave, is in that bag over there. Your breakfast is right here.

03 22 05 25 CDR Thank you. You're a good guy.

03 22 05 27 LMP Well, looks - looks like it's about the best way to do it here.

03 22 05 57 CDR No, 33.

03 22 05 59 LMP Is it actually a what, plus or minus - -

03 22 06 00 CDR What?

03 22 06 01 LMP - - 9?

03 22 06 02 CDR Yes.

03 22 06 05 LMP Yes; 33's not so bad, except a -

03 22 06 08 CDR Plus or minus 9; that's a 24.

03 22 06 12 LMP ...

03 22 06 19 CDR I don't know whether we can or not. Let me ...

03 22 06 29 LMP Put a - put a 50-degree mark on the window.

03 22 07 58 CDR Yes. I know it, I want to get ahead. We got - got time to do it now. I just like to get everything done we can, and I'd like to be sitting and waiting.

03 22 09 47 CMP We should have turned that cabin fan off last night. It wouldn't have been so cool - been less noisy.

03 22 09 58 CDR Well, I tell you, I woke up at one time - and I listened to the noise, and I thought the thing was off. I thought to myself, "Great, somebody got up and turned the cabin fan off."

03 22 10 11 LMP I was burning up down there. I just about got up and got the hoses - ... them down there.

03 22 10 16 CDR Boy, you should have done that before you went to bed. Get yourself some air.

03 22 10 19 LMP Yes.

03 22 10 26 CDR Did you get any sleep, Jim?

03 22 10 28 LMP Yes, about like the first night.

03 22 10 31 CDR Well, you should have got up and got the hoses then. You need your sleep, babe.

03 22 10 39 LMP Yes.

03 22 10 58 CDR Huh! We're moving it. I can't believe it!

03 22 11 11 CDR The ...! That biomed is working.

03 22 11 15 LMP Al has them.

03 22 11 16 CDR Oh, thanks. Son of a gun.

03 22 14 07 CDR Well, I reckon what we ought to do is the burn, and then get suited. Burn and then get suited, you know - finish up the burn. You can put on your suit; get it out of the way. Go clear out the tunnel.

03 22 15 58 CDR Yes. It really is.

03 22 16 07 LMP I couldn't tell whether the spacecraft was moving or whether Dave was shifting in his couch.

03 22 16 24 CDR Yes, we must have used a fair amount.

03 22 16 27 LMP Need some more? I can get it for you.

03 22 16 31 CDR ... any more ...

03 22 16 38 LMP You ready?

03 22 16 40 CDR Yes. Don't push, just let it go, Jim. Pull it out and let it - and release it. Pull the handle out.

03 22 16 48 LMP Again?

[redacted]

03 22 16 49	CMP	Just pull out - now let go. That a boy. You don't - you don't push it in. Have you been pushing it in?
03 22 16 55	LMP	Sometimes it sticks.
03 22 16 56	CMP	No, it never - no, it - it - you - it counts up and - it has a little accumulator in there.
03 22 17 06	LMP	Here.
03 22 17 09	CDR	Now, just pull it out and - and let it - and leave it go.
03 22 17 12	LMP	Okay.
03 22 17 13	CDR	The accumulator builds up, and then it'll shoot you. That's where you get your measurement.
03 22 17 29	CDR	Take a shot of cold right here.
03 22 17 31	LMP	All right.
03 22 17 32	CDR	... than caught short.
03 22 17 37	LMP	Ready?
03 22 17 38	CDR	Yes.
03 22 17 39	LMP	...
03 22 20 20	CMP	...
03 22 21 23	CDR	... hot chocolate I just grabbed?
03 22 21 25	CMP	Yes, sure.
03 22 21 26	LMP	...
03 22 21 35	CDR	... this good stuff is for the kid's stamina.
03 22 22 00	CDR	That all right?
03 22 22 06	LMP	The opposite end.
03 22 22 10	CDR	There. Eat it.
03 22 24 34	LMP	Al, I'll leave some bacon squares for you.

03 22 24 49 CDR ... remembered.

03 22 24 54 CMP ...

03 22 24 55 CDR 100 hours and 13 minutes, I think we ...

03 22 24 58 CMP Hmm.

03 22 25 31 CDR You like bacon squares? I'll leave you some, too.

03 22 25 35 CMP Too much salt. Too dry and salty for a whole meal. I don't ...

03 22 27 11 CMP Ten minutes until AOS. Huh!

03 22 27 15 LMP You going to get this pad on the next rev?

03 22 27 17 CMP Mm-hmm.

03 22 27 18 CDR Al, why don't you and I switch off here when ...

03 22 27 24 LMP I'd like to take a crap if I can work it in, Dave.

03 22 27 28 CDR Okay.

03 22 27 29 LMP Tell me when.

TIME SKIP

03 23 38 42 LMP Al, can you get those?

03 23 38 44 CMP What?

03 23 38 45 LMP LOGIC POWER, two, to DEPLOY/RETRACT.

03 23 38 47 CMP Yes.

03 23 38 48 LMP I can't get in there among all the helmets.

03 23 38 59 CMP DEPLOY/RETRACT.

03 23 39 30 CDR You got another 15 degrees to go, Al.

03 23 39 32 CMP Okay.

03 23 39 33 CDR Jim, could you - -

03 23 39 35 LMP Yes.

03 23 39 36 CDR - - go ahead and finish what you're doing; I'm sorry.

03 23 40 01 LMP Al, you've got to change those LOGIC POWERs, too, and go back on OFF; I'm sorry. I was thinking we had to retract the booms. They're already retracted.

03 23 40 13 CMP Okay. I'll be glad when I get rid of you guys. I won't have to worry about those switches anymore.

03 23 40 18 CDR You won't, huh?

03 23 40 19 CMP Huh-uh.

03 23 40 20 CDR Oh, that's right. You don't have any maneuvers.

03 23 40 22 CMP No, I - I laid it on them. I said, "Those switches, as long as I'm by myself, are going to stay in DEPLOY/RETRACT all the time."

03 23 40 30 CDR That's good. Okay, you're almost there.

03 23 40 32 CMP Okay.

03 23 40 36 CDR And I'll tell you what. Why don't you do your P52, and just stay down there, and I'll do a P30 - -

03 23 40 42 CMP All right - -

03 23 40 43 CDR - - since we're at the attitude - -

03 23 40 44 CMP Yes.

03 23 40 45 CDR - - and let you do the star check.

03 23 40 46 CMP All right. ... warning lines. Jim can pick up the checklist.

03 23 40 54 CDR Okay, you're there.

03 23 40 55 CMP Good.

03 23 40 56 CDR I'll - I'll get the numbers. They recommend 25 and 26.

03 23 40 58 CMP Right. If 25 doesn't come up, I'm going to punch it in.

03 23 41 02 CDR What - -

03 23 41 03	CMP	Twenty-five.
03 23 41 04	CDR	Okay. Well, you've got 16 minutes, so you're in good shape.
03 23 41 10	CMP	Okay. Twenty-five is Acrux.
03 23 41 25	LMP	Do you want to start an EMS DELTA-V test over there - -
03 23 41 26	CDR	Yes.
03 23 41 27	LMP	- - and null bias check.
03 23 41 28	CDR	Okay.
03 23 41 29	LMP	Okay.
03 23 41 37	CMP	Twenty-six; comes up the right stars.
03 23 41 41	CDR	Good.
03 23 41 44	CMP	And 26 is Spica.
03 23 42 03	CMP	Oh, yes, there's Gienah; this must be Spica.
03 23 42 26	CDR	Four balls 1.
03 23 42 27	CMP	Beautiful.
03 23 42 29	CDR	Torquing angles.
03 23 42 32	CMP	One, 2, 3 - Okay, I'll torque them on a minute.
03 23 43 03	CDR	Okay.
03 23 43 12	CMP	What's the sextant star?
03 23 43 14	CDR	Well, wait a minute. Oh, you want to do it right here? Okay, sextant star is number 30.
03 23 43 23	CMP	Aaah.
03 23 43 24	CDR	Huh.
03 23 43 38	CDR	Take a look at your shaft and trunnion, if you can.
03 23 43 41	CMP	Yes.

03 23 43 43	CDR	What's that? NOUN 99?
03 23 43 45	CMP	Yes. Let's see - 90 - -
03 23 43 48	CDR	Okay, it should be 192.8 and 111. You've got 192.1 and 114.
03 23 43 53	CMP	That's pretty close.
03 23 43 54	CDR	Yes, that's at 192 - 192.8?
03 23 44 05	CDR	What are you doing?
03 23 44 07	CMP	...
03 23 44 11	CDR	Why don't we just - Let me do a - -
03 23 44 13	CMP	Do you want to just take those numbers?
03 23 44 14	CDR	No, let me do a P - P30-P41 real quick and get you to - the right attitude.
03 23 44 19	CMP	Well, we want to do the sextent star check on their attitude anyway.
03 23 44 24	CDR	It doesn't matter.
03 23 44 25	CMP	Yes. Well, wait - -
03 23 44 26	CDR	111 - 192.8 - -
03 23 44 27	CMP	Okay.
03 23 44 28	CDR	- - and 111.
03 23 44 38	CDR	There, I - you're in good shape.
03 23 44 45	CMP	Yes, it's there.
03 23 44 47	CDR	Okay. Good. Okay, why don't you clean up down there? I'll do a 30-41.
03 23 44 55	CMP	Okay.
03 23 45 04	CDR	I want to go to POO, okay?
03 23 45 05	CMP	Okay, you got it.

03 23 45 21	CDR	3.1, is that all?
03 23 45 23	LMP	Yes.
03 23 45 28	CMP	They're really getting down to nitpicking. Okay, I'm all cleaned up down here, Dave.
03 23 45 35	CDR	Okay.
03 23 45 45	CDR	Your TSBs are getting pretty full, aren't they?
03 23 45 48	LMP	I think there's a lot of space in the bottoms of them.
03 23 45 51	CMP	Well, if you guys leave today, I'll - I'm going to get the JETT bag out and start filling it up with that stuff.
03 23 45 55	LMP	Yes.
03 23 45 58	CDR	Okay, we're in P41. Trim it out. There, attitude looks pretty good. Okay. Why don't you come up here and do your EMS check?
03 23 46 09	CMP	Okay, Dave.
03 23 46 21	CDR	3.1. God, that's a nothing.
03 23 46 26	CMP	Yes, they're really splitting hairs.
03 23 46 29	CDR	That's all right, I wouldn't feel too comfortable at 24,000 feet on the verge of a 22,000-foot mountain.
03 23 46 39	CMP	Yes, well, this'll bring you up 10,000 feet.
03 23 46 42	CDR	Yes.
03 23 46 44	CMP	Or thereabouts.
03 23 46 48	CDR	Are you running a null bias check here?
03 23 46 49	CMP	No. I just started to set it up now when you got - -
03 23 46 53	CDR	Oh. Okay.
03 23 46 54	CMP	- - the numbers in.
03 23 46 55	CDR	Did you run the DELTA-V test?

03 23 46 56 CMP Yes. That's good. It's a minus 21.9.

03 23 46 59 LMP We've got 10 minutes to go.

03 23 47 01 CDR You clock's set, but for some reason it isn't set exactly right. I think that timer drifts on you.

03 23 47 08 LMP Drifts? Yes.

03 23 47 13 CMP Yes. I suspect it very well might.

03 23 47 21 LMP Have we got the DAP set in there that we want?

03 23 47 24 CMP Yes.

03 23 47 25 LMP Four jets?

03 23 47 26 CDR Four jets.

03 23 47 30 CMP ... start.

03 23 47 32 CDR Okay, we got BMAG - -

03 23 47 33 CMP Yes, I've got 21101.

03 23 47 35 CDR Let's go back to - -

03 23 47 36 CMP That gives us four jets.

03 23 47 38 CDR Yes. Let's go check the waste - -

03 23 47 39 CMP I ch - I put that in.

03 23 47 40 CDR You already did that?

03 23 47 41 CMP Yes.

03 23 47 42 CDR Okay.

03 23 47 43 CMP That's the only thing there was to put in.

03 23 47 44 CDR Okay. Roll, pitch, and yaw looks okay.

03 23 47 52 LMP Okay, you want to get ROT CONTROL POWER, NORMAL, two, to AC/DC?

03 23 47 56 CDR AC/DC.

03 23 47 57	LMP	ROT CONTROL POWER, DIRECT, two, to MAIN A, B.
03 23 47 58	CDR	MAIN A, MAIN B.
03 23 48 02	LMP	I didn't get the chance to check the DET.
03 23 49 09	CDR	Looks like it's about 3 or 4 seconds off, and I'm really not sure I understand why.
03 23 48 17	CMP	Yes, you can turn it right and the next time you look it's - Oh, ..., forgot to give you that.
03 23 48 26	CDR	That's all right. I put your film in your TSB.
03 23 48 29	CMP	Okay.
03 23 48 32	LMP	Okay BMAG MODE, three, are RATE 2.
03 23 48 34	CDR	They're in RATE 2.
03 23 48 36	LMP	And we're at CMC in AUTO?
03 23 48 38	CDR	Yes, yes.
03 23 48 39	LMP	We'll wait until the DELTA-V test is complete to do the trim?
03 23 48 47	CDR	DELTA-V test is complete, and it's .8 feet per second per 100 seconds. It's getting better.
03 23 48 54	CMP	Yes. ...
03 23 48 56	LMP	Okay, do you want to - do you want to trim?
03 23 49 03	CDR	Huh? Trim?
03 23 49 04	LMP	I said you want to set DELTA-V_C, I suppose?
03 23 49 08	CDR	Ah, let's set - Yes, better - Your 100 is probably good. DELTA-V_C should be 3.1.
03 23 49 15	CMP	Yes, let's -
03 23 49 22	CDR	You know what? That's yours.
03 23 49 31	CMP	Okay, 3.1. I've got a 103.1 set in there.

03 23 49 35	LMP	Okay. EMS FUNCTION, DELTA-V.
03 23 49 36	CDR	DELTA-V.
03 23 49 39	LMP	Okay, do you want to trim it?
03 23 49 42	CDR	Yes, we might as well. Get it all in plus-X. Okay?
03 23 49 46	CMP	Yes. Okay, push up close to ... Yes.
03 23 49 55	CDR	Okay, burn time is 20 seconds.
03 23 50 00	CMP	Okay.
03 23 50 01	LMP	Spacecraft roll alined, Al?
03 23 50 04	CMP	Alined.
03 23 50 06	LMP	SPACECRAFT CONTROL, CMC in AUTO.
03 23 50 08	CMP	CMC, AUTO.
03 23 50 09	LMP	MANUAL ATTITUDE, three, to RATE COMMAND.
03 23 50 11	CDR	RATE COMMAND.
03 23 50 12	LMP	DEADBAND, MIN.
03 23 50 13	CDR	MIN.
03 23 50 14	LMP	RATE, LOW.
03 23 50 15	CDR	LOW.
03 23 50 16	LMP	BMAG MODE, three, ATT 1/RATE 2.
03 23 50 17	CDR	ATT 1/RATE 2. Wellll - -
03 23 50 18	LMP	GDC ALIGN.
03 23 50 20	CDR	What happened to your TRANSLATION CONTROL POWER?
03 23 50 23	CMP	Yes, that's what I'm wondering.
03 23 50 24	CDR	Where's the THC POWER? Well, now -
03 23 50 29	LMP	Get that down there.

03 23 50 30	CDR	Oh, down there? Okay.
03 23 50 31	LMP	Five minutes.
03 23 50 32	CDR	(Sigh)
03 23 50 33	CMP	Why - why go ATT 1/RATE 2, though?
03 23 50 34	LMP	Do it for a GDC ALIGN. That doesn't make sense.
03 23 50 37	CDR	No? No, it sure doesn't, does it?
03 23 50 39	CMP	Why the GDC ...?
03 23 50 55	LMP	And we're standing by for 5 minutes.
03 23 50 58	CMP	Okay, we're at 6 minutes.
03 23 51 21	CMP	Have you timed this thing, Dave?
03 23 51 23	CDR	Yes.
03 23 51 24	CMP	Okay.
03 23 51 35	CMP	GDC alined.
03 23 51 37	LMP	Okay. Standing by for 5 minutes.
03 23 51 39	CMP	Okay, we're at 5 minutes.
03 23 51 40	CDR	Okay, at some point you got to go ATTITUDE 1/ RATE 2 to have your SPS - -
03 23 51 46	CMP	Right.
03 23 51 47	CDR	- - in attitude hold. Let's not call down anymore. So you might as well do it now.
03 23 51 51	LMP	... ATT 1/RATE 2, ... 42, GDC ALIGN.
03 23 51 54	CMP	I don't understand that.
03 23 51 56	CDR	I don't either.
03 23 51 57	CMP	Okay, we're in ATT 1/RATE 2, just in case we need it.
03 23 52 04	CDR	Okay, we're at 5.

[redacted]

03 23 52 05 LMP Okay, TRANSLATION CONTROL POWER, on.

03 23 52 08 CMP TRANSLATION CONTROL POWER, on.

03 23 52 09 LMP Hand controllers, armed.

03 23 52 11 CMP Armed.

03 23 52 15 LMP Okay. Did you get the 85 display? I guess it's - -

03 23 52 18 CMP Yes.

03 23 52 19 LMP - - ...

03 23 52 20 CMP I got the ... right now.

03 23 52 25 CDR Okay. After the burn, there's not much. I think we're in good shape. I'll tell you what we might do. After the burn, let's pressurize the LM.

03 23 52 41 CMP Yes.

03 23 52 42 CDR And let you get suited. And it might be better if you just pull your suit out and stuck it in the corner and got all that stuff out of the tunnel. ..., we can put it here and - -

03 23 52 54 CMP Yes.

03 23 52 55 CDR - - down under that couch, where we've been putting it.

03 23 52 56 CMP And try to ... it back. Yes.

03 23 52 58 CDR Yes, and I think there's enough room for you to get suited there.

03 23 53 01 CMP Yes, I think so.

03 23 53 02 CDR Then we can start working on that ... I'd like to do that landing site thing - the P24.

03 23 53 22 LMP And I'll be getting all the transfer gear.

03 23 53 24 CDR Yes, get all the transfer gear. Yes. As a matter of fact, you can start taking it over, once we get the tunnel opened up.

03 23 53 31 LMP Yes.

03 23 53 32	CMP	Boy, I tell you, we go by that landing site awful fast.
03 23 53 36	CDR	We really do.
03 23 53 37	CMP	Yes, you really go zipping by.
03 23 53 38	CDR	Did you get a good picture of it?
03 23 53 39	CMP	No.
03 23 53 40	LMP	It was a little too dark.
03 23 53 41	CMP	I just - All I could do was point down, and I just picked up the rille going past the edge of the window. I was just too slow getting to it, so - I knew I didn't have much time, but I didn't know it was that fast. I didn't realize we were going to get through it that quickly.
03 23 53 55	CDR	Did it look low?
03 23 53 56	LMP	Yes.
03 23 53 57	CDR	Yes. You know, doggone it - -
03 23 53 58	LMP	The sector's right there, boy.
03 23 53 59	CDR	- - ... In the LM when - when we'd do that, we'd run it several times across PDI with the window. We should have done that in the LMS with you. I didn't - I didn't - -
03 23 54 07	CMP	We did.
03 23 54 08	CDR	- - ... about the - No, you never came over there and watched us do it from 9 miles.
03 23 54 11	CMP	Oh, I - -
03 23 54 12	CDR	...
03 23 54 13	CMP	Oh, I see. Yes.
03 23 54 14	CDR	Because it really moves.
03 23 54 15	CMP	Yes.
03 23 54 16	CDR	Really give you a feeling for it.

03 23 54 17	CMP	Yes.
03 23 54 18	CDR	I never thought about the TV pass, though, to tell you the truth.
03 23 54 30	CDR	Tell them it went awful fast?
03 23 54 33	LMP	They could tell, I think (laughter).
03 23 54 34	CMP	Yes.
03 23 54 36	CDR	Could you - did you have any - -
03 23 54 37	CMP	Well, all - all I could do was stick it in the window and catch - catch the rille going out of the edge of the picture, and that was it, Dave. So, all I saw was - all I saw was St. George and - and Elbow Crater.
03 23 54 47	CDR	Could you see them?
03 23 54 48	CMP	Yes. And they were gone.
03 23 54 51	CDR	Did you get a good chance to point it at the Apennines coming up, though?
03 23 54 55	CMP	Yes. Yes.
03 23 54 56	CDR	Did you see the mountains on the horizon and all that stuff?
03 23 54 58	CMP	Yes.
03 23 54 59	CDR	Well, that ought to be pretty impressive. Well, we're down to 2 minutes, Jimmy.
03 23 55 14	CDR	And don't - don't forget on that Activation Checklist that one of them has that ECS stuff, and the other's got - Make sure we have both of those. Yes.
03 23 55 44	CDR	One minute. Okay, 20-second burn ... Jim will count because your clock is sort of ...
03 23 55 56	CMP	Yes. ... - -
03 23 55 57	CDR	... on that, Jim?
03 23 56 29	SC	...

03 23 56 30 CMP Okay.

03 23 56 31 LMP ...

03 23 56 32 CMP 43.

03 23 56 33 LMP Roger.

03 23 56 36 CDR Ten seconds. Ready -

03 23 56 45 CDR MARK; the burn time. DSKY's count?

03 23 56 51 CMP Roger. So is the EMS.

03 23 56 54 LMP Here's the countdown. ... 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, and -

03 23 57 05 LMP ZERO.

03 23 57 06 CDR Now trim it a little bit. Yes, that's ... That's good, Al. ...

03 23 57 10 CMP What did they want it trimmed to?

03 23 57 12 CDR They didn't say. Why don't you - Could you take that to 3/10ths?

03 23 57 14 LMP They didn't want us to trim any - -

03 23 57 16 CMP That's for retrograde ...

03 23 57 18 CDR There you go.

03 23 57 19 CMP Okay.

03 23 57 20 CDR .1, .2, and .0.

03 23 57 23 CMP Okay.

03 23 57 24 CDR Okay, we got everything?

03 23 57 25 CMP Whoo.

03 23 57 26 CDR All the data?

03 23 57 27 CMP Yes.

03 23 57 29 CDR Okay. EMS FUNCTION, OFF.

[redacted]

03 23 57 32	CMP	OFF.
03 23 57 33	CDR	EMS MODE, STANDBY.
03 23 57 35	CMP	STANDBY.
03 23 57 36	CDR	RHC and a THC, lock.
03 23 57 37	LMP	Lock.
03 23 57 39	CDR	TRANSLATION CONTROL POWER, OFF.
03 23 57 41	CMP	OFF.
03 23 57 44	CDR	We got a POO after that?
03 23 57 45	LMP	Yes - yes.
03 23 57 47	CDR	POO and a VERB 66.
03 23 57 49	CMP	Okay.
03 23 57 50	CDR	ROT CONTROL POWER, DIRECT, OFF.
03 23 57 52	CMP	DIRECT, OFF.
03 23 57 53	CDR	BMAG MODE, three, RATE 2.
03 23 57 54	CMP	RATE 2.
03 23 57 55	LMP	TAPE RECORDER going off.
03 23 59 08	CDR	...?
03 23 59 09	CMP	...
03 23 59 10	CDR	Okay, there's a maneuver to P52 high-gain attitude. FDOI [sic] trim required; roll, pitch, and yaw. Well, beautiful, they didn't give us that one. Did they? Did they give us an attitude to go to, Jim - after the burn?
03 23 59 29	LMP	No, I don't think so. It's not on the pad.
03 23 59 45	CMP	We don't have it. Huh.
03 23 59 57	CMP	Well, for God sakes. They forgot it completely.

DAY 5

04 00 00 06	CDR	Okay. They're not too with us this morning.
04 00 00 09	CMP	What - what kind of high-gain antenna angles do we get in this attitude?
04 00 00 15	LMP	Why don't you look for it - -
04 00 00 16	CMP	We'll just stay here.
04 00 00 17	LMP	- - ... 142?
04 00 00 18	CMP	Let's look in the book and see if that's in a clear area.
04 00 00 21	CDR	Which book? Where's the ... at?
04 00 00 23	LMP	Right up there. Do you want - want to clean up of SIM bay here, Dave?
04 00 00 29	CDR	Yes, okay. X-RAY to STANDBY.
04 00 00 33	LMP	X-RAY to STANDBY.
04 00 00 34	CDR	X-RAY - ALPHA RAY/X DOOR to ALPHA ON.
04 00 00 38	LMP	Okay, that is ALPHA ON.
04 00 00 40	CDR	Okay. GAMMA RAY, EXPERIMENT, ON.
04 00 00 43	LMP	GAMMA RAY, EXPERIMENT, ON.
04 00 00 46	CDR	GAINSTEP to shield on.
04 00 00 48	LMP	GAINSTEP to shield on.
04 00 00 50	CDR	MASS SPEC - -
04 00 00 51	LMP	Wait, hold it. GAINSTEP to shield on?
04 00 00 53	CDR	Yes.
04 00 00 54	LMP	Is that the midprogression?
04 00 00 55	CDR	I don't know. What is it?
04 00 00 56	LMP	It's the SHIELD OFF, down.

[redacted]

04 00 00 58 CDR What's that?

04 00 00 59 CMP Shield on for the GAINSTEP.

04 00 01 02 CDR Which position is that?

04 00 01 05 CMP Center.

04 00 01 06 LMP Okay, the shield's on.

04 00 01 07 CDR I don't know. It doesn't say that over there.

04 00 01 08 CMP GAINSTEP is in up.

04 00 01 10 CDR Okay, MASS SPEC EXPERIMENT to STANDBY.

04 00 01 14 LMP Okay, MASS SPEC EXPERIMENT is STANDBY.

04 00 01 19 CDR PAN CAMERA to off.

04 00 01 23 LMP PAN CAMERA - You got the mode? For the PAN CAMERA ... - -

04 00 01 29 CMP It's the ... POWER.

04 00 01 30 CDR Oh, POWER - PAN CAMERA POWER to off. I'm sorry.

04 00 01 32 LMP Verified.

04 00 01 33 CDR All right, that's all.

04 00 01 35 LMP Okay.

04 00 01 52 CDR Okay, let's -

04 00 01 55 LMP What does that look like? I said that to you.

04 00 02 06 CDR Oh, my. Well, let's see. Getting range and no coverage, though. Next thing we go to is landing-site observation attitude at 96:55, which is 015, 290, and 000. So that ought to be a good attitude. You see we come down through here and do all that.

04 00 02 31 CMP Yes.

04 00 02 32 CDR I guess we'd better - -

04 00 02 33 CMP Well, we don't have anything else, do we?

04 00 02 35 CDR S-band. Says P52 HGA attitude, if DOI trim required. Well, we'll give it to him. And the next attitude we have to do - it looks stable for maneuver, because they're surely to give us a - an extra maneuver.

04 00 02 52 CMP ...

04 00 02 57 CDR They didn't give us that. Here we come around here, and the next thing we have to do is burn status - maneuver to this attitude. Okay?

04 00 03 06 CMP Yes.

04 00 03 07 CDR So let's - let's go there.

04 00 03 08 CMP That'll be Charlie there, huh? That's not a good - that's not a good high-gain attitude.

04 00 03 21 CDR It's not?

04 00 03 22 CMP But it's better than the one we've got, though.

04 00 03 24 CDR How can you tell we're there?

04 00 03 25 CMP Huh? Well, the landing-site observation attitude is not a good high gain.

04 00 03 29 CDR Oh, it's not?

04 00 03 30 CMP Huh-uh. The high - -

04 00 03 32 CDR Well, let's - -

04 00 03 33 CMP - - That's - that's corrected better than what we've got.

04 00 03 34 CDR Well, we got OMNI now, anyway, don't we?

04 00 03 36 CMP Yes. Now we can just sit here. You've got OMNI B here or OMNI Charlie in that other attitude.

04 00 03 45 CDR Let's see, we have AOS at 96:30. Okay, and then we only got 20 minutes to maneuver. I guess you're right. I guess that would be better than - kind of - We only have OMNI, but that's too bad, I guess. But at least it's better than this one.

04 00 04 06 CMP Yes.

[redacted]

04 00 04 16	CDR	290, 0 ... the whole 180 degrees down ...
04 00 04 29	LMP	Got a long ways to go.
04 00 04 30	CDR	So we might as well do it. Go to ... Okay. Next order of business is the tunnel.
04 00 04 49	LMP	Al, I want to change lightweights with you. I'm going off comm.
04 00 05 15	CMP	Okay, and I'd better put some biomed on.
04 00 05 17	CDR	Oh, yes, that's right. Why don't -
04 00 05 33	CDR	You're going to have some time - Oh, you got to get your suit on.
04 00 05 46	CDR	Why don't - why don't we do the tunnel and get that stuff in here. I don't think it's going to be in the way too much, once we get your suit out of the way. Oh, do your biomed stuff, and we'll get all the transfer stuff together. Then we'll have it all, and we won't have to do any more shuffling.
04 00 06 16	CDR	I - I'll get it. Jim, go ahead and get the transfer stuff. I'll - That's the wrong thing, Jim. You're in the right wall.
04 00 06 38	CDR	Need any help, Jimmy? What - UCW2 [?]. Oh, that thing. Yes, okay. Where it is? I'll go get it. Oh, I know where it is; it's in A-8.
04 00 07 13	CDR	Whew. (Clanking)
04 00 07 35	CDR	There we go. (Clanking)
04 00 07 52	CDR	What happened?
04 00 08 07	LMP	...
04 00 08 10	CDR	Okay. (Clanking)
04 00 08 37	CDR	Did you leave Al one jettison bag?
04 00 08 44	LMP	Okay, I'll check.
04 00 08 47	CDR	Okay. How many did you have to start with?

04 00 09 05	CDR	(Clanking) No, I really guess not. Okay, we'll just take one. Okay, LM Data File, huh? What should - what should be in it, Jim? Huh? Yes. I know this is in it; I saw it the other day.
04 00 09 33	LMP	...
04 00 09 35	CDR	No, it's - it's an extra one of ours. I had - that's a backup. Command module. I had them put on. (Laughter) It's the only kind I understand. It's not going to work (laughter). Here, I know where I'll put it, right in here. Right there.
04 00 10 01	LMP	...
04 00 10 08	CDR	Okay, let's check it.
04 00 10 27	CDR	Time line. Go. Data Card Book. Go. Okay, go.
04 00 10 41	LMP	...
04 00 10 42	CDR	Got it.
04 00 10 43	LMP	...
04 00 10 45	CDR	Got it.
04 00 10 46	LMP	...
04 00 10 47	CDR	Star charts; you have them.
04 00 11 04	LMP	Get the ...
04 00 11 08	CDR	All right. I'd like to time it ...
04 00 11 26		(Clanking)
04 00 11 39	CDR	Maybe I got a PRD, Jim.
04 00 11 55		(Clanking)
04 00 12 17	CDR	There it is. I've got to get Al's, really. Yes.
04 00 12 37	CDR	What?
04 00 12 39	LMP	...
04 00 12 41	CDR	It wasn't? Why? Really? Oh, let me write this stupid thing down.

[redacted]

[redacted]

04 00 13 07 LMP ...

04 00 13 13 CDR Do you know where your PRD is, Al? Yes, give me to it [sic]. I'm switching you right now.

04 00 13 35 (Clanking)

04 00 13 37 CDR Some day they may want these readings. They're in here. They're in here at the beginning of the day, if you ever get around to it. Okay, Jim, my PRD. I thought I just handed you one. Huh?

04 00 14 11 LMP ...

04 00 14 31 CDR Oh, shoot, I don't see it, Jim. No, don't check it off; we'll look for it, as we go around. Oh, is that the list you're checking? Oh, come on. Okay. Yes. Yes, I put mine on. Yes.

04 00 15 11 LMP ...

04 00 15 14 CDR Yes, we're - Yes, but - Yes, okay. I've got mine in my pocket. Okay. Yes. Got that? Yes. Yes.

04 00 15 42 LMP ...

04 00 15 44 CDR Okay, yes - yes. What I - We also want to take these over and bring the new ones back. CWGs.

04 00 16 04 LMP ...

04 00 16 07 CDR Yes.

04 00 16 11 LMP ...

04 00 16 14 CDR Yes.

04 00 16 15 LMP ...

04 00 16 28 CDR Yes. Yes, we have them on.

04 00 16 31 LMP ...

04 00 16 33 CDR I'm going to have mine in my pocket, in this thing when I bring it over. So I got mine. Do you want to take yours? Okay, it's in the tube, Jim.

[redacted]

04 00 16 48 LMP ...

04 00 16 50 CDR Yes.

04 00 16 53 LMP ...

04 00 16 58 CDR Yes. I was going to put them in my pocket, too, before I got hooked around. Here, I can stick it in this pocket up here - in my strap-on pocket. When are we going to put them over there? Okay.

04 00 17 20 LMP ...

04 00 17 22 CDR Yes, okay.

04 00 17 24 LMP ...

04 00 17 25 CDR Yes, got mine ready to snap on.

04 00 17 27 LMP ...

04 00 17 30 CDR Okay.

04 00 17 32 LMP ...

04 00 17 36 CDR Yes.

04 00 17 38 LMP ...

04 00 17 39 CDR Okay.

04 00 17 41 LMP ...

04 00 17 47 CDR We got both Activation Checklists? Sure, huh? Okay.

04 00 18 12 CDR Huh?

04 00 18 13 LMP ...

04 00 18 14 CDR Yes. Well, all right. We're going to go early.

04 00 18 20 LMP ...

04 00 18 27 (Clanking)

04 00 18 35 LMP ...

04 00 18 39 CDR I'll put it in R-3.

04 00 18 51	CDR	The what?
04 00 19 35		(Clanking)
04 00 19 54	LMP	Get all ...?
04 00 19 56	CDR	Yes.
04 00 19 57	LMP	...
04 00 19 59	CDR	Okay.
04 00 20 05		(Clanking)
04 00 20 07	CDR	Yes.
04 00 20 08		(Clanking)
04 00 20 49	CDR	Well, I don't think we've left you with too much to do, Al. I hope not. Keep an eye on those guys down there.
04 00 21 02	CMP	...
04 00 21 05	CDR	Huh?
04 00 21 06	CMP	...
04 00 21 08	CDR	Yes, they really have.
04 00 21 12	CMP	... watch the systems ...
04 00 21 17	CDR	Let them watch the systems and you do the flying, which is the way it ought to be.
04 00 21 43		(Clanking)
04 00 22 22	LMP	... all through down there?
04 00 22 35		(Clanking)
04 00 22 42	LMP	...
04 00 23 06	LMP	... wait a minute ...
04 00 23 15	LMP	Yes.
04 00 23 18	CDR	Jim, here's your - thing.

04 00 23 53	LMP	...
04 00 24 55		(Clanking)
04 00 25 12	LMP	...
04 00 25 16		(Clanking)
04 00 25 36	LMP	...
04 00 25 39		(Clanking)
04 00 26 20	CDR	... Is this your ..., Jim?
04 00 26 29	LMP	No, I've got it. ...
04 00 26 33	CDR	...
04 00 26 35		(Clanking)
04 00 27 00		(Clanking)
04 00 27 29	CDR	Okay, I guess the - next thing we ought to do - when you get ready - is go through the tunnel. No, I don't need that. Systems Checklist.
04 00 27 58	LMP	I think you had the Systems Checklist, didn't you? Oh, here it is. Okay. Well, that's your job, because - Say again?
04 00 28 15	CMP	...
04 00 28 18	LMP	Yes.
04 00 28 34		(Clanking)
04 00 28 42	CDR	Think we ought to try and get them on the high gain? Hey, Al, you think we ought to try to get them on the high gain?
04 00 29 36	CDR	Well -
04 00 29 37	LMP	I mean - Okay. I could easily go through it, because I could tell which ones to check - skip through. ... get.
04 00 29 50	CDR	Turn around here, Jim.

[redacted]

04 00 30 00 CDR Hey, we're getting them. How about that. Yes. There, got a lock.

04 00 30 13 CDR Roger. Houston; 15 here. We had a good burn and have a burn report for you.

04 00 30 23 CDR Okay. On time; burn time was about 18 or 19 seconds. The residuals were minus .1, plus .2, plus .2; DELTA-V_C was plus .8, and the G&N has us in a 59.4 by 10.3.

TIME SKIP

04 01 54 08 CMP (Yelling) In case you guys are wondering, I'm dumping.

04 02 03 00 CMP Fuel cell purge, huh? Okay, fuel cell purge. Two for 2 hours. Two of them on.

04 02 03 59 CMP (Yelling) Hey, we're going to maneuver.

04 02 05 09 CMP Yes, must be ... low.

TIME SKIP

04 02 16 50 CDR ...?

04 02 16 52 CMP Well, we're getting there. Slowly.

04 02 16 58 CDR What?

04 02 16 59 CMP We're getting there slowly.

04 02 17 01 CDR ...

04 02 17 04 CMP Yes. I think so.

04 02 17 12 CDR When you almost get there, how about ...?

04 02 17 19 CMP Okay.

04 02 17 21 CDR ...

04 02 17 22 CMP All right.

04 02 17 23 CDR ... coming up ... to AOS ... up to - be ready for AOS.

04 02 17 31 CMP I think I'm just about ready.

04 02 17 36 CDR ...

04 02 17 39 CMP Yes. Where is the tape? Anybody know?

04 02 17 44 CDR It's over - ...

04 02 17 48 CMP Okay.

04 02 17 50 CDR ...

04 02 20 13 CMP ...

04 02 20 33 CMP Oh, what the hell.

04 02 21 40 CDR Hey, Al.

04 02 21 41 CMP (Yelling) Yes.

04 02 21 46 CDR ...

04 02 21 47 CMP (Yelling) What?

04 02 21 55 CDR ...

04 02 21 57 CMP (Yelling) What?

04 02 21 58 CDR Did you ...?

04 02 22 00 CMP (Yelling) No. You guys are too far ahead.

04 02 22 58 CMP Okay. Let's see.

04 02 23 02 CDR Ready?

04 02 23 03 CMP You want P - Okay.

04 02 23 04 CDR ...

04 02 23 06 CMP Okay.

04 02 23 21 CDR [redacted], there, Endeavour. How do you read the Falcon on - -

04 02 23 23	CMP	Hey, loud and clear.
04 02 23 24	CDR	Say again?
04 02 23 25	CMP	Beautiful!
04 02 23 26	CDR	Good.
04 02 23 27	LMP	And, Al, how do you read me?
04 02 23 28	CMP	Read you loud and clear, Jim.
04 02 23 30	LMP	Ah, you're beautiful.
04 02 23 31	CMP	Hey, did you say something about T_{ephem}? Did you want a T_{ephem}, Dave?
04 02 23 38	CDR	Stand by.
04 02 23 39	CMP	Okay. I'll give it to you if you want.
04 02 23 43	CDR	Stand by. Configure for SIMPLEX A.
04 02 23 45	CMP	Okay.
04 02 23 57	CDR	Okay, Al. How do you read on A?
04 02 23 59	CMP	Loud and clear, Dave.
04 02 24 00	CDR	That's nice.
04 02 24 01	LMP	And, Al, how do you read me?
04 02 24 02	CMP	Loud and clear, Jim.
04 02 24 03	LMP	Very good.
04 02 24 05	CDR	Okay. Now you can give me your T_{ephem}.
04 02 24 07	CMP	Okay.
04 02 24 18	CMP	Ready to copy?
04 02 24 19	CDR	Go.

04 02 24 20	CMP	Just like SIM. All balls in the R_1. R_2 is 32251. R_3 is 26157.
04 02 24 31	CDR	Okay. All balls, 32251, 26157.
04 02 24 34	CMP	Great.
04 02 24 44	CMP	Want a clock sync?
04 02 24 46	CDR	Stand by 1.
04 02 25 32	CDR	Okay, Al. VERB 06 - 6 - VERB 06 NOUN 65. I'll give you a mark.
04 02 25 37	CMP	Give me a mark. I'm waiting.
04 02 25 43	CDR	3, 2, 1 -
04 02 25 45	CDR	MARK.
04 02 25 46	CMP	Okay. 98:25:45.60.
04 02 25 53	CDR	Okay. 25:45.60.
04 02 25 56	CMP	Roger.
04 02 26 06	CMP	And I'm coming up to get the umbilical now.
04 02 26 08	CDR	Read you loud and clear.
04 02 26 19	LMP	Okay. Let's hope so.
04 02 26 48	CDR	Okay, Endeavour. Another NOUN 65 if you're ready.
04 02 26 56	CMP	On your mark.
04 02 26 58	CDR	3, 2, 1 -
04 02 27 00	CDR	MARK.
04 02 27 01	CMP	Okay. 98:26:59.60.
04 02 27 07	CDR	Okay. We're within 3/100ths.
04 02 27 10	CMP	Okay.
04 02 27 44	CMP	Hello, Endeavour - Houston, this is Endeavour, loud and clear.

04 02 27 58 CMP Okay, you got it. NARROW and REACQ.

TIME SKIP

04 03 29 32 CDR Okay. Understand, Al. Get the DAP reset, and the tape meter looks like it works fine.

04 03 31 28 CMP Okay, Falcon; Endeavour. I got the hatch in and - you want to verify your hatch closed?

04 03 31 35 CDR Okay, that's verified. Closed and locked.

04 03 31 37 CMP Okay, I'll do a hatch integrity check then.

04 03 31 40 CDR Okay.

04 03 32 43 CDR Okay, Endeavour; Falcon. Our radar checks out okay, and your B-3, OFF, and transponder, off, are no longer required.

04 03 32 49 CMP Okay. Thank you.

04 03 32 53 LMP And, Al, we're going B data.

04 03 33 00 CMP Okay.

04 03 38 34 CMP Falcon, Endeavour. Your transponder checked out okay.

04 03 38 37 CDR Oh, very good. Thank you.

04 03 47 15 CMP Okay, Falcon; Endeavour. We're maneuvering to SEP attitude.

04 03 47 19 CDR Okay.

04 03 47 30 CDR Okay, Endeavour; Falcon. Have you vented the tunnel?

04 03 47 33 CMP Roger.

04 03 47 34 CDR Okay; thank you.

04 03 47 53 CDR Hear that noise with us, Al?

04 03 47 58 CMP Okay.

04 03 57 59	CDR	Okay, Al, are you about in attitude now?
04 03 58 03	CMP	Right, Dave. About 5 degrees to go.
04 03 58 05	CDR	Okay. We're down to - -
04 03 58 09	LMP	Oh, yes. We should - -
04 03 58 10	CDR	- - just about everything and it's all shipshape.
04 03 58 13	CMP	Good.
04 03 58 21	CDR	Even the old broken tape meter seems to work.
04 03 58 27	LMP	That figures.
04 03 58 58	CMP	Okay, we're at attitude now.
04 03 59 01	CDR	Okay; thank you.
04 04 03 15	CMP	Okay, Falcon; Endeavour. Doing the trim maneuver.
04 04 03 18	CDR	Okay.
04 04 03 53	CMP	Okay. We're setting at attitude and I've got 10 minutes -
04 04 03 56	CMP	MARK - to go.
04 04 03 57	LMP	Okay, we're right with you.
04 04 04 09	CDR	And we're right on the attitude.
04 04 04 11	CMP	Okay, good.
04 04 04 49	CDR	Okay, Al, at 5 minutes to go, we need a - 06 20. Okay?
04 04 04 56	CMP	Okay, you want it now?
04 04 04 59	CDR	No, let's wait down until 5 minutes. Okay?
04 04 05 02	CMP	Okay.
04 04 05 03	CDR	I'd like to give them as much time on the platform as we can.
04 04 08 44	CMP	Coming up on 5 minutes in 10 seconds.

04 04 08 46 CDR Okay, I'll give you a mark.

04 04 08 53 CDR 3, 2, 1 -

04 04 08 55 CDR MARK.

04 04 08 57 CMP Okay. 35975, 10818, 35995.

04 04 09 10 CDR Give me that last one again.

04 04 09 11 CMP Okay. 35995.

04 04 09 17 CDR Okay. 35915, 10818, 35995.

04 04 09 24 CMP The last two were okay. The first one was 35975.

04 04 09 29 CDR Okay; 75. I don't write too good with gloves on.

04 04 09 32 CMP Roger.

TIME SKIP

04 04 38 58 CMP Ten seconds.

04 04 39 00 CDR Roger.

04 04 39 17 CDR Okay, we're on the capture latches. Good.

04 04 39 20 CMP Roger.

04 04 39 34 LMP And you're on your own.

04 04 39 40 CDR Okay. Good clean SEP.

04 04 40 28 CMP Okay, Ed; if you think we can't get there for the P24.

04 04 40 40 CMP Okay. We'll hold this.

04 04 40 43 LMP Okay. Falcon's going to yaw left.

04 04 41 32 CDR Okay. Falcon's going to pitch up 90.

04 04 41 34 CMP Roger.

04 04 41 57 CMP And you got four good-looking gear.

04 04 42 27	CMP	And, Falcon; Endeavour. Looks like you got one radar there that's - rotating quite freely.
04 04 42 39	CDR	Okay. We've got you in sight; we're looking straight at you. It's really pretty.
04 04 42 43	CMP	Roger.
04 04 43 55	CDR	Roger. We're LO bit rate and AFT OMNI.
04 04 45 17	LMP	Roger. PITCH, 155; YAW, minus 50.
04 04 47 45	LMP	Roger. HI bit rate.
04 04 47 49	CDR	And, Houston, we're ready to go with the DPS throttle check whenever you are.
04 04 47 58	CDR	Okay.

TIME SKIP

04 05 24 10	LMP	Al, we're going to DATA.
04 05 24 12	CMP	Okay, Jim. Recorder's running.
04 05 24 18	CDR	Okay, nice recovery over there.
04 05 24 23	CMP	Think I'm minus at least one fingernail, though.
04 05 24 25	CDR	Oh, gad. Where did you lose it?
04 05 24 33	CMP	On - as a matter of fact, on A-1 when I went after the sextant adapter.
04 05 24 39	CDR	Oh, my!
04 05 24 40	CMP	(Laughter) That's okay, just a little loose.
04 05 24 51	CDR	So long as you're not leaking.
04 05 24 54	CMP	I'm not, no. Okay, I'm all set up for the burn here, I've done P40, done the sextant star check, and everything's looking pretty good. And I've got 14 minutes to go.

[redacted]

04 05 25 05 CDR Okay, very good. Oh, yes, I wanted to tell you a little bit about the landing site there - on the - on the craters. There's a - Earthlight Crater, of course, is a lot sharper than Index. And then there's a great big one to the east of Index, which is the same size and quite sharp, and I think - you won't have any trouble as long as you see the Matthew, Mark, Luke, and Index. Index is a pretty subtle crater, and there probably won't be much shadow in the bottom of it at all, when you get there.

04 05 25 38 CMP Yes. Okay. I - I - I know where it is, I think, well enough in location so I can look for the - for the shallow depression.

04 05 25 45 CDR Okay. Both of those will probably have shadow in them.

04 05 25 48 CMP Yes.

04 05 25 51 CDR But - gee, they're real super; you can't miss.

04 05 32 52 CMP Falcon, Endeavour.

04 05 32 55 CDR Go ahead, Al.

04 05 32 56 CMP Okay, do you want the NOUN 81 values for this burn now, or do you want to wait until after?

04 05 33 01 CDR After.

04 05 35 27 CMP Okay, I've gone through the primary gimbal check and turning on number 2 now.

04 05 35 31 CDR Roger.

04 05 36 30 CMP Gimbal drive check.

04 05 36 33 CDR *** we feel like we're right there with you.

04 05 36 35 CMP All looks normal.

04 05 36 37 CDR Good show.

04 05 36 39 CMP FDAI scale 5/5. RATE, HIGH, and looks like we're going.

04 05 36 44 CDR Good.

04 05 36 45	CMP	Everything checks fine; 2 minutes and 12 seconds.
04 05 36 48	CDR	Okay.
04 05 37 15	CMP	Okay. DELTA-V THRUST B is ON. And B PILOT VALVE is closed.
04 05 37 20	CDR	Okay.
04 05 37 57	CMP	One minute.
04 05 37 59	CDR	Right with you on the time.
04 05 38 24	CMP	Average g.
04 05 38 26	CDR	Roger.
04 05 38 44	CMP	ULLAGE.
04 05 38 54	CMP	Thank you.
04 05 38 59	CMP	THRUST, ON.
04 05 39 02	CMP	THRUST, off. What a kick in the tail!
04 05 39 06	CDR	Didn't I tell you?
04 05 39 07	CMP	You did! Had to see it for myself.
04 05 39 10	CDR	That's great, isn't it?
04 05 39 12	CMP	Fantastic, man; you really move!
04 05 39 14	CDR	Yes, man. That's like really flying, isn't it?
04 05 39 17	CMP	Yes, sir.
04 05 41 20	CDR	Did you get it all in, Al?
04 05 41 23	CMP	Sure did, Dave. Right down to the gnat.
04 05 41 26	CDR	Very good.
04 05 41 27	CMP	Sorry about that. I had - only had 9/10ths residual in X and I - I trimmed it out. That short burn constant made it a lot better.
04 05 41 36	CDR	Good.

[redacted]

04 05 41 38 CMP And I'm in a 65.2 by 54.8.

04 05 41 43 CDR 65.2, 54.8. Okay.

04 05 42 19 CDR How about that! We have you in a 65.2 by 54.6.

04 05 42 23 CMP Super.

04 05 45 12 CDR Al, how do you read now?

04 05 45 14 CMP I read you 5 square, Dave.

04 05 45 16 CDR Okay. We had an antenna change called here and sounds like you're pretty good, so we'll just stay with you this way.

04 05 45 24 CMP Okay.

04 05 46 36 CMP Now.

TIME SKIP

04 06 12 48 CMP Hello, Houston; Endeavour. Roger. Stand by 1.

04 06 12 56 CMP Okay, Houston. The burn got off on time. Burn time, 4 seconds, V_{GX} was minus 0000.9, and I trimmed that to - zero - -

TIME SKIP

04 08 06 02 LMP Houston, Falcon. Go.

04 08 06 14 LMP Roger, Ed. The ASCENT BATs were on at 103:50:45, and I'll check ED BATs now.

04 08 06 50 LMP And, Houston, this is Falcon. ED batteries both check at 37 volts.

04 08 07 04 LMP And LMP. Go ahead.

04 08 07 17 LMP POO and DATA. And go ahead with the pad.

04 08 07 32 LMP Yes? Okay.

04 08 07 54	LMP	Ed, if you're reading us, you ought to call us after the - the up-link. We cannot read you. We're not getting the up-link either.
04 08 08 13	CDR	Locked up yet?
04 08 08 14	LMP	No.
04 08 08 18	CDR	Here it comes; don't change it. It's coming in.
04 08 08 33	LMP	THROTTLE control, AUTO.
04 08 08 35	CDR	AUTO. Read you loud and clear, Ed. I'm ready for that update now.
04 08 09 10	LMP	Roger. 104:30:08. 54; cross range, plus 0003.3; DEDA 231, plus 56943.
04 08 09 36	LMP	Roger. Okay, your T - your THROTTLE in min? Okay. THROTTLE, min.
04 08 09 48	CDR	Okay.
04 08 09 49	LMP	THROTTLE, soft stop.
04 08 09 51	CDR	Okay.
04 08 09 52	LMP	RATE SCALE, 25 DEGREES PER SECOND.
04 08 09 54	CDR	25.
04 08 09 55	LMP	ATTITUDE/TRANSLATION, 4 JET.
04 08 09 56	CDR	4.
04 08 09 57	LMP	Check DPS, APS, RCS, ECS, EPS. Okay?
04 08 10 03	CDR	Looks all right.
04 08 10 18	CDR	Did you check the RCS? Okay. ECS look all right?
04 08 10 27	LMP	Yes.
04 08 10 52	LMP	If we should be up-linked, Dave, I'll need a - VERB 47.
04 08 10 57	CDR	Okay.

[redacted]

04 08 12 01 LMP ... computer, because -

04 08 12 06 CMP Roger. Thank you.

04 08 12 08 CDR Thirty-nine point - How's that?

04 08 12 09 SC (Tone)

04 08 12 20 CDR (Laughter) ENTER.

04 08 12 48 CDR Okay. Looks like I just screwed. Okay.

04 08 13 38 LMP Okay. That's good.

04 08 14 30 LMP Get - I think we ENABLE on the - S-BAND?

04 08 14 34 CDR Okay. Houston, how do you read Falcon?

04 08 14 43 CMP Houston, Endeavour. Loud and clear.

TIME SKIP

04 23 03 22 CC *** while you work, I got a couple of short goodies ***

04 23 03 57 CMP Hey, that all sounds real good, Karl. And, as you can see, I'm right in the middle of a P52 here. We'll have the second star and gyro torquing angles in just a second.

04 23 04 48 CMP And if you've got those torquing angles, I'll get them on the minute.

04 23 05 04 CC *** read them down to us, Al.

04 23 05 06 CMP Okay, Karl, I'll read them to you. P52 stars were 01 and 36. The torquing angles were minus three balls 28, minus three balls 58, plus three balls 12. And they were torqued out at 119:05 on the minute.

DAY 6

05 01 53 08	CMP	Hello, Houston; 15 - Endeavour.
05 01 53 21	CC	Endeavour, this is Houston. How do you read?
05 01 53 23	CMP	I read you loud and clear.
05 01 55 32	CC	Endeavour, this is Houston. How do you read? And we seem to have a small comm problem. Please stand by.
05 01 55 41	CMP	Roger, Houston. Endeavour standing by, and I'm reading you 5 square. Houston, Endeavour is standing by, and I'm reading you 5 square.
05 01 55 55	CC	Roger. And I'm reading you loud and clear with a good bit of noise over the top of you.
05 01 56 01	CMP	Roger.

TIME SKIP

05 04 58 21	CMP	Ah, ha!
05 04 59 10	CMP	Hello, Houston; Endeavour. How do you read?
05 04 59 56	CMP	Hello, Houston; Endeavour.
05 05 00 26	CC	Endeavour, this is Houston. How do you read?
05 05 00 28	CMP	Okay, Houston. It looks like we're just going over the hill here. Just wanted you to know, it looks like my mission timer on the main panel is shot.
05 05 00 44	CC	Roger, Al. We read, and we would like to have COMMAND RESET and LOW BIT RATE.
05 05 00 50	CMP	Roger. COMMAND RESET; LOW BIT RATE. The - the timer's - -
05 05 00 53	CC	Probably - -

[redacted] TIME SKIP

[redacted]

05 05 51 19 CC 15, this is Houston. We'd like to have you go WIDE BEAM on the HIGH GAIN ANTENNA and then to NARROW.

05 05 51 28 CMP Okay, Houston, this is Endeavour. Going WIDE BEAM; going back NARROW.

05 05 51 57 CC That's sounding better, Al. How are things going up there?

05 05 52 00 CMP Well, going okay, Karl. Looks like I've caught up a little bit, got all the dumps out of the way, and got the libration photography. It looks like I'm going to be handicapped a little bit because of the mission timer, but we'll press on.

05 05 52 17 CC All right. Our understanding on the mission timer is that, even though you tried to reset it, it still refused to count up. Is that correct?

05 05 52 24 CMP That's correct, and I thought what I'd do now is reset to zero and start.

05 05 52 34 CC Roger.

05 05 52 35 CMP Well, it counts from zero, Karl. I - -

05 05 52 37 CC And for future reference we'd like - Roger. You say it is counting, but it had - it had to start from zero to start counting again?

05 05 52 47 CMP Yes. Well, let me pick a random number, zero, count from there. I just tried to tell you the correct time, is all.

05 05 53 34 CMP Okay, Houston; Endeavour. Looks like we must have just run across a little funny there, Karl, because - it started okay now and is running.

05 05 53 46 CC Roger. Do you have a time source - -

TIME SKIP

05 06 56 11	CC	Very good, Al. That came through loud and clear.
05 06 56 57	CC	Al, everybody down here is sending up bouquets to you for having done such a great job in a crowded period.
05 06 57 03	CMP	Well, thank you very much, sir.
05 06 57 09	CC	And all the systems down here are looking in good shape as you go around the corner.
05 06 57 12	CMP	Okay, Karl. Thank you.
05 06 57 22	CMP	Think I'll get something to eat.

TIME SKIP

05 07 47 44	CC	Endeavour, we'd like to have a NARROW BEAM, please.
05 07 47 50	CMP	NARROW BEAM.

TIME SKIP

05 09 48 17	CMP	Houston, Endeavour. How do you read?
05 09 48 25	CMP	Okay; reading you loud and clear, also.
05 09 49 09	CMP	Stand by 1.

TIME SKIP

05 20 41 31	CMP	- - and my PRD is 23149.
05 20 41 46	CMP	And standing by for a consumables.
05 20 42 13	CMP	Roger, Karl. Might as well get them now.
05 20 42 45	CMP	Roger, Karl. 140:00; RCS total, 61, 61, 61, 59, and 61; H_2 tanks, 70, 70, 48; O_2 tanks, 75, 78, 60.
05 20 43 37	CMP	Roger. Go ahead. I'll be doing a P52.

[redacted]

05 20 44 14 CMP Well, that certainly sounds very good, Karl.

05 20 44 41 CMP Roger, Karl.

05 20 47 10 CMP And, Houston, if you're - -

05 20 50 35 CMP (Yawn)

DAY 7

06 03 29 55	CC	Endeavour, this is Houston. How do you read?
06 03 29 57	CMP	Hello, Houston; Endeavour. Loud and clear.
06 03 30 03	CC	Good to hear your cheery voice. How is everything up there?
06 03 30 06	CMP	Yes, just fine. It took us a little longer to lock up that time.
06 03 30 18	CC	Yes, a couple of minutes, but it still wasn't bad.
06 03 30 36	CMP	And, Karl, on the waste water dump, I overshot 10 percent, just a little bit, but I'm reading - I'm reading about 10 percent now.
06 03 30 48	CC	How much was that?
06 03 30 50	CMP	I'm reading 10 percent.
06 03 30 56	CC	Roger. Reading 10 percent now. I copy that.

TIME SKIP

06 19 14 13	CMP	Okay, Houston. Got it.
06 19 14 27	CMP	Oh, I've just had a very nice breakfast and getting ready for today's activities.
06 19 15 13	CMP	Okay. Stand by.
06 19 17 11	CMP	Okay, Karl. Stand by 1.
06 19 17 51	CMP	Okay, Karl, go ahead.
06 19 19 35	CMP	Roger, Karl. I understand. Yes, the SPS burn is going to be a - a nominal bank B burn - bank B only burn. But to get set up for it, we want to check, after cycle cryo fans, check that the EMS is off, get two EMS circuit breakers in, check that the group 5 circuit breakers are closed, and

[redacted]

check that the SPS pilot valves both are open at that time. And then down where it says, "CB STABILITY CONTROL, panel 8, and SPS 10 or 12," we'll make that a 10.

06 19 20 24 CMP Okay.

06 19 20 59 CMP Roger. Understand. You want the SPS PILOT VALVES, MAIN B, closed before DELTA-V THRUST B switch to NORMAL.

TIME SKIP

06 21 09 42 CMP Okay, Houston, I got 1 minute and 45 seconds to the burn.

06 21 11 02 CMP Average g.

06 21 11 15 CMP ULLAGE.

06 21 11 37 CMP THRUST, on.

06 21 11 51 CMP THRUST, OFF.

06 21 12 56 CMP Houston, Endeavour. If you're copying the DSKY, you'll see residuals: .2, .2, and .3; so no trim.

06 21 13 14 CMP Yes, sir; it certainly does.

DAY 8

07 04 14 37	CDR	Well, very good. That's nice to know. Thank you much. Save the tapes for us, will you?
07 04 14 53	CDR	Save the TV tapes for us, will you, please?
07 04 15 01	CDR	Roger. See you around the corner.
07 04 15 20	LMP	Okay. That's LOS.
07 04 15 22	CDR	Okay.
07 04 15 49	LMP	Why don't we have our helmet and gloves on? When we going to dock?
07 04 15 51	CMP	Jim, never mind; never mind.
07 04 16 06	CDR	Why do we have to have it this way?
07 04 16 09	LMP	It'd help to have your glove on - and your helmet on just to keep the Sun out of your eyes, you know.
07 04 16 13	CDR	Yes, but we don't have anything in the procedures, do we?
07 04 16 18	LMP	Well, I think there's something about doing it optional.
07 04 16 21	CDR	Huh! Yes, I think that's ...
07 04 16 42	LMP	That sure was a sporty lift-off.
07 04 16 44	CDR	I thought it was sort of springy. It looked - it's the soup.
07 04 17 39	LMP	And it's tracking good.
07 04 17 42	CDR	Our - Okay, turning elliptical.
07 04 17 45	LMP	It's coming to 8.
07 04 17 47	CDR	State vector's -
07 04 18 16	CDR	Okay.

07 04 18 17	LMP	Now you select ...
07 04 18 19	CDR	Okay.
07 04 18 21	LMP	Careful.
07 04 19 01	CDR	Now we're to ...
07 04 19 05	LMP	... total.
07 04 19 09	CDR	...
07 04 19 17	LMP	Okay, AGS - C component is exactly what the ground computed it: 19.1. They came up with - 19.
07 04 19 24	CDR	Huh. Well - got a ... computer there.
07 04 19 36	CMP	Okay. Four seconds to final comp.
07 04 19 39	CDR	Okay, fine.
07 04 19 41	CMP	Final comp.
07 04 19 44	CDR	Did you get a bunch of good marks?
07 04 19 47	CMP	Yes, sir. 19 and 18.
07 04 19 49	CDR	Beautiful.
07 04 20 37	CDR	Okay, take the end of your first mark and total the answer in minutes. Let me turn that down. Twenty-six minutes.
07 04 20 56	CMP	Okay. I've got the answer now.
07 04 20 58	LMP	Go ahead, Al.
07 04 20 59	CMP	Okay, minus 69.1, minus 6.1, plus 16.1.
07 04 21 07	LMP	Copy, minus 69.1, minus 6.1, and plus 16.1.
07 04 21 11	CDR	Okay, want to get these numbers, Jim? I mean, tell me the elevation and so on.
07 04 21 25	CDR	Okay, here's a NOUN 50 in.
07 04 21 27	LMP	... okay. ...

07 04 21 34	CDR	Right. There's a ... you better jump. No, no, that's not NOUN 81.
07 04 21 38	LMP	...
07 04 21 39	CDR	Here's NOUN 81.
07 04 21 40	CMP	Okay, Dave, I'm maneuvering.
07 04 21 41	CDR	Okay. Let us give you the numbers first, Al. Okay - -
07 04 21 44	CMP	Go ahead.
07 04 21 45	CDR	Okay; 70.3; plus 5.9; and minus 17.7.
07 04 21 55	CMP	Okay, that's official burn attitude.
07 04 21 57	CDR	That's correct.
07 04 22 02	CMP	Okay, ... I'm in attitude and only ...
07 04 22 06	CDR	Beautiful.
07 04 22 14	CMP	...
07 04 22 15	CDR	Good.
07 04 22 18	LMP	Well, I came up with exactly the same numbers as the PGNS, and X and Y, there's a difference of 2 and 3.
07 04 22 27	CDR	Okay.
07 04 22 30	LMP	I think we'll move. You got the burn attitude?
07 04 22 36	CDR	I maneuver now?
07 04 23 11	CDR	Okay, Endeavour, did you get our numbers for the burn?
07 04 23 58	CDR	Maneuver.
07 04 24 41	LMP	Roger. Copy. Okay. It's picking up ... for AGS.
07 04 26 09	CDR	We have 3 and a half minutes to go, Al.

[redacted]

07 04 26 11 CMP Roger. Understand. ...

07 04 26 16 CDR Excuse me.

07 04 26 17 LMP Yes, Dave. Get your engine.

07 04 26 21 CDR Yes. ...

07 04 26 57 LMP Should be a 3-second burn.

07 04 26 58 CDR Okay, 3-second burn. Don't start until I tell you.

07 04 27 04 LMP Go AGS to maximum to normal. Okay, at 30 seconds, it's ENGINE ARM to ASCENT, manual ullage, and PRO. And AGS to AUTO.

07 04 27 15 CDR I should ... Nothing in it.

07 04 27 38 LMP MARK; 2 minutes.

07 04 27 40 CMP ...

07 04 27 43 LMP And everything looks good.

07 04 28 35 LMP Mark at 1 minute, Dave.

07 04 28 36 CDR Okay -

07 04 28 38 CDR MARK; 1 minute.

07 04 28 40 LMP Okay. AGS going to AUTO now.

07 04 28 43 CDR Okay, AGS to AUTO.

07 04 28 52 CDR Okay. You give me the time. I'll get the ullage.

07 04 28 55 LMP Okay.

07 04 29 06 LMP Okay.

07 04 29 07 CDR Average g low. ABORT STAGE, push. ENGINE ARM to ASCENT. Standing by for 10 seconds.

07 04 29 28 CDR Ullage. Trouble.

07 04 29 39 LMP Three.

07 04 29 42	CDR	Okay. AUTO SHUTDOWN and AUTO IGNITION. We're trimming.
07 04 29 48	CMP	Dave? Did you remember the up-link?
07 04 29 51	CDR	Okay. In fact, I think it is.
07 04 29 54	LMP	Didn't like it worth a damn. Okay, Dave. We'll be done in a minute with this.
07 04 30 06	CDR	Okay, there you go; .2, .2, and .4.
07 04 30 18	LMP	I don't like tragedy.
07 04 31 48	CDR	Okay, Al. We're starting them over.
07 04 32 29	LMP	...
07 04 33 16	CDR	We freaked up at 23: 38 - about 100.
07 04 33 20	LMP	I think we're ...
07 04 33 34	CDR	We have one mark. Now doing 40.
07 04 33 43	LMP	Make that zero burn at this close mode.
07 04 33 45	CDR	Never touch it. Really?
07 04 33 46	LMP	Yes.
07 04 35 10	LMP	Right on the nominal line, Dave.
07 04 35 12	CDR	Really?
07 04 35 13	LMP	Yes.
07 04 35 24	CDR	Hey!
07 04 37 17	LMP	Watch it. Tail's going to bump it.
07 04 37 20	CDR	Okay.
07 04 37 23	LMP	Next thing's - no - no ...
07 04 37 31	CDR	Okay. ...
07 04 37 36	LMP	You want to grab this?

07 04 37 37	CDR	We already picked the ...?
07 04 37 39	LMP	If he could talk, you could get him.
07 04 37 42	CDR	State vector agrees with ... I don't know. I think - Let's see what - We might borrow anything off our equipment.
07 04 37 50	LMP	Let's see.
07 04 37 51	CDR	Here's your ... pocket.
07 04 37 58	LMP	Let's see, what - ... I remember, we've got a ... to do.
07 04 38 21	LMP	How you doing over there, Albert?
07 04 38 25	CMP	Doing just fine, but it's back to end-to-end, and I've got much in motion.
07 04 38 30	LMP	Very good. And reading the procedures and checking - -
07 04 38 32	CDR	Oh, yes! Bad update! What do you know. I've been looking for it and I finally saw it, but it's not very funny.
07 04 38 41	LMP	Want to check on it?
07 04 38 42	CMP	What'd you see?
07 04 38 43	CDR	That's your tracking light. You're - -
07 04 38 45	CMP	Oh, good.
07 04 38 46	CDR	Yes, you're right down the path.
07 04 38 48	CMP	Yes, so are you. Your light is right through the money.
07 04 38 51	CDR	Is it really? Yours - yours is really dim. About like a - maybe a fourth magnitude star? Okay, let's really hit them.
07 04 39 28	LMP	Brighten it up to three.
07 04 39 51	CDR	Okay, there she is. Oop!

07 04 40 03	LMP	Especially about this problem. Make it stick.
07 04 41 11	CDR	Okay. Know what you got to do, Jim?
07 04 41 14	LMP	Yes. I'll take it. I think that's going out there.
07 04 41 19	LMP	... burning.
07 04 41 21	CMP	You guys coming up on final comp.
07 04 41 23	CDR	Okay. We got 20 seconds or so.
07 04 41 25	CMP	Why don't you mark final comp. Get you back with us.
07 04 41 29	CDR	All right, I sure will. 10 seconds. 3, 2, 1 -
07 04 41 41	CDR	MARK.
07 04 41 44	CMP	Gotcha.
07 04 41 45	CDR	Okay.
07 04 41 46	CMP	Only 3 seconds difference between us.
07 04 41 47	CDR	Well, it's a 3-second burn, so that makes sense.
07 04 41 55	LMP	No, I don't need it. We have to go to coffee in a minute.
07 04 41 59	CDR	Yes.
07 04 42 01	LMP	Okay, Al. We've got a minus 1.1, 0, and a minus 1.1.
07 04 42 07	CMP	Okay, and I got a plus 1.5, and a minus .2, and plus 1.9.
07 04 42 12	CDR	How about that! That's very nice. Think we'll burn our solution on time. That's - it sort of took an ...
07 04 42 20	CMP	Okay, go ahead and burn your solution.
07 04 42 22	CDR	All right. We'll burn our solution.
07 04 42 27	CMP	I'll buy that.
07 04 42 35	LMP	Got the AGS and redo solution.

07 04 42 37	CDR	All righty. It's reading straight, now.
07 04 43 42	LMP	MARK; 1 minute to the midcourse.
07 04 43 46	CMP	Roger.
07 04 44 08	LMP	Houston's money?
07 04 44 12	CDR	Yes, I guess they're using it.
07 04 44 15	LMP	Looking forward.
07 04 44 16	CDR	Here, you'll like this.
07 04 44 19	LMP	... I want to plop.
07 04 44 47	CDR	There you go.
07 04 44 48	LMP	... and the pink ...
07 04 44 51	CMP	Can't you get it all?
07 04 44 54	CDR	One more cycle now. Okay, we got it all in.
07 04 44 58	CMP	Okay.
07 04 44 59	CDR	Consider it down there, Jim. It's really 2222s.
07 04 45 18	CMP	Oh, you're shining in the sunlight now! Boy, is that pretty!
07 04 45 27	CDR	Who's shining in the sunlight?
07 04 45 31	LMP	Us, I think.
07 04 46 15	CMP	Yes, I can see in the sunlight now, too.
07 04 46 18	LMP	Okay. We've got our first mark. We should be up with you.
07 04 46 22	CMP	I believe I can even make out the shape.
07 04 46 25	LMP	Hey, that's it!
07 04 46 27	CDR	No, sure can't.
07 04 46 30	LMP	Hey.

07 04 46 34	CDR	It's unreal.
07 04 46 45	LMP	Think you can call another one up?
07 04 46 48	CDR	Hmm! You sure if you got the right thing?
07 04 46 52	LMP	Seems to be ...
07 04 46 57	CDR	Okay. Can't put too much ... Seems to be squared away though, now.

TIME SKIP

07 07 01 09	CC	...
07 07 01 11	CMP	Houston, 15. Still in the - the midst of doing a little housecleaning.
07 07 06 37	CC	Endeavour, Houston. Would you ask ...
07 07 06 43	CMP	Roger, Houston. Hey, Jim.
07 07 06 55	CMP	Roger, Ed. I was 1 minute late on that - on the mapping camera. We got it started at 1 - at 174:51.
07 07 07 42	CMP	Hey, go to forward OMNI.
07 07 07 45	CDR	Okay.
07 07 08 27	CMP	Houston, 15.
07 07 08 32	CC	...
07 07 08 33	CMP	Roger, Ed. One other thing: I didn't get the P52 in, either.
07 07 08 40	CC	Roger. Understand ...
07 07 08 42	CMP	Affirm.
07 07 08 49	CC	Al, I'll keep track of your cameras for you ...
07 07 08 54	CMP	Okay. If you would, that would help.

07 07 09 15 CC 15, Houston. Give me REACQ and NARROW, please.

07 07 09 18 CMP Okay, REACQ and NARROW.

07 07 10 48 CMP *** the pilot valve - -

TIME SKIP

07 14 07 11 CMP Cabin reading about 5.7 over there, Dave?

07 14 07 22 LMP Okay. I guess we ought to wait until we complete chlorination before we get the - -

07 14 07 33 CMP David.

07 14 07 35 LMP - - the gloves and helmets off.

07 14 07 47 CMP Hello, Houston; this is 15.

07 14 07 50 LMP Baseband.

07 14 07 51 CDR Yes. Of course.

07 14 08 57 LMP Mine.

07 14 09 01 CDR Yes, that's yours.

07 14 09 02 LMP Let me get that.

07 14 11 52 CMP Hey, pretty good.

07 14 12 23 CMP Help me put the other end of this guardrail on here.

07 14 12 27 LMP MDC guard, Al.

07 14 12 30 CMP So the MDC guard.

07 14 12 32 LMP Yes.

07 14 12 33 CDR Hope it doesn't get over ...

07 14 12 37 CMP Is it in the way? Huh?

07 14 12 42 LMP Oh, the MDC guard.

07 14 12 43	CDR	Did you take that down?
07 14 13 40	CMP	Okay.
07 14 33 59	CDR	Got it?
07 14 34 00	CMP	I got it.
07 14 34 08	CDR	Okay, pal.
07 14 34 12	CMP	Come here and - get this.
07 14 37 40	LMP	What time is it?
07 14 37 54	CMP	32:20.
07 14 38 10	LMP	God, 4 hours; that's -
07 14 38 14	CDR	...
07 14 38 16	CMP	They say go for it.
07 14 38 19	LMP	Yes, just as well. Just fiddling around and getting squared away.
07 14 38 26	CDR	That's right. I guess all I'm saying is the Flight Plan really ought to reflect that.
07 14 39 04	CMP	Yes, they had you learning the ... switch.
07 14 39 21	CDR	Yes.
07 14 39 27	CMP	Okay.
07 14 39 51	CDR	Right there, Jimmy.
07 14 40 11	CDR	Oh, Christ. I'm putting it all over your face here.
07 14 40 28	LMP	Want to use some of your soap?
07 14 40 54	CMP	Hey, you're supposed to be somehow nonaffected by the CMP.
07 14 42 28	CMP	Okay, Dick [sic].
07 14 42 41	LMP	Shit.

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07 14 43 47	CMP	Oh, yes, 7 hours left of my 9-hour rest period.
07 14 44 01	CDR	Well, we -
07 14 44 06	LMP	Not interested in what he's doing. You'd like that more than this.
07 14 44 18	CMP	Huh?
07 14 44 28	CDR	Your urine bag? Oh, no, I got them all cleaned out so -
07 14 44 57	LMP	Yes. I've cleaned mine.
07 14 45 01	CMP	Oh! Poor ... I've been - I tell you, I've been rinsing everything out with water every time I pee and every time I go to sleep.
07 14 45 16	LMP	Is that a fact?

DAY 9

08 01 51 13	CMP	Houston, 15. Houston, 15.
08 01 51 15	CC	Go ahead.
08 01 51 19	CMP	Okay, Joe. I got the gyro torquing angles up, and I'll torque them out in a minute.
08 01 51 26	CC	Standing by.
08 01 53 17	LMP	I'll get out of your way, Al, so you can get down in here.
08 01 53 33	CMP	Okay.
08 01 53 38	CC	Al, we've no - noted the termination of your fuel cell 3 purge. At your convenience, open the X-ray and the alpha particle experiment covers, please, and turn the alpha particle back on. Over.
08 01 53 51	LMP	Okay, Joe, we'll be about another 2 or 3 minutes finishing up all the dumps, and then we'll do that.
08 01 53 59	CC	Okay. Fine. We do want you to wait until all the dumps are completed, and then open the doors and turn alpha particle on at your convenience, really.
08 01 54 10	LMP	Roger.
08 01 54 17	CDR	... this morning.
08 01 54 19	LMP	Yes, Myrtle. I didn't use - I didn't - hadn't used Myrtle this morning. I didn't use Myrtle this morning.
08 01 54 25	CDR	I think that checklist is ... 5 minutes and then closed.
08 01 54 29	LMP	Yes, it does.
08 01 54 30	CDR	Yes, that's ... Yes. Yes. ...
08 01 54 36	LMP	Yes. Yes. I didn't use that this morning.
08 01 54 40	CDR	... Al. ...

08 01 54 50	LMP	That's true.
08 01 54 51	CDR	...
08 01 54 56	LMP	Yes. You were smart.
08 01 55 19	CC	Good Ship Endeavour, this is Houston. We'll see you on the other side.
08 01 55 23	CMP	Okay, Joe.
08 01 55 43	LMP	Okay, we got - -
08 01 55 44	CDR	We stow this in that jum [?] bag down there? When I took that ..., Al? Okay.
08 01 56 28	LMP	How about this? Go MANUAL and WIDE. Right, Al? That what you say? Then - then go to REACQ? Just leave it in MANUAL and WIDE until we come around, right?
08 01 56 41	CMP	What?
08 01 56 42	LMP	MANUAL and WIDE. How about the SQUELCH ENABLE?
08 01 56 56	LMP	I have the SQUELCH ENABLE on.
08 01 59 17	LMP	I'll get it. This is ...
08 02 00 04	CMP	Okay.
08 02 00 20	LMP	Okay, all ... be done behind here.
08 02 01 02	CDR	You want to - I don't care. Where is the best place for you to be?
08 02 01 08	CMP	Here ...
08 02 01 09	CDR	Okay. I'll just stay here in the center.
08 02 01 20	CMP	...
08 02 01 22	CDR	I know. You ... put mine on.
08 02 01 25	CMP	... launch.

08 02 01 27	LMP	We might have them sorted out by then.
08 02 01 36	CDR	Old Al, he's a gentleman ...
08 02 01 40	LMP	No, don't bruise him.
08 02 01 53	LMP	Yes?
08 02 02 43	CDR	... read that ... now?
08 02 03 05	CDR	... Magic Marker ... Besides, these used to be the guys ... all versions ... all the cross-subjects of the command module. Although ... all the stuff ...
08 02 03 43	CDR	... a lot of garbage. ...
08 02 03 55	CDR	..., Jim. ... all garbage ...
08 02 04 08	LMP	Yes. ... put the garbage in here all ...
08 02 04 46	CDR	I don't - -
08 02 04 49	LMP	We do? Shoot, I - I feel great today.
08 02 04 56	CDR	... gone from one ... to the two.
08 02 04 59	LMP	What do I have to do?
08 02 05 01	CDR	Photograph that ...
08 02 05 02	LMP	Oh, yes.
08 02 05 12	LMP	I should have brought that LEC hook back. It sure was handy in the LM. Trying to grab stuff with the EV gloves was like work.
08 02 05 37	CDR	... 5 minutes ... did you get them - did you get them back ...
08 02 05 49	LMP	You know, Dave, we had probably - we had the worst condition possible for getting up and down that front ladders. That's the problem - -
08 02 05 55	CDR	...
08 02 05 56	LMP	For getting up and down that front ladders. The gear hadn't stroked at all. And it was, you know, practically off the surface. If I didn't have

anything, if I could give a good leap, I could make it to the first rung. Most times, while carrying something, I ended pulling myself up with my arms to get to the first rung.

08 02 06 15 CMP ... the gear didn't stroke ... - -

08 02 06 16 LMP Didn't stroke at all. In fact, the front pad wasn't even on the surface. No, the pad was loose - -

08 02 06 24 CMP Yes.

08 02 06 25 LMP - - free to rotate, so it wasn't even - it wasn't making a firm contact at all with the surface.

08 02 06 36 CDR ... sticking to the bottom, to me. I'll tell you, Jim, it sure is a lot easier than that damn ...

08 02 06 45 LMP Oh, yes, particularly, you know, if there is a little time. I - I could transfer the bags up and just leave them on the porch, wait for you to get up there, and you pass them, then I could grab them with that LEC hook.

08 02 06 55 CDR ... in three times to try it. ... once to transfer the LEC ...

08 02 07 02 LMP Yes.

08 02 07 48 CMP Try your scissors. You ... Your scissors are over there, on your left of your - O_2 FLOW HI. Help me dump it.

08 02 08 07 CDR Oh, shit! ... ketchup ...

08 02 08 13 LMP Here's some, Dave. Right here.

08 02 08 15 CDR Okay. Now ...

08 02 08 36 LMP Want some more?

08 02 08 39 CDR ...

08 02 09 20 CDR ...

08 02 09 42 LMP Cabin pressure's are ...

08 02 09 44	CDR	Cabin pressure's are what?
08 02 09 45	LMP	Split at 5.
08 02 09 51	CDR	What? This vent is open ...
08 02 10 05	CDR	Myrtle was ... and the ... valve was just open ... back up.
08 02 10 50	LMP	... your burn's out if you leave your flow valve in normal? ...
08 02 11 15	CDR	Jim, I think this little valve in your jiminy [?] bag is all clogged up. That's your problem. Because I just tried that, and it works fine - transferred to a new jiminy [?] bag. ... valve.
08 02 11 26	LMP	Yes, I think my valve is probably a little clogged.
08 02 11 28	CDR	Well, you got to keep it clean.
08 02 11 29	LMP	Yes.
08 02 11 59	CDR	...
08 02 12 02	LMP	... I don't think any ... in there.
08 02 12 58	LMP	Anyone for chewing gum this morning?
08 02 13 53	LMP	Want some chewing gum, Dave?
08 02 13 55	CDR	What?
08 02 13 56	LMP	Want any chewing gum?
08 02 13 57	CDR	...
08 02 14 37	LMP	Do you have all the parts there, Al?
08 02 14 38	CMP	They're in here if you need them. ...
08 02 14 47	LMP	Good.
08 02 14 56	LMP	They go on here ... Take a whole piece.
08 02 15 24	LMP	...

08 02 15 39 LMP ... stuff like that.

08 02 15 53 LMP ...

08 02 16 16 LMP Watch it. This washer over here slipped.

08 02 16 33 LMP If you had a screwdriver, I think we could push the washer on this side down a little bit, Al. This washer here's slipped up.

08 02 18 37 LMP Okay. I've got it through now.

08 02 18 40 CMP You've got it a little apart.

08 02 18 44 LMP ...

08 02 18 46 CMP Where is the other part? I got it through the washers. Go ahead. ... be tighter than that.

08 02 18 56 LMP Man!

08 02 19 10 LMP I don't see it. Okay. Tightened it up to some extent ... this screwdriver. Why don't we try them out.

08 02 19 42 LMP Tool E fit in this socket over here? It's too big?

08 02 20 05 LMP Yes?

08 02 20 06 CDR ...

08 02 20 10 LMP Okay, I think we got it. O_2 FLOW HI again.

08 02 20 33 LMP I think you almost got it. You want me to try it ...

08 02 20 50 CMP Better put some chewing gum on it; maybe some tape. That's what we need. Put some tape around it. That will keep it from backing off.

08 02 21 06 LMP Guess we ought to check those screens on the - on the hoses, too; they're probably - should be changed this morning.

08 02 21 23 CDR ... get the vacuum cleaner, pull all the filters out, and we'll ... - -

08 02 21 38 LMP Okay.

08 02 21 39 CDR - - Get the vacuum cleaner ... off, lay down every bag and ... everything before we leave. ... shoes ... stow away ... In the mean time, I'll go around and ... get it ... all the little bags we have and ... all the goodies from the LM, put them in that one camera bag ... bag, and ... And ... check. It would be nice to log all ... before we start taking ... - -

08 02 22 26 LMP Yes.

08 02 22 27 CDR - - Exactly what we're ...

08 02 22 30 LMP Yes, okay. Okay, Dave. If you hand me the tape. I think this is about as tight as we'll get this.

08 02 22 42 CDR I can't hear you.

08 02 22 43 LMP Little pieces of tape.

08 02 22 44 CDR Tape?

08 02 22 45 LMP Yes.

08 02 22 59 CDR How big?

08 02 23 01 LMP Oh, probably - 6 inches worth. Yes.

08 02 23 13 LMP Yes.

08 02 23 27 LMP Dave Scott taught me. Tape everything. Yes, I don't know what we would have done if we hadn't had the tape along. I might have been without comm on the surface.

08 02 23 53 CMP Okay, I think your seat's fixed.

08 02 25 17 LMP You know what we can also do, Dave, is wet wipe the MAGs. Might be even better than - wet wipe them - get a towel - damp towel here - just wipe them off.

08 02 25 27 CDR MAGs?

08 02 25 28 LMP Yes, rather than vacuuming.

08 02 25 29 LMP No vacuum ... wet wipe ... towel ...

08 02 25 36 LMP Procedure says to unstow them, vacuum, and then wet wipe. Yes.

08 02 25 41 CDR ...

08 02 25 47 LMP Yes, I was just going ... LM Timeline.

08 02 26 01 CDR I think I would follow the ...

08 02 26 06 LMP Yes.

08 02 26 07 CDR You know why I vacuum ...

08 02 26 11 LMP Okay.

08 02 26 12 CDR ...

08 02 26 16 CMP Can't we use this little square?

08 02 26 17 LMP Yes. Yes.

08 02 26 18 CDR Make sure you ...

08 02 26 20 CMP Use those little square jobbies, you mean - we have around. Yes.

08 02 26 24 CDR And I think vacuuming would be easier to get in the cracks. And I certainly think that dirt will - dirt can get in the cracks ... Maybe wipe the surface clean. ... Okay. ...

08 02 27 31 LMP Yes. Okay.

08 02 27 33 CDR ...

08 02 27 52 LMP You don't have another bag we can put this - this trash in?

08 02 28 02 CDR ...

08 02 28 04 LMP I was wondering if we had another big feed bag that was just about empty - the food locker, we could put this in there. Better than making two transfers.

08 02 28 39 CDR ...

08 02 29 08 LMP ... CG

08 02 29 10	CDR	...
08 02 29 21	LMP	Well, where's the JETT bag? Let's put it in the JETT bag.
08 02 29 24	CDR	We can't use the JETT bag. If we do that you've got to get the ...
08 02 29 32	LMP	Okay, okay.
08 02 29 34	CDR	Get your own C ...
08 02 29 35	LMP	Okay.
08 02 29 58	LMP	We don't put up with it.
08 02 30 17	LMP	Do you want to take this down with you? Just transfer all the stuff up - out of that bag and into this one here, Al.
08 02 30 22	CMP	Yes.
08 02 30 28	CDR	... We got JETT bag in 3 - 310B ... Turn around and look ...
08 02 30 46	CMP	...
08 02 31 12	CDR	No, that's ... canister.
08 02 31 25	CDR	Hey, I got a mapping camera pad ...
08 02 31 31	LMP	Yes.
08 02 31 33	CDR	...?
08 02 31 35	LMP	Which one do you want to get in? This one? Okay.
08 02 31 51	LMP	I'll just unplug here.
08 02 33 35	CMP	...
08 02 33 37	CDR	What?
08 02 33 38	CMP	I got the LM Timeline ...
08 02 33 56	LMP	Yes, I have.

08 02 33 57	CDR	...
08 02 34 09	CDR	Yes.
08 02 34 10	LMP	... cooled things off, too, huh? Beat his ass, too.
08 02 34 15	CDR	No, I ...
08 02 34 18	LMP	Oh, I don't know.
08 02 34 20	CDR	No, I ... something.
08 02 37 21	CDR	Daylight. Oh, okay. Sure will. ...
08 02 37 35	CMP	...
08 02 38 41	CDR	You know, I figure we got almost exactly a 100 hours. As a matter of fact, this ent - this orbit entry, or - entry interface, is at - 291:30 - huh - 294:43. It is now 194 and some.
08 02 39 25	LMP	Not as bad as ...

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08 03 51 15	LMP	Roger.
08 03 51 16	CDR	Roger. Let's go back to POO.
08 03 51 19	LMP	Mine, too. Is mine in work?
08 03 51 22	CDR	No (laughter). I got mine.
08 03 51 26	LMP	Yes.
08 03 51 27	CMP	... went that-a-way, huh? Okay. I got tape motion going, so I guess we might as well -
08 03 51 42	LMP	We don't need those guys.
08 03 51 50	CDR	Oh - beautiful. Fine.
08 03 51 58	CMP	... your private beverage.

08 03 52 11	CMP	Okay, Joe. And we're just sitting here in attitude all set to dim the lights and do the gegenschein.
08 03 52 30	CMP	(Laughter) Certainly, Joe (laughter).
08 03 52 38	CDR	"Anything you need, give us a call."
08 03 52 42	CMP	(Laughter) Just like we're assigned right behind ...
08 03 53 02	CMP	Better check our camera time here.
08 03 53 08	CDR	153 even is where the Flight Plan calls us.
08 03 53 50	CMP	Go ahead.
08 03 53 52	CDR	Okay, in 1 minute, Al.
08 03 53 55	CMP	Yes. What frame time?
08 03 53 57	LMP	One frame, the whole minute.
08 03 54 01	CMP	Yes.
08 03 54 04	CDR	Ten seconds.
08 03 54 05	CMP	One in each hand. ... look all right? Okay?
08 03 54 19	CDR	Looks like we're 1 minute and 18 seconds down in the Flight Plan.
08 03 54 23	CMP	Bravo. I want to go get a star mark.
08 03 54 27	CDR	Okay.
08 03 54 31	CMP	Hey. Got coffee?
08 03 54 36	LMP	Yes.
08 03 54 38	CMP	Yes. ...
08 03 54 40	CDR	Okay, Jim, if you'll give us FREE.
08 03 54 53	CMP	And turn the lights off down there.
08 03 55 19	CDR	Can't get used to it. We're getting free light out there.

08 03 56 04 CMP Yes, that's some stuff, ain't it?

08 03 56 06 CDR That's really bright.

08 03 56 22 CMP Now we're trying the gegenschein, the midway point, and the Moulton point. But we got to do an attitude maneuver here in just a minute. In fact, in 3 minutes from now, to be precise, since we're getting a 3-minute exposure.

08 03 56 52 CMP Yes, we're all right for that.

08 03 57 03 CMP Here.

08 03 57 05 CDR That's - that's in some bunch of ... anyway.

08 03 57 17 CDR Well, you see the gegenschein?

08 03 57 21 CMP Well, it should be straight ahead of us, Dave.

08 03 57 30 CDR ...

08 03 57 36 CMP No.

08 03 57 54 CDR Well, I'm not sure. I think we ought to get ... I - I - Why don't you look - I think it would be -

08 03 58 00 CMP No. If there is such a thing, there's a - there's a very definite branch off from the Milky Way. Floating almost to big B. Well, it's not long.

08 03 58 19 CDR No - no, the big hairy one.

08 03 58 28 CMP Yes, that's right. No, it's - it's a localized area, you know. But it would probably be in the shape of an oval. Well, anyway, that's the only thing - that's the only thing that came close to that, was that thing that looked like a branch off the Milky Way. Double or nothing.

08 03 59 34 CMP Okay, turn the lights up there, Jim.

08 03 59 54 CMP No. Okay, go to CMC, AUTO. Okay, now we want to maneuver to another point there: Midpoint attitude, Flight Plan.

08 04 00 05 LMP Midpoint. I understand.

08 04 00 09	CMP	Okay, plus .6900.
08 04 00 14	LMP	Let's see.
08 04 00 17	CMP	5100? And minus 021.
08 04 00 35	CMP	No, 261.
08 04 00 46	CDR	Yes. Okay.
08 04 00 48	LMP	...
08 04 00 54	CMP	It's - it's in the ...
08 04 00 56	LMP	Oh, Jesus!
08 04 00 58	CMP	...
08 04 01 10	LMP	Shouldn't laugh at me.
08 04 01 18	CMP	Give him my regards.
08 04 01 21	CDR	Now break down a little bit. Look, he'll stay crazy if you're acting crazy. Look, Al, he doesn't understand.
08 04 01 29	CMP	We're down in the time line. Getting slightly green, Jimmy, my boy?
08 04 01 34	LMP	No.
08 04 02 00	CDR	I got to get it into AUTO.
08 04 02 08	CMP	... getting ...?
08 04 02 12	LMP	Christ!
08 04 02 17	CMP	Yes, I know.
08 04 03 08	CDR	Now let the rate damp there for a second; hope it improves.
08 04 03 48	CDR	Okay, you're not losing face.
08 04 03 52	CMP	Yes. Right. Okay.
08 04 04 19	CMP	As I was saying -

[redacted]

08 04 04 22	LMP	Ah, go to hell, MDC.
08 04 04 24	CMP	What's that time on the other one? Time on the DSKY?
08 04 04 45	LMP	...
08 04 05 37	CMP	Mm-hmm. Yes, I used them, too.
08 04 05 51	CMP	What elevation? Yes.
08 04 06 32	CMP	Yes, there's quite a few stars out there, aren't there?
08 04 06 35	LMP	Christ! ... given you?
08 04 06 38	CMP	A little darker now. Let's see. There's my star right up over there. Yes, that's -
08 04 06 49	LMP	...
08 04 07 02	CDR	...
08 04 07 38	CDR	Damn! You always seem to take it bad when you do an alinement.
08 04 07 45	CMP	Well, you can't be all crude and all. But that little - that - that little - that thing there is something. Might be another planet.
08 04 07 54	CDR	Why don't you ...?
08 04 07 56	CMP	Yes. Yes.
08 04 08 18	CDR	...
08 04 08 28	CMP	Yes.
08 04 08 47	LMP	...
08 04 08 54	CMP	Yes, trying to move ... We've got another 5 minutes to go. Anyway, we've used -
08 04 09 02	CDR	Okay. Okay, Jim, lights up.
08 04 09 14	CMP	And we got a P20 coming then.

08 04 09 19	CDR	Yes, CMC, AUTO. And this time we want maneuver to -
08 04 09 38	CMP	Yes. We have ...
08 04 09 46	CDR	We haven't ...
08 04 09 54	LMP	...
08 04 09 57	CMP	Well, got the housekeeping done.
08 04 10 02	CDR	We're not going to have a ...
08 04 10 09	LMP	That's a shame. ...
08 04 10 25	CMP	I can't find - -
08 04 10 26	CDR	Turn the lights down and look for a few minutes, if you want.
08 04 10 29	CMP	We don't have to stop for another 10 minutes yet.
08 04 10 33	CDR	So you can go to ATTITUDE HOLD there, Jim.
08 04 10 36	CMP	Or go to CMC, AUTO.
08 04 10 48	CMP	Got it. Turn it down. Turn that damn thing down.
08 04 11 37	CMP	...
08 04 11 39	LMP	I want to look for a few minutes.
08 04 11 56	LMP	God damn. Is it in there?
08 04 11 59	CMP	You can see something bright down in there.
08 04 12 27	LMP	Al, could you move it?
08 04 12 29	CMP	No, it's ...
08 04 12 50	CMP	Yes.
08 04 12 59	CDR	...
08 04 13 05	LMP	No, can't see. I just can't see. ... lights wouldn't come down. It's a function of lighting.
08 04 13 22	CMP	No. ... got ... something else.

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08 04 13 26	LMP	No, I really can't see anything, Dave. ...
08 04 13 28	CMP	Oh, shit. You're too easily impressed.
08 04 13 33	LMP	No one thinks like me.
08 04 13 35	CMP	Yes. As a matter of fact, that's what I keep saying.
08 04 13 44	LMP	Freak you.
08 04 13 45	CMP	That's not nice.
08 04 13 48	CDR	See if I can see that.
08 04 14 01	CDR	Oh, let me see. That's - that's too hard to see.
08 04 14 09	CMP	Okay.
08 04 14 15	LMP	...
08 04 14 17	CDR	They're not - they're not as bright as I thought they'd be, either.
08 04 14 20	CMP	They're not?
08 04 14 21	LMP	Is that right?
08 04 14 22	CDR	Yes. They're not - they're not much brighter than they are on Earth. Okay, lights up. Camera's off?
08 04 14 42	CMP	No, the guy wants that - business here. Yes.
08 04 15 50	CMP	Okay, Dave, will you put these back in B-2 for me, please?
08 04 16 30	CDR	Jim? Is that breaker off?
08 04 16 59	CDR	Yes, might as well call.
08 04 17 01	CMP	All right. I want to move these before I - ... Ow!
08 04 17 09	CDR	All right.
08 04 17 11	CMP	Too early.
08 04 17 28	LMP	...

08 04 17 45	CMP	...
08 04 20 33	CMP	Yes.
08 04 20 45	CMP	Huh? Yes. Yes, I'm a person. Right here, Jim.
08 04 20 51	CDR	...
08 04 20 52	CMP	Well, put the TV back in -
08 04 20 56	CDR	If you will, snap that one.
08 04 20 58	CMP	It kind of gets in the way of everything else. Let me stick it down here for now.
08 04 21 08	LMP	Sure is fun with lots of people.
08 04 21 12	CMP	Stow them.
08 04 21 54	CDR	Put that one down here with mine.
08 04 22 11	CDR	What's that, Jim?
08 04 22 13	LMP	No!
08 04 22 14	CMP	Good. Very good.
08 04 22 17	CDR	Okay?
08 04 22 18	CMP	Yes. You got to - yes. We've already signed those, haven't we? We haven't signed these? It really doesn't make much difference, does it?
08 04 22 26	CDR	No.
08 04 22 27	CMP	We don't really have to sign them now I guess. We can do that anytime.
08 04 23 10	CMP	Yes, those - those covers would have been infinitely more valuable, I think.
08 04 23 17	CDR	Oh, well.
08 04 23 21	CMP	Maybe, Dave, it's just as well we didn't.
08 04 23 27	LMP	Okay.

08 04 23 30	CMP	Bastard.
08 04 23 35	CDR	...
08 04 24 49	CDR	I've got one. Come down.
08 04 24 51	CMP	God damn. Is it - is it in there?
08 04 24 56	CDR	Oh, I've only been changing the film; one in the LM and one in there. Come on down.
08 04 25 02	CMP	I'm going to have to go all the way back to the Moon to come on some of that.
08 04 25 06	CDR	(Laughter)
08 04 26 13	CDR	...
08 04 26 21	CMP	Yes, very good. ... that move.
08 04 26 30	CDR	...?
08 04 26 31	CMP	Yes.
08 04 26 32	CDR	What? No more film.
08 04 26 36	CMP	What?
08 04 26 37	CDR	... I need more film ... camera ...
08 04 26 39	CMP	Can you change it?
08 04 26 42	CDR	...
08 04 26 45	CMP	Yes, but you know the way he is.
08 04 26 49	LMP	Feel around here.
08 04 26 50	CMP	Yes, sir.
08 04 26 57	CDR	...
08 04 27 04	CMP	Oh, no. But I don't think you are. ...
08 04 27 10	LMP	That's the reason. Yes, yes, yes.
08 04 27 20	CDR	...

08 04 27 22 CMP That doesn't take very long.

08 04 27 26 LMP Where you going?

08 04 27 30 CMP This guy's got more pens somewhere, because I need one to keep track of the Flight Plan, too.

08 04 27 35 LMP Here's one.

08 04 27 54 CDR ..., Al.

08 04 27 55 CMP I got one.

08 04 28 25 CMP Excuse me, Jim.

08 04 28 28 LMP Excuse me.

08 04 29 33 LMP Sure can.

08 04 29 57 CDR ...

08 04 29 59 CMP Yes. I got one. Yes.

08 04 30 01 LMP ... solution in color ...

08 04 30 19 LMP You got a MAG that hasn't been used at all?

08 04 30 32 CDR ...

08 04 30 37 CMP Huh? Just as - it may be just as well. Tell me we don't have any.

08 04 30 43 CDR We don't - we don't have any of that left.

08 04 32 10 CMP Hey, gang, they don't have another eat period for 6 hours.

08 04 32 12 CDR What?

08 04 32 13 CMP There's not another eat period in the Flight Plan for 6 hours.

08 04 32 16 CDR Six more hours? Jesus Christ!

08 04 32 21 CMP That's right. And that's just before our sleepy time.

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08 04 32 28	CDR	Six hours to bed.
08 04 32 43	CDR	Yes. I don't think we need the Contingency anymore. We don't need that one. Or these. Or these.
08 04 33 21	CDR	Can I get that map you got over there?
08 04 33 24	CMP	Okay. Yes, got -
08 04 33 29	CDR	Two of them here. Have three.
08 04 33 41	CMP	Okay, David.
08 04 33 42	CDR	Most of these don't.
08 04 33 45	CMP	Yes. Got two fresh maps here. One's labeled CMP and the other is labeled nothing.
08 04 34 36	CMP	Well, we missed some spectacular terminator photos. Damn. You know, I was wondering. You want to get the terminator photos if still possible. That would have really been spectacular.
08 04 34 54	CDR	...
08 04 34 55	CMP	Well, yes. The terminator's on the Flight Plan.
08 04 35 00	CDR	Yes.
08 04 35 56	CMP	Well, if we've got the film, by golly, I'd like to take a lot of terminator photos.
08 04 36 09	CDR	Yes.
08 04 36 10	CMP	No, that'd really be neat; take a bunch of terminators. And the setting should be the same regardless of where the terminator went.
08 04 36 18	CDR	...
08 04 36 21	CMP	Yes.
08 04 36 22	CDR	...
08 04 36 23	CMP	Boy. That one's - Look at that.
08 04 36 29	CDR	...

08 04 36 44	CMP	Do you know how to change the settings from 250 to 500?
08 04 36 49	CDR	...
08 04 36 57	CMP	No, I mean - I mean what the comparable settings are. Like f/5, 1/50th and all that.
08 04 37 04	CDR	...
08 04 37 05	CMP	Yes.
08 04 37 07	CDR	...
08 04 37 09	CMP	Terminator photos for the 250, they call out f/5.6 and 1/125th. And that's for the very-high-speed black and white. Yes. You don't have any left though, do you? No. Yes.
08 04 37 31	CDR	...
08 04 37 35	CMP	No. No, that's not fast enough. That's all right. Listen, I got lots of brand R left. Use it.
08 04 37 59	CDR	... something.
08 04 38 02	CMP	Yes.
08 04 38 16	CMP	Yes. It sure would be nice to get a - some pictures down into the bottom of ... bottom. ...
08 04 40 25	CMP	Oh, deary.
08 04 40 34	CDR	The old Earth is real impressing down there. ... get some.
08 04 41 16	CDR	...
08 04 41 19	CMP	Oh, boy! God, I guess. That thing was huge.
08 04 41 25	LMP	...
08 04 41 27	CMP	Never did, huh?
08 04 41 41	CDR	... Never mind.

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08 05 47 23 CDR Well, we ought to be able to tell in an hour.

08 05 47 24 LMP Okay.

08 05 47 30 CDR The what? Oh, yes. Okay?

08 05 47 55 LMP ...

08 05 47 57 CDR We are, Jim. I got it hot for you. Don't worry, pal, we won't forget you.

08 05 48 05 LMP I'll bet you ...

08 05 48 09 CDR No. I think he's right here.

08 05 48 12 LMP ... sex?

08 05 48 15 CDR Neuter? Okay, that spaghetti is mine. Hamburger wet pack. Pea soup, ham and salad, applesauce, cheese crackers. Brack!

08 05 48 32 CDR Blach! Does it look like it, Jim?

08 05 48 34 LMP Yes.

08 05 48 36 CDR You say it looks like it, Jim?

08 05 48 39 LMP No.

08 05 48 45 CMP You got eyes, they're almost 20 - 20, so - (laughter) Okay, it's a - -

08 05 48 53 CDR I think it's time to raid you. I want to make sure they get it all down - down on the - on the file there.

08 05 50 26 CDR Very good.

08 05 50 28 LMP What?

08 05 50 30 CDR That one's for you. Here. Have at it. ... turn around ...

08 05 50 53 CMP ... here.

08 05 52 04 CDR ...

08 05 52 09 LMP Well, I think I'd - stick it under the couch there. That's where I kept it before. But, of course - Huh?

08 05 52 17 CDR ...

08 05 52 19 CMP (Laughter)

08 05 52 21 CDR ...

08 05 52 22 LMP May be, David. The empty ones, you mean. Oh, that's what you're talking about. Empty one. Yes. Yes. A-2.

08 05 52 37 CDR Okay, Jimmy, you got 8 minutes to go.

08 05 52 59 LMP ...

08 05 53 01 CDR Hey, listen. You - you - you're bugging me a little bit. If you're going - if you're going to exercise, you ought to at least have the decency to put your biomed on (laughter). There's no sense wasting all that on us. Let the doc see it.

08 05 53 23 CDR Ooh, applesauce. Their applesauce is good stuff.

08 05 54 05 LMP You have Cannon towels, no doubt.

08 05 54 06 CMP Yes.

08 05 54 07 CDR I think I've been holding this many of them before.

08 05 55 31 CDR Oh, yes. Yes, we were in darkness about the time ... We'll be on the dark side for about 20 minutes now.

08 05 58 06 CDR Two minutes to go, Jim.

08 06 00 42 CMP Hey, Jim.

08 06 00 46 CDR Okay, Jim.

08 06 01 24 CMP ... regular ... heartbeat.

08 06 01 34 CDR Huh? Yes. After - after awhile it gets to be working, moving your legs around again, you know?

08 06 01 45 LMP ...

08 06 01 53	CDR	... boy, oh boy.
08 06 02 38	CDR	How do you mean?
08 06 02 48	CMP	No?
08 06 02 53	CDR	Oh, my eyes - my eyes were playing funny tricks on me for a while. ...?
08 06 02 58	CMP	So am I. Yes.
08 06 03 01	CDR	I'll think I'll see a - yes. Yes.
08 06 03 09	LMP	Oh, yes, I seem to be getting them.
08 06 03 17	CDR	Well, that's like a ...
08 06 03 19	LMP	Too early.
08 06 03 22	CDR	No. My brain is seeing them when you're not.
08 06 03 35	CMP	Hey, Dave, you any good at putting hot water in?
08 06 03 38	CDR	Oh, God, yes. Let's - Okay.
08 06 03 42	CMP	How about doing some pea soup for me when you get around to it?
08 06 03 45	CDR	Huh? Where's your spoon, Jimmy?
08 06 03 56	CMP	Is it in here?
08 06 04 12	CMP	... Jimmy's spoon.
08 06 04 19	LMP	It's in the - oh, okay. ...
08 06 04 32	CMP	You mean like these?
08 06 04 45	CMP	What spoon?
08 06 04 49	CDR	How many?
08 06 04 59	CMP	Oh! Gee, what'd I do? Try to get rid of them?
08 06 05 46	CDR	What?
08 06 05 55	LMP	You're getting ... for a ...

08 06 05 57	CMP	Yes.
08 06 06 02	CDR	...
08 06 06 35	CDR	... (Clears throat)
08 06 06 46	CMP	Yes.
08 06 06 50	LMP	...
08 06 06 53	CMP	Watch it. He'll be bitching about that.
08 06 07 42	LMP	...
08 06 07 45	CMP	Yes.
08 06 07 50	LMP	Give it to Al.
08 06 07 57	CMP	Give me the little white tool.
08 06 08 17	CMP	Thank you, Dave.
08 06 09 15	CMP	... got in the way here.
08 06 09 18	LMP	...
08 06 09 21	CMP	Yes. It really is. Yes. I wish you guys would go somewhere.
08 06 09 45	LMP	...
08 06 09 47	CMP	Because he doesn't want the gray to show.
08 06 09 50	LMP	...
08 06 09 51	CMP	(Laughter) He'd be perfectly happy if we had pens instead of erasers.
08 06 10 15	CMP	(Laughter)
08 06 10 49	LMP	...
08 06 11 22	CDR	Hey, how about exporting it?
08 06 11 34	CDR	... Yes. ...
08 06 12 20	CMP	...

08 06 12 43	CDR	You guys ...?
08 06 13 15	LMP	...
08 06 20 30	CDR	...
08 06 20 35	CMP	..., Dave.
08 06 20 37	CDR	Where? I don't see ... Huh?
08 06 20 44	CMP	Right there.
08 06 20 46	CDR	...
08 06 21 07	CDR	Yes. I can see ...
08 06 21 10	CMP	(Laughter)
08 06 33 34	CDR	Don't forget, we got ...
08 06 33 37	CMP	Yes.
08 06 35 50	LMP	What a sport.
08 06 36 06	LMP	What a sport!
08 06 36 08	CMP	...
08 06 36 09	LMP	You are.
08 06 36 11	CMP	(Laughter) Yes. Yes.
08 06 36 29	LMP	Enough!
08 06 36 32	CMP	Yes.
08 06 36 33	CDR	Enough's enough. ...
08 06 36 39	LMP	Yes.
08 06 36 41	CDR	... - -

TIME SKIP

08 09 46 10	CDR	Boy, that's ...

08 09 46 13 CMP We didn't put it in my safe place.

08 09 46 18 CDR Are you at P51?

08 09 46 20 CMP I'm not there yet. See, I cleaned that thing religiously, all - every night?

08 09 46 28 LMP No - -

08 09 46 29 CDR But we didn't - -

08 09 46 30 LMP ...

08 09 46 31 CMP But - but we didn't get it last night, I don't think.

08 09 46 32 CDR No, it's all that crap we brought in here.

08 09 46 34 LMP Yes. Yes. Yes. Feel the difference already in air that's blowing out of the hose. It really does make a difference. Yes.

08 09 46 47 CDR I thought it was practically suffocating.

08 09 46 51 CMP Probably that, and the combination of going in dark.

08 09 46 58 CDR Oh, gosh. They're sitting there in their own comfortable console.

08 09 47 02 LMP ...

08 09 47 03 CDR ...

08 09 47 04 CMP Yes, that's right. Go ahead.

08 09 47 21 CMP All righty. Thank you, sir, and we'll see if we can conjure one up for you.

08 09 50 50 CMP ...? Yes, I need to get him a status of the command module. Joe - we'll give it to him when we come around next time.

08 09 51 38 CDR That's the stuff ...

08 09 52 35 CMP You tell me when - You tell me when ... that flight data ...

08 09 54 28 CMP What's you doing? What's you doing? Throwing away dirty stuff? ...

08 09 54 40 LMP ...

08 09 54 44 CMP ... - You didn't put on clean tonight, did you?

08 09 54 46 LMP ...

08 09 54 47 CMP Oh. Your last one? Guess you got stuck with it, Jim. ...

08 09 55 26 CMP (Laughter) I've got a little job for you to do, Jim. Assemble camera, lens, mirror, and magazine on special window-5 bracket; rotate the lens 180, so we can take pictures of the mass spec. You do that in - about 15, 20 minutes. Well, we use the - we use the 16 millimeter. And the bracket's down in A-8. You know, that big bracket down there. You do that while I'm - -

08 09 56 09 LMP I don't see it.

08 09 56 10 CMP - - while I'm doing a P52. Oops! Excuse me, Dave. ...

08 09 56 18 CDR ...

08 09 56 21 CMP Yes, I know. God dang, it's not very crowded down here!

08 09 56 39 CDR Hey, you got to this ...

08 09 56 40 CMP Okay. We'll - we'll get it. I'll get it. Keep going. I'll get it.

08 09 56 44 CDR ...

08 09 56 47 CMP I used to do it by myself. No big deal.

08 09 57 08 CMP Okay, as long as you're in the couch, how about putting me in FREE? MODE to FREE.

08 09 57 14 CDR Okay.

08 09 57 36 CMP Star 1.

08 09 58 56 CMP Star 40.

08 09 58 57	LMP	Where?
08 09 58 59	CMP	Out there.
08 09 59 47	CDR	Wooo!
08 09 59 52	CMP	...
08 10 00 04	LMP	...
08 10 00 06	CMP	Huh?
08 10 00 07	LMP	...
08 10 00 09	CMP	Let's see. ... 202:00:30.
08 10 00 43	CMP	Jim wants to know if his camera ... on the mass spec stuff.
08 10 00 59	CMP	Jim, you want to get the - the mass spec boom and gamma ray boom on their way out now? Might as well go ahead and do that.
08 10 01 08	LMP	MASS SPEC BOOM, DEPLOY. ... find it?
08 10 01 11	CMP	No, just get it out.
08 10 01 13	LMP	Do you want to - -
08 10 01 14	CMP	We got time for it.
08 10 01 15	LMP	- - ...
08 10 01 16	CMP	Yes. Okay, mass spec boom photography, 16 millimeter - MAG L. What MAG's on there? E is on there now?
08 10 01 37	LMP	...
08 10 01 57	CMP	Here, you've got to put this UV thing in the window, too.
08 10 02 02	LMP	I'll have to go back.
08 10 02 36	LMP	Okay. I took all this - extra film and ...
08 10 02 38	CDR	... You got plenty of places in here, right?

08 10 02 43	CMP	Yes.
08 10 02 47	CDR	... remember ...
08 10 02 52	CMP	Okay.
08 10 02 53	CDR	You'll never get it all used up if you ...
08 10 02 55	CMP	That's right. We'll never have time to use it all.
08 10 03 04	CDR	...
08 10 03 20	CMP	Yes. Is there any further use for the vacuum cleaner and all this - -
08 10 03 25	LMP	... -
08 10 03 26	CMP	- - stuff hanging around here?
08 10 03 28	LMP	... Put the bag and brush in ...
08 10 03 39	CMP	Okay.
08 10 03 47	LMP	...
08 10 03 48	CMP	Yes.
08 10 03 53	CDR	...
08 10 04 13	CDR	You've got to use it for ...
08 10 05 07	CDR	What have you got in there now?
08 10 05 11	CMP	Where did you - -
08 10 05 12	CDR	...
08 10 05 13	CMP	- - where'd you leave the filter and all that stuff?
08 10 05 16	LMP	...
08 10 05 17	CMP	Okay. Might as well leave it all there, huh?
08 10 06 19	CMP	I think before activities get too far away, I will take a crap.
08 10 06 24	CDR	Is that so?

08 10 06 25 CMP Yes. Jim, will you unplug me, please? You guys got the comm.

08 10 06 29 LMP ...?

08 10 06 30 CMP Yes.

TIME SKIP

08 19 49 57 LMP Trade you for your cocoa.

08 19 50 17 CDR 35, 45.

08 19 51 23 CDR Okay. Okay?

08 19 51 33 CDR ... Right? ... 3.

08 19 51 51 LMP Here you go, Al. There. Okay. Good.

08 19 52 23 LMP Here's your bag, Al. Give me your juice, then, Al. I'll take the juice.

08 19 52 58 CDR I think I'll ... Okay. ... eggs ...

08 19 53 20 LMP We have sausage and eggs. How about sausage this morning.

08 19 53 24 CDR ...

08 19 53 25 LMP Sausage this morning.

08 19 53 27 CDR Scrambled eggs and sausage? That'd be good.

08 19 53 29 LMP That'd be good. Yes.

08 19 53 48 CDR ...

08 19 54 14 LMP Our favorite compartment.

08 19 54 43 CDR ... sleep, Jim?

08 19 54 45 LMP Pretty good. I just woke up once.

08 19 55 54 SC (Humming)

[redacted]

08 19 56 18	CDR	... down there. ...
08 19 57 03	LMP	Want me to try to put that separator on the - dispenser down here, Dave?
08 19 57 09	CDR	Well, we haven't got any ...
08 19 57 21	LMP	That's probably why we're farting so much.
08 19 57 23	CDR	What'd you say?
08 19 57 24	LMP	Probably why we're farting so much up here.
08 19 57 27	CDR	Yes, I didn't put - -
08 19 57 28	LMP	All smells like hydrogen, really.
08 19 57 30	CDR	- - ...
08 19 57 31	LMP	Check it here.
08 19 57 32	CDR	... What's that number.
08 19 58 58	LMP	Okay, Dave. Here's that other cocoa.
08 19 59 10	CDR	...
08 19 59 12	LMP	Too late now. Don't be an Indian giver.
08 20 01 08	LMP	If you have something there to go in the hot water, Dave, I'll stick them on for you.
08 20 01 15	CDR	Yes, I got ...
08 20 01 26	LMP	What do you want, Dave?
08 20 01 28	CDR	Oh, that's all right. What do you have?
08 20 01 32	LMP	Okay, I'll see what I can dig up out here.
08 20 01 34	CDR	...
08 20 01 35	LMP	No - -
08 20 01 36	CDR	...
08 20 01 38	LMP	Be easier since I'm here.

08 20 02 32	LMP	Can you bring this back a little, Al? Will that go back?
08 20 02 50	LMP	Yes.
02 20 03 40	LMP	Anybody want any fruit? Lot of apricots and peaches.
08 20 04 02	CDR	..., Jim?
08 20 04 03	LMP	Yes.
08 20 04 38	LMP	How about some bacon squares?
08 20 05 02	CDR	...?
08 20 05 05	LMP	Coffee.
08 20 05 21	LMP	Yes. Stick it on there. Did you tighten down on it?
08 20 05 31	CDR	...
08 20 05 36	LMP	Is it tightened down?
08 20 05 37	CDR	Turn around.
08 20 06 20	CDR	...
08 20 07 59	CDR	... Jim ...
08 20 08 10	CDR	Very simple.
08 20 09 11	LMP	Ready? You really have to push it on there.
08 20 09 14	CDR	...
08 20 09 15	LMP	Is it up all the way? Yes - you - you have to push pretty hard to get it on there.
08 20 09 27	CDR	Think it ...
08 20 09 30	CMP	I don't know ...
08 20 10 42	CDR	I don't know. Something coming out of there?
08 20 10 47	LMP	Yes, it's coming out there, but - looks like there's a lot of water collecting at the end of the separator. No, I just - it's got a pool there at the end.

[redacted]

08 20 10 58	CDR	...
08 20 11 12	LMP	In fact, it looks like it's leaking. It is leaking. It's leaking, Dave.
08 20 11 23	CDR	I guess it's just ... water ...
08 20 12 43	CDR	...
08 20 12 50	LMP	Went to bed at 9. Got up at 4.
08 20 12 55	CDR	Got up at 4!
08 20 13 03	LMP	Seven hours.
08 20 14 14	CDR	...
08 20 14 54	CDR	What?
08 20 16 54	CDR	...
08 20 17 02	LMP	When are we going to listen to music? Were you listening to - your recor - the recorder last night, Dave?
08 20 17 12	CDR	Say what?
08 20 17 13	LMP	Were you listening to your recorder last night?
08 20 17 15	CDR	...
08 20 17 17	LMP	Did - didn't you have some music on last night? I'd swear I heard music just before I went to sleep.
08 20 17 24	CDR	...
08 20 17 26	LMP	Put me to sleep anyway.
08 20 17 32	CDR	...
08 20 17 34	LMP	(Laughter)
08 20 17 45	CDR	...
08 20 19 25	CDR	...
08 20 20 48	LMP	Want me to put some hot water in those eggs, Dave?

08 20 21 13	CDR	...
08 20 21 15	LMP	About ready to go again.
08 20 21 31	CDR	...
08 20 21 32	LMP	Yes.
08 20 22 21	CDR	...
08 20 22 23	LMP	Yes.
08 20 22 24	CDR	...
08 20 22 26	LMP	Yes.
08 20 22 27	CDR	...
08 20 22 40	LMP	Okay.
08 20 22 57	LMP	Want some more?
08 20 22 58	CDR	Yes. Sure. ...
08 20 28 05	CC	Apollo 15, this is Houston. How do you read?
08 20 28 11	CDR	Hi, Houston; 15. Loud and clear. How - us?
08 20 28 17	CC	Hi, Dave. You're coming through loud and clear. How did our consumables update get to you? Okay?
08 20 28 25	CDR	Yes, we got normal ... Okay. We got everything but the oxygen.
08 20 28 34	CC	Okay. Want me to read those three up?
08 20 28 43	CDR	Okay. Go ahead.
08 20 28 51	CC	Roger. Oxygen tanks at that same time that I gave you originally were 61, 64, 48.
08 20 29 09	CDR	Okay. 61, 64, and 48. And I have a P52 for you and a crew status report.
08 20 29 20	CC	Fire away with them.

08 20 29 23 CDR Okay. The P52: NOUN 05 was .01; NOUN 93 was plus .029, minus .025, plus .018; it was torqued out at 211:52:00.

08 20 29 48 CC Roger.

08 20 29 52 CDR And if you still have your pencil handy, why, the sleep came out to 7, 7 and a quarter, and 7. And the PRDs: 25026, 23182, and 08033. And go ahead with your updates.

08 20 30 18 CC Roger. Okay, Flight Plan updates for the coming rev and - There's several of them here. And just to keep you feeling a little bit more optimistic, on the following revs, there are very few updates. Okay. At 212:40, we want to delete MAP CAMERA IMAGE MOTION, INCREASE.

08 20 30 53 CDR Roger. Got the deletion at 212:40. Go.

08 20 30 55 CC At 2 - Roger. At 213 plus 24, we want to delete the GAMMA RAY BOOM, DEPLOY.

08 20 31 08 CDR Marking DEPLOY.

08 20 31 10 CC And at that - there are three - Roger. And just below that, the MSFN verify len - lens tuck in and also the PAN CAMERA POWER, OFF; delete both of those.

08 20 31 23 CDR Roger. Copy the next two deletions also. Go.

08 20 31 30 CC At 214 plus 02. We want to change that camera configuration to the 250-millimeter lens, 250. The f-stop should be 5.6; the exposure time should be 1 over 125.

08 20 31 57 CDR Roger. 214:02. Camera configuration: 250 millimeter lens, f/5.6 ...

08 20 32 07 CC Correct. - -

TIME SKIP

08 23 35 22 LMP ...

08 23 35 27	CMP	What?
08 23 35 28	LMP	...
08 23 35 30	CMP	Yes, he'll ... Follow those numbers. As long as we're in FREE, it don't really make any difference whether you got P30 running or not, as far as P20 is concerned. Anyway, they don't care about it as long as we don't run it more than a half an hour.
08 23 36 43	CMP	No, he wanted to run the P20 through.
08 23 36 46	CDR	...
08 23 36 49	CMP	Yes.
08 23 36 50	SC	...
08 23 36 51	CMP	You want to do a P20 first.
08 23 36 52	SC	...
08 23 36 54	CMP	Yes, you don't need to do that until - They - they need to have us inertial for a while. Yes. We do that calibration in this attitude. And then at -
08 23 37 07	LMP	...?
08 23 37 08	CMP	Yes. At 55, then we can go ahead and do a P20, and - and get into attitude and then do the P30.
08 23 37 22	LMP	(Yawn) ... time for ...?
08 23 37 27	CMP	Hey; you know, it is. What time is that thing happening? Not for a while yet, I bet.
08 23 37 45	CMP	... another 3 and a half hours.
08 23 40 27	CMP	Yes, ...
08 23 40 33	LMP	... What ... do? Let's see ... We're ... that bag ... Put them away - ...
08 23 40 57	CDR	Stand by and ... Come on. ... LOGIC ...
08 23 41 02	LMP	8700? The rest of them ...

08 23 41 08	CDR	... still too ...
08 23 41 11	LMP	Yes, I know.
08 23 41 13	CDR	Got to ... these goddam ...
08 23 41 18	LMP	...
08 23 41 22	CDR	... this ...?
08 23 41 23	LMP	...
08 23 41 28	CMP	Yes, it's not much of a lineup - from a ...
08 23 41 38	CDR	...
08 23 41 41	LMP	... What are you trying to do? ...
08 23 41 53	CDR	Well, if you want to get - well, what I really want to do is make sure we got helmets and gloves ... Be right back.
08 23 42 00	LMP	Where you going?
08 23 42 01	CDR	I got to put your - I got to put my helmet ... my EV gloves. The rest of your helmet, Jim, will go with my helmet and your ...
08 23 42 21	LMP	Yes, put them down there. ...
08 23 42 32	CDR	... out?
08 23 42 33	LMP	... umbilical and ...
08 23 42 44	CDR	... going to do it just like you used to do it with a checklist back when ...
08 23 42 49	CMP	Try to find that checklist ... It's part of the requirement. ... do. You're going to have to punch all these goddam switches, pardner.
08 23 42 59	LMP	... for the ... switches, let me know.
08 23 43 16	CMP	Who doesn't?
08 23 43 19	CDR	...

08 23 43 28	LMP	Just have to see.
08 23 44 00	CDR	We'll have to stow this stuff for TEI. ... umbilical. All this stuff for the EVA configuration, ... really ... trouble.
08 23 44 20	CDR	... - -
08 23 44 21	CMP	Well, we are going to have to photograph the EVA, too. (Cleared throat)
08 23 44 27	CDR	I know that.
08 23 44 29	CMP	Okay.
08 23 44 30	LMP	..., too. ...
08 23 44 34	CDR	Yes.
08 23 44 42	CMP	We better not use - use your attitude. ... The rates are low. ... I think once we get ...; otherwise, maybe we could arrange a TEI ... (Laughter)
08 23 44 57	LMP	Yes.
08 23 44 58	CMP	Well, TEI, all we really need to do is ...
08 23 45 05	CDR	Sounds like you're trying to get out of EVA ... Tomorrow, ... take a little - -
08 23 45 10	CMP	Yes.
08 23 45 11	CDR	- - reshuffling. So, if you can go now, ... some reasonable point ... EVA prep. We can try it, anyhow; because tomorrow, when I'm trying to get things squared away for the EVA prep, by the time we can ... the EVA prepping ... It'll be late tomorrow before we even ...
08 23 46 04	LMP	Yes. We can get all that stuff done ...
08 23 46 08	CDR	Yes.
08 23 46 13	CMP	Got lots of stuff to be ...
08 23 46 15	LMP	... for these? Oh! ...

[redacted]

08 23 46 23 CDR ... Yes. Well, we can't really use those on this EVA. ...

08 23 46 30 LMP Yes.

08 23 46 34 CMP Watch it now. ... coming up ...

08 23 46 40 CDR ... Where will we have to go with - Well, let's put it in this ...

08 23 46 48 CMP It's getting ...

08 23 47 02 CDR ...

08 23 47 04 LMP What?

08 23 47 05 CDR I said, "Why don't we ...?"

08 23 47 08 LMP Yes.

08 23 48 01 CMP Well, we got the pan camera figured out for the new whole show, huh?

08 23 48 04 LMP Really?

08 23 48 08 CMP (Laughter).

08 23 48 10 LMP Stop laughing, you son of a gun, you ...

08 23 48 12 CMP I - I'm happy that it's even ready to come to, it's such a complicated bunch of shit.

08 23 48 25 CMP Okay, these return pictures should come out in the ... see what happens ...

08 23 48 57 CMP Another - Yes. As soon as we get through this other color, you can hand me that other MAG, and I'll get set up for the Earth pictures. I think I'll keep holding it. ... your problem. Why don't - -

08 23 49 12 LMP You know, this thing's ... about 30 degrees ...

08 23 49 17 CDR That right?

08 23 49 21 CMP ... that thing somewhere.

08 23 49 28 LMP ...

08 23 49 41	LMP	... would you hold that thing?
08 23 49 43	CDR	Damn right. Just sitting there, looking at the Moon.
08 23 50 12	CDR	...
08 23 50 19	CMP	... all right? ... What'd I do with my MAG. Here it is.
08 23 50 27	CDR	Did you take that cover off?
08 23 50 29	CMP	No, not lately. ...
08 23 50 30	LMP	...
08 23 50 32	CMP	Huh?
08 23 50 33	LMP	Take that ...
08 23 50 45	LMP	...
08 23 50 48	CMP	Move it up a little.
08 23 50 51	LMP	...
08 23 51 00	CMP	... Yes, take these a little bit later.
08 23 51 11	CMP	How's that?
08 23 51 13	LMP	That's about the only way you can get them.
08 23 51 15	CMP	...
08 23 51 21	LMP	Try to move them.
08 23 51 25	CMP	What?
08 23 51 26	LMP	Try to move them up one.
08 23 51 28	CMP	Yes. No?
08 23 51 37	LMP	Just going to leave these tied down.
08 23 51 45	CMP	... vertical?
08 23 51 57	CDR	Hey, watch the ... Be sure you don't get any of the crap out of that one.

08 23 52 06	CMP	Yes.
08 23 52 07	CDR	You ...?
08 23 52 10	CMP	Yes, that was my Hasselblad pack right here.
08 23 52 12	CDR	Well, that wouldn't ...
08 23 52 18	LMP	Really need to take a Hasselblad MAG with you.
08 23 52 20	CMP	Yes, give me a Hasselblad MAG ...
08 23 52 24	LMP	...
08 23 52 29	CMP	Yes, you're right.
08 23 52 30	LMP	...
08 23 52 43	LMP	...
08 23 52 46	CMP	Yes.
08 23 53 03	CMP	...
08 23 53 08	LMP	All you really need ...
08 23 53 12	CMP	...
08 23 53 14	LMP	Yes.
08 23 53 15	CMP	Okay.
08 23 53 25	LMP	Mine's here. ...
08 23 53 31	CMP	Here are mine, okay. ...
08 23 53 37	LMP	...
08 23 53 40	CMP	I'll take them.
08 23 53 47	LMP	...
08 23 53 50	CMP	How you like them? Okay?
08 23 53 52	LMP	...
08 23 53 59	CMP	Look for yours, pal.

08 23 54 00	LMP	(Laughter).
08 23 54 04	CMP	You should be proud - you should be proud of yourself, Jim.
08 23 54 16	CMP	Do you intend ignoring that question? Are you a naive ...?
08 23 54 24	LMP	I answered it. Hey, you got to get your -
08 23 54 26	CMP	God! What a posthole digger.
08 23 54 29	LMP	Chief priority. Time to do the P20. ... do it?
08 23 54 37	CMP	...
08 23 54 44	LMP	Oh. ...
08 23 55 17	LMP	...
08 23 55 25	CMP	Jim, how long has it been since weight? ... says part 1 - part 2, part 2. All the rest of you ready?
08 23 55 36	LMP	Yes.
08 23 55 38	CMP	DAC should be set for right now. Got to notify the ...
08 23 55 50	LMP	...
08 23 56 07	CMP	Y'all noticing that all that noise is gone?
08 23 56 11	LMP	What?
08 23 56 12	CDR	I don't know if ...
08 23 57 13	CMP	You ignoring that Flight Plan?
08 23 57 15	LMP	Cut it.
08 23 57 17	CMP	Aw, you ain't that bad. Catch it, son.
08 23 57 23	LMP	... won't come down. Help me?
08 23 57 45	CMP	All right, God damn you, come help me.
08 23 57 49	CDR	Boy, oh, boy.

08 23 57 51	LMP	All these MAGs ... 2 and a half by 2 millimeter. ...
08 23 58 01	CMP	... bracket.
08 23 58 03	LMP	Got a ... bracket.
08 23 58 04	CMP	That's 80 millimeter ... up there.
08 23 58 10	LMP	No. ... I gave it to you.
08 23 58 33	CMP	Hope you don't roll the ... back in there.
08 23 58 38	LMP	Can't believe it.
08 23 58 42	CMP	Ah! Okay, 2.8, 1/500th, and click one off - which I just blew.
08 23 59 00	CMP	Okay.
08 23 59 14	CDR	Hey, what time did -
08 23 59 17	CMP	Yes.
08 23 59 18	CDR	Got that one?
08 23 59 19	CMP	Yes, that at the - T-start time, yes.
08 23 59 21	CDR	Yes.
08 23 59 26	CMP	That solar corona is kind of interesting. You might watch it out the window there. You - you can really - you can really see it.
08 23 59 42	CMP	That's right.
08 23 59 44	CDR	Are you going ... from here?
08 23 59 46	CMP	Well, ENTER. That doesn't work right. Oh, you're trying to ENTER on NOUN 18.

DAY 10

09 00 00 00	CDR	Oh, my. I've got to have a NOUN.
09 00 00 09	CMP	NOUN 18 is attitude. Gimbal angles. There's time.
09 00 00 19	CDR	Well, ...
09 00 00 20	CMP	You loaded - you loaded gimbal angles, to drive to, for some reason.
09 00 00 25	CDR	...
09 00 00 27	CMP	Is it going there? You changed the gimbal angles in - in P20.
09 00 00 33	CDR	Why didn't I get a P50?
09 00 00 38	CMP	Because you were probably already - you were probably just getting to the P20 attitude.
09 00 00 41	CDR	... each time. Why don't we both do 20? You've taken up enough pictures.
09 00 00 48	CMP	Did you ENTER on the re - Did you ENTER on it when you got to the attitude?
09 00 00 54	CDR	No.
09 00 00 55	CMP	Well, that - Okay. Call up P20 again and go through that. Okay.
09 00 01 03	CDR	I get a NOUN 18 ... NOUN 78. ... NOUN 18.
09 00 01 12	CMP	What'd you do?
09 00 01 13	CDR	... option 5?
09 00 01 16	CMP	Yes. Option 5. Yes.
09 00 01 24	CDR	You ... another 20?
09 00 01 26	CMP	Okay? Go.
09 00 01 28	CDR	5.1. ...?
09 00 01 29	CMP	Yes - -

[redacted]

09 00 01 30 CDR - - ...? 5.2?

09 00 01 31 CMP That's good.

09 00 01 32 CDR ...?

09 00 01 37 CMP Oh, it wasn't to the attitude yet, Dave. No wonder. You're in - you're in HOLD over there.

09 00 01 46 CDR Sure enough.

09 00 01 48 CMP Oh! Blew it!

09 00 01 53 CDR Well, all I know is I got that needle.

09 00 01 54 CMP Sure. We're in LOW RATE.

09 00 01 58 CDR ... needle ...

09 00 02 09 LMP All I know is - -

09 00 02 10 CDR Can I load P30 now?

09 00 02 11 CMP No.

09 00 02 12 CDR ...

09 00 02 13 CMP No. Not when we're in maneuver. They won't let you in.

09 00 02 22 CDR So that's what I did wrong.

09 00 02 24 CMP Yes. That's why you - that's why you loaded - -

09 00 02 25 CDR I heard - -

09 00 02 26 CMP - - the NOUN 18.

09 00 02 27 CDR Well, I thought you said - -

09 00 02 28 CMP It'll come up in a major mode but you won't get - -

09 00 02 29 CDR Oh, I thought - -

09 00 02 30 CMP - - You won't get a time display. Yes. You can't; it shuts off the power to display, like a NOUN 18.

09 00 03 01 CMP That T-start is right now, too.

09 00 03 04	CDR	...
09 00 03 07	CMP	Uh -
09 00 03 12	CDR	216.
09 00 03 14	CMP	216:03. That's right.
09 00 03 16	CDR	We have 15 minutes.
09 00 03 18	CMP	No, we're at 216:03 right now.
09 00 03 23	CDR	... We'll never complete ...
09 00 03 28	CMP	Yes, we will. That's been all - Well, let's see. Let's get the stick and put in a higher rate in the DAP. Jim?
09 00 03 35	LMP	Get the stick?
09 00 03 36	CMP	Yes.
09 00 03 50	CMP	What the hell's that ... lll. Okay.
09 00 04 03	CMP	Okay. I think that does it. I should have played a 3 while I was at it. Huh.
09 00 04 12	LMP	What?
09 00 04 13	CMP	I should have put in a 3 and really zapped it around.
09 00 04 26	CDR	Three ...
09 00 04 28	CMP	Yes.
09 00 04 29	CDR	Three is a what? ...?
09 00 04 31	CMP	Three is 2 degrees per second. We better do it.
09 00 04 34	CDR	...
09 00 04 35	CMP	I don't know if I can hit the stick again, only -
09 00 04 41	CDR	How about the boom? Is that extended?
09 00 04 43	CMP	We got the boom now?

09 00 04 44 CDR I don't know.

09 00 04 46 CMP Well, what's the Flight Plan say?

09 00 04 51 CDR Yes, better not.

09 00 04 52 CMP Better not. Yes.

09 00 04 54 CDR You want the ..., don't you? ...

09 00 04 58 CMP Yes, we're almost there.

09 00 05 00 CDR Okay.

09 00 05 01 CMP Yes, we don't have to start here until - Got 5 minutes left - 80 - 8:55.

09 00 05 11 CDR Why is that coming up? Why didn't it come down?

09 00 05 14 LMP Because the mission timer starts. ... Flight Plan ...

09 00 05 18 CMP Yes, because - yes, because of that one.

09 00 05 20 CDR ...?

09 00 05 21 CMP No, this is the mission timer. That - this was - this - Yes?

09 00 05 26 CDR Mission timer, do you set the start and T-stop ...?

09 00 05 29 CMP That's right. No. We're not doing it because we're using P30 instead.

09 00 05 33 CDR Be cool if we set the mission timer anyway.

09 00 05 35 CMP Oh, yes. Sure.

09 00 05 37 CDR And use our GET?

09 00 05 38 CMP You can get it off the DSKY. Hell, the goddam thing's already stopped twice - on its own.

09 00 05 45 CDR What? This one stopped twice?

09 00 05 46 CMP Yes.

09 00 05 47 CDR Really?

09 00 05 48 CMP Yes.

09 00 06 03 CMP You can't read that DET from over here.

09 00 06 06 CDR What?

09 00 06 07 CMP You can't read it from over here to begin with.

09 00 06 14 LMP I got a good idea.

09 00 06 16 CDR ... fails if you move.

09 00 06 21 CMP Well, you - you got the date.

09 00 06 24 CDR ...

09 00 06 26 CMP Yes. You tried G&N and comp fail?

09 00 06 30 CDR Yes.

09 00 06 31 CMP You tried G&N and comp fail? You're screwed anyway.

09 00 06 36 CDR Better start getting our ... TEI.

09 00 06 43 CMP Well, I think that's - kind of pushing the rules.

09 00 06 56 LMP Y'all are getting freaked up.

09 00 06 58 CMP Yes. We might.

09 00 07 05 CDR Need a piece of tape. Ought to be a piece of tape around here somewhere.

09 00 07 13 LMP Yes.

09 00 07 14 CDR Okay.

09 00 07 15 CMP Are you there?

09 00 07 16 CDR Okay.

09 00 07 17 CMP Yes, call up P30 and put those numbers in the -

09 00 07 45 CDR Yes ... zero.

09 00 07 47 CMP I'd just - Yes, I'd just leave all those in there or just load it zero. Okay. ... Doesn't make any difference.

09 00 08 12 CDR Got 417.

09 00 08 16 LMP ... FREE? You want to let it be for a while?

09 00 08 20 CMP Yes, we should. On, no, wait. No, that's okay. Those maniacs can wait on Dave. It won't damp.

09 00 08 28 CDR Huh?

09 00 08 29 CMP It won't damp because we're in ORB RATE.

09 00 08 31 CDR You want to go FREE?

09 00 08 32 CMP Yes. Okay. Okay, now - look at those times and remember them, Dave.

09 00 08 43 CDR Okay.

09 00 08 44 CMP It starts - Well, the first one's at 5 minutes and then we go 6:40 and every 10 seconds after that. Okay?

09 00 08 51 CDR You ... for that?

09 00 08 52 CMP Yes.

09 00 08 55 CDR Got it.

09 00 08 56 CMP Okay, you ready? Okay.

09 00 08 59 CDR MARK. One cycle.

09 00 09 35 CDR Oh!

09 00 09 40 CMP Now turn out all the MDC lights, and just let - watch the DSKY LEB - if - if you can find one down there.

09 00 09 48 CDR MARK. Forty.

09 00 09 50 CMP Yes.

09 00 10 15 CDR Forty.

09 00 10 16 CMP Okay.

09 00 10 24 CDR Thirty.

09 00 10 34	CMP	Okay.
09 00 10 35	CDR	MARK.
09 00 10 36	CMP	Okay, I got the time. You can watch, if you want.
09 00 10 41	CDR	You want a mark at 2:50?
09 00 10 42	CMP	Yes. No, I'll - I'll get it. Just watch out the window.
09 00 10 45	CDR	MARK. 2:50.
09 00 10 46	CMP	Enjoy the scenery.
09 00 11 46	CMP	If that time is good enough, boy, you wait. At 8 minutes, the Sun'll show.
09 00 11 51	CDR	Fifty-five.
09 00 11 52	CMP	Yes.
09 00 11 53	CDR	Ga! Boy!
09 00 11 55	CMP	Isn't that something?
09 00 11 56	CDR	Woo-hooo!
09 00 11 57	CMP	Isn't that something?
09 00 11 58	CDR	Yes, man!
09 00 11 59	CMP	(Laughter)
09 00 12 00	CDR	Woo-hoo-hooo!
09 00 12 01	CMP	I thought you'd like that (laughter).
09 00 12 02	CDR	That's something again! (Laughter) Wheee!
09 00 12 04	CMP	Okay - DAC off.
09 00 12 07	CDR	That's something ...
09 00 12 09	LMP	... Cycle one frame.
09 00 12 11	CDR	Okay (laughter). Boy, I love stuff like that.

09 00 12 19 CMP Now that's pretty spectacular.

09 00 12 21 CDR It sure is. That's just right between the eyeballs.

09 00 12 23 CMP Yes. You don't expect it. Oh, yes! Okay. Okay, lift the ... away. Oh, we got - we got a little time. No - there's no big rush.

09 00 12 46 LMP Okay, remove DAC from window, cover lens, and run at 24 frames per second.

09 00 12 49 CMP Yes.

09 00 12 51 LMP Shutter speed, 1/500th, for 2 seconds.

09 00 12 54 CMP Yes.

09 00 13 04 LMP Cover lens?

09 00 13 05 CMP Yes.

09 00 13 12 LMP CMC MODE, AUTO. Record the MAG.

09 00 13 25 CMP Okay, we're down to about - oh, 60 percent of the frame, I guess.

09 00 13 33 LMP Sixty percent?

09 00 13 34 CMP Sixty percent of the MAG, yes.

09 00 13 35 LMP How about your frame?

09 00 13 46 CMP 100.

09 00 13 49 LMP Okay.

09 00 13 56 CMP Yes.

09 00 13 58 LMP ... what?

09 00 14 00 CMP Now, which one you want to use? Use this one?

09 00 14 27 CMP Okay, we got 1/125th, got - -

09 00 14 29 LMP What's your MAG number? Need that.

09 00 14 31 CMP ... Yes.

09 00 15 18 CMP Okay ... get it up there and get it going, we'll be all right. ... Why don't you run one across this way? Now hold it.

09 00 15 58 CMP Okay, I want back ... Yes, that ought to do it. Run this one down through here.

09 00 16 05 LMP ...

09 00 16 08 CMP What?

09 00 16 09 LMP I don't think you guys'll make it, frankly.

09 00 16 11 CMP No (grunt).

09 00 16 35 CMP ... back it off. Oh, yes, that's right. We don't move now, anyway.

09 00 16 52 CMP Okay.

09 00 17 10 LMP ...

09 00 17 15 CMP Did you let the ... down?

09 00 17 18 CDR No.

09 00 17 21 LMP ... - -

09 00 17 22 CMP Yes.

09 00 17 23 LMP - - ...

09 00 17 24 CMP Huh! (Sigh) Okay.

09 00 17 44 LMP ...

09 00 17 46 CMP Yes, we got it. Is that what you got on there?

09 00 18 00 CDR ...

09 00 18 07 CMP Rate's down.

09 00 18 13 CDR ...

09 00 18 17 CMP Yes. That's - that's about right, Dave.

09 00 18 21 CDR ...

09 00 18 22	CMP	Huh?
09 00 18 24	CDR	...
09 00 18 35	CMP	Yes. Okay.
09 00 25 37	CDR	Did we do a P20?
09 00 25 38	CMP	Yes.
09 00 25 41	CDR	I thought we called P20 now, Al.
09 00 25 43	CMP	Yes, just recall P20. It should do it itself. No, if you get the UPLINK ACTIVITY light, that means it's gone outside the 10-degree dead band, in which case you have to do a VERB 58 - to get back in.

TIME SKIP

09 01 32 39	CDR	Back to normal now.
09 01 32 40	CMP	Okay. ...
09 01 32 41	CDR	Okay.
09 01 33 11	CDR	...?
09 01 33 13	CMP	No, ... 15.
09 01 33 16	CC	Endeavour, recall the 50 18 and get the attitude, please.
09 01 33 27	LMP	Well, I can do it. But -
09 01 33 40	LMP	But my needles are not close to center. The needles are not very close to center.
09 01 33 50	CDR	I can't hear you.
09 01 33 51	LMP	You can't hear me?
09 01 33 52	CDR	No.
09 01 33 54	LMP	Well, you're not on comm. Yes.
09 01 34 08	LMP	We're off about - 20 degrees in pitch.

09 01 34 45 LMP ENTER.

09 01 34 50 CDR ...

09 01 34 58 LMP As soon as you get the 50 18, you hit the ENTER.

09 01 36 13 CDR ...?

09 01 36 15 LMP Yes.

09 01 36 20 CDR Now. ...

09 01 36 34 LMP What?

09 01 36 36 CDR ...

09 01 36 40 LMP I can't hear you. Can you get SQUELCH, ENABLE on? There's so much noise in the S-band. I can't hear anything. Yes, I can hear you now.

09 01 37 04 CDR ...

09 01 37 12 LMP Why'd they tell us to PRO, then? That wasn't the right thing to do, was it?

09 01 37 15 CDR ...

09 01 37 17 LMP Yes.

09 01 37 19 CDR ...

09 01 37 21 LMP Yes.

09 01 37 23 CDR ...

09 01 37 24 LMP Well, we had a 50 18 - flashing. But we'd already gone past the 10 degrees, apparently. And they told us to PRO.

09 01 37 31 CDR ...

09 01 37 33 LMP Yes.

09 01 37 34 CDR ...

09 01 38 55 LMP Dave, if you want to put this away, you can. It'd be down in - in R-13, in the camera compartment on

that side. There's a bag there - you know, the MAG bags from the LM.

09 01 39 06 CDR ...

09 01 39 07 LMP No, let's see. Okay, yes. Right in there. See that MAG bag with six in it?

09 01 39 19 CDR ... right in there ...

09 01 39 21 LMP No. We have B and A, and - and that one, and there's another one that was good in there.

09 01 39 33 LMP The others just won't drive.

09 01 41 09 LMP Not bad. Did real well, Dave.

09 01 41 43 LMP I'd better be watching the Flight Plan for this page, because there are a lot of little notes I put in there that -

09 01 41 49 SC ...

09 01 41 51 LMP Kind of hard to understand, yes.

09 01 43 18 CDR Need it now?

09 01 44 13 CDR Think you can ... tomorrow? Think you ... tomorrow?

09 01 44 19 LMP That won't be hard to do.

09 01 44 20 CMP ...

09 01 44 30 LMP A little tennis.

09 01 44 34 CDR ...

09 01 44 37 LMP I'm going to be worried, too, if I don't have that FCS ... on. I should say the FCS - (laughter). Should say the FCS. All day, Al. We'll be in those suits and won't be able to take a crap.

09 01 44 54 CMP Okay. ...

09 01 45 33 LMP I'll look it up there. The menu today - Today is - -

09 01 45 45 CMP We're ready to ...

09 01 45 50 LMP We have turkey and gravy, wet pack. Cranberry - orange - pineapple fruit cake. Vanilla pudding, which we had yesterday (laughter). And citrus beverage.

09 01 47 08 CDR Okay. ... down below.

09 01 47 12 LMP Yes. I can cut, if you want to put water in them.

09 01 47 52 CMP ... don't see why ... camera for terminator photos.

09 01 47 56 CMP ...

09 01 48 15 CDR Okay.

09 01 49 43 CMP ... shave.

09 01 49 46 CDR Is it? ...

09 01 50 06 CMP ... wet pack, turkey and gravy.

09 01 50 35 CMP ... minus 5 ...

TIME SKIP

09 02 11 01 LMP Okay. We need GAMMA RAY, BOOM, RETRACT.

09 02 11 19 LMP After about 3 minutes 15 seconds, it should be gray, and then we'll turn it off.

09 02 11 41 CMP ..., Jim. ... one whole week ...

09 02 11 45 LMP I'll take the cheese.

09 02 11 49 CMP ... all right ...

09 02 12 07 LMP No. No. I - there'll be plenty of time for canned.

09 02 12 12 CMP ...

09 02 12 13 LMP No. No, this tube was good.

09 02 12 18 CDR ... camera went out ... right, Al?

09 02 12 31 CMP ... mapping camera ...

09 02 12 51	LMP	Y'all want to try the tube?
09 02 13 38	CMP	... mapping camera right now. ...
09 02 13 46	LMP	Hope so.
09 02 14 08	CMP	...
09 02 14 13	LMP	One minute to terminator photos, Dave.
09 02 14 16	CDR	...
09 02 15 04	LMP	15, 19.
09 02 15 18	CMP	How long?
09 02 15 20	LMP	One minute and 40 seconds.
09 02 15 28	LMP	Something on my window. I don't know why they put -
09 02 15 39	LMP	Al, would you turn the LASER ALTIMETER, ON? LASER ALTIMETER, ON.
09 02 16 09	LMP	And MAPPING CAMERA, IMAGE MOTION, ON. Barber pole plus 4. Yes.
09 02 16 25	LMP	No, I just want it ON now. They don't want it - don't want it - you to do that until after you turn it ON.
09 02 16 33	LMP	Yes, but it doesn't say IMAGE MOTION, INCREASE, until after we turn it on - turn the MAPPING CAMERA, ON.
09 02 17 24	LMP	Okay, Al. If you'll turn the MAPPING CAMERA, ON. Yes.
09 02 17 32	CMP	... want?
09 02 17 33	LMP	And IMAGE MOTION, INCREASE to barber pole plus 4.
09 02 18 45	LMP	Yes.
09 02 19 53	LMP	See that crater out there - I don't know whether you can see it out your window, Dave. The one I mentioned looked like it had a contact right through it; one half of it was gray and the other half was white.

09 02 20 02	CDR	...
09 02 20 05	LMP	It's right out here. Just east of - that good Russian crater, Svodska [sic] - Sovolska [sic].
09 02 20 18	CMP	... it's a Russian crater.
09 02 20 23	LMP	Sbodska [sic].
09 02 20 25	CDR	Sklodowska.
09 02 20 26	LMP	Sklodowska.
09 02 20 29	CDR	...
09 02 20 53	LMP	Yes.
09 02 21 07	LMP	Okay, we're supposed to configure the DSE. Stop, COMMAND RESET, and REWIND.
09 02 21 13	CDR	All right.
09 02 21 24	LMP	It's on the - the REWIND, right - the RECORD ...

TIME SKIP

09 03 30 10	CMP	Good.
09 03 30 13	LMP	Got them?
09 03 30 16	CMP	Got them. Okay. Okay, and I'll go ahead and torque those out on the minute. Just give me a mark.
09 03 30 24	LMP	Okay.
09 03 30 58	LMP	Stand by, Al.
09 03 30 59	CMP	Okay.
09 03 31 00	LMP	MARK.
09 03 31 05	CMP	Okay, we'll just check it out here.
09 03 31 17	CC	Endeavour, you're looking good at LOS minus 60 seconds. Configure the DSE for us please. And we see you've done that; thank you.

[redacted]

09 03 31 31 CMP Boy, that puts that star smack in the middle. Beautiful. Okay. Are we in P20, Jim?

09 03 31 45 LMP Yes, P20's coming up. Option - -

09 03 31 46 CMP We - -

09 03 31 47 LMP - - option 5.

09 03 31 48 CMP We were in it before, weren't we?

09 03 31 50 LMP Yes.

09 03 31 51 CMP Okay. Okay, we got it for TEI ascent. No, wait a minute.

09 03 32 00 LMP Okay. It calls for GDC ALIGN. Yes, you went back in P20; I'll go CMC MODE, AUTO, huh?

09 03 32 08 CMP Yes, go AUTO.

09 03 32 10 LMP Okay, then GDC ALIGN.

09 03 32 14 CMP That has to be done from your couch there.

09 03 32 16 LMP Yes.

09 03 32 18 CMP Can you do it?

09 03 32 20 LMP I can do one. I'll - probably use the checklist. It's been a long time since I've gone through one.

09 03 32 33 LMP Minus 5 and 25.

09 03 32 43 CDR ... burn, Al? Get all your ... all set? No, you're ... open.

09 03 32 48 CMP Yes, I guess it would ...

09 03 32 50 CDR ... TEI?

09 03 32 52 CMP Put the optics away. ...

09 03 32 56 LMP Well, we might as well get in our regular couches then, huh?

09 03 32 59 CDR What?

09 03 33 00 LMP Do you want me to switch around to regular couches there?

09 03 33 02 CDR Yes. ...

09 03 33 07 LMP A GDC ALIGN is required. And then a P20. I think we need to - change the deadpan [sic] - dead band.

09 03 33 25 LMP And when we come - come around, we get the maneuver pad.

09 03 33 28 CMP How long until the shaping burn?

09 03 33 29 LMP Two hours.

09 03 33 31 CDR No. ...

09 03 33 33 CMP Well, we ought to start getting cleaned up then for it. Let's see. Yes, yes. We don't have a sheet. Okay.

09 03 33 55 LMP ... G&C Checklist, I guess that - Where's that in the G&C Checklist? Let's see what we're doing here.

09 03 34 02 CDR ...?

09 03 34 06 LMP Okay. Let's see what I've got here now. I'll do the - do a GDC ALIGN, huh?

09 03 37 10 CDR Did you ... the JETT bag, Al?

09 03 37 12 CMP Yes. ... got it here in B-1.

09 03 37 26 LMP Hey, Al. We want to change the dead band in P20 here - -

09 03 37 29 CMP Yes.

09 03 37 30 LMP - - 5 degrees.

09 03 37 31 CMP Okay. Do a VERB 22 NOUN 79.

09 03 37 40 LMP Oh, I see that. Is that all you have to do? You don't have to - while we're in a - -

09 03 37 42 CMP That's all you have to do.

09 03 37 48 LMP Just put in this entry bit, huh?

09 03 37 49 CMP Yes.

09 03 37 50 LMP Plus 005 00?

09 03 37 51 CMP Yes.

09 03 37 58 LMP Okay. That's entered.

09 03 38 07 CMP Okay. That should do it then.

09 03 38 35 LMP Need any help, Al?

09 03 38 36 CMP No, I can get it all right, Jim.

09 03 39 43 LMP Let's see, did we decide to throw those two urine bags and the JETT bag? I don't have to - transfer those?

09 03 39 48 CMP Don't dump those yet. We're going to jettison them.

09 03 39 52 CDR Yes, we can just jettison them.

09 03 39 53 CMP Yes.

09 03 39 54 CDR When is the next dump period?

09 03 39 58 LMP Coming up in about 2 hours.

09 03 39 59 CDR Before the burn, I guess.

09 03 40 09 LMP Hmmm. After the burn.

09 03 40 23 LMP Just after the burn is the dump.

09 03 40 25 CDR Oh, really?

09 03 40 26 LMP Yes.

09 03 41 54 CMP We're in pretty good shape, Dave, except I don't know what to do with LEVA bags for the burn.

09 03 41 58 CDR With the what?

09 03 41 59 CMP With the LEVA bags.

09 03 42 00 CDR You got straps for them, to clamp - to clamp them down. No. There are three straps down on the EVA tunnel ... - -

09 03 42 08	CMP	Hmm.
09 03 42 09	CDR	And strap down those - and I'd suggest that somebody reach up and strap - and strap them down.
09 03 42 13	CMP	Could be we better do that.
09 03 42 15	CDR	You got them?
09 03 42 16	CMP	Yes. They ought to put the utility straps in the -
09 03 42 17	CDR	We better get these other cameras tucked away, too. Where would you suggest putting - -
09 03 42 21	CMP	Hey!
09 03 42 22	CDR	- - these cameras we got?
09 03 42 23	CMP	Why not put them all in B-1? We could stuff that JETT bag around them so they won't get banged up too much. They'd probably all fit in there.
09 03 42 35	LMP	Or you could just put them in the JETT bag?
09 03 42 39	CMP	Well, we might want to use them again.
09 03 42 41	LMP	Well, we know where they are. Yes.
09 03 43 01	CMP	What's this bag here?
09 03 43 03	CDR	What?
09 03 43 04	LMP	That's your tether kit.
09 03 43 06	CMP	Oh. Okay.
09 03 43 13	CDR	You're going to need it.
09 03 43 14	CMP	That's good. That's good.
09 03 43 17	CDR	...
09 03 43 18	LMP	Everything except the PPK.
09 03 43 20	CMP	Yes. What's - what was in that PPK, by the way?
09 03 43 35	CDR	I don't see how you can get used to it with all these bags, huh?

[redacted]

09 03 43 37 CMP Yes.

09 03 44 05 LMP ...

09 03 44 07 CMP ...

09 03 45 39 CMP Um.

09 03 46 04 CMP Um. Um-huh - -

09 03 46 10 CDR What?

09 03 46 11 CMP - - Very interesting. I don't know. I'll let you know in a minute. Oh, there we are. Christ, I thought they were - I thought somebody'd blown it.

09 03 46 20 CDR Huh?

09 03 46 21 CMP I thought somebody'd blown it. The OPS straps weren't in the OPS strap pouch.

09 03 46 26 CDR You don't think - -

09 03 46 27 CMP Yes (laughter). Huh?

09 03 46 29 CDR You don't think that ...

09 03 46 30 CMP Yes, who'd do something like that?

09 03 46 32 CDR ...

09 03 46 33 CMP (Laughter) Yes.

09 03 47 01 CMP Okay.

09 03 47 37 CDR You know, I think we better dump - we better dump those out. We better not put them in the JETT bag.

09 03 47 44 CMP Huh?

09 03 47 45 CDR Probably ...

09 03 47 46 CMP Yes, they're apt to break.

09 03 47 53 CDR You don't have to dump. Jim will help you.

[redacted]

09 03 47 56	CMP	(Laughter) Yes. Okay, how about gathering up as many of the utility straps as you can around. Let's see if we can get enough here to put these LEVAs down.
09 03 48 13	CDR	There's some up here in ... I can't disagree with gathering them up.
09 03 48 54	CMP	These won't work on here.
09 03 49 01	CDR	Pull on it here. Pull those out just a little.
09 03 49 08	CMP	Here, Jim. I think this is yours.
09 03 49 12	LMP	Mm. It's anybody's ...
09 03 49 20	CDR	Huh?
09 03 49 21	LMP	...
09 03 49 22	CDR	In here?
09 03 49 38	LMP	...
09 03 49 40	CMP	Which? Oh, yes.
09 03 49 43	LMP	...
09 03 49 46	CMP	Yes, that one - I cleaned it out. And that - we're going to have to use that tomorrow.
09 03 49 51	LMP	...
09 03 49 53	CDR	So you want to put that into B-1.
09 03 49 57	LMP	...
09 03 49 58	CMP	Yes.
09 03 50 22	CDR	Hey, Al? ... gamma ray and alpha ray and ... all that stuff ...
09 03 50 31	CMP	Not supposed to, Dave. They don't - they don't like it.
09 03 50 35	CDR	... they give us 2 minutes to dump.
09 03 50 37	CMP	Two minutes?

[redacted]

09 03 50 39 CDR Yes, 2 minutes between dumping and turning on all that gamma, X-ray, and alpha ray stuff.

09 03 50 43 CMP Well, the gamma - We'll turn it on.

09 03 50 46 CDR What?

09 03 50 47 CMP We'll turn it on.

09 03 50 49 CDR It'll screw it up, won't it?

09 03 50 50 CMP Well, it ain't going to screw up the experiment. It'll screw up their data. And they'll go back to the Flight Plan and look, and they'll say, "Yes, sure, they're dumping."

09 03 51 24 CMP Where's the other needle there, Jim?

09 03 51 26 LMP We aren't even counting ...

09 03 51 27 CMP We don't care about that. Dave, if you can reach around there on the back of you, on that LEVA that I put on the - on the - on A-8 back there, there's another stop towards the head end - If you want, go ahead and snap it.

09 03 51 40 CDR Over this one - -

09 03 51 41 CMP Yes, I already put a strap on it, but I couldn't reach it.

09 03 51 47 CDR ...

09 03 51 50 CMP (Laughter) Yes.

09 03 52 01 CDR ...

09 03 52 02 CMP Huh?

09 03 52 03 CDR You may not believe it, but there's no snap - -

09 03 52 05 CMP Oh, there's no snap up there? Oh, shit! Can we tie it to something up there?

09 03 52 16 CDR Yes.

09 03 52 17 CMP Actually, it'll be all right with one strap probably. It won't - -

09 03 52 20 CDR ...

09 03 52 27 CMP No, it's not going to go anywhere.

09 03 52 38 CMP In fact, these other snaps don't really cinch things down tightly; they just kind of hold them in place.

09 03 53 28 CDR ...

09 03 54 06 CDR Gee, we're running out of snaps.

09 03 54 08 CMP Hey, I bet you we can put a couple of bags and a couple - helmets in the top of the PGA bag.

09 03 55 00 CDR ... if you use these ...

09 03 55 04 CMP Okay. Yes, we'll be using it on the way home. But we can put it away for now. It's probably just as well.

09 03 55 11 CDR Yes.

09 03 55 14 LMP It's hot in here. You want to undo it?

09 03 55 15 CMP Yes. That's an easy one.

09 03 55 22 CDR ...

09 03 55 23 CMP By the UVs and goes into A-8, though.

09 03 55 25 CDR What?

09 03 55 26 CMP Goddam U thing - UV thing goes in the A-8, and that's underneath all the LEVAs and everything else.

09 03 55 33 LMP ... somewhere else ...

09 03 55 38 CMP Excuse me, Jim.

09 03 56 15 LMP ...

09 03 56 17 CMP Yes, they go down here.

09 03 56 37 CMP What else have we got?

09 03 56 39 CDR Pardon?

09 03 56 40 CMP (Laughter) Before - before I go tearing into those lockers again, what else have we got?

09 03 56 43 CDR ...

09 03 57 08 CMP Yes. Where's MAG R?

09 03 57 16 LMP Ah, I think it's ... there.

09 03 57 18 CMP Is it used up yet?

09 03 57 19 LMP Yes, it is. Didn't we do it - -

09 03 57 21 CMP All right. Stash it away here then.

09 03 57 26 LMP Here's R. Does it belong there with all that stuff?

09 03 57 29 CDR I don't think ...

09 03 57 31 CMP I got three hands full. How about the dark slides for our -

09 03 57 46 CDR ...

09 03 57 47 CMP Huh?

09 03 57 53 CDR ... use one of those?

09 03 57 55 CMP No.

09 03 57 56 CDR Huh?

09 03 57 57 CMP Uh-huh.

09 03 57 58 CDR What about the ...?

09 03 57 59 CMP Have to pull it on. The N-pack, too.

09 03 58 04 CDR ...

09 03 58 05 LMP ...

09 03 58 25 CMP Get me that cinch. I must be getting weak.

TIME SKIP

09 05 46 28 LMP ... it in the SIM bay, huh?

09 05 46 31 CDR Yes.

09 05 46 44 CDR Okay. Waste water's down to about 20.

09 05 46 57 LMP Okay, we'll purge. Are you going to time her?

09 05 47 01 CDR Uh-huh.

09 05 47 35 SC ...

09 05 47 38 CDR Fifty.

09 05 47 48 CMP Up to RELIEF, huh?

09 05 47 49 LMP Yes.

09 05 47 50 CDR Uh-huh. Up to RELIEF, right?

09 05 48 03 LMP Eighty degrees.

09 05 48 07 CDR ... to do that on the front-side pass?

09 05 48 09 LMP Yes.

09 05 48 12 CMP Think we'll be okay once we get out in the -

09 05 49 05 CDR H_2 PURGE LINE HEATERS, OFF.

09 05 49 08 CMP All you got to do is look after the purge, huh?

09 05 49 09 CDR Yes.

09 05 49 11 LMP I'm going to purge.

09 05 49 30 CDR We got this great big filter floating around. Why is that floating around?

09 05 49 34 LMP I'm sorry, Dave. I'll throw it in the diaper bag.

09 05 49 36 CDR Gee, Jim, we got to make another burn.

09 05 49 39 LMP Yes.

09 05 49 44 CMP I didn't realize we were so close to another burn. ... close.

09 05 49 47 CDR No, I didn't either.

09 05 49 52 CMP ...

09 05 49 55 CDR Yes.

09 05 50 09 CDR Where'd you put the second garbage can?

09 05 50 10 CMP ...

09 05 50 22 CDR Al, wait. Stick it up here. No, wait.

09 05 50 58 CDR Did you have any tissues down here when you did your thing, Jim?

09 05 51 01 LMP No, I didn't have any, Dave.

09 05 51 03 CDR How did you get by?

09 05 51 05 LMP How'd I get by? I used the - -

09 05 51 06 CDR Yes.

09 05 51 07 LMP - - UCTA. I used the UCTA. So I had to dump it anyway.

09 05 51 15 CDR Yes. Right over there with the camera is, we got to configure the DAC anyway. Open it up. You got to put the DAC together anyway for photographing the subsat.

09 05 51 42 CDR What? Yes. Didn't think about that.

09 05 59 01 LMP ... in the way.

09 05 59 04 CMP I'll get it - -

09 05 59 05 CDR Okay, I got it.

09 05 59 06 CMP Okay.

09 05 59 12 CDR There. ...

TIME SKIP

09 06 17 54 LMP Clear.

09 06 18 00	CMP	Oh, my. Look at this. That's a good picture.
09 06 18 06	CC	Hello, Endeavour; this is Houston.
09 06 18 10	CDR	Houston, Endeavour. Go.
09 06 18 15	CC	Roger, Endeavour. We're requesting you verify your systems - DATA SYSTEMS, ON, and the S-band - -
09 06 18 21	CMP	Yes.
09 06 18 22	CDR	Right here it is.
09 06 18 23	CC	- - AUX switch to SCIENCE, please.
09 06 18 24	CMP	Huh!
09 06 18 25	CDR	Yes. That's verified, isn't it?
09 06 18 28	CMP	No, DATA SYSTEMS isn't ON.
09 06 18 30	CDR	Well, it wasn't in here then.
09 06 18 35	CMP	It sure was and I missed it. I'm sorry.
09 06 18 40	CDR	Okay; that's verified now, that the DATA SYSTEMS are ON now.
09 06 18 46	CMP	Shoot!
09 06 18 48	CDR	They're easy to overlook, aren't they?
09 06 18 49	CC	Okay, Dave; we copy that. I've got a map update, REV 75, when you're ready to - -

TIME SKIP

09 07 47 33	CMP	You get the other ones. THRUST A and B to NORMAL after the PRO.
09 07 47 37	CDR	Roger.
09 07 47 45	CMP	One minute.
09 07 48 11	CDR	And there's the average g coming up. Twenty-nine seconds.

[redacted]

09 07 48 18	CMP	EMS MODE, NORMAL -
09 07 48 19	CDR	NORMAL.
09 07 48 22	CMP	Twelve seconds ullage.
09 07 48 33	CMP	ULLAGE.
09 07 48 37	CDR	Ready for the PRO?
09 07 48 38	CMP	Ready for the PRO.
09 07 48 39	CDR	Okay, 99 PROing.
09 07 48 45	LMP	B valves.
09 07 48 46	CDR	There it goes.
09 07 48 48	CMP	Oop! Steady.
09 07 48 49	LMP	- - 4 - 5 - 6 - -
09 07 48 50	CMP	A's on.
09 07 48 51	LMP	A valves.
09 07 48 53	CMP	Looks good.
09 07 48 57	CDR	EMS and G&N agree.
09 07 48 59	CMP	Good.
09 07 49 04	CDR	Tracking 217 now. GDC looks good.
09 07 49 11	CMP	Man alive! Watch them push.
09 07 49 13	CDR	Powering down now. Okay, we trim here in about - just short of 100.
09 07 49 18	CMP	Okay. DSKY and EMS look good, at about 50.
09 07 49 24	CDR	On the dead band?
09 07 49 26	CMP	Roger.
09 07 49 34	CMP	DSKY and EMS are running about 35.
09 07 49 45	CDR	GDC looks good.

09 07 49 46	LMP	One minute. ...
09 07 49 56	CDR	Tracking 219.
09 07 50 01	LMP	Are we going to decrease on the - flow valve, Al?
09 07 50 06	CDR	Okay, EMS and DSKY are about 50. You got about a minute to go.
09 07 50 11	CMP	Roger.
09 07 50 16	CDR	Tracking 220. EMS and DSKY look good.
09 07 50 37	CDR	Tracking 221. Looks very good.
09 07 50 40	CMP	Okay.
09 07 50 41	CDR	Twenty-five seconds to go.
09 07 50 43	CMP	Roger.
09 07 50 46	CDR	Twenty seconds to go.
09 07 50 52	LMP	Okay, here comes the count. 10, 9 - -
09 07 50 59	CDR	..., Al?
09 07 51 00	LMP	- - 8, 7, 6, 5, 4, 3, 2, 1, 0 -
09 07 51 07	CMP	THRUST, OFF; automatic.
09 07 51 11	CDR	Okay, babe, your trim's to .2. Forget the Y.
09 07 51 15	CMP	Wait. Forget the Y?
09 07 51 16	CDR	No, you - X and Z, forget the Y.
09 07 51 18	CMP	Okay. We'll let .2 ... again. Okay, Jim.
09 07 51 25	LMP	Okay. I'm ready. 1, 2, 3, 4 - TVC SERVO POWER 1 and 2, OFF.
09 07 51 33	CMP	OFF.
09 07 51 34	LMP	MAIN BUS TIES coming OFF.
09 07 51 55	CDR	Right on 221. Right down the tube.

[redacted]

09 07 51 58 CMP Yes. Good act.

09 07 52 02 CDR Yes - -

09 07 52 04 CMP I'd swear ...

09 07 52 05 CDR - - ...

09 07 52 06 LMP Okay, Al, EMS FUNCTION, OFF.

09 07 52 08 CMP OFF.

09 07 52 09 LMP EMS MODE, STANDBY.

09 07 52 10 CMP STANDBY.

09 07 52 11 LMP RHC and THC, locked.

09 07 52 12 CDR Locked.

09 07 52 13 LMP DEADBAND, MAX.

09 07 52 14 CMP MAX.

09 07 52 15 LMP TRANSLATION CONTROL POWER, OFF.

09 07 52 16 CMP OFF.

09 07 52 17 LMP ROT CONTROL POWER, DIRECT, two, OFF.

09 07 52 18 CMP DIRECT, OFF.

09 07 52 19 LMP BMAG MODE, three, RATE 2.

09 07 52 20 CMP RATE 2.

09 07 52 21 LMP CB DIRECT ULLAGE, two, open.

09 07 52 22 CDR Open.

09 07 52 23 LMP CB SPS, PITCH 1 and YAW 1, open.

09 07 52 26 CMP YAW 1, open.

09 07 52 27 LMP CB SPS PILOT VALVES, MAIN B, open.

09 07 52 30 CDR B - -

09 07 52 31 CMP MAIN A and MAIN B, both open.

09 07 52 33 LMP Okay, CB EMS, two, open.

09 07 52 34 CDR They're open.

09 07 52 35 LMP Okay. PCM BIT RATE going LOW.

DAY 11

10 02 28 08	LMP	Cool it here for a minute.
10 02 28 20	CDR	Okay, Houston; 15. It looks like we have a good seal. How's it look down there? (Cleared throat)
10 02 28 42	CDR	Okay, thank you. Okay, 601, OPEN? 601, REPRESS O_2, OPEN.
10 02 28 49	CMP	It's OPEN.
10 02 28 50	CDR	Monitor REPRESS O_2 indicator to zero.
10 02 29 00	CMP	Okay. It looks zero now, Dave.
10 02 29 02	CDR	Okay. So, you let your umbilical flow bring every - the cabin up to 3.
10 02 29 07	CMP	Roger.
10 02 29 11	CDR	That's very nicely done. That's about - 22 minutes. Which is just about what we figured. You went back and looked at all that stuff. So that's just about right.
10 02 29 52	CDR	It's fun out there, isn't it?
10 02 29 54	CMP	Mm-hmm. Should have stayed longer.
10 02 29 57	CDR	(Laughter) You done good. You made a lot of people back there very happy.
10 02 30 04	CMP	Roll over and let me take another look again.
10 02 30 11	CDR	Well, I'll tell you what, your - your left arm or something's covering up the light over there.
10 02 30 16	CMP	The OPS is, I guess.
10 02 30 19	CDR	Really bad lights in here.
10 02 30 20	CMP	Okay, there. I can see it now.
10 02 30 23	CDR	We're at 2.4, about. So we'll just let your flow bring it up to 3. Gee, I had a great view on the TV. Did you turn the TV off, Jim?

[redacted]

[redacted]

10 02 30 39	LMP	No, I didn't - -
10 02 30 40	CMP	I'll turn it off.
10 02 30 41	CDR	Can you reach it?
10 02 30 42	CMP	Yes. There. Thought I turned it off.
10 02 30 53	CDR	Can you reach the SCIENTIFIC TV switch? The S-band TV switch, Jim?
10 02 30 59	LMP	No, not yet, Dave.
10 02 31 01	CDR	Okay. Maybe I can. No.
10 02 31 06	LMP	I don't think there's any rush on that, is it?
10 02 31 08	CDR	No.
10 02 40 36	CMP	I'll get it.
10 02 40 38	CDR	Here, give me it first, Al.

TIME SKIP

10 05 13 15	CMP	We need the repress time on the cabin. ...
10 05 13 18	CDR	Yes.
10 05 13 53	CDR	Ten days and 5 hours we've been gone, Jim.
10 05 13 59	CMP	Long time. We beat your old record.
10 05 14 00	CDR	By 3 minutes.
10 05 14 03	CMP	Sure does. Went farther from home, too.
10 05 14 10	CDR	That's great.
10 05 14 11	CMP	Didn't go as far.
10 05 14 13	CDR	Let's not count the miles.
10 05 14 15	LMP	...

[redacted]

10 05 14 16	CDR	Huh?
10 05 14 17	CMP	Didn't go as far, but went farther.
10 05 14 19	LMP	Yes, coming back.
10 05 14 22	CDR	And a lot more fun, too.
10 05 14 30	CMP	A lot more to it.
10 05 14 35	CDR	Big Dipper, do you know, on 9, we could have missed any one thing and pressed on.
10 05 14 41	LMP	Yes.
10 05 14 42	CDR	Here, it's a lot different; you can't miss anything and press on.
10 05 14 46	CMP	Well, it looks like we can't miss anything.
10 05 14 49	CDR	Very different. Very different.
10 05 15 13	CDR	This is sort of an all-or-nothing kind of operation, you know it?
10 05 15 18	CMP	Yes, it really is, you know. It's really all your eggs in one basket, boy. I got to thinking about that after you guys left for your descent. Once you start that descent, man, that - that's it - -
10 05 15 40	LMP	We're all hanging out.
10 05 15 41	CMP	We're there. That's right. It's all hanging out from there on.
10 05 15 46	LMP	...
10 05 15 54	CMP	It would be better for ... to put pills in all the food drawers.
10 05 15 59	CDR	(Laughter) For sure.
10 05 16 02	CMP	Make him ...
10 05 16 03	CDR	Let's put them away somewhere.

[redacted]

10 05 16 07 CMP Where will I put them? It's the last time I'm saying it, but you better not lose your pills.

10 05 16 13 CDR You didn't see them in your TSB, did you, Jim?

10 05 16 16 LMP What?

10 05 16 17 CDR You didn't see the pills in your TSB when you cleaned out, did you?

10 05 16 20 LMP No. ...

10 05 16 31 CDR Ohh, what did I do with it?

10 05 16 33 LMP ...

10 05 16 34 CMP It's almost back to normal times.

10 05 16 38 CDR Where did you see them?

10 05 16 40 LMP Down in U-1.

10 05 16 45 CMP Do you really know what ...?

10 05 16 48 LMP ...

10 05 16 49 CMP ...

10 05 16 57 CDR Oh! Did you notice anything loose?

10 05 17 03 CMP Well, I thought I saw - Well, I saw a - -

10 05 17 08 CDR Hey, do you guys ... get some orange juice? ... Let's enjoy it - let's enjoy it while we can.

10 05 17 16 CMP ...

10 05 17 17 CDR Except for bad stuff, we can always put up with it for 1 more day.

10 05 17 20 CMP Yes, that's right. Well - Hey, let's - ... will be our last meal. We have three meals below and breakfast ... 1 day.

10 05 17 28 CDR And a long way to go.

10 05 17 29 CMP Oh, hush.

10 05 17 37	CMP	Hello, Houston; this is 15. Loud and clear, and I got your first message, Karl. Sorry.
10 05 17 45	CC	..., Al. We've got some sort of problem on the ground circuits here. ... in contact with you.
10 05 17 51	CMP	No, we're here.
10 05 17 55	CC	Roger. Very good.
10 05 18 46	SC	(Cough)
10 05 18 53	CC	Al, I have a couple of questions from ...
10 05 18 58	CMP	Oh, yes. That's right. That's great. Okay, Karl. I'll tell you what, I'll give you a call back in about 10 minutes when I'm ready.
10 05 19 11	CC	...
10 05 19 14	CMP	No, he's got some questions on the SIM bay.
10 05 19 37	CDR	SIM bay looks pretty good.
10 05 19 42	LMP	What'd ...?
10 05 19 43	CMP	I'm coming. I'm coming, Jim. ...
10 05 19 46	LMP	Yes, I can see through on the handles.
10 05 19 55	CMP	I didn't even see any scorching or any burning or anything down there.
10 05 19 59	LMP	...
10 05 20 02	CMP	The covering on the - on the service module, if it hadn't been covered, boy, that would have been burned and scarred and scorched and everything else.
10 05 20 10	CDR	Yes. That's right.
10 05 20 11	LMP	Yes. Yes. Excuse me 1 second, will you?
10 05 22 11	CMP	Excuse me, Jim. Let me get out of your way here.
10 05 22 27	CDR	...
10 05 22 28	CMP	Really?

10 05 22 49	CMP	Well, I guess it doesn't make any difference on this food if we take it back home anyway.
10 05 22 58	CDR	Yes, that's probably true. They can decontaminate it back there.
10 05 23 02	CMP	Sure.
10 05 23 03	CDR	You can tell them we ran out, though. Do you think this salad's good, Al?
10 05 23 11	CMP	My what?
10 05 23 12	CDR	Sandwich spread ... It's a whole half a can.
10 05 23 16	LMP	...
10 05 23 17	CDR	Sure you can, Jim.
10 05 23 18	CMP	We have to finish after you.
10 05 23 21	LMP	Okay, I'll eat it.
10 05 23 23	CMP	That's right.
10 05 23 24	LMP	What?
10 05 23 30	CDR	If you wouldn't complain so much, we wouldn't leave you so much.
10 05 23 33	LMP	You guys didn't leave me nothing.
10 05 23 36	CMP	Freak you!
10 05 23 38	LMP	I'm thinking
10 05 23 39	CMP	(Laughter)
10 05 24 10	CDR	What kind of desserts we got there, Jim? A lemon pudding, huh?
10 05 24 16	CMP	Mmmm.
10 05 24 46	LMP	...
10 05 24 50	CMP	Yes, you're right, mouth, and I'm going to catch it ...
10 05 24 58	LMP	I'm ready, if you can catch it.

10 05 24 59 CMP (Cleared throat) That's the only way a power bowler makes it.

10 05 25 04 LMP ...

10 05 25 14 CDR Huh? Yes, I suppose we ought to think about doing that. We can get to all that stuff now.

10 05 25 20 LMP Bright idea. ...

10 05 26 00 CDR I would.

10 05 27 56 CDR That's a pretty good sandwich.

10 05 27 59 CMP Mm-hmm.

10 05 29 27 CDR How much food we got left?

10 05 29 32 CMP I don't know, at least a couple of days.

10 05 31 04 CDR Six-foot waves in the recovery area, huh?

10 05 31 05 CMP Yes.

10 05 31 06 CDR That'll be sporty.

10 05 31 08 CMP Yes, if we can dodge and land, that's great.

10 05 31 11 LMP Yes.

10 05 31 15 CMP That's better than dead calm.

10 05 31 21 CDR It is?

10 05 31 23 LMP Yes. ...

10 05 31 25 CMP It's probably because the power's ...

10 05 31 27 LMP Hmm.

10 05 31 28 CDR That's why we had so much trouble on 9. ...

10 05 31 41 CMP Why can't we just hop on over her pretty good in that fashion, too?

10 05 31 46 CDR Yes.

[redacted]

10 05 31 49 LMP It's not that bad, boys.

10 05 33 27 CDR Houston, 15. Go ahead.

10 05 33 31 CC ...

10 05 33 41 CDR Okay, Karl. Thank you.

10 05 33 47 CMP Okay, Houston. Boy, oh, boy, I used to think it was a good thing to get on a flight and then they could only talk at you one at a time. Whew, boy! Now, I think it's a good thing to get back so you - you don't have to listen to that goddam radio all the time.

10 05 35 00 CMP The DAC, yes. But the Hasselblad's above your head.

10 05 35 05 CDR No, mine's - I don't think so. No, that's Jim's.

10 05 35 13 LMP What else we got?

10 05 35 28 CMP It's time for the UV stuff, huh? Let me get out of your way. You couldn't find any more pills, right?

10 05 35 36 LMP ...

10 05 35 41 CMP No, I thought I put them in your TSB. I just saw them hanging there just before we started all that stuff, and I don't know.

10 05 36 02 LMP ...

TIME SKIP

10 05 50 03 CDR Why don't you get the ...?

10 05 51 26 CMP Okay.

10 05 51 27 LMP Don't forget to ...

10 05 51 29 CMP ION - ION SOURCE to STANDBY.

10 05 51 41 CC ...

10 05 51 46 CMP Okay.

[redacted]

10 05 51 47 CC ...

10 05 52 01 CMP Okay. Minus 76 and 117.

10 05 52 13 CC Okay. We copied your comment on the SIM bay door jettison, and further questions go as follows. The white coating in the SIM bay, were - did you notice that any of them were obviously discolored or - or coated from contamination or overheating?

10 05 52 35 CMP I saw no evidence of heating in the SIM bay. I saw no evidence of discoloration of the white surfaces. There were (cleared throat) as - as best I could tell, no particulate matter that had come to rest on any of the surfaces in the SIM bay. It looked very, very clean. And - even at a - across the top of the mapping camera were - was a - -

10 05 57 51 LMP ... and just delete the note here.

10 05 58 00 CC ... Stand by 1 second. 247 plus 30. Also, we would like to add "MASS SPECTROMETER MULTIPLIER, HIGH; DISCRIMINATOR, LOW."

TIME SKIP

10 08 00 56 CMP Okay, good deal.

10 08 00 57 LMP Just completed one.

10 08 00 59 CDR Did you do one?

10 08 01 00 CMP Yes. I'll talk to him. Bob, we just completed one retraction for 33 seconds.

10 08 01 06 CC Okay, we're starting our time.

10 08 01 11 CMP ...

10 08 01 15 LMP And away we go.

10 08 01 17 CMP ...

10 08 01 44 LMP Hey, you woke up just in time to eat again, Dave.

10 08 01 51 CDR ... fresh.

[redacted]

10 08 01 54 CMP To sleep in ... work ...

10 08 02 08 CMP Okay, valve pressure is getting good and ... is ...

10 08 02 14 CMP Surge tank pressure greater than 400?

10 08 02 15 LMP Yes, 487. ...

10 08 02 36 CMP ...

10 08 02 48 CDR Any surge?

10 08 02 50 LMP Yes, it's 600.

10 08 02 52 CMP ...

10 08 02 54 LMP Yes.

10 08 03 00 CDR ...

10 08 03 03 CMP Yes. ...

10 08 03 13 CDR ...

10 08 03 16 CMP You got that solar stuff?

10 08 03 17 CDR ...

10 08 03 26 LMP Sure a relaxed schedule here today.

10 08 03 28 CMP We're going along all right until we get to ...

10 08 03 39 LMP You never do any more UV work, Al?

10 08 03 42 CMP Yes, we get another one tomorrow.

10 08 04 11 LMP Hand me the log there, will you? Oh, we don't have the log out, do we?

10 08 04 16 CMP ... find it.

10 08 04 21 LMP It might be in my TSB. My ... TSB.

10 08 04 33 CMP ...

10 08 05 06 LMP Let's see. I have a G&C Checklist over here. But I don't have the - I don't have the other good information. I take it back; I have it. I have it.

10 08 06 20	LMP	Did you take any UV photos in - in orbit?
10 08 06 28	CC	15, Houston. Over.
10 08 06 30	CMP	Go ahead. Go ahead, Houston.
10 08 06 38	CC	Roger, 15. We'd like to get a PITCH of minus 40 and YAW, 90, for the HIGH GAIN ANTENNA. And then, if you change your antenna switch to HIGH GAIN without hitting the COMMAND RESET switch, we'll maintain comm that way, please.
10 08 06 59	CMP	Yes. Okay.
10 08 08 30	CC	Apollo 15, Houston. Over.
10 08 08 36	CMP	Go ahead, Houston.
10 08 08 39	CC	Negative. You did the right thing without us calling you. Thank you.
10 08 08 45	CMP	Whatever that was, okay.
10 08 08 49	LMP	Are we going to press on with the high gain?
10 08 09 21	CDR	Yes, yes. If you just get your ... down here, ...
10 08 09 30	CMP	Ah, mark it.
10 08 09 32	CDR	... We want to take four breathing samples and do our ... What do we have - we have about 50 left to make, don't we?
10 08 09 40	LMP	We have 50 in this one.
10 08 09 41	CDR	...
10 08 09 43	CMP	Okay.
10 08 09 44	CDR	...
10 08 09 52	LMP	Yes.
10 08 09 53	CDR	...
10 08 13 23	CMP	... change that one.

[redacted]

10 08 13 24 CDR Bring it in ...

10 08 13 28 LMP You should bring that. I used the scissors to cut mine on the LM, but - Is there a file on the end of those scissors?

10 08 13 43 CMP I don't think so. That one's ...

10 08 13 54 CDR Not much of a file, huh?

10 08 14 00 LMP I got a razor blade (laughter).

10 08 14 02 CDR ...

10 08 14 12 CMP Yes.

10 08 14 13 LMP Yes.

10 08 14 14 CDR ...

10 08 14 16 CMP Okay.

10 08 14 17 LMP Okay.

10 08 14 18 CC 15, Houston. Your rates look good to us ...

10 08 14 21 CMP Okay, Bobby.

10 08 15 38 LMP Maybe we better turn the heat up a little in here.

10 08 15 42 CDR Getting cold?

10 08 15 45 LMP My feet are a little cold. I wonder where my - my little slippers went.

10 08 15 51 CDR ...

10 08 15 53 CMP Open up my - open up my sack. Here's my little slipper.

10 08 15 58 CDR ...

10 08 15 59 LMP Get me into my slippers in here.

10 08 16 00 CMP Are they yours?

10 08 16 01 CDR Two-hundredths.

[redacted]

10 08 16 16	LMP	I'll take them.
10 08 16 21	CMP	...
10 08 16 25	CDR	...
10 08 16 26	LMP	Yes.
10 08 16 27	CDR	...
10 08 16 31	LMP	Yes, I think I did.
10 08 16 32	CDR	...
10 08 16 42	LMP	No. I think I - There is one.
10 08 16 43	CDR	Are you sure, Jim?
10 08 16 55	LMP	The last time I saw it, we - it was in B-1. You know, wrapped in there with the - the JETT bag. But it's not in there any longer.
10 08 17 04	CDR	...
10 08 17 06	LMP	No, it's not in there now. Just - just the - -
10 08 17 10	CDR	...
10 08 17 11	LMP	It's not in there now.
10 08 17 12	CDR	...
10 08 17 14	LMP	I don't know, Dave. I'll have to look. I don't know - I don't know who took that stuff out of B-1.
10 08 17 20	CMP	... - -
10 08 17 21	LMP	What'd you - Al, the one - the cam - we had the 500 - millimeter camera, Al?
10 08 17 27	CDR	...
10 08 17 30	LMP	Yes.
10 08 17 31	CDR	Remember, we pulled the cameras out ... and put them in the JETT bag.

[redacted]

10 08 17 35 LMP Yes.

10 08 17 36 CDR I gave you yours, and you ...

10 08 17 39 LMP You gave me my camera at that time?

10 08 17 41 CDR Yes, ...

10 08 17 45 LMP Tell me where it is and I'll look.

10 08 17 46 CMP Yes.

10 08 18 38 LMP Did you find ...?

10 08 18 39 CMP Yes.

TIME SKIP

10 08 32 09 LMP I think this package of MAGs goes into - A-8.

10 08 32 12 CDR ...

10 08 32 17 LMP Ah, you think so, huh?

10 08 32 41 CMP Should be pictures ... we used all that film. ... It picked up a little here ...

10 08 32 55 CDR Who's going to ...?

10 08 32 58 CMP Where's your bag? ...

10 08 33 06 CDR It's down here right now. I got to get these straightened out.

10 08 33 18 CMP ...

10 08 33 28 CMP Yes.

10 08 33 29 CDR ...

10 08 33 39 CMP I'd like - I'd like to get a MAG of that, too. Start eating it. ...

10 08 33 58 CDR ...

10 08 34 06 LMP The MAG, you mean?

[redacted]

10 08 34 08 CDR ...

10 08 34 12 CMP Well, no matter what you do, it's got to come back tightly, before you start it.

10 08 34 17 CDR I knew you could, but you could - you could do it ... perfect here, or you could ... Now can you get it started?

10 08 34 30 CMP Yes.

10 08 35 41 LMP Al, one pack of this film goes in A-8, the 70s in the LM.

10 08 35 48 CMP Yes.

10 08 36 07 CMP ... 40. Want three of them?

10 08 36 10 LMP Yes.

10 08 36 12 CMP Did you get three?

10 08 36 13 LMP Yes.

10 08 36 14 CMP Okay.

10 08 36 19 LMP We're going to get the other three in today. We'll have 13. We'll have to split the package up.

10 08 37 07 CMP ... We can put some MAGs in here.

10 08 37 09 LMP Yes.

10 08 37 11 CDR We only got this one MAG.

10 08 37 16 CMP ... that?

10 08 37 18 CDR Right on. Why don't we just ...?

10 08 37 23 CMP Probably, because nobody can ...

10 08 37 25 LMP Probably.

10 08 38 32 LMP ... in there? Al. That bag is much too big to fit in there.

10 08 38 43 CMP ... but we can certainly get ...

[redacted]

10 08 38 47 CDR We need one bigger than this, though.

10 08 38 49 LMP Well, this bag probably should not have come over from the LM. I used this bag, though, to wrap up these - these MAGs. You know, neither one have been used.

10 08 39 29 CMP I think they might be ...

10 08 39 51 CDR What are you going to get out of here?

10 08 40 01 CDR Carry it for me. Can't help but be better.

10 08 40 12 LMP You got to work - work it out.

10 08 40 15 CMP ... that one ...

10 08 40 18 CDR ...

10 08 40 19 CMP I wouldn't ...

10 08 40 22 CDR Yes, I wouldn't ...

10 08 40 25 CMP Yes. Tool - tool B on the - wait - wait a second.

10 08 40 48 LMP Tool B or tool E?

10 08 40 51 CMP Tool B.

10 08 40 53 LMP From the LM?

10 08 40 55 CC Apollo 15, Houston. It's retract time.

10 08 41 01 CDR Thank you, Bob.

10 08 41 41 CDR What?

10 08 41 46 LMP Hey, I forgot to cut - I didn't cut the ion off.

10 08 41 50 CDR Cut the ion ...?

10 08 41 52 LMP No. We should have cut the hammock straps. Should have got those, too, before we jettison them.

10 08 43 01 CDR No, those are the LM pans. ...

[redacted]

10 08 43 22 CMP Hey, Dave? Yes, you got them.

TIME SKIP

10 08 56 37 LMP We do UV photos twice. Two more - UV photos two more times.

10 08 56 45 CDR ... your film.

10 08 57 13 CMP It's kind of nice having some room down here, isn't it?

10 08 57 16 CDR It sure is.

10 08 58 31 LMP You don't want to go through this contamination control with the vacuum cleaner, do you, Dave?

10 08 58 36 CDR I don't think we're required to do it.

10 08 58 38 LMP Okay.

10 08 58 41 CMP ...

10 08 58 43 CDR No, we don't ...

10 08 58 45 CMP We don't ...? ... mention down-range control. They're standing by to give some water on it anyway.

TIME SKIP

10 09 19 15 LMP Oh, and then CDR doffing biomed harness. LMP donning. Alpha X-ray. Let's get a little SIM bay and then eat. Eat and then we do a canister change. You do a little P23 stuff. Then we'll get ready to go to bed.

10 09 19 46 CMP Three hours to bedtime.

10 09 19 50 CDR ... sleep. ...

10 09 20 05 CMP ... 3 to 4 hours ...

10 09 20 22 CDR ... here?

[redacted]

10 09 20 25 CMP ... - -

10 09 20 26 LMP Otherwise, it would have been pretty boring.

10 09 20 28 CDR ...

10 09 21 32 CMP ...

10 09 21 39 CDR ...

10 09 21 40 CMP ...

10 09 21 50 LMP (Laughter)

10 09 21 51 CMP ...

10 09 21 55 LMP Yes.

10 09 21 56 CMP ...

10 09 22 06 CDR ...

10 09 22 09 LMP You work mighty hard, I'll tell you.

10 09 22 11 CDR What ...?

10 09 22 12 LMP You work mighty hard.

10 09 22 20 CDR ...

10 09 22 23 LMP No, a little ...

10 09 22 35 LMP I wish I would have tried running alongside the Rover at a - the same pace, you know, to see how - -

10 09 22 42 CDR You'd have never stayed with it, Jim. You know ... - -

10 09 22 47 LMP Yes, true.

10 09 22 48 CDR - - ...

10 09 22 56 LMP I would have liked to have, you know, to run alongside of it. It'd been neat to do a few things like that, you know.

10 09 23 01 CDR What?

10 09 23 02 LMP It'd been neat to try a few things like that.

10 09 23 04 CDR Yes. I know. Yes. ...

10 09 23 43 LMP You can take off your biomed harness, Dave.

10 09 23 44 CMP Whoo!

10 09 24 05 LMP He'll lose sleep for 9 hours tonight.

10 09 24 08 CDR Good! ...

10 09 24 35 CDR Can you see the Moon?

10 09 24 36 LMP Oh, yes.

10 09 25 45 CMP Can you get that? Thank you.

10 09 25 58 LMP On a lunar eclipse - Let's see, we take a total there of -

10 09 26 06 CDR ...

10 09 26 07 LMP No, we take some with the EL.

10 09 26 10 CDR Yes.

10 09 26 11 LMP Yes. We take eight with the EL.

10 09 26 13 CDR What kind?

10 09 26 14 LMP Color.

10 09 26 17 CMP ...

10 09 26 27 CDR Yes, eight with color.

10 09 26 40 LMP Here's some more Lunar Orbiter.

10 09 26 44 CDR Is that the same?

10 09 26 47 LMP No, you have it on two different pages.

10 09 26 51 CDR Oh, yes.

10 09 26 54 LMP Hey, what was this one for?

10 09 27 08 CDR Don't you have any more?

[redacted]

10 09 27 09 CMP ... think we need any ...

10 09 27 12 CDR Yes. ...

10 09 27 15 LMP It's in the lockers.

10 09 27 20 CDR ... more?

10 09 27 22 CMP ... time to figure it out - figured out ...

10 09 27 26 CDR Going to give them ...?

10 09 27 31 CMP ...

10 09 27 34 CDR ...

10 09 27 38 CMP Yes, you got to reckon with him yet.

10 09 27 40 CDR Huh?

10 09 27 41 CMP You're going to have to reckon with him yet on those ...

10 09 27 42 CDR Yes. ... make sure to recommend that he ...

10 09 27 49 CMP Yes.

10 09 27 52 CDR ...

10 09 28 00 CMP Yes.

10 09 28 24 CC Apollo 15, Houston. About 2 minutes to MASS SPEC BOOM, DEPLOY. And we'd like a DELTA-T on the length of time it takes to deploy it, please.

10 09 28 34 CMP Roger, Bob.

10 09 29 51 CDR (Laughter) They can't tell that, I don't think.

TIME SKIP

10 09 43 03 CDR There must be a MAG around somewhere. There must be two of them.

10 09 43 07 CMP In the bag.

10 09 43 09 CDR Okay.

10 09 43 11 CMP Now, all we're missing is S, per his ...

10 09 45 32 CMP Is that MAG hooked up?

10 09 45 35 CDR I don't know.

10 09 45 58 CMP I've got - I've got two whole reels of color stereo.

10 09 48 50 CMP Yes, that goes back up for ...

10 09 48 55 CDR Why?

10 09 48 56 CMP Why?

10 09 48 57 CDR Why?

10 09 49 08 CDR Let's see. Next is the ...

10 09 52 53 CDR Huh?

10 09 55 17 CDR Huh?

10 09 55 26 CMP One more time. Ready?

10 09 55 27 CDR Yes.

TIME SKIP

10 10 10 38 CMP You got it?

10 10 10 39 LMP Over here.

10 10 10 40 CDR Oh, yes.

10 10 12 22 CMP God damn.

10 10 12 23 CDR Huh?

10 10 13 11 CDR Al, what all is there?

10 10 13 29 CMP We have turkey.

10 10 13 34 CDR Turkey?

[redacted]

10 10 13 35 CMP Yes.

10 10 14 22 CDR Do we have something extra for lunch?

10 10 14 37 CMP Ham.

10 10 15 26 CDR As you're loading it.

10 10 15 29 CMP Oh, I - you know, I think we can do it with ...

10 10 16 03 CMP Ah, yes.

10 10 16 16 CDR Hey, I'd - I'd like to ... Yes. ...

TIME SKIP

10 10 35 08 CMP I'm just fine. Just fine.

10 10 35 24 CMP I'm so damn happy; nobody could give me any better service.

10 10 37 40 CDR What seems to be ...?

10 10 38 20 CMP Hey, what do you ...?

10 10 38 25 CDR Yes. Yes, ...

10 10 38 44 CDR ...

10 10 38 45 CMP ...

10 10 38 48 CDR ...

10 10 39 30 CMP Yes, I guess the worst thing in the world would be to try to do something like that and not be able to do it.

10 10 39 35 LMP Oh, boy, ...

10 10 39 50 CMP Tired?

10 10 39 52 CDR Yes.

10 10 40 01 CMP Well, I'll tell you, I'm sure glad we got rid of that clothesline operation ...

10 10 40 06 LMP ...

10 10 40 16 CMP In fact, it's really a ball, when you get all suited up, get cooled off, and get the hatch open.

10 10 40 24 LMP Sounds good. Sounds real good.

10 10 40 29 CDR Oh, it's great.

10 10 40 32 CMP The Sun would have been some better - It would have been better if it could have been a little bit higher. Because when I went down around the side of the mapping camera, it was pretty dark.

10 10 40 47 CDR Yes.

10 10 41 06 CDR Yes.

10 10 41 19 CMP Boy, I hope the - I hope the TV came out all right.

10 10 41 23 CDR Yes. ...

10 10 41 25 CMP Did you? Okay. ...

10 10 43 17 CDR Got them. Got them.

10 10 43 18 CMP Okay.

10 10 43 19 CDR Somehow they got way down in there - -

10 10 43 20 CMP Well, we didn't lose anything of value out the hatch. ...

10 10 43 23 CDR Everything's okay.

10 10 43 25 CMP We lost a spring clip. We lost a paper clip - -

TIME SKIP

10 10 57 43 CMP Want me to write?

10 10 57 46 CDR Where do you want this? In your ...?

10 10 59 24 CDR Okay. Plus four balls 8, minus three balls 67, plus three balls 54.

10 10 59 34	CMP	Wait a minute; maybe that's 34.
10 10 59 41	CDR	Oh, yes.
10 10 59 42	CMP	Yes.
10 11 00 23	CDR	Oh, you screwed up.
10 11 01 29	CMP	Yes, sir, Bob, you bet you. It sure is beautiful.
10 11 01 35	CDR	You say that sure has been planned for me?
10 11 01 41	CMP	Yes, ...
10 11 02 08	CDR	...
10 11 02 09	CMP	The platform gets us home without a midcourse, by golly.
10 11 02 16	CDR	No range error, but pressure's a little low.
10 11 02 18	CMP	Hey, Jim. While you're down there, we need a canister change. Twenty-one into B. Stow 19 in A-4.
10 11 03 51	CDR	Twenty-one. Yes. Twenty should be in A. Get it out of A-4.
10 11 04 21	CDR	No!
10 11 04 22	CMP	... catch it.
10 11 05 03	CDR	That a boy.
10 11 05 04	CMP	Lock her, Dave. You can ...
10 11 05 07	CDR	...
10 11 05 09	LMP	Yes, it is. I think we can ... I hate to use those pulleys.
10 11 05 16	CDR	...
10 11 05 20	CMP	Yes. If you use your own tool.
10 11 05 30	LMP	...

10 11 05 34	CDR	Who stole my ...? (Cough) Boy, ..., didn't I?
10 11 05 44	CMP	...
10 11 07 32	CMP	What are you doing?
10 11 07 42	CMP	Thank you, Davey.

TIME SKIP

10 12 19 16	LMP	What are you doing there, man?
10 12 19 18	CDR	...
10 12 19 21	LMP	Did you find it?
10 12 19 33	CMP	That's better.
10 12 19 36	CDR	...
10 12 19 37	LMP	Yes, I wouldn't know the switches on it.
10 12 19 41	CDR	Houston, Apollo 15.
10 12 19 46	CC	Apollo 15, go.
10 12 19 48	CDR	Hi, Bob; got a presleep checklist for you.
10 12 19 55	CC	We're ready.
10 12 19 57	CDR	Okay.
10 12 19 58	CC	Dave, hold on. We got a ...
10 12 20 16	CC	Okay, 15, we're back with you. We just had a site changeover.
10 12 20 21	CDR	Okay. Crew status is all good; no medication. And I've got the onboard read-outs, if you've got a pencil.
10 12 20 31	CC	I've got a pencil.
10 12 20 33	CDR	All righty. Starting with BAT C: 37.0, 37.0, 37.0; RCS A is 56, B is 50, 48, and 52. And I

guess everything else has been done, and you should have got your E-memory dump. We pressurized the cabin with the OPS, and when we got to about 57 or 58, the OPS was down to 800. And I reckon that's the size of it.

10 12 21 11 CC — Roger, Dave. That sounds like the size of it to us. We copy all that, and there will be no vector update. Ground says your vector is just as good as theirs right now.

10 12 21 21 CDR — How about that? Oh, that's pretty good. We got a good navigator.

10 12 21 27 CC — And, 15, let's hold a couple of minutes while we check some data on the SIM bay and then we'll go to the MOCR one more time. And we'll be back with you in final status, I hope.

10 12 21 40 CDR — (Laughter) Okay, we got - we got time. We're not quite ready to go to bed yet.

10 12 22 04 CDR — (Laughter) Bob says, if he - says, okay, let me go around to the MOCR and check it and come back with your final status, I hope.

10 12 22 24 CDR — But, you know, they got to old Joe, I can tell. Joe's changed. He's a changed man. They had him, boy.

10 12 22 32 LMP — They did?

10 12 22 33 CDR — They were all over his ass during that EVA. He was just really humping. That poor fellow - I bet he's exhausted.

10 12 22 49 CDR — He probably had so damn many inputs, he didn't know which way to go.

10 12 23 04 CMP — ...

10 12 23 08 CDR — Huh?

10 12 23 09 CMP — ... apart.

10 12 23 14 CDR — Oh, he's pretty close to them. That - that group's all tied together pretty well. Yes. It was in

pretty good shape. We got all those guys out on the field trips and sat down and talked to all of them, and that - that group's pretty well squared away.

10 12 23 28 CMP ...

10 12 23 32 CDR No, they're in the back room. And the guy who really comes up to him is Jerry Griffith.

10 12 23 40 CMP Oh, yes?

10 12 23 41 CDR He's really the experiments officer. But - -

10 12 23 45 LMP Who's Jerry Griffith?

10 12 23 46 CMP Yes (laughter).

10 12 23 47 LMP ...

10 12 23 48 CMP Yes.

10 12 23 50 CDR And - But it really goes from Gordon Swann through Griffith to the Flight Director to Joe. And it's - it's a straight loop because Griffith and Griffin both understand the problem, so it - it isn't any big deal. Except that all the other people who aren't in the loop and don't understand were there - all the guys up in the back row with their input - with them.

10 12 24 12 LMP ...

10 12 24 15 CDR Jerry Griffin said he - one of his main problems was going to be holding the people off behind him - you know, to let Joe do his job, and I'm sure it was ... - especially when they can see it all on the TV. And they're clanked - -

10 12 24 29 LMP They're all there?

10 12 24 30 CDR Yes. They're all clanked up anyway. Then we go up on top of some big frigging mountain or stand right next to some big frigging valley, and, you know, they can't do anything about it; they're all bunched up like a nickel cigar.

10 12 24 40 LMP ... They ... and ...

10 12 24 44 CDR Yes.

10 12 24 45 LMP And ...

10 12 24 46 CDR Yes.

DAY 12

11 00 35 37	CC	Roger.
11 00 37 17	CMP	It's a quiet morning.
11 00 37 19	CDR	Say again?
11 00 37 20	CMP	It's a quiet morning.
11 00 37 21	CDR	Yes.
11 00 38 47	CMP	Maybe that means that they come from the Sun. Huh?
11 00 38 51	CDR	Hmm.
11 00 38 57	CMP	Very interesting. Or that the window shield's cutting them off.
11 00 39 02	CDR	No, we had the window shields up before.
11 00 39 04	CMP	Did we?
11 00 39 05	CDR	Yes.
11 00 39 06	CMP	Um hum.
11 00 39 07	CDR	Because we had them - the cockpit all dark.
11 00 39 08	CMP	Be dark. Yes.
11 00 39 09	CDR	Yes, that's right. We did. The only difference now is that the Sun's behind - -
11 00 39 13	CMP	We're not - we're not pointed at the Sun - Yes. And the Moon's behind us. Some place behind the Sun. Isn't it?
11 00 39 23	CDR	No. No, nobody's behind the Sun to us.
11 00 39 27	CMP	Hey, we - You know, we're not shielded - we're not - Gee, I don't know.
11 00 39 44	CMP	We may not be in orientation in PTC to be looking at the Sun either. Well, that shouldn't make any difference yet. Were we in PTC when we did it before?

[redacted]

11 00 39 59	CDR	...
11 00 40 00	CMP	Huh?
11 00 40 02	CDR	I think so. Because I remember thinking, "How are they going to figure the attitude?" They'd have to get it off the - the data.
11 00 40 11	CMP	Yes.
11 00 40 19	CDR	Yes, I see. The - the Sun - will soon be behind the Earth, right?
11 00 40 25	CMP	Yes, should be.
11 00 40 27	CDR	So, if the Sun is close to being behind the Earth right now, maybe the Earth will shield it.
11 00 40 32	CMP	Oh, you mean warpage in the pausal tail?
11 00 40 37	CDR	Yes.
11 00 40 38	CMP	That could be. It comes out in a - in a pinwheel fashion.
11 00 40 56	CMP	Although I saw some last night when I went to sleep.
11 00 41 00	CDR	Yes, I did, too.
11 00 41 01	LMP	Yes.
11 00 41 09	CDR	That's good, Jim. Is that an hour? (Laughter)
11 00 41 14	CMP	(Laughter) Change the sheet.
11 00 41 15	CDR	Wake up, Jim (laughter).
11 00 41 16	CMP	(Laughter) ... Houston (laughter). You're ... - -
11 00 41 22	CDR	... - -
11 00 41 23	CMP	- - for minutes.
11 00 41 24	CDR	All you got to do is repeat that 10 times now, Jim.
11 00 41 36	LMP	Boy, that was fast.
11 00 46 04	CDR	Maybe we've been desensitized to them.

11 00 46 06	CMP	(Laughter)
11 00 46 17	CDR	Houston, 15. We're still here. It just looks like a quiet morning.
11 00 46 25	CC	Roger. Glad you're still awake. Keep on looking for the cosmic rays.
11 00 46 31	CDR	Looking as hard as we can.
11 00 52 23	CDR	Absolutely nothing. Very amazing.
11 00 52 28	CMP	Yes.
11 00 52 42	CDR	MARK CDR. Yes, down on the left eye at about 7 o'clock; intensity about 2. Point source of light.
11 00 52 57	CMP	I guess we can get ready then. They're starting to come.
11 01 01 31	LMP	MARK LMP. Flash at 8 o'clock on the periphery; intensity 2.
11 01 04 01	CDR	MARK CDR. It was in the left eye at 6 o'clock at about a third of the way from the center out; intensity 3; point source of light.
11 01 04 23	CMP	You two guys must be shielding me.
11 01 04 26	CDR	MARK CDR. It was in the left eye about 2 o'clock; a quarter of the way in; intensity 1; point source. Yes, we're taking it all for you, Al.
11 01 04 41	CMP	You must be.
11 01 04 42	LMP	I think Dave's imagining all these.
11 01 04 45	CDR	Got to do something for the ... - -
11 01 04 46	CMP	... he's gotten to the point where he's conjuring them up on me.
11 01 04 51	CDR	Dedicating my imagination to science.
11 01 04 53	CMP	Right. Protecting all those who go after you.

11 01 04 59	CDR	Wait until you see how many I'm going to see in the last minute (laughter).
11 01 05 04	CMP	Confound that curve.
11 01 05 47	CMP	MARK CMP.
11 01 05 48	CDR	Yay!
11 01 05 49	CMP	Left eye; dead center; intensity 2; point source. Only ones I can see are the ones that hit me right between the eyes like a ...
11 01 08 00	CMP	MARK CMP. Right eye; about 1 o'clock; 2/3rds of the way out; intensity 2; and a little streaking - some towards the center of the eye - about another third of the way down.
11 01 09 03	LMP	Do you have your eyelids closed?
11 01 09 05	CMP	MARK CMP. Two flashes: one at 9 o'clock in the left eye and one at 6 o'clock in the left eye; both intensity 3. Yes, my eyes are closed, Jim.
11 01 09 17	LMP	Your eyelids are closed.
11 01 09 18	CDR	Yes. Me, too.
11 01 09 24	CMP	Your eyelids aren't going to stop anything.
11 01 09 27	LMP	Don't think so. Just want to get consistent data.
11 01 10 32	LMP	MARK LMP. Flash; one at 4 o'clock, halfway out; another one at 2 o'clock on the periphery; intensity 3.
11 01 11 17	CMP	MARK CMP. Two o'clock; almost on the periphery; and intensity between 3 and 4. Bright one.
11 01 11 52	CMP	MARK CMP. Two o'clock; streak from right to left; centered about the 2 o'clock radial; about halfway out; intensity 2.
11 01 13 51	LMP	MARK LMP. It was a streak; right eye; moving from the top down toward the bottom, intensity 4.
11 01 19 50	CDR	Maybe we get adapted to it.

11 01 19 52	CMP	Hmm! I suppose so.
11 01 19 55	CDR	You build up an immunity.
11 01 19 56	CMP	Mm-hmm.
11 01 19 57	CDR	Or maybe it's destroyed so many brain cells we don't have any ... left for it.
11 01 20 00	CMP	You know, that's right. Maybe that's it. Mmm. Our sensitivity is so dulled - -
11 01 20 05	CDR	Yes.
11 01 20 06	CMP	- - that we just don't see them anymore.
11 01 20 07	CDR	A lot of people would probably agree with that.
11 01 20 09	CMP	Yes (laughter).
11 01 20 10	LMP	Mmm-hmm.
11 01 20 12	CDR	That's why we're doing them to begin with. Because people are worried about that, I guess.
11 01 20 19	LMP	Well, I wonder if we're the same distance on the trajectory as we were when we did it on the way out?
11 01 20 24	CDR	(Yawn) I don't know.
11 01 20 25	LMP	Is that the idea — to be in the same spatial relation? Yes, we could look - -
11 01 20 29	CMP	MARK CMP. Right eye; dead center; point source; intensity 3.
11 01 20 38	LMP	We could look at the Flight Plan when we get through. The distances are in there.
11 01 20 44	CMP	Mm-hmm. Yes. We could always figure it out.
11 01 21 11	LMP	MARK LMP. It was a streak; left eye; top to bottom; intensity 2; it was right at the periphery.
11 01 22 03	LMP	MARK LMP. Again it was a streak; it was - appeared to be in both eyes; moving from 1 o'clock toward the center; intensity 3.

11 01 22 27	LMP	MARK LMP. A flash; 2 o'clock; periphery; intensity 2.
11 01 23 27	CMP	MARK CMP. Right eye; 11 o'clock; about halfway out; point source; intensity 3.
11 01 26 06	CMP	MARK CMP. Left eye; about 10 o'clock, 2/3rds of the way out; point source; intensity 3.
11 01 28 49	LMP	MARK LMP. Flash; position 2 on the periphery; right eye; intensity 2.
11 01 28 58	LMP	MARK LMP. Same position; intensity 4; flash.

TIME SKIP

11 03 14 09	CC	Roger.
11 03 14 11	CDR	And on top of A-2, we have the ISA decontam bag, for 64 pounds.
11 03 14 23	CC	We copy.
11 03 14 25	CDR	Okay. A-3, A-4, A-5, and A-6 - as you have on your list right now.
11 03 14 34	CC	We copy.
11 03 14 36	CDR	A-7 is as you have on your list, with an addition of the LM DAC and the LM 70-millimeter camera that failed on the surface, which we thought you might like to take a look at it.
11 03 14 51	CC	All right, both those are - are added items, I take it?
11 03 14 54	CDR	That's correct.
11 03 15 04	CC	We copy.
11 03 15 06	CDR	Inside of A-7 is the EVA umbilical and bag as p - p - prescribed.
11 03 15 14	CC	Roger.

11 03 15 15	CDR	Top of A-7 is sample collection bag - Oh, stand by. Oh, shoot, we didn't scratch this out. Dad gum it.
11 03 15 25	LMP	What's that?
11 03 15 27	CDR	You don't - On top of A-1, we don't have number 2. We moved it over here to top of A-7. We've got the LM items, right? Only. Just the LM items on top of the - -
11 03 15 35	LMP	Yes.
11 03 15 36	CDR	- - of - of A-1? That's right. Okay, let me - let me go back and make a correction here, Karl. Look over in the left-hand column where it says top of A-1, and scratch "Sample collection bag number 2."
11 03 15 53	CC	Okay.
11 03 15 55	CDR	And then go back to your right-hand column there. On top of A-7, we have a - a decontam bag with sample collection bag number 2 and the BSLSS bag, for a total of 48 pounds.
11 03 16 16	CC	We copy.
11 03 16 19	CDR	Okay. The 35-millimeter bracket in the bag, we're going to put that in the - -
11 03 16 24	CC	- - I clarify that - both of those bags - -
11 03 16 26	LMP	That's going to go in there.
11 03 16 27	CC	- - together were 48 pounds, or do I also put over the 20 - the 23 pounds we had on A-1?
11 03 16 33	CDR	No, the total of collection bag number 2 plus the BSLSS is 48 pounds.
11 03 16 41	CC	I understand.
11 03 16 43	CDR	And you can scratch the collection bag number 2 for 23 off of A-1.
11 03 16 50	CC	Roger.
11 03 16 57	CDR	Okay. And then, in A-8, it's stowed as pre - -

[redacted] TIME SKIP [redacted]

11 03 25 44	LMP	- - to have some wet packs. I think I'll finish what I have, and then I still - Yes, I'll hit the wet packs.
11 03 25 49	CDR	You got 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 wet packs. Hey, we're in - -
11 03 25 59	CMP	That's enough to keep us alive.
11 03 26 01	CDR	Oh, yes.
11 03 26 02	CMP	Do we have - How many deals do we have to mark? Two?
11 03 26 05	CDR	Just two. Let me stick that in there, too.
11 03 26 08	CMP	Great. I think, just to clean this place out a little bit, I'm going to take some of these bacon squares and throw them.
11 03 26 23	CDR	Yes (laughter). It's probably a good idea.
11 03 26 46	CMP	As a matter of fact, we could consolidate a lot of this stuff.
11 03 26 48	CDR	Yes.
11 03 26 50	CMP	We could use these bags for garbage bags.
11 03 26 53	CDR	Yes.
11 03 27 00	LMP	You dropped yours.
11 03 27 06	CDR	God damn! Dropped it on the floor. Lord a'mighty.
11 03 27 32	CDR	Get what you want?
11 03 27 35	CMP	Yes.
11 03 27 41	LMP	Oh, a little spaghetti. I had some for breakfast; it wasn't bad. A vast spectrum.
11 03 27 54	CDR	Two meals tomorrow, breakfast, and two more meals today - -
11 03 28 05	LMP	One - two - Uh-oh, we'll have to eat - to eat fast, to eat it all up.

11 03 28 13 CMP No, I don't think so (laughter). I think we're going to be there.

11 03 28 17 CDR Do you guys think - -

11 03 28 18 CMP We've got 10 wet packs.

11 03 28 19 CDR Ten wet packs, huh?

11 03 28 22 CMP Yes, one for lunch, one for dinner, and - one for tomorrow.

11 03 28 50 CDR Want a wet pack, Jimmy?

11 03 28 52 LMP Yes, I'll probably take one as long as you got them out.

11 03 28 54 CDR Anybody tried the beef stew?

11 03 28 55 LMP Yes, I have a beef stew here.

11 03 28 57 CDR Mine was pretty good.

11 03 28 58 CDR I'll try one.

11 03 28 59 CDR You want to try one?

11 03 29 00 CMP Yes.

11 03 29 03 CDR Pretty interesting.

11 03 29 06 CMP Have a wet pack.

11 03 29 10 CDR Okay.

11 03 29 14 CMP ... get the drinks out here.

11 03 29 18 CDR And right now you got a P52.

11 03 29 21 CMP Oh, really.

11 03 29 22 CDR Just to stir you up a little bit.

11 03 29 25 CMP Okay. Here's the beverage.

11 03 29 27 LMP Okay. What kind of beverage do you want here, Dave?

[redacted]

11 03 29 33	CDR	I can't take anything but water, grape, and cocoa. I'm through with that other stuff. Somebody ought to - -
11 03 29 37	LMP	There's one grape left.
11 03 29 38	CDR	Well, you can have it.
11 03 29 39	LMP	Getting lucky.
11 03 29 40	CDR	I don't care. I'll just drink water.
11 03 29 41	LMP	Oh, I - I'd like the grape, too.
11 03 29 43	CDR	I can't take any more. I've had 21 days of those juices, and that's all I can handle.
11 03 29 51	LMP	Yes. I'm with you, pal. I feel that way about a lot of this stuff. Well, what do you want to drink, Al? Did you get your drink?
11 03 29 59	CMP	No, not yet.
11 03 30 00	LMP	Do you want an orange?
11 03 30 02	CMP	Yes, I don't guess there's any pineapple left, is there?
11 03 30 05	LMP	There's a pineapple-orange.
11 03 30 07	CDR	Is there a pineapple-orange in there?
11 03 30 08	LMP	Yes.
11 03 30 09	CMP	Yes, that's what I'd like.
11 03 30 17	LMP	No, I take that back. There's an orange-grapefruit. There's no - no pineapple. What's your choice?
11 03 30 24	CMP	Oh, I'll have an orange.
11 03 30 25	LMP	Okay.
11 03 30 48	CDR	Is that P52 due now?
11 03 30 50	CMP	Yes.

11 03 30 51 CDR Okay. Jim, put these back.

TIME SKIP

11 04 13 49 CC Apollo 15, this is Houston. We'd like to have you retract the mass spectrometer boom for 85 seconds.

11 04 13 58 CMP Understand. Retract the mass spec boom for 85 seconds.

11 04 14 08 LMP Yes, I will. Soon as I get the door closed here.

11 04 14 10 CMP Roger. Get you ... then.

11 04 14 12 CC That's affirm, and then you'll leave it there for about 5 minutes. We'll cue you when to extend it again.

11 04 14 17 CMP Okay.

11 04 14 19 LMP Okay, retracting now.

11 04 15 47 LMP ...

11 04 15 50 CDR Huh?

11 04 15 52 LMP Screwed up.

11 04 16 36 CMP Your stuff.

11 04 17 07 LMP This the way it goes in?

11 04 17 08 CDR Yes, it's getting a little tricky. Ought to get that thing in there, though.

11 04 17 12 LMP Does it go in all the way?

11 04 17 13 CDR Yes, put it in.

11 04 17 16 CMP Yes.

11 04 17 22 CDR ...

11 04 17 28 LMP That's funny. Looks like it fits in there pretty well. Oh, what's in - Okay. You're going to put the camera on anyway.

[redacted]

11 04 18 11	CDR	Got ... we can start.
11 04 18 13	LMP	Yes.
11 04 18 15	CDR	Okay.
11 04 18 17	CMP	Okay, we're starting. NOUN 35. Starting now.
11 04 18 50	CDR	Guess we might as well maneuver, huh?
11 04 18 54	LMP	I don't know. Why do you want to go early?
11 04 18 57	CDR	Why not? There's nothing in - the Flight Plan ... Nothing in here ... that I can see.
11 04 19 08	LMP	Well, how about - explain this.
11 04 19 12	CDR	Gamma ray gain. Got to be there by - -
11 04 19 17	LMP	Not until 50 - 30 minutes from now.
11 04 19 37	CDR	Yes, that's right.
11 04 20 04	LMP	I guess we're going to dim the lights and do all this on time. Rather sit for - we can get a flashlight out.
11 04 20 14	CDR	...
11 04 20 18	LMP	Well, we'll see. One minute. Let's see. I don't know why - cabin lights are not going to affect it anyway with that cover over it.
11 04 20 28	CDR	...
11 04 20 40	LMP	Says we're supposed to use the PCM cable. How can we shoot - that PCM cable for the 250? The EL? It won't reach this window, will it? And we'll have the Nikon in the other window.
11 04 20 55	CDR	Didn't we have that this morning?
11 04 20 57	LMP	Well, it's ruined the other things, Dave. That's for the sextant photos.
11 04 21 22	SC	(Sneeze)
11 04 21 36	LMP	Solid 24 minutes of activity, isn't it?

11 04 21 59	LMP	We got MAG N on there. And I still have a MAG way back here with a - color - Q. They suggested T, but -
11 04 22 24	SC	(Yawn)
11 04 22 26	CDR	... Q ...
11 04 22 28	LMP	Might as well.
11 04 22 56	CDR	...
11 04 23 04	LMP	I'll look in this TSB over here.
11 04 23 06	CMP	Look in - in U-1 back there.
11 04 23 58	LMP	...
11 04 24 00	CMP	Roger. You messed up 190 ... - -
11 04 24 02	CC	15, this is Houston. Would you please extend the mass spec boom all the way out again?
11 04 24 08	CDR	Tell him yes.
11 04 24 09	CMP	Roger. In work.
11 04 24 13	CC	And I have a T-start for the lunar eclipse photos when you're ready to copy.
11 04 24 19	CMP	Okay. Go ahead with T-start?
11 04 24 32	CC	T-start for lunar eclipse photos, 268:59:47.
11 04 24 42	CMP	Understand 268:59:47.
11 04 24 48	CC	That's correct, Al.
11 04 24 53	LMP	Yes, my camera's still up here, Dave.
11 04 24 55	CDR	Okay, good.
11 04 25 00	CMP	Hey, we're going to have to rush.
11 04 25 01	CDR	Huh? I know it. Why - logical.
11 04 25 04	CMP	Okay, 59, 47, ...

[redacted]

11 04 25 07	CDR	How long is that from now?
11 04 25 10	CMP	Three minutes.
11 04 25 11	LMP	Well, why don't we go ahead to U - Why don't you go - -
11 04 25 13	CC	Al, we had a question on the mass spectrometer, and it may be too late. Was it possible to confirm by visual look through the window that it was retracted?
11 04 25 25	CMP	Negative, Karl. You can't determine that it's retracted. All you can determine is that it's full out.
11 04 25 33	CC	Roger. Well, when it was retracted, you wouldn't be able to see it; that's what I'm asking. Is it possible for you to take a look now and see if it slowly comes into view?
11 04 25 44	CMP	You want - -
11 04 25 45	CDR	Okay, he wants you to watch and see if it does come full out.
11 04 25 48	CMP	Roger. In other words, you're asking to confirm that it does come full out.
11 04 25 54	CDR	All right, - -
11 04 25 55	CC	That's correct.
11 04 25 56	CDR	- - look down - -
11 04 25 57	CMP	Okay.
11 04 25 58	CDR	- - and if you can't see it, it was retracted. If you can see - You can't see it then.
11 04 26 02	LMP	Yes.
11 04 26 06	CDR	...
11 04 26 08	CMP	Sure I can. Okay, Jim, I'll go ahead maneuver you. You're the act again.

11 04 26 17 LMP Okay.

11 04 26 19 CDR Let's see a Flight Plan.

11 04 26 53 LMP Well, if we can't find that other MAG, Al, we might have to use this one. Got the one MAG here of black and white from the LM. It has got to be - -

11 04 27 02 CC Just to clarify - -

11 04 27 03 LMP - - very high speed.

11 04 27 04 CC - - our question, Al, the main question was just to confirm whether or not it did go out of your field of view. Did it actually move from full - from the full-extended position? Al, since you saw no change in the data when you retracted it during the test yesterday, there is a suspicion that, even though you actuated the switch, that for some reason it didn't retract.

11 04 27 25 CMP Understand.

11 04 27 26 LMP I see - there's one boom extended.

11 04 27 30 CMP Okay. It's fully extended now, Karl. But it may be too late. It may have already been out by the time we looked. Is that talkback barber pole or gray?

11 04 27 40 LMP Gray.

11 04 27 41 CMP Yes.

11 04 27 50 CDR It kind of oscillates back and forth, doesn't it?

11 04 28 08 CMP Karl doesn't realize we don't want to get too much UV. He must think we watch out that window every time we extend and retract it.

11 04 28 20 LMP Hmm.

11 04 28 21 CDR Yes, no kidding.

TIME SKIP

[redacted]

11 06 08 35	CMP	Percentage on the MAG?
11 06 08 39	LMP	Okay.
11 06 08 40	CDR	Trim and call it 75.
11 06 08 44	LMP	Okay, we're moving. Stable DAC. G&N POWER coming back to AC 1. CMC MODE, AUTO, Dave? A VERB 49 maneuver to the lunar-eclipse attitude. I wonder - I guess we better be in that attitude - for the press conference. Okay. You ready -
11 06 09 10	CC	15, Houston. We'd like to get the HIGH GAIN up, PITCH, 22; YAW, 261.
11 06 09 17	LMP	Say, buddy!
11 06 09 21	CMP	Stand by; we're maneuvering.
11 06 09 25	CDR	The numbers, Jim.
11 06 09 26	LMP	Okay; 040, plus 011, plus 041.
11 06 09 42	CDR	Forty, 11, and 41. Right?
11 06 09 44	LMP	That's right.
11 06 09 54	CDR	What time's the chronometer say?
11 06 09 55	LMP	Twenty after.
11 06 09 58	CMP	Yes.
11 06 10 03	CDR	Okay, Houston. Are your high gain angles for the sextant photos or for the lunar-eclipse-photo attitude?
11 06 10 14	CC	Sorry about that, Dave. When you complete this maneuver, they're in your Flight Plan, PITCH, minus 22; YAW, 227.
11 06 10 21	CDR	Roger.
11 06 12 03	CDR	Oh, yes. That's not bad. Not a bad picture. Oops!
11 06 12 18	CC	15, we'd like to have OMNI Bravo.

11 06 12 23	CDR	Can you get that for him, Jim? OMNI Bravo?
11 06 12 26	LMP	Oh.
11 06 12 27	CMP	I'll get it. - -
11 06 12 28	LMP	OMNI Bravo.
11 06 12 29	CMP	... Okay.
11 06 12 40	CDR	It's looking up.
11 06 12 46	CMP	Let's see - -
11 06 12 47	CDR	Wait.
11 06 12 49	CMP	Yes, let me get it.
11 06 12 53	CDR	What say to open all the windows and get a little light in here, huh?
11 06 12 58	CMP	Yes.
11 06 13 09	CDR	There seem to be - Ah, there won't be any at the lunar-eclipse attitude, though.
11 06 13 32	LMP	Turn all the floods up all the way.
11 06 13 34	CDR	Yes.
11 06 13 52	CMP	What time's ...?
11 06 13 54	CDR	In a few minutes.
11 06 13 59	LMP	Yes, at 20 after.
11 06 14 00	CDR	Yes.
11 06 14 11	CDR	One guy here.
11 06 14 13	LMP	Let's see if this controller wants to take up.
11 06 14 17	CDR	One guy here. Here, I got it, Jim. Why don't you come on down?
11 06 14 25	LMP	Come down now?

11 06 14 26	CMP	Yes. Sit on my urine hose. Keep the - -
11 06 14 28	CDR	Sit on urine hose and keep it down. The controller, we can stick under the couch - for now. This moose is in the way.
11 06 14 47	CMP	(Laughter) Too much gravity.
11 06 14 50	CDR	Get over in the - put your feet on the couch and sit down.
11 06 14 53	CMP	Well, someone's going to have to get up and get the switch.
11 06 14 54	CDR	What switch?
11 06 14 55	CMP	SCIENCE - -
11 06 14 56	CDR	I'll get it.
11 06 14 57	CMP	- - TV switch.
11 06 14 58	CDR	Yes, it's got to go TRANSMIT on the TV.
11 06 15 00	CMP	Yes.
11 06 15 02	CDR	Let's see if this all is going to work. No, we've got to shift it over - away from the corner. Yes, okay. Hold on to that.
11 06 15 27	LMP	Okay, it looks like we're in attitude. Al?
11 06 15 30	CMP	Right.
11 06 15 31	LMP	And we got to get the high gain going there.
11 06 15 33	CDR	Okay. It's not in the press con - shoo - it's not in here.
11 06 15 45	CMP	It's in there for the - the maneuver to the - yes, the eclipse attitude.
11 06 16 00	CDR	Let's see, you ought to try and move those hoses somewhere, Jim. Because you're going to end up having to be further back in the corner, I think. This thing needs to come - Great. I don't - Why don't you come - You get down - -

11 06 16 18	LMP	What's wrong?
11 06 16 20	CDR	Taped right now, but I think - -
11 06 16 21	CMP	Yes.
11 06 16 22	CDR	Yes, it needs to come over this way more. It's not going to go any further on the other side of the bulkhead there.
11 06 16 35	LMP	Yes.
11 06 16 36	CDR	See, because I'm - I'm in the far - no. Jim, can you get down? And let's see how it's going to work.
11 06 16 40	CC	15, Houston. Give us AUTO and NARROW on the HIGH GAIN, please.
11 06 16 44	CDR	Whew!
11 06 16 45	LMP	Roger. AUTO and NARROW.
11 06 16 46	CMP	You want the front end to come this way a little? You want the front end to come this way?
11 06 16 56	CDR	No, I guess it's all right, if I can - It - it - There.
11 06 20 00	CDR	It's reflected. I mean there's not -
11 06 20 01	CMP	Yes, that's what I made it for. Pick up behind here. No, right behind here.
11 06 20 08	CDR	Tell you one thing. I hope we can turn the lights up.
11 06 20 10	CMP	Yes. Might help.
11 06 20 12	CDR	Lights all up?
11 06 20 13	CMP	Yes. Oh, put it up it.
11 06 20 18	CDR	Al, you take that little bit and we'll put it on the patch.
11 06 20 21	CMP	Okay.

[redacted]

11 06 20 22	CDR	Okay. Yes, that's fine. How's that?
11 06 20 26	CMP	You got it, Jim. Fix it (laughter).
11 06 20 33	CDR	You see a patch, Al?
11 06 20 34	CMP	Yes.
11 06 20 35	CDR	Okay.
11 06 20 37	LMP	Okay, there you go.
11 06 20 38	CMP	No, I don't want it.
11 06 20 39	LMP	See there? It's going to be hitting it. By gads, I'll just hold it on the patch.
11 06 20 54	CMP	(Laughter) Maybe.
11 06 20 58	LMP	I'm in charge of light - light - light effect there - -
11 06 21 00	CMP	Light, yes.
11 06 21 01	LMP	- - on the patch.
11 06 21 02	CMP	Light my own.
11 06 21 04	LMP	You want me to turn it on at the right time, Bob?
11 06 21 06	CMP	(Laughter)
11 06 21 07	LMP	Huh?
11 06 21 08	CMP	(Laughter)
11 06 21 09	CDR	No, I think that's all right. There. Maybe you ought to come over this way a little bit. You're up there, like you're hiding in a corner.
11 06 21 20	LMP	There you go.
11 06 21 21	CDR	There. No, I don't think you need that on the patch, do you?
11 06 21 24	CMP	No.

11 06 21 26	CDR	You still got to look at the stupid camera.
11 06 21 27	CMP	No, it doesn't - shows my face up there.
11 06 21 31	LMP	What do you mean?
11 06 21 32	CDR	Okay.
11 06 21 34	CMP	We'll keep it available in case somebody wants to look at my face (laughter).
11 06 21 39	CDR	Okay. Houston; 15. You ready down there?
11 06 21 50	LMP	Well, it's in TV already. Who put it in TV?
11 06 21 53	CC	Roger, 15 - -
11 06 21 54	CMP	I put it in TV.
11 06 21 55	CC	- - We're close to ready. Are you ready for a big press conference?
11 06 21 57	CMP	That goes TRANSMIT.
11 06 21 58	CDR	Oh, Roger. We're ready. Any time you want to go to TRANSMIT, let us know.
11 06 22 06	CC	Okay, you can go ahead to TRANSMIT.
11 06 22 09	CDR	Roger. We are. I got 3 seconds, 2 seconds, 1 second. How's that? There.
11 06 22 19	CMP	Except for - move your wire, Jim.
11 06 22 22	CDR	That a boy, now. See? They get it all. Okay, Houston, talk to us. We're all here. Except how does it - -
11 06 22 32	CC	Hey, 15, we're getting a beautiful picture coming through.
11 06 22 34	CDR	Yes.
11 06 22 36	CMP	Very good.
11 06 22 37	CDR	Roger. Go ahead with your questions.
11 06 22 45	CDR	It's probably blank as hell.

[redacted]

11 06 22 46	CC	Roger. We'll - we'll admire the beautiful picture for - for a few minutes here.
11 06 22 50	CDR	... this one.
11 06 22 51	CMP	... lens?
11 06 22 54	CDR	Yes, that's been done.
11 06 22 56	CC	Deke just passed out from the shock, incidentally.
11 06 23 01	LMP	Do we look that scroungy? (Laughter)
11 06 23 03	CDR	Yes - yes. No, we look so good.
11 06 23 05	SC	(Laughter)
11 06 23 07	CMP	Mmm!
11 06 23 08	CDR	He probably can't believe it.
11 06 23 09	CMP	Yes.
11 06 23 12	LMP	It's just because we haven't shaved in 2 weeks.
11 06 23 14	CMP	Is that a fact?
11 06 23 15	LMP	Yes.
11 06 23 16	CC	Okay, fellows, I have a preliminary statement to make here. The questions you will be asked in this news conference have been submitted by newsmen here at the Manned Spacecraft Center who've been covering the flight. Some of the questions they raised have been answered in your communications with - with Mission Control, but the public at large has not necessarily heard them. The questions are being read to you exactly as submitted by the newsmen and in an order of priority specified by them.
11 06 23 45	CDR	Hum.
11 06 23 46	CC	Question number 1. Since last week, we have shared scores of exciting moments with you. Which single moment would you most like to live again, and is there any moment which you would never like to repeat?

11 06 24 03 CDR Well, I guess we all probably have a different idea on which would be the single most exciting moment of the flight, and maybe we'll just run through it one at a time. I guess the most impressive moment I can remember is standing up on Hadley Mountain - Hadley Delta, and looking back at the plain and seeing the LM and the rille and Mount Hadley, and the whole big picture in one - one swoop. And I think we've got some pictures for you from up there, and I believe the TV was running at the same time, and I think that was probably the most impressive sight that I've ever seen. Al?

11 06 24 39 CMP I guess I'd have to say - sort of, two events occurred which were exciting for different reasons, and I guess they were really kind of the highlights of - of the flight for me. One was right after LOI, when we got our first look at the Moon, and it was a fantastic, spectacular sight. And the other, I guess, was when TEI burned so beautifully, and right after TEI, that was an awfully good feeling.

11 06 25 11 LMP Okay. Well, I guess there were a great many new thrills for me, and the one that was most impressive, though, was the lift-off. It began the flight, and I knew that I was going into space after a - a few years of waiting and training. And then, as far as the event that I would not like to - to repeat again, was probably the - the time when I fell down in front of the TV when we were deploying the Rover.

11 06 25 42 CDR Let me get your mike.

11 06 25 45 CC Question number 2. Near Spur Crater, you found what may be Genesis Rock, the oldest yet collected on the Moon. Tell us more about it.

11 06 25 58 CDR Well, I think the one you're referring to was what we felt was almost entirely plagioclase or perhaps anorthosite. And it was a small fragment sitting on top of a - a dark brown larger fragment, almost like on a pedestal. And Jim and I were both quite impressed with the fact that it - it was there, apparently waiting for us. And we had hoped to find more of it, and, I'm sure, had we more time at that site, we would have been able to find more. But I think this one rock, if it is, in fact, the

beginning of the Moon, will tell us an awful lot. And we'll leave it up to the experts to analyze it, when we get back, to determine its origin.

11 06 26 48 CC Question number 3. Apollo 15 is already being described as one of the great events in the history of science. Aside from the crystalline rock, what other findings at Hadley-Apennine seem most important to you?

11 06 27 02 CDR Jim? Why don't you answer that?

11 06 27 05 LMP Well, I guess that, immediately, I think of the - the orientation or organization that was revealed in the side of Mount Hadley. There's 14,000 feet vertical relief of vast mountain face exposed to us. And there was layering in there that was most impressive for the total 14,000 feet, and we commented on the number of beds we could see. That really impressed me, that you could have that much organization in - on a large mountain on the Moon.

11 06 27 45 CC Question number 4. This is the toughest landing area we have attempted to - to reach on the Moon. Describe what it was like, flying into it.

11 06 27 58 CDR Well, I think, to begin with, we had every confidence that we could get to the landing site. The trajectory had been modified such that we had adequate clearance over the mountains. And the first sight I had out the window was somewhere around probably 9 or 10,000 feet as we passed down below the upper elevations of Mount Hadley. And I could see Mount Hadley to my left before we pitch - pitched over and saw the - the plain at Hadley, and that was probably as impressive sight - a sight as I've seen. The landing itself, once we pitched over, was somewhat of a surprise in that the - the cratering was much more subtle that we had expected. There was a great lack of any large fragments or boulders on the surface. It was apparently quite smooth, and those rather deep craters, which we - we had anticipated using as landmarks because of their subtlety, did not appear quite as readily as we had hoped. I think we did recognize our relative position east-west

of the rille because of the size of the rille itself. I think we were a little off on the north-south, but close enough to handle the traverses in the Rover. And I think that having a vehicle such as that - as that enables us to go into more complicated, difficult landing areas, because it's not necessary to land on an exact point. We can take advantage of our mobility and land anywhere within a certain prescribed area, which was initially our goal on this flight.

11 06 29 39 CC Question number 5 for Al Worden. In lunar orbit, you, too, carried out geologic observations; for example, you reported cinder cones. Could you discuss this and other observations from 60 miles up?

11 06 29 54 CMP Yes. The comment on the cinder cones was one of color, but we noticed particularly on - on some of the lighter part of the back side that many, many of the craters that we - that we flew over were filled with what appeared to be lava. There seemed to be a great number of lava flows in the - in the mare area, particularly Mare Imbrium. Mare Imbrium seems to be a - just a - countless numbers of - of lava flows, which were all apparently very thin and - and very fluid. And you can see - you can just count number - numbers of flow fronts covering Mare Imbrium. So we got, I think, quite a distinct impression of a - of a - of a great deal of volcanism around the Moon. And, in some particular isolated area, such as the Littrow area and such as areas like probably the Aristarchus Plateau, there's a great deal of volcanism and some cinder cones and - and certainly a lot of lava flows.

11 06 31 06 CC Question number 6. Do you feel that the workload during your three lunar-surface excursions was too demanding? You appeared at times to be reaching the limit of your endurance. Any recommendations for Apollo 16?

11 06 31 23 CDR I think any time you set out on a task such as the one we had, you're bound to, at certain times, get a little tired, which I think we probably did. However, I - I think we came back and I don't think

we ever reached anywhere near the limit of our physical endurance. I think Apollo 16 probably has everything in hand; it's just a matter of conditioning yourself. Jim and I have discussed it since we got back on board the Endeavour and concluded that our training is what really prepared us, and the many hours we spent during geology field trips and in simulations at the Cape in our suits, we feel, was a factor which really contributed to being able to proceed with those duration EVAs. I see no problem in the future with conducting three successive 7-hour EVAs. Neither one of us were particularly physically tired. I think the fatigue is really in the - the mental regime, in which you're concentrating very intensely for 7 hours, and you're pressing to do your best all the way through and - and keep your eyes open to make the appropriate observations and gather the samples. And I think it's really more of a mental factor than a physical factor.

11 06 32 50 CC Question number 7. You described the Lunar Rover as a bucking bronco on the Moon. Would you elaborate and assess the Rover's performance and tell us what changes you recommend for the 1972 model?

11 06 33 04 CDR (Laughter) Jim, you want to talk about that? Why don't you go ahead? Not too hard, though (laughter).

11 06 33 12 LMP Well, there were several times there when we were riding along where we'd hit a - a sizable bump and you could - you could see the - the wheels come off the ground and then float through the air and - But Dave should comment more as far as the - the driving. And it was really like a bucking bronco, that's true, because I was strapped in. As you know, Dave had to strap me in because I had some trouble with my seatbelt, but I - I really did feel like I was on a - a bucking bronco.

11 06 33 41 CDR I think I might add that it's a - it's a very stable machine, but because of the - the 1/6th gravity, it tends to float. In - in the simulations we ran in Houston, we saw the same amplitude or the same degree of bouncing but a different damping. In other words, the - the vehicle would

come off the ground, or one wheel normally would come off the ground, and it would take it somewhat longer to return to the ground than in one g. And I think it's just a matter of being - becoming accustomed to the - to driving. It's a very stable vehicle; the suspension system - system is excellent. We had to make some rather sharp avoidance turns periodically, and in - in these turns, we could tell the vehicle was quite stable. No tendency to turn over whatsoever. I think the only recommendation we'd really have would be to come up with a new idea on a seatbelt-type arrangement, and we - we've discussed that also. I think we have some suggestions we could make when we get back to ensure that you can have both crewmen securely in their seats in a short period of time. Other than that, I think the vehicle is about as optimum as you can build.

11 06 35 02 CC Question number 8 for Dave Scott. The drill seemed to drive you up the crater walls. What was the problem, and was it worth the time?

11 06 35 13 CDR I guess I'd anticipated that question. I think the problem was a - a striking discovery. When we went to Hadley Rille, we expected to find a regolith, or the soil, about 5 meters thick. And with that in mind, like 25 feet, I expected to have no trouble putting the heat flow probes in or drilling the - the core stem because of the expected soft soil. After about 1 meter, I ran into hard rock, and my first thought was it was an isolated rock somewhere within the - the soil. But that was not the case. Apparently, what we have is a very thin regolith or a thin soil layer above solid rock. And with this in mind, I think we brought back a core stem or a deep drill-core of the Moon of basic bedrock or foundation rock on the Hadley Plain. I think that's a very significant find. I think it will be very meaningful to the scientists when they analyze it. The perplexing problem was doing the actual drilling and extracting the core stem. If you put a drill into solid rock, it's very difficult to get it out. And there at the end, it took both Jim and I with our shoulders, pushing as hard as we could, up, to extract the drill stem. But, in the final analysis, as I look back on it, I think it is indeed worthwhile. At

the - at the time it occurred, we were both interested in moving out to the - the Northern Complex and further geology, which Jim and I are both quite interested in. And the mechanical task of doing the drill at that time seemed what - somewhat less important than seeking new - new finds in a new geological area. But, in retrospect, I think we have, in fact, brought back one of the most significant samples of the whole trip.

11 06 37 15 CC Question number 9 for Dave Scott.

11 06 37 17 CDR Gee, I don't want them all.

11 06 37 18 CC In view of your comment to geologist Leon Silver about the need for trained scientists on the Moon, do you think that Scientist-Astronaut Jack Schmitt should be included in the crew of Apollo 17, the last of the Apollos?

11 06 37 32 CDR Okay. Well, since I really had very little say-so as to which - which people get selected for which crews, I might sort of bypass it with the - with the one comment that I think the more qualified a man is on the Moon, the more results you're going to get. And I think that's one of the reasons that we put as much time as we did into the geological aspects, in hopes of - of learning enough to bring back some significant data. I think that, in any situation such as this, in any scientific endeavor, that you want the most qualified people possible. You must also remember that this is a - a highly complex operational mission. It requires a great deal of - of training and skill in order to fly these machines. I think, in particular, Jack Schmitt - Schmitt is a very highly qualified individual in both aspects. And I believe it's up to the - the management, that when they select the crews, to select the best people for the flight. That all right?

11 06 38 42 CC - - Al Worden. What runs through the mind of a man orbiting the Moon alone?

11 06 38 51 CMP Well, I guess - I guess the - the thing foremost in my mind during those 3 days was how I was going to keep up with the time line and the Flight Plan,

and how I was going to keep track of all the experiments we had going and where they were, and - and whether they were operating or not. And I guess that was a very, very fast 3 days for me. When I wasn't looking at the SIM bay experiments, I was looking out a window and taking pictures, and it was a pretty crammed 3 days. As a matter of fact, I - I guess I didn't really have - have much time to give any thoughts to being alone out there.

11 06 39 31 CC Question number 11, again for Al. You said, after your spacewalk, you wish you'd stayed out longer. What was it like out there between the Earth and the Moon, and why did you come in so soon?

11 06 39 45 CMP Well, let me answer the last one first. I - I guess I didn't come in soon; I came in when the job was done. And, as a matter of fact, I made an extra trip back out to take a look at the mapping camera. Now as - as far as what I felt like when I went out there, we talked a little bit about it after - after the EVA and decided it was sort of like walking on stage at your high school - dinner dance or something. We opened the hatch and it was pitch black, and as soon as we got out, the Sun was beating down on everything, and it looked like a very large floodlight on a stage. And then putting the TV camera out on the door just added a little bit more to that sort of unreal feeling that it was time to get out on the stage and do something. I think, as far as the EVA went, we - we did it just almost exactly as we'd practiced it. It took almost exactly the same amount of time; we did it the same way. And, of course, we had practiced out with the pan - with the mapping camera in the extended position, and so that - that really posed no difficulty to us.

11 06 40 55 CC Question number 12 for Dave and Jim. You - you didn't have time to get to North Complex, craters which may have been formed volcanically and where you thought some surprises might be found. Was this a significant loss?

11 06 41 12 LMP Why don't you?

[redacted]

11 06 41 13 CDR Well, I'll start out and - and throw an answer there. I think if you look back at the original requirements for the landing at the Hadley-Apennines, they were primarily to inspect the Front and the rille. It was only after a - a considerable amount of study had been done and some rearrangement in the Flight Plan - the timing on the surface, that we found we had enough time to plan to go to the Northern Complex. So the Northern Complex was, in fact, an addition to the original requirement; it was a bonus. And I think, because Jim and I have spent so much time with volcanics in our terrestrial geology work, that we were quite interested in getting to the Northern Complex to see if, in fact, it was a volcanic area. But I don't believe we lost anything from the lunar surface by not going there; only we would have had an extra - a bonus had we been able to reach that point. And, with that in mind, I hope that someday somebody gets a chance to go back and take a look at the Northern Complex. Jim, you want to answer?

11 06 42 18 LMP No, I agree with everything you said. It was just a - a little personal disappointment that we couldn't get up there, because we - we thought we'd have another beautiful view of the - the plains there and the LM, a view almost - -

11 06 42 29 SC (Sneeze)

11 06 42 30 LMP - - as beautiful as it - as it was from the side of Hadley Delta.

11 06 42 37 CC Question number 13 for each of you. Would you, please, in your own words, tell us what you gave the American taxpayers besides a few hours of good television?

11 06 42 48 CDR (Laughter) Well, I think - the magnitude of the scientific data we've returned will speak for the taxpayers' money. The small amount of time they had for television, I think, is rather insignificant relative to the amount of return we've gathered in the SIM bay and in the lunar samples we have aboard right now. I think these data will not only en - enhance the progress of science, but it'll reach the common man on the street

directly by the - the byproducts of what we learn. I think man must extend himself, that new frontiers must be opened in order for us to - to propagate mankind, and I think this is one way in which we do it. I - I feel that the taxpayers got, probably - as a matter of fact, I hope they got more than their money's worth out of the flight. And, if you could see the size of the - the film magazines that Al brought in yesterday from those cameras, why, you'd see that we have indeed at - at least a great deal of data on film alone. Want to answer that?

11 06 43 59 CMP Well, I really guess that - that there's not much more to add to what Dave said. He - he expressed my sentiments exactly, in that the - the knowledge that, hopefully, we've - we've added to our store of information about the Moon and about ourselves will be increased in an extent which is greater than - than the - than the capital that was - spent on the flight itself. And I would certainly think that - that this whole theory adds significantly to - to man's knowledge about himself primarily and about himself in those areas where it will help future generations maybe. Jim?

11 06 44 45 LMP I can only add that we're bringing back just a - a lot of - a lot of data and a log of material, and it's going to take many years for people to really appreciate how much was gained from - from this flight.

11 06 45 05 CC Question number 14. It seemed this flight had as many problems as some of the old Gemini missions. Which of these gave you the most concern; and, for Dave, did you ever feel you were back on Gemini VIII?

11 06 45 22 CDR Well, I guess we weren't aware we had that many problems. I thought this was a rather troublefree flight, myself. We went a long way, we spent a long time doing the job, and I think, relative to the number of systems we have in all the spacecraft, that we had very few problems. I can think of none that were significant that would enable me to compare it with Gemini VIII at all. We had a - I guess the first little problem we had was a - a leak in our water system, which was cleared up rather rapidly by somebody having already done

[redacted]

some investigation and having a procedure at hand. I believe our system is such that people have all the anticipated problems understood, and, when they have them understood, they come up with solutions which are quite meaningful and successful. And I feel like the spacecraft and the life-support systems on the Moon and everything worked exceedingly well. I - I guess really I couldn't ask for much more. How about you?

11 06 46 37 CMP Well, I really don't - -

11 06 46 38 CDR No, go ahead.

11 06 46 39 LMP Go ahead. You know, really, we had very few problems. It seemed like a very tame simulation, as far as I was concerned.

11 06 46 47 CMP Certainly, there were - there were - there were irritating things that happened like some circuit breakers in the spacecraft here that gave us some trouble, and some lights that aren't working exactly right. But certainly none of the important aspects of the flight or - or none of the essential pieces of equipment has malfunctioned, and I think it's been just great. Okay, Karl, you take it from there, baby.

11 06 47 19 CC Gentlemen, we'd like to continue the press conference in a few minutes. But, in the meantime, we'd be anxious to get - start - get one of you started on the lunar-eclipse photos.

11 06 47 28 LMP Yes, turn - -

11 06 47 29 CDR We got to try to do both?

11 06 47 30 CC - - three more questions.

11 06 47 31 CDR Okay - -

11 06 47 32 CC Question 15.

11 06 47 35 LMP Why don't we show them the lunar eclipse?

11 06 47 37 CDR (Laughter)

11 06 47 39 LMP There's a lunar rock to show them.

[redacted]

11 06 47 40 CC - - 15 - for Dave and Jim. How many times did each of you fall down on the lunar surface? Did any of these falls hurt you or give you any problems?

11 06 47 54 CDR Let's think, how many times?

11 06 47 56 LMP Well, I fell down twice - -

11 06 47 57 CDR Yes.

11 06 47 58 LMP - - and it was never any real problem. Actually, I could have got up very well by myself without any help.

11 06 48 05 CDR Yes, I guess I fell down twice, too, and, as - as Jim said, it was never any really problem. It's a matter of, if you start to go - and, of course, the terrain there, I guess you could see in the television, was quite rough and irregular with occasionally rocks around, and we were pressing to try and get things done. And it was just a matter, if you just start losing your balance, to go ahead and go easy, and accept somewhat of a - a light fall. Because of the 1/6th gravity, there was never any impact when we hit. Take it easy and get up slow. And I don't think either one of us ever came anywhere near the point of being hurt, in that sense of the matter, it's just a matter of slowing you up for a minute, enabling you to regain your balance, and go ahead. And - and I have a question. Do you want to have the photos of lunar eclipse with the television now, or do you want us to get on with the - the camera photos? Because if that's the case, we have to turn the lights out.

11 06 49 13 CC Roger. We're going to skip down to the last question, Dave, which says your cabin must be jammed with Moon rocks, core samples, suits, and assorted hardware. Can you show us what it's like in there? And, as you show us around, you can get set up for the Moon photos and dim the lights when you like.

11 06 49 28 CMP Oh, man.

11 06 49 29 LMP (Laughter) Ohh!

[redacted]

11 06 49 30	CDR	Okay. I guess - -
11 06 49 31	CMP	(Laughter)
11 06 49 32	CDR	- - to show you around, we have to unstow everything. We're - we're pretty well stowed for reentry right now. We have all the samples stowed, The suits are all stowed, and I guess, in order to show you around, we'd have to do some unstowing because under - beneath the couches right now, it's jammed full. And I guess we'd like to do that for you, but it's some - somewhat impractical, in that all you could see would be some - some edges of the white bags, and that's why we have the room in the cabin here. Every - everything's pretty well squared away. But, when we get back, I'm sure you'll have an opportunity to see the many things we have, and there's really a lot of it.
11 06 50 12	CC	0 - okay, Dave. That's fine. And I guess one last request is, when you get over to that window to - and before you take the photos, could you give us a quick picture of the Moon with the TV camera?
11 06 50 23	CDR	Sure will. Can try it.
11 06 50 31	CMP	(Humming)
11 06 50 37	CDR	Have I got any pictures? I'll cut this thing down.
11 06 50 40	CMP	(Humming)
11 06 50 42	CDR	See any magazines?
11 06 50 43	CMP	Yes - -
11 06 50 44	LMP	Right here's some, Dave. I got Al's. You got some? Procedures, cameras -
11 06 50 55	CMP	You ought to get over here.
11 06 50 56	CDR	Let me get over there.
11 06 50 57	CC	15, the word here is to proceed. Give your photography first priority there, and maybe we can see the - the Moon out of the other window.
11 06 51 09	CMP	That's ... - -

11 06 51 10	CDR	Okay, we're working on it.
11 06 51 14	CMP	Oh, ...
11 06 51 17	LMP	Got enough?
11 06 51 27	LMP	Hold it, Al. It's still going - -
11 06 51 29	CDR	Monitor? Yes, I can get it from here. I think.
11 06 51 56	CC	15, Houston. We hear that your attitude is very good right now; there's no need to trim the maneuver.
11 06 52 02	CDR	Okay, thank you.
11 06 52 05	LMP	Okay, Al, you got the camera all set up over there, huh?
11 06 52 08	CMP	Yes.
11 06 52 09	LMP	Do you want me to read the settings to you, just in case?
11 06 52 10	CMP	Yes.
11 06 52 11	LMP	There's a change.
11 06 52 12	CMP	Yes.
11 06 52 14	CDR	If you'll grab those ...
11 06 52 18	LMP	What do you want me to get, Dave? Get the lights? Yes, I can get them.
11 06 52 24	CMP	If you can get the lights -
11 06 52 38	LMP	Turn this up a little bit. Okay, Al, when you're ready for me, I'll read to you.
11 06 52 50	CDR	Could that be it?
11 06 52 53	CMP	Need anything down there, Dave?
11 06 52 55	CDR	No, I don't think so. See what it looks like.
11 06 53 01	LMP	Well, it's completely dark now. Just the lower part is orange.

[redacted]

11 06 53 04	CDR	Yes.
11 06 53 07	LMP	The top part's almost a red, a dark red, and the bottom is an orange.
11 06 53 11	CMP	Here.
11 06 53 12	CDR	There you go. Yes, you got her. Okay, Houston. I think you have a picture of her now. There she is.
11 06 53 19	CMP	Okay.
11 06 53 20	LMP	Okay. Let's check it; f/1.2?
11 06 53 23	CMP	Yes.
11 06 53 24	LMP	1/500th?
11 06 53 25	CMP	Right.
11 06 53 26	LMP	Take eight frames? Okay, I guess we'll give priority to you, huh, Al?
11 06 53 30	CDR	Okay, we - we got to get the - -
11 06 53 32	CC	15, so far we have a blank screen down here.
11 06 53 35	CDR	Oh, really? I've got a good picture on the monitor.
11 06 53 41	CMP	Okay, Jim, while - -
11 06 53 42	CC	Hang on for a moment, please.
11 06 53 43	LMP	Okay, we're coming up on 6 minutes here at 55 - -
11 06 53 47	CMP	Besides, we're FREE here.
11 06 53 49	CDR	Boy, every time those - the jet fires ...
11 06 53 52	LMP	Okay, go - we're FREE.
11 06 53 54	CMP	Okay, Jim.
11 06 53 56	CC	It's coming through now.
11 06 53 57	CMP	Okay, Jim.

11 06 53 58	LMP	Okay, stand by. Your first one'll be a 60-second exposure time and I'll - it'll be at 55:53.
11 06 54 07	CMP	Well, that's kind of - not ...
11 06 54 08	CC	That's a beautiful picture with just an edge of the Moon coming out of eclipse.
11 06 54 11	CMP	I can do it anyhow.
11 06 54 12	LMP	Can you?
11 06 54 13	CMP	Roger; that's right.
11 06 54 17	LMP	Okay. Suit yourself then. I'm - -

TIME SKIP

11 11 07 09	CDR	Anybody else like chicken stew?
11 11 07 14	LMP	Chicken stew, huh? Yes, I do. I didn't know we had any. Is that what you have up there?
11 11 07 31	CMP	Yes.
11 11 07 32	CDR	No, uh-uh.
11 11 07 44	LMP	If you want to eat here, I'll be happy to come down there.
11 11 08 31	LMP	Hey, throw me some beef steak. Well, I guess some turkey and gravy.
11 11 08 50	CDR	...
11 11 08 52	LMP	Go back where? Yes, man, you aren't kidding.
11 11 08 58	CMP	Thought you wanted to go back to the Moon?
11 11 08 59	LMP	Don't know why.
11 11 09 26	LMP	I'll trade with you, Dave.
11 11 09 27	CDR	All right.
11 11 09 28	LMP	I'll go down there.

11	11 09 31	CDR	Down here?
11	11 09 32	LMP	Yes.
11	11 10 37	LMP	This is our new garbage can down here, huh? Good.
11	11 10 49	LMP	You want to get those readings now, Al, or after supper?
11	11 10 52	CMP	I don't care.
11	11 10 54	LMP	Get them now?
11	11 11 03	CMP	Okay. Start out with 5-C.
11	11 11 13	LMP	5-C reading 4 - 4.2.
11	11 11 19	CMP	All right; 5-D?
11	11 11 23	LMP	3.9.
11	11 11 25	CMP	6-A?
11	11 11 26	LMP	You writing them down?
11	11 11 28	CMP	Yes.
11	11 11 30	LMP	6-A is 4.1.
11	11 11 34	CMP	Okay; 6-B?
11	11 11 37	LMP	4.2.
11	11 11 42	CMP	6-C?
11	11 11 45	LMP	Greater than 5.
11	11 11 48	CMP	No kidding. Huh. Okay - -
11	11 11 53	CC	...
11	11 11 54	CMP	- - 6-D? Houston, 15. Go ahead.
11	11 11 58	CC	Roger. Remember back aways, we were talking about doing some more mass spec boom tests at 275 hours, which has gone by. We're right now talking about delaying that until 276 hours, approximately, or

at least until before you start your VERB 49 maneuvers for the next set of P23s. Over.

11 11 12 21 CMP Okay, fine. 6-D.

11 11 12 26 LMP Is that okay on 6-C, the fact that it's - -

11 11 12 28 CMP I don't know; we'll tell them.

11 11 12 30 LMP Okay, 6-D is 45.

11 11 12 36 CMP Okay. And, Houston; 15. I have some command module RCS injector temperatures for you.

11 11 12 44 CC Ready to copy.

11 11 12 46 CMP Okay, these are readings off the SYSTEMS TEST meter: 5-A is 4. - or 5-C is 4.2, 5-D is 3.9; 6-A is 4.1, B is 4.2, C is greater than 5, and D is 4.5.

11 11 13 07 CC Roger. Copy 4.2, 3.9, 4.1, 4.2, greater than, and 4.5.

11 11 13 14 CMP Roger.

11 11 13 30 LMP Here, put it on there, I'll give you a squirt. How many do you want?

11 11 13 37 CDR Is that the soup?

11 11 13 41 CMP Chicken stew.

11 11 13 42 LMP How many do you want?

11 11 13 43 CDR Three of them.

11 11 13 44 LMP Ready?

11 11 13 45 CDR Yes.

11 11 14 01 CDR Shit.

11 11 14 04 LMP Screw it in there?

11 11 14 05 CDR Good.

11 11 14 06 CMP ...

11 11 14 13	CDR	Yes. Roger.
11 11 14 16	CMP	...
11 11 14 30	LMP	Yes.
11 11 14 39	CDR	Well, we have a lot of drinks for breakfast.
11 11 14 42	LMP	Okay, I ought to change the LiOH. Which one was it, Al?
11 11 14 48	CMP	Okay, 23 to B and 21 to A-5.
11 11 14 52	LMP	Okay, going into B.
11 11 14 54	CMP	23 into B.
11 11 14 56	LMP	Okay.
11 11 16 22	LMP	I wonder if any of this food is - the - the irradiated food.
11 11 16 26	CDR	Could be. ...
11 11 16 33	LMP	One way of preserving food these days is to -
11 11 16 37	CDR	... radiation.
11 11 16 39	LMP	And it preserves it. At certain times, radiation preserves it.
11 11 18 01	LMP	Okay. Canister change is complete.
11 11 18 03	CDR	Okay. Very good.
11 11 19 22	CDR	...
11 11 19 25	LMP	That's wrong, Dave.
11 11 19 27	CDR	... - -

TIME SKIP

11 11 30 27	CDR	Al, you going to monitor comm? I'm going to get off the headset here.

11	11 30 29	CMP	...
11	11 32 09	CDR	Come forward, Al. Thank you very much. ... Just ruined the whole thing.
11	11 36 48	CMP	Oh - damn!
11	11 36 51	CDR	Oh, my God.
11	11 37 09	CMP	Freaking DAC won't come off.
11	11 37 15	CDR	You need one of these, too? That okay?
11	11 37 20	CMP	Okay. Okay.
11	11 37 27	CDR	There you go. Can I get that for you?
11	11 37 32	CMP	Thank you.
11	11 37 36	CDR	Ready for it now?
11	11 39 42	CDR	... Move over some. ...
11	11 39 52	CMP	If I were you, I'd go over to the lab and pick one up out of there - a perfect sample.
11	11 39 58	CDR	They don't have them.
11	11 39 59	CMP	They don't?
11	11 40 00	CDR	No.
11	11 40 08	LMP	Dammit, why don't you buy a set of them? ...
11	11 40 14	CMP	I might buy them.
11	11 40 16	LMP	Yes, but you'd be taking all that guff.
11	11 40 30	LMP	Feast over his favorite rock.
11	11 40 34	CMP	Right.
11	11 40 39	CDR	...
11	11 40 40	LMP	How come?
11	11 40 41	CMP	...

11 11 40 53	CMP	...
11 11 41 05	CMP	On the ball.
11 11 41 12	CDR	...
11 11 41 30	CMP	... to surprise ...
11 11 41 40	CDR	... 330 ...
11 11 41 49	CMP	(Clears throat) You going to do anything else down there? Are you going to do anything down there? All right.
11 11 41 58	CDR	...
11 11 42 02	CMP	Well, I've got a P23 to do in 3 minutes, and then we got to ... the daytime. I got to clean up and change my long johns and take my biomed off, while I got the chance.
11 11 42 17	CDR	Okay.
11 11 42 58	CMP	Okay.
11 11 44 37	LMP	Dave, I hope we're going to be able to see them unload all those rocks.
11 11 44 42	CDR	Yes, I think we should.
11 11 44 43	LMP	Okay.
11 11 44 44	CDR	... time ...
11 11 44 48	LMP	I hope so. Yes. They'll just have to hold up the - the rocks until we're there.
11 11 44 58	CDR	... going to have a ball ... Is that why you ...?
11 11 45 07	LMP	Yes.
11 11 45 12	CDR	...
11 11 45 15	LMP	Yes.
11 11 45 19	CDR	... mind working some long hours.
11 11 45 29	LMP	How long does the medical take on the ship?

11 11 45 33	CDR	...
11 11 45 34	LMP	... ship until about what - 6 o'clock tomorrow night? We'll be taking that physical until 10 tomorrow night?
11 11 45 42	CDR	Ten their time is all I know.
11 11 45 48	LMP	Oh, that's right. It's 4 our time, which is - -
11 11 45 54	CDR	On board the ship.
11 11 45 56	CMP	Yes. ...
11 11 46 03	LMP	Yes.
11 11 46 04	CDR	...
11 11 46 24	CMP	... we're laughing.
11 11 46 46	CDR	...
11 11 46 59	CDR	I think we might look ...
11 11 47 35	LMP	I had it under control. I had it under control.
11 11 47 41	CDR	...
11 11 48 00	CMP	We're all having his.
11 11 48 05	LMP	Man, we're down low. The cupboard's bare. Bacon squares.
11 11 48 27	LMP	I don't know if we have enough in there for two more. Yes, I guess we do.
11 11 48 52	CDR	...
11 11 48 57	LMP	Yes, you need a reinfo - forced toe section.
11 11 50 55	CMP	I'll take that and get this - Going to use the camera.
11 11 51 26	LMP	Have a 9-hour rest period.
11 11 51 42	LMP	Make sure I'm turned on there, will you, Dave? My power on?

[redacted]

11 11 52 00	CMP	...
11 11 52 02	LMP	What? Yes, if you want to dig it out, it's in the - I put it in that bag. Dave, could you get - Dave, could you get - There's a bag in my TSB. One of the white towel bags that has all my gear it in.
11 11 52 38	LMP	Thank you. It's in here, Al.
11 11 55 08	CC	Apollo 15, Houston. Over.
11 11 55 11	LMP	Go ahead, Bob.
11 11 55 14	CC	Roger. If one of you fellows has the time, we might like to continue on with the mass spec boom retract test.
11 11 55 21	LMP	Okay. Is it something I should write down, or can I just do it real time?
11 11 55 26	CC	Give it to you in real time. It's not that complicated, Jim.
11 11 55 30	LMP	Okay. Go ahead.
11 11 55 33	CC	Okay. We need the EXPERIMENT switch to ON down there in the ALPHA - Excuse me, the MASS SPEC, EXPERIMENT switch to ON; and the ION SOURCE, ON. Over.
11 11 55 47	LMP	Okay. I understand MASS SPEC, EXPERIMENT, ON; and ION SOURCE, ON. Stand by. David, can you get a couple of switches over there? The MASS SPEC, EXPERIMENT, ON; and the ION SOURCE, ON.
11 11 56 08	LMP	Okay, Bob. They're both ON.
11 11 56 13	CC	Okay. And then next, you go down to the other panel, and we go DEPLOY for 20 seconds on the MASS SPEC BOOM, and then RETRACT for 40 seconds, or until we get a gray indication. Over.
11 11 56 32	LMP	Understand you want DEPLOY for 20 seconds and then - on the MASS SPEC BOOM, and then RETRACT until we get gray or 40 seconds.
11 11 56 43	CC	Roger. Whichever occurs first.

11 11 56 46	LMP	Okay. Okay, Dave. On that MASS SPEC BOOM, we go DEPLOY for 20 seconds. If you want, I can give you a mark.
11 11 56 59	CDR	That's okay.
11 11 57 21	CDR	They're OFF.
11 11 57 23	LMP	Go to OFF and then I'll have you - and then RE - and then RETRACT it for 40 seconds - -

TIME SKIP

11 13 38 18	CDR	Oh, 6:45 tomorrow.
11 13 38 22	CMP	Yes. ...
11 13 38 26	LMP	He didn't.
11 13 38 33	CDR	Cabin temp, 67.
11 13 38 36	CMP	...
11 13 44 01	CMP	Oh, shit.

[redacted]

[redacted]

[redacted]

DAY 13

12 03 56 22	CDR	- - NORMAL.
12 03 56 23	LMP	TAPE RECORDER's on HIGH BIT RATE. Record the start.
12 03 56 29	CDR	Okay. It worked.
12 03 56 32	CMP	Yes.
12 03 57 04	CMP	10, 9, 8, 7, 6, 5, 4, 3, 2, 1 -
12 03 57 14	CMP	ZERO.
12 03 57 15	LMP	... open.

TIME SKIP

12 06 50 17	LMP	Okay, TAPE RECORDER's on HIGH BIT RATE, RECORD, and FORWARD.
12 06 50 25	CDR	Here, my friend, is a lunar rock.
12 06 50 28	CMP	Yes. Floating around in the space of our spacecraft.
12 06 50 33	CDR	Yes. Wonder (laughter) - The sequence of panels we go through is somewhat inane.
12 06 50 41	CMP	Oh, it really is, isn't it? God!
12 06 51 13	CMP	About 8 minutes.
12 06 51 17	CDR	This is the most leisurely entry we've ever done.
12 06 51 19	LMP	Yes, I don't understand how - why we have so much time.
12 06 51 21	CMP	Stand by. ... fast.
12 06 51 23	CDR	It'll go fast.
12 06 51 25	CMP	That's because we started 4 hours earlier - -
12 06 51 27	SC	(Laughter)

[redacted]

12 06 51 28 CMP - - than we normally do.

12 06 51 29 CDR (Laughter) That's true. This is our normal reset burn, right here.

12 06 51 39 CC Apollo 15, Houston. You're looking good. About a minute and a half to handover to ARIA.

12 06 51 45 CDR Roger.

12 06 52 00 CDR Separation really unloosened a bunch of stuff.

12 06 52 04 CMP Yes.

12 06 52 05 LMP See my nut come flying by yet?

12 06 52 07 CDR No (laughter). Nor your screw (laughter).

12 06 52 11 LMP Listen, man, I've got my screw right here.

12 06 52 59 CDR Got your camera all ready, Jim?

12 06 53 01 LMP Ready.

12 06 53 02 CMP Don't forget it.

12 06 53 03 LMP I think I'll turn it on at - probably - Oh, look out the window, and you see iona - ionization.

12 06 53 09 CDR Yes.

12 06 53 15 LMP Probably be just before blackout, I guess. Blackout at PT. Yes. Before zero phase.

12 06 53 55 CMP Looks like 5 minutes.

12 06 53 56 CDR Right on. Time is right on.

12 06 53 58 CMP Great.

12 06 54 00 CDR Can't argue with that.

12 06 54 04 CMP My dynamics - or trajectory's changing somewhere, because that light's coming from a different place now.

12 06 54 52 SC (Sneeze)

12 06 55 15	CMP	Oh, that's the Earth down there, baby.
12 06 55 18	LMP	Can you see it?
12 06 55 19	CDR	Sure as hell can. Yes, siree, I hope to tell you.
12 06 55 23	LMP	Are we going backwards?
12 06 55 25	CDR	It's big and real.
12 06 55 26	LMP	Yes. I can see it. Just barely see it out of my window.
12 06 55 29	CMP	Yes, we're going backwards.
12 06 55 30	CDR	Encouraging.
12 06 55 35	CMP	Just check the needle on the peg here; 51 and a couple of minutes until we're down.
12 06 55 40	LMP	Is that pausing from minimum impulse?
12 06 55 45	CDR	It sure is. Man, that's just bang, bang. That's really neat.
12 06 55 51	CMP	I keep thinking that, if I hit the stick quick, that minimum impulse will be less (laughter). Did you ever get that feeling?
12 06 55 56	CDR	Yes.
12 06 55 57	CMP	There's just a little bit you want to go - -
12 06 55 58	CDR	It's right then.
12 06 55 59	CMP	- - and you try to get it and you can't quite get there. Yes.
12 06 56 09	CMP	Oh, yes. Hey - Oh, man, are we moving, too! Son of a gun! Sheeoo!
12 06 56 21	CDR	Yes, indeedy. You ought to be able to see it out the - out the hatch window.
12 06 56 25	CMP	Oh my, I sure can. Sure a lot of mountains down there. How about that!

[redacted]

12 06 56 36	LMP	Shit, I think that's Alaska out there. That would be right, wouldn't it?
12 06 56 47	CMP	Yes. Keep an eye out for the Moon.
12 06 56 49	CDR	Yes, keep an eye out for the Moon.
12 06 56 50	CMP	We've done it. Oh, we've missed it.
12 06 56 53	CDR	56:37. Oh, Al - -
12 06 56 54	CMP	We were too busy watching the Earth.
12 06 56 55	CDR	- - why don't you pay attention to what you're doing there.
12 06 56 57	CMP	Too busy watching the Earth.
12 06 57 05	CDR	I'm not sure there's much you could do about it any - any - to correct it anyway.
12 06 57 09	CMP	Not at this point. Here comes the needle off the peg. There it goes. Now let me get to 5. Yes, 55.
12 06 57 17	CDR	Okay.
12 06 57 33	CDR	Neat.
12 06 57 34	CMP	Yes.
12 06 57 35	LMP	We just passed south of Alaska.
12 06 57 37	CDR	Did we?
12 06 57 38	LMP	Yes.
12 06 57 41	CDR	Little earlier than usual.
12 06 57 48	CMP	Houston, 15; go ahead.
12 06 58 05	CDR	Okay, the needle's off the peg.
12 06 58 12	CMP	About right.
12 06 58 28	LMP	What a view! Whew!
12 06 58 37	CMP	Okay, we've got about 10 - 20 seconds to entry interface.

12 06 58 41	LMP	More than that. Oh, EI, yes. ... I don't think I'm going to like it.
12 06 58 55	LMP	There's RRT.
12 06 58 57	CDR	Okay.
12 06 59 06	LMP	Getting the ionization?
12 06 59 08	CDR	Yes, man.
12 06 59 09	CMP	Put your - -
12 06 59 10	CDR	Yes, look at it. Good.
12 06 59 11	CMP	Yes.
12 06 59 13	CDR	Ionization?
12 06 59 14	LMP	Everything looks good.
12 06 59 15	CDR	Boy, I guess.
12 06 59 16	CMP	.01, .02, 4 -
12 06 59 25	CMP	.05G light.
12 06 59 26	CDR	Okay, GO. EMS scroll - -
12 06 59 28	LMP	.05G switch - -
12 06 59 29	CDR	EMS good.
12 06 59 32	LMP	.05G switch, on; EMS ROLL, on.
12 06 59 34	CDR	They're both on.
12 06 59 35	LMP	Okay.
12 06 59 36	CDR	Okay. Okay, .39.
12 06 59 42	CMP	Okay.
12 06 59 43	CDR	.5, .1.
12 06 59 44	LMP	.6.
12 06 59 46	CDR	.8, 1, 1.3, 2g's, 2g's - -

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12 06 59 53	CMP	Accelerometer and the DSKY.
12 06 59 56	CDR	Okay.
12 06 59 57	CMP	Scroll look good?
12 06 59 58	CDR/CMP	3g's.
12 07 00 01	CDR	Three and a half.
12 07 00 03	CMP	4.
12 07 00 04	CDR	There's 4.
12 07 00 05	CMP	5.
12 07 00 07	CDR	There's 5, 6 -
12 07 00 13	CMP	Scroll looks good.
12 07 00 14	CDR	There's 6, 6, 6 there, 6.2. Don't see anything on master alarm.
12 07 00 22	CMP	Want the master alarm?
12 07 00 24	CDR	Nothing.
12 07 00 25	CMP	Huh?
12 07 00 26	CDR	Nothing.
12 07 00 27	CMP	Okay.
12 07 00 28	CDR	5.6. We roll 180. 5, 4.7 -
12 07 00 37	CMP	Looking good.
12 07 00 38	CDR	180 roll, 4, 4.4, 4.2, 4.1. Rolling to 150, 117, 092 - -
12 07 00 52	CMP	Okay, looking good.
12 07 00 54	CDR	Plus 69, plus 51.
12 07 00 57	CMP	Looking good.
12 07 00 58	CDR	Plus 49.

12 07 00 59	CMP	Okay.
12 07 01 00	CDR	4g's, you're right on.
12 07 01 02	CMP	4g's.
12 07 01 03	CDR	Eighty-five, plus 101. Holding 4g's. Lift vector, up.
12 07 01 10	CMP	Going up.
12 07 01 11	CDR	We're in P67.
12 07 01 12	CMP	Good.
12 07 01 18	CDR	Okay. Minus 51.
12 07 01 21	CMP	Okay.
12 07 01 23	CDR	And at 4g's. Minus 110.
12 07 01 31	CMP	Okay, we're going in.
12 07 01 34	CDR	Minus 116.
12 07 01 35	CMP	Okay, 450 miles and that's - -
12 07 01 36	CDR	Okay.
12 07 01 37	CMP	- - right where we are on the scroll.
12 07 01 49	CDR	Okay, at 399, we're - -
12 07 01 51	CMP	Okay, we're off the ...
12 07 01 52	CDR	- - almost 3g's. Boy, EMS has missed here within about 5 miles.
12 07 01 55	CMP	Yes, we're looking good.
12 07 01 58	CDR	Seventy-one, minus 70.
12 07 02 00	CMP	EMS is -
12 07 02 04	CDR	Minus 70.
12 07 02 19	CMP	Pretty good.

[redacted]

12 07 02 20	CDR	Yes.
12 07 02 23	CMP	Minus 70 - -
12 07 02 24	CDR	Okay, there's 3g's.
12 07 02 26	CMP	And the scroll shows us right on the range to go.
12 07 02 30	CDR	Okay.
12 07 02 34	CMP	Couldn't be better.
12 07 02 36	CDR	Houston, Apollo 15. We're in P67. The EMS and the G&N agree within 15 miles, and everybody's in good shape.
12 07 02 51	CDR	Okay, plus 52.
12 07 02 52	CMP	Roger. That's where we are. Still pulling 3g's.
12 07 03 01	CDR	Okay, stand by.
12 07 03 04	CMP	And we're coming right straight down that scroll. Beautiful.
12 07 03 06	CDR	Good. Houston, 15. EMS and G&N agree within about 10 miles, and everybody's in fine shape.
12 07 03 28	CMP	There they are.
12 07 03 30	CDR	Okay, 32 degrees ...
12 07 03 40	CMP	Okay, 98, NOUN 18; boy, that's slick.
12 07 03 43	CDR	10,000 feet per second.
12 07 03 50	CMP	My eyes were cocked; 100 miles to go. I'm about 4 miles off; so - Looks like even the scroll's working great.
12 07 03 59	CDR	Yes. Great. Hey, now I know why you got to check the tunnel for water.
12 07 04 07	LMP	Yes, boy, I guess. Did you get wet?
12 07 04 09	CDR	Yes, man. ...

12 07 04 13	LMP	Yes, it really comes barreling out of there, doesn't it? (Laughter)
12 07 04 19	CDR	Okay. ... - -
12 07 04 20	CMP	Sixty miles to go. Okay, up.
12 07 04 24	CDR	...? 33 and 46. Boy, they really agree. 6000 ... - -
12 07 04 37	CMP	Getting our cross range right now.
12 07 04 44	CDR	Hey, Houston; 15 in the blind. The EMS and G&N agree within about 10 miles.
12 07 04 52	CMP	Gee, what makes you feel - sound so hollow?
12 07 04 55	LMP	Sounds like ... is about to make a low pass on us.
12 07 04 58	CMP	Yes.
12 07 04 59	CDR	We're coming up to 38. Watch your steam pressure, Jim.
12 07 05 01	LMP	Standing by.
12 07 05 17	CMP	It's 3000.
12 07 05 18	CDR	No steam pressure yet?
12 07 05 19	LMP	It's going up now.
12 07 05 20	CDR	Okay.
12 07 05 21	LMP	Okay, steam pressure's pegged.
12 07 05 24	CMP	Okay, we should get - 50K in about another 600 feet. Got 9 miles to go on EMS.
12 07 05 34	CDR	Okay. Should be getting a NOUN 67 here directly.
12 07 05 47	CDR	Okay, Houston; 15 in the blind. Latitude, plus 26.12; longitude, minus 158.17 - -
12 07 05 54	CMP	Okay, we're off the peg.
12 07 05 55	CDR	- - and about a 2.2 off the peg.

12 07 05 56	LMP	Okay, CABIN PRESSURE to BOOST/ENTRY.
12 07 06 00	CMP	BOOST/ENTRY.
12 07 06 01	LMP	SEQUENCE PYRO, two, to ARM.
12 07 06 04	CMP	PYRO to ARM.
12 07 06 07	LMP	Standing by for 30.
12 07 06 09	CDR/CMP	Okay.
12 07 06 11	CMP	We're out of 40.
12 07 06 16	CDR	Okay, Houston; 15. Out of 40K, and we're showing about a .7, .2, this business now. Everybody's in good shape.
12 07 06 27	LMP	How's the altitude, Al?
12 07 06 29	CMP	Coming up on 30.
12 07 06 30	CDR	Okay - -
12 07 06 31	CMP	Okay, 30K.
12 07 06 32	LMP	Okay, ELS LOGIC, on.
12 07 06 33	CMP	ELS LOGIC, on.
12 07 06 35	LMP	ELS, AUTO.
12 07 06 36	CMP	AUTO, on.
12 07 06 38	CDR	Okay. Stand by for - -
12 07 06 39	LMP	Standing by for drogues at 24. There go the - there goes the apex. There are the drogues.
12 07 06 50	CMP	Good drogue.
12 07 06 52	LMP	Okay, cabin pressure's increasing.
12 07 06 55	CMP	All right.
12 07 06 58	LMP	Standing by for mains - at 10.
12 07 07 02	CMP	Okay, we're out of 18.

12 07 07 15	CDR	Give us a call when you get to 10.
12 07 07 17	CMP	Well, coming out of 14, 13, out of 12, 11,000.
12 07 07 34	LMP	Okay.
12 07 07 37	SC	(Sigh)
12 07 07 38	LMP	Okay, the mains are up there.
12 07 07 40	CMP	And the mains are out, three.
12 07 07 42	CDR	Okay - -
12 07 07 43	CMP	Okay.
12 07 07 44	CDR	- - Apollo 15 has good mains.
12 07 07 45	CMP	The mains are opening.
12 07 07 46	LMP	SURGE TANK O_2, off, Al.
12 07 07 48	CMP	SURGE TANK O_2 coming off.
12 07 07 51	LMP	REPRESS PACKAGE, OFF.
12 07 07 53	CDR	Let's go, Al.
12 07 07 54	CMP	REPRESS, OFF.
12 07 07 57	LMP	DIRECT O_2, OPEN.
12 07 07 58	CMP	DIRECT O_2, OPEN.
12 07 08 02	P	- - the bearing is 130 to - three main chutes. I have visual contact; three main chutes.
12 07 08 08	CMP	- - 8000.
12 07 08 09	OKI	Okinawa, Roger. Out.
12 07 08 10	LMP	- - PRESSURE RELIEF, two, CLOSED.
12 07 08 11	CMP	CLOSED.
12 07 08 13	LMP	CM RCS LOGIC, on, up.
12 07 08 14	CDR	... 2, Apollo 15. We're showing about a minus .6 - -

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12 07 08 16	CMP	RCS LOGIC, on.
12 07 08 17	CDR	- - on the miss distance - -
12 07 08 18	LMP	CM PROPELLANT to DUMP.
12 07 08 19	CDR	- - Everybody's in good shape.
12 07 08 28	R	Okinawa, Recovery has a recovery beacon contact, bearing 175 magnetic. On station.
12 07 08 34	OKI	Okinawa here.
12 07 08 37	S-2	Okinawa, this is Swim 2. I have a visual contact bearing 010, that's approximately 1 mile. My position, 134; Okinawa 8.5 miles. Altitude is about 6000 feet to the command module.
12 07 08 52	OKI	Okinawa, Roger. Out.
12 07 08 58	S-1	Okinawa, this is Swim 1. I have recovery beacon, 115 degrees magnetic, at 270, 12 miles, at time 47. Over.
12 07 09 11	OKI	Okinawa, Roger. Out.
12 07 09 16	CMP	Pick out the place.
12 07 09 19	CDR	Okay?
12 07 09 20	CMP	Okay - -
12 07 09 21	P	This is Photo. I have one - there's something - something's falling beside the command module. I could not tell what it was, though.
12 07 09 31	LMP	Strut locks, four, unlocked.
12 07 09 33	R	Apollo 15, Apollo 15, this is Recovery. Over.
12 07 09 38	CDR	Recovery, Apollo 15. Everybody's in good shape, and we're looking at about 3500 feet.
12 07 09 43	R	This is Recovery. I have a visual of 165 - -
12 07 09 47	LMP	Ten seconds to release.
12 07 09 48	R	- - from me, about 8 miles.

12 07 09 51	CDR	Go ahead, Jim.
12 07 09 52	LMP	Stand by for purge dump.
12 07 09 53	P	This is Photo. It appears that one of your main chutes is streaming. I can only see two main chutes, and one appears to be streaming.
12 07 10 02	OKI	Yes. ... two chutes concurred.
12 07 10 05	P	They have one streaming chute.
12 07 10 06	LMP	Do we have three, Al?
12 07 10 07	CMP	We got two.
12 07 10 08	CDR	No, we're at 3000 - -
12 07 10 09	LMP	Stand by for ... - -
12 07 10 10	P	Okinawa, this is Photo 1 - -
12 07 10 12	LMP	- - ...
12 07 10 13	CMP	Okay.
12 07 10 14	P	- - the extra fuel has been jettisoned and burned off.
12 07 10 17	CDR	Cinch up, gang.
12 07 10 18	CMP	Cinch up, gang.
12 07 10 19	R	Apollo 15, Apollo 15, this is Recovery. Over.
12 07 10 23	CDR	Got your VHF beacon on?
12 07 10 24	CMP	3000 - -
12 07 10 25	LMP	Yes, it's - -
12 07 10 26	CMP	- - Jim.
12 07 10 27	CDR	3000, Jim.
12 07 10 28	LMP	Okay, CM RCS PROPELLANT, two, OFF.
12 07 10 29	CMP	OFF.

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12 07 10 30	CDR	Okay.
12 07 10 31	CMP	Two, off.
12 07 10 32	LMP	CABIN PRESSURE RELIEF VALVE to DUMP.
12 07 10 34	CMP	All right, coming to DUMP.
12 07 10 36	LMP	FLOODs to POSTLANDING.
12 07 10 43	CMP	Coming up on 2000.
12 07 10 45	CDR	How many chutes we got, Al?
12 07 10 46	CMP	We got two.
12 07 10 47	LMP	Two.
12 07 10 48	CMP	We got a streamer on one.
12 07 10 49	LMP	FLOODs to POSTLANDING.
12 07 10 51	CMP	FLOODs to POSTLANDING.
12 07 10 52	LMP	Stand by for 800.
12 07 10 54	P	This is Photo. Lost contact due to cloud cover.
12 07 10 57	R	Apollo 15, Apollo 15, this is Recovery. Over.
12 07 11 02	CDR	Roger, Recovery; 15. You're 5 square. Everybody's in good shape.
12 07 11 04	CMP	Okay, we're out at 1500, Jim.
12 07 11 05	LMP	Okay.
12 07 11 06	R	Roger, Apollo 15. If you hear, all units have you in sight, and we are eastbound now.
12 07 11 11	CDR	Roger.
12 07 11 13	CMP	1000 feet, Jim.
12 07 11 14	LMP	Okay - -
12 07 11 15	CDR	... dump.

12 07 11 16	LMP	- - CABIN PRESSURE RELIEF to CLOSE.
12 07 11 17	OKI	Apollo 15 - -
12 07 11 18	CMP	CLOSED.
12 07 11 19	OKI	- - this is Okinawa. Request your splashdown read-out. Over.
12 07 11 21	LMP	Okay, you ready for MAIN BUS TIES to come OFF.
12 07 11 23	CDR	Roger. Plus 26.13, minus 158.12.
12 07 11 26	CMP	Ready for BUS TIES.
12 07 11 28	P	This is Photo. Approaching ...
12 07 11 30	CMP	Okay.

END OF TRANSCRIPT

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