NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

APOLLO 10

TECHNICAL AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Prepared for

Data Logistics Office
Test Division
Apollo Spacecraft Program Office

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS
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INTRODUCTION

This is the transcription of the Technical Air-to-Ground Voice Transmission (GOSS NET 1) from the Apollo 10 mission.

Communicators in the text may be identified according to the following list.

Spacecraft:

CDR	Commander	Thomas P. Stafford
CMP	Command module pilot	John W. Young
LMP	Lunar module pilot	Eugene A. Cernan
SC	Unidentifiable crewmember	

Mission Control Center:

CC	Capsule Communicator (CAP COMM)
F	Flight Director

Remote Sites:

CT	Communications Technician (COMM TECH)

Recovery Forces:

PRINCE	USS Princeton
R	Recovery helicopter
AB	Air Boss

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 and subsequent completion of a thought. Two dashes (- -) are used to indicate an interruption by another speaker or a point at which a recording was terminated abruptly.

APOLLO 10 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

MILA

00 00 00 00	CC	10, 9, 8, 7, 6, 5, 4 - Ignition - 3, 2, 0.
00 00 00 01	CC	LIFTOFF.
00 00 00 02	CDR	We have a lift-off.
00 00 00 03	CC	Roger. Lift-off.
00 00 00 05	CDR	Yaw - yaw maneuver.
00 00 00 07	CC	Roger.
00 00 00 08	CDR	Clock is started.
00 00 00 09	CC	Roger.
00 00 00 11	CDR	And the --
00 00 00 13	CC	- - are off.
00 00 00 14	CDR	Roger.
00 00 00 15	LMP	We're going!
00 00 00 16	CDR	And, roll program right on time.
00 00 00 17	CC	Roger, Tom.
00 00 00 19	CDR	She's looking good, Charlie.
00 00 00 20	CC	Beautiful.
00 00 00 26	CDR	Okay. Pitch is tracking. Looking good.
00 00 00 29	CC	Roger.
00 00 00 34	CDR	Roll complete. ELS MANUAL.
00 00 00 36	CC	Roger. Roll.
00 00 00 41	CC	10, Houston. Mark. Mode 1 Bravo.
00 00 00 44	CDR	Roger. One Bravo.
00 00 00 52	CDR	I ... around a little bit in here.

00 00 00 54	CC	Roger.
00 00 00 56	CDR	Cabin is relieving.
00 00 00 58	LMP	Cabin is relieving.
00 00 01 01	CC	Roger. Copy.
00 00 01 05	CDR	2 g's, Charlie.
00 00 01 07	CC	Roger. Looking good at 1 minute.
00 00 01 18	LMP	What a ride, Babe, what a ride!
00 00 01 20	CC	Roger. You're looking good, 10; you're looking real good.
00 00 01 26	CDR	Roger. Going through MAX Q.
00 00 01 30	CC	Roger.
00 00 01 35	CC	10, you're through the MAX Q. You're looking good.
00 00 01 39	CDR	Two and a quarter g's. She's looking beautiful.
00 00 01 51	CDR	Okay. Two and a half g's.
00 00 01 53	CC	Roger. Copy, Tom.
00 00 01 58	CC	Okay. And, Mark. Mode 1 Charlie. You're looking great.
00 00 02 01	CDR	Roger. One Charlie and 3 g's; it feels great.
00 00 02 06	CC	You're GO for staging, 10.
00 00 02 08	CDR	Roger. 10 is GO.
00 00 02 16	CDR	Inboard check alignment.
00 00 02 19	CC	Roger. Inboard.
00 00 02 24	CDR	They're a little POGO. POGO damps.
00 00 02 26	CC	Roger. Copy, Tom. EDS OFF, 10.
00 00 02 47	CDR	... staging lights out.
00 00 02 51	CC	Roger.

00 00 02 54	CDR	And it looks like we got a good S-II. - -
00 00 02 57	CC	Roger ... 10, on the S-II. It's looking good. Confirm EDS OFF.
00 00 03 05	CDR	EDS is OFF ...
00 00 03 07	CC	Roger.
00 00 03 14	CDR	Plane SEP.
00 00 03 16	CC	Roger.
00 00 03 18	CDR	There goes the tower.
00 00 03 20	CC	Roger, on the tower. And we confirm second plane SEP.
00 00 03 22	CDR	Okay.
00 00 03 25	CDR	Man, that staging was quite a sequence!
00 00 03 27	CC	Roger. Sounded like it.
00 00 03 30	CDR	And we have guidance INITIATE.
00 00 03 31	CC	We confirm that, 10.
00 00 03 33	CDR	Roger.
00 00 03 35	CC	The S-II is looking beautiful, Tom. Everything is ...
00 00 03 37	CDR	Roger. It looks good to be back up here, Charlie.
00 00 03 44	CC	Yes, I bet.
00 00 03 45	CMP	Just like old times! It's beautiful out there!
00 00 03 46	CC	Not bad.
00 00 03 51	CC	You guys sound ecstatic.
00 00 03 55	CDR	Man, this is the greatest, Charlie.
00 00 03 57	LMP	Charlie, babe. It's fantastic, babe, really!
00 00 04 01	CDR	Okay. Four minutes - -

00 00 04 01	CC	Roger. Four minutes. Your trajectory and guidance look good.
00 00 04 07	CDR	Roger. We look on the line on board.
00 00 05 01	CC	10, Houston. At 5 minutes, you're all GO. All your systems are looking great.
00 00 05 05	CDR	Roger. Five minutes, and 10 is GO.
00 00 05 07	CC	Roger. You're right on the track.
00 00 05 09	CDR	Roger, Charlie.
00 00 05 58	CC	10, Houston. Coming up on 6 minutes. You're looking beautiful.
00 00 06 01	CDR	Six minutes. Gimbal motors coming ON. PITCH 1.
00 00 06 03	LMP	That's GO.
00 00 06 04	CDR	YAW 1.
00 00 06 05	LMP	That's GO.
00 00 06 06	CDR	PITCH 2.
00 00 06 07	LMP	That's GO.
00 00 06 08	CDR	YAW 2.
00 00 06 09	LMP	You got them all, Tom.
00 00 06 11	CDR	Looks good here.
00 00 06 25	LMP	Charlie, are you sure we didn't lose Snoopy on that staging?
00 00 06 28	CC	No, I think Snoopy is still there with you. You're looking good. We copy your gimbal motors ON and your trim looks good.
00 00 06 34	CDR	... tracking ... beautiful.
00 00 06 44	CC	10, Houston.
00 00 06 45	CC	MARK.
00 00 06 46	CC	S-IVB to orbit capability.
00 00 06 47	CDR	...

00 00 06 55	CC	10, Houston. Coming up on 7 minutes. You are all GO. We have nominal level sense arm, 8 plus 15. S-II cut-off, 9 plus 11.
00 00 07 03	CDR	You have the level sense arm, and 9 plus 11 is the S-II.
00 00 07 07	CC	Roger.
00 00 07 31	CDR	07 30. 10 is good.
00 00 07 33	CC	Roger. Looking good here.
00 00 07 41	CDR	Inboards shut down.
00 00 07 43	CC	Roger on the inboards, Tom. We confirm it.
00 00 07 49	CC	How's the ride?
00 00 08 00	CC	10, Houston. Eight minutes. You're looking good. How's the ride?
00 00 08 04	CDR	Roger. Fantastic, Charlie, fantastic.
00 00 08 06	CC	Roger.
00 00 08 26	CC	10, Houston -
00 00 08 27	CC	MARK -
00 00 08 28	CC	- the level sense arm - -
00 00 08 29	CDR	The level sense arm.
00 00 09 01	CDR	... everything looks good.
00 00 09 04	CC	Roger, Apollo 10. You are GO for staging.
00 00 09 09	CC	Mark. Mode IV, Apollo 10. Mode IV.
00 00 09 13	CDR	Through mode SEP IV. Staging.
00 00 09 14	CC	Roger.
00 00 09 17	CDR	Separation.
00 00 09 18	CC	Roger.
00 00 09 19	CDR	Appears we got good ignition.
00 00 09 21	CC	Roger.

00 00 09 26	CC	We confirm your guidance, and your S-IVB looks good, 10.
00 00 09 29	CDR	Roger.
00 00 09 32	LMP	Charlie, lots of stuff out the window in staging. We're catching up and passing it now.
00 00 09 36	CC	Okay.
00 00 09 39	CDR	Okay. Guidance looks right on with the onboard jet, Charlie.
00 00 09 42	CC	Roger. We confirm that. Looking great here. You're looking beautiful.
00 00 09 43	CDR	Roger.
00 00 10 02	CC	10, Houston. At 10 minutes you're GO.
00 00 10 04	CDR	At 10 minutes, GO. Onboard's good.
00 00 10 06	CC	Roger.
00 00 10 21	CC	Apollo 10, Houston. Predicted S-IVB cut-off, 11 plus 47.
00 00 10 26	CDR	11 plus 47.
00 00 11 03	CDR	Eleven minutes, and 10 looks good.
00 00 11 05	CC	Roger, 10.
00 00 11 06	CDR	...
00 00 11 10	CC	10, Houston. At 11 10, you're looking good.
00 00 11 13	CDR	Roger, Charlie. The guidance is beautiful.
00 00 11 15	CC	Roger.

MILA (REV 1)

00 00 11 45	CDR	SECO!
00 00 11 46	CC	Roger. SECO.
00 00 11 47	CDR	... at 56.
00 00 11 50	CC	Roger. Stand by, 10.

00 00 12 02	CMP	Okay, Houston. We show a 102.6 by 101.1.
00 00 12 07	CC	Roger. We copy that.
00 00 12 11	CMP	And our VI was 25 565, minus one-tenth H dot, and 102.6.
00 00 12 17	CC	Roger. We copy.
00 00 12 19	CDR	...
00 00 12 20	CMP	And, Charlie, have them take a look at our evaporator. We're reading a high outlet temperature and OFF-SCALE LOW on the steam pressure right now.
00 00 12 28	CC	Roger. We agree. Stand by.

VAN (REV 1)

00 00 12 35	CDR	Okay -
00 00 12 52	CC	10, Houston. Your S-IVB is safe. We'd like you - On the evaporator, we'd like for you to close the PRIMARY BACK PRESSURE valve, and activate the SECONDARY LOOP.
00 00 13 03	CMP	Roger. Understand. Close the primary back pressure valve and activate the secondary loop.
00 00 13 08	CC	Roger. Just for a little while. We'll give you the number. And we'll have Vanguard LOS at 15 32, and a minute gap. And, we'll see you over the Canaries at 16 29.
00 00 13 19	CDR	Roger. And, we have closed the isolation valve on CM RCS ring 1, 2 is still OPEN.
00 00 13 26	CC	Roger.
00 00 13 36	CC	10, Houston. The Saturn is in great shape; you're configured for orbit; we're all GO.
00 00 13 41	CDR	Roger. Just looks beautiful.
00 00 13 47	CC	And 10, Houston. We confirm your orbit. The IU vector has you in a 103 by 100.
00 00 13 54	CDR	Roger.

00 00 14 54	CC	10, Houston. We want you to keep the PRIMARY BACK PRESSURE valve closed for about 15 minutes, and then we'll deacti - Stand by.
00 00 15 02	CDR	Roger.
00 00 15 18	CC	10, Houston. At GET of 30 we'd like you to put the PRIMARY BACK PRESSURE valve back in AUTO and deactivate the SECONDARY LOOP.
00 00 15 35	LMP	Roger. Understand. You want - at 30 - You want to deactivate the SECONDARY LOOP and go back to AUTO on the primary boiler.
00 00 15 44	CC	Affirm, Gene

CYI (REV 1)

00 00 17 01	CC	Apollo 10, Houston. Standing by through the Canaries.
00 00 17 04	CDR	Roger. 10 reading you loud and clear. We've just completed that insertion checklist.
00 00 17 09	CC	Roger. Copy. And, 10, Houston, would you like for me to review this ring 2 heater check?
00 00 17 22	CDR	Why don't you do that ...
00 00 17 25	CC	Okay, Tom. We'd like for you to - We got a 7-step procedure here, and I'll read it up to you. On panel 8, CB CM heaters, two, MAIN B, closed, CM RCS LOGIC, ON, CM RCS heaters, ON. We want you to heat ring 2 for 15 minutes, and you can select position C5 on the systems test and monitor the OX line temp.
00 00 18 00	CDR	...
00 00 18 02	CC	Correct - 10, your first step would be to close the RCS PROPELLANT ISOLATION valve on ring 2.
00 00 18 14	CDR	We'll go ahead and do that right now, Charlie.
00 00 18 16	CC	Okay. Then you can - then we'd like for you to - If you are going to close the PROP valve right now, we'd like for you to turn the heaters on, too.
00 00 18 22	CDR	Okay. Turn the heaters on right now.

00 00 18 24	CC	Affirm. And then after -
00 00 18 30	CC	10, Houston.
00 00 18 31	CDR	Okay, Charlie. We're going through the procedure; the heater is ON.
00 00 18 34	CC	Roger.
00 00 18 37	LMP	Okay. And we'll turn them off after 15 minutes. And you say we car monitor what on C5?
00 00 18 42	CC	You can monitor the oxidizer line temp on C5 - it'll probably be OFF-SCALE HIGH, but if you see any change, we'd appreciate you - we'd appreciate you telling us.
00 00 18 52	CDR	Roger.
00 00 18 53	LMP	Okay. We got that, Charlie.
00 00 19 05	CC	10, after 15 minutes, we'll - We'd like for you to turn the heater off, RCS LOGIC OFF, and open both heater circuit breakers.
00 00 19 15	CDR	Roger. Will do, Houston.
00 00 19 31	LMP	Charlie, it's just fantastic to be back up here again! Fantastic, really.
00 00 19 36	CC	Man, you guys - (laughter) You guys really sound great up there.
00 00 19 40	CDR	Yes, Charlie, after 3 years, it seems a long time, but here comes the Coast of Africa again and it looks beautiful.
00 00 19 49	CC	Yes, I'll bet. Wish we were there with you.
00 00 19 50	LMP	They make you feel - we all feel great.
00 00 19 55	CC	Roger. Next time we are going to put a cart - cot on board and one of us is going along.
00 00 19 56	CDR	Roger.
00 00 21 00	CC	Apollo 10, Houston. The P52 is your option. It really looked great during the launch phase; we have an azimuth correction of minus 0.11.
00 00 21 08	CDR	Roger. Minus 0.11. Thank you.

00 00 21 58	CC	10, Houston. If you've taken your helmets off, we'd remind you to open the SUIT CIRCUIT RETURN valve.
00 00 22 06	CDR	Roger. We're gonna do that now.
00 00 22 08	CC	Okay.
00 00 22 29	CC	Apollo 10, Houston; you've got about 1 minute to Canaries LOS; Tananarive at 3 - correction - 37.
00 00 22 33	CDR	Roger. Tananarive at 37; thank you.

TAN (REV 1)

00 00 37 46	CC	Apollo 10, this is Houston through Tananarive. How do you read? Over.
00 00 38 12	CC	Apollo 10, this is Houston through Tananarive. How do you read? Over.
00 00 38 25	CT	Tananarive, Houston COMM TECH Net 1.
00 00 38 28	CT	Houston COMM TECH, Tananarive.
00 00 38 30	CT	Roger. Can you confirm that CAP COMM is uplinking through your site?
00 00 38 32	CT	That's affirm. You are uplinking.
00 00 38 34	CT	Have you heard any downlink from the spacecraft?
00 00 38 38	CT	Negative. No downlink.
00 00 38 39	CT	Roger.
00 00 38 45	CC	Apollo 10, this is Houston through Tananarive. Radio check. Over.
00 00 39 13	CC	Apollo 10, this is Houston transmitting in the blind. Confirm SIMPLEX Alfa. Over.
00 00 40 04	CC	Apollo 10, Apollo 10, this is Houston through Tananarive. Over.
00 00 40 24	CDR	Houston, Apollo 10. Transferring to broad. We're reading you loud and clear.
00 00 40 26	CC	Roger, 10. And now we're reading you loud and clear. Up.

00 00 40 32	CDR	Okay. We've been reading you all the time down there, Houston. John and Gene have completed the P52, and the torquing on the IMU realign is minus 0.12, plus 0.34, and minus 0.76. Looks like the platform is real good.
00 00 40 50	CC	Roger, 10. We copy. Understand platform is good.
00 00 40 56	CDR	And we will turn the Command Module RCS B heater off at 43. That will give us 15 minutes on it.
00 00 41 06	CC	Roger. We confirm - We confirm that. And - Your PROP ISOL valves OFF? RCS PROPELLANT valves OFF?
00 00 41 13	CDR	That's affirmative, Charlie.
00 00 41 15	CC	Okay.
00 00 41 39	CDR	Houston, Apollo 10. The ... on the heater is OFF-SCALE HIGH, which we expected for the heaters, and we're going to turn the heaters off at 43.
00 00 41 50	CC	Say again, 10. You're fading in and out.
00 00 41 54	CDR	Roger. Command Module RCS heaters OFF at 43.
00 00 41 58	CC	Roger. We copy. OFF at 43.
00 00 42 13	CC	10, Houston. We expected that on the heaters. We'll have LOS here at Tananarive in 30 seconds; we'll see you over Carnarvon at 52.
00 00 42 24	LMP	Roger. Understand 52. Our radiators appear to be working all right. Our GLYCOL EVAP OUTLET temperature is down around 58. The steam pressure is OFF-SCALE LOW, OFF-SCALE LOW.
00 00 42 42	CC	Roger. Steam pressure OFF-SCALE LOW?
00 00 42 44	LMP	That's affirm. And the evaporator outlet temperature is 58 degrees with - with the radiators apparently working.
00 00 42 51	CC	Roger. We copy, Gene.
00 00 43 05	CC	And, Apollo 10, Houston. If you read, we'd like you to close the PRIMARY BACK PRESSURE valve again. Over.

CRO (REV 1)

00 00 52 42	CC	Hello, Apollo 10, Houston through Carnarvon. Standing by.
00 00 52 49	CDR	Roger, Houston. This is Apollo 10. We're going through our ECS checklist and everything looks good.
00 00 52 53	CC	Roger, Tom. COMM is real great.
00 00 52 59	CDR	Roger. We got the - We could read you all the way through Tananarive, Houston, but evidently you couldn't read us - COMM back here until the last. We got the heater OFF exactly at 15 minutes, the PROPELLANT valve was shut, the LOGIC was OFF and the breakers OPEN.
00 00 53 13	CC	Roger. We copy, Tom.
00 00 54 53	CDR	Houston, Apollo 10. Did you get our torquing angles on the IMU realign?
00 00 54 58	CC	Roger, Tom. You were pretty weak. What I copied was minus 0.12, plus 0.34, and minus 0.76.
00 00 55 08	CDR	Roger. And everything looks real good.
00 00 55 12	CC	Roger. Can you give us the time that you torqued those?
00 00 55 17	CDR	Stand by.
00 00 55 23	CMP	It was 41 minutes even, Charlie. That's what - I paid special attention to that.
00 00 55 30	CC	Roger. Thank you very much, John. 41 minutes; special attention.
00 00 57 03	LMP	Hello, Houston; this is 10.
00 00 57 05	CC	Go ahead.
00 00 57 07	LMP	Okay. Guess you got my word on the OFF-SCALE LOW on the steam pressure on the PRIMARY LOOP.
00 00 57 12	CC	Roger. We've been discussing that, Gene, and stand by. We'll have some words on it for you.

00 00 57 17	LMP	I just rechecked the SECONDARY LOOP and it all looks good on it. Going through all our monitor checks and redundant component checks. Looks like we've got a good Charlie Brown, here.
00 00 57 27	CC	Roger. Good.
00 00 57 59	CC	Apollo 10, Houston, with some words on the - the primary evap.
00 00 58 03	LMP	Go ahead, Charlie.
00 00 58 04	CC	Roger. We'd like you to put the BACK PRESSURE valve back to AUTO - correction, MANUAL. And we wondered if you went to AUTO on the H_2O valve during launch?
00 00 58 17	LMP	That's affirm; I sure did. I went to AUTO on the steam pressure valve and the water valve.
00 00 58 22	CC	Okay. We want the steam pressure back to MANUAL, and we're going to think about it a little bit more, and we might reservice later on.
00 00 58 30	LMP	Okay, fine. Looks like our radiators are beginning to carry the load. I'm looking at about 51 degrees on the EVAP OUTLET TEMP.
00 00 58 37	CC	Roger.
00 00 59 17	CC	Apollo 10, Houston. Gene, everybody thinks I might have given you the wrong word. What - Now to clarify it, we want the BACK PRESSURE valve CLOSED. Over.
00 00 59 31	LMP	Okay. In other words, you want STEAM PRESSURE AUTO switched to MANUAL, and you want me to go to INCREASE, is that correct?
00 00 59 38	CC	Affirmative.
00 00 59 41	LMP	Okay. Well, I'm in MANUAL now. I'll go to INCREASE.
00 01 00 37	LMP	Houston, this is 10. Do you want me to leave the WATER FLOW in AUTO during - after I do this?
00 01 00 41	CC	Stand by.

00 01 00 51	CC	10, Houston. You can leave the water valve in AUTO.
00 01 00 55	LMP	Roger. Understand.

HSK (REV 1)

00 01 02 24	CC	Hello, Apollo 10. Houston on the S-band through Honeysuckle. How do you read? Over.
00 01 02 28	CDR	Roger. Houston, Apollo 10. Reading you loud and clear.
00 01 02 32	CC	Roger, Tom. Same. The S-band is really great today.
00 01 02 36	CDR	Roger. I've never seen the COMM better. It's great, Charlie.
00 01 02 39	CC	Roger.
00 01 03 20	CC	Apollo 10, Houston. We'll have LOS at Honeysuckle at 1 plus 06. We'll see you over Guaymas at 1 plus 28.
00 01 03 28	CDR	Apollo 10, Roger.

NOTE

Subsequent to TLI, there is continuous acquisition among Goldstone (GDS), Madrid (MAD), and Honeysuckle (HSK).

GUAYMAS (REV 2)

00 01 29 49	CC	Hello, Apollo 10. Houston through Guaymas. Standing by.
00 01 29 52	CDR	Roger, Houston. Reading you loud and clear.
00 01 29 54	CC	Roger. You're five-by.
00 01 30 01	CDR	Okay. We are ready to extend the docking probe when you are.
00 01 30 06	CC	Roger. Stand by.
00 01 30 07	LMP	We've got to get a GO on that temperature measurement.
00 01 30 22	CC	10, Houston. We're ready for you to extend the docking probe. And, you'll have to stand by on the temp until we get high bit rate.
00 01 30 29	CDR	Roger.
00 01 30 34	CDR	Okay. We'll count down: 5, 4, 3, 2, 1.
00 01 30 42	CDR	EXTEND.
00 01 30 43	CC	Roger. Copy.
00 01 30 46	CDR	Barberpole, then gray.
00 01 30 48	CC	Roger.
00 01 30 50	CDR	We could feel a klunk.
00 01 30 53	CC	Roger.
00 01 30 55	CMP	We could hear it go out. I believe it's all the way out.
00 01 30 57	CC	Roger. You say you heard it go out?
00 01 31 00	CMP	Yes.
00 01 31 03	CC	Okay. Hey, we will have the P27 for you over Bermuda at about 1 plus 40. And, we've got a TLI plus 90 PAD, if you are ready to copy, Gene.

00 01 31 11	CDR	Stand by.
00 01 31 13	LMP	Roger. TLI plus 90. Go ahead, Charlie.
00 01 31 15	CC	Roger. TLI plus 90. SPS/G&N: 63556; minus 148; plus 135; 00355; 4487; minus 05484, minus 4 balls 1, plus 66232; 180, 239, 001; apogee is NA; perigee is plus 00175; 66458; burn time 07 37; 66199; 24; 2087; 167.
00 01 32 22	LMP	Hello, Houston. This is 10.
00 01 32 24	CC	Go ahead.
00 01 32 26	LMP	Houston, we lost S-band for a second, there. I got everything through H_A, NA. Go after that.
00 01 32 32	CC	Okay, Gene. H_P is plus 00175; 66458; 07 37; DELTA-VC 66199; 24; 2087; 167; boresight star is Shaula, and it's left 008, down 27; minus 2605, minus 02500; 11229; 339930; 12 55 35. Okay, your set stars are Deneb and Vega at 067283, 337; no ullage. Your P37 for TLI plus 4 is 00630, 6373; the longitude is minus 165; GET 400K is 00 22 21. Ready for you readback.
00 01 34 08	LMP	Okay, Charlie, here it comes. SPS/G&N: 63556; minus 148; plus 135; 00355; 4487; minus 05484, minus 4 balls 1, plus 66232. You with me?
00 01 34 20	CC	Go ahead.
00 01 34 24	LMP	180, 239, 001; Apogee is NA; perigee is plus 00175; 66458; 07 37; 66199; 24; 2087; 167; boresight star is Shaula, left 008, down 27; minus 2605, minus 02500; 11229; 339930; 55 44 35. Still there?
00 01 35 01	CC	Keep going.
00 01 35 03	LMP	Okay. Deneb and Vega, 067283; 337; no ullage. TLI plus 4, 00630; 6373; minus 165; 0 22 21. And, you are just a little bit fast on those reads, Charlie. I was barely able to keep up with you.
00 01 35 21	CC	Roger, Gene. Sorry about that. That was a good readback, and we got the TLI PAD if you are ready to copy.

00 01 35 28	LMP	Stand by one.
00 01 35 32	LMP	Okay. I'm ready.
00 01 35 36	CC	Okay. Time base 6p, 2 24 25; 179, 115, 3 balls; burn time 05 43; 104376; 35603; 358, 151, 040; TLI plus 10 minutes, abort pitch angle is 267. Standing by for your readback.
00 01 36 27	LMP	Okay, TLI is 2 24 25; 179, 116, 000; burn time is 05 43; 104376; 35603; roll is 358, 151, 040; and our TLI plus 10 minutes, pitch is 267 degrees.
00 01 36 51	CC	Roger. The burn looks real - going to look real nominal. The SEP angles - everything is real nominal and your backup S-IVB cue cards are okay. Pitch and yaw and everything looks good.
00 01 37 05	CMP	That's great, Charlie. We ought to be coming over the top here pretty soon.
00 01 37 09	CC	Roger. You ought to be right over.
00 01 37 21	CC	10, Houston. On the TLI, we've got a string of nines on the probability for a guided cut-off.
00 01 37 26	CDR	Can't beat that.
00 01 37 28	CC	Sure can't.
00 01 37 32	LMP	You're doing good work so far, Charlie.
00 01 37 34	CC	So are you guys. Man, you guys sounded ecstatic on that boost.
00 01 37 38	LMP	Babe, you ain't seen nothing until you've seen that S-IC stage.
00 01 37 42	CC	(Laughter) Would you care to elaborate?
00 01 37 45	LMP	I will later.
00 01 37 49	CC	Okay.
00 01 37 55	LMP	It's real smooth between the start and the end of its burn.

00 01 37 59	CC	Yes. (Laughter)
00 01 38 02	CDR	There's no doubt the whole structure unloaded on us when we staged.
00 01 38 05	CC	Yes, you kind of felt like you were pulling yourself off from the 8-ball, there.
00 01 38 10	CDR	No, more like a structural POGO. We'll tell you about it later.
00 01 38 13	CC	Okay. Chris says, "Don't forget now, after 8 days."
00 01 38 17	CDR	(Laughter) Okay.

VAN (REV 2)

00 01 40 35	CC	Hello. 10, Houston. We got our load at Bermuda. We're ready to go, if you'll give us ACCEPT.
00 01 40 40	CDR	In ACCEPT, and we're in POO. Go.
00 01 40 42	CC	Roger.
00 01 42 47	CC	Hello. Apollo 10, Houston. We got the load in okay. You can go back to BLOCK. The computer is yours.
00 01 42 53	CDR	We've got BLOCK.
00 01 42 53	CC	Roger.
00 01 43 18	CDR	Houston, Apollo 10. What does your latest orbit show?
00 01 43 22	CC	Stand by.
00 01 43 31	CC	10, Houston. We're showing you in a 107 by 104.
00 01 43 35	CDR	Roger. Thank you.
00 01 45 19	CC	Hello. Apollo 10, Houston. We think that your PRIMARY EVAP is definitely dried out, so we're going to leave it as is, and if we have to, well, we'll reservice after TLI.

00 01 45 33	LMP	Okay. After I closed the valve, it started off to low peg and now has drifted off to a reading of about 0.24.
00 01 45 42	CC	Roger.
00 01 45 45	CDR	Roger. The spacecraft temp has started to cool down. We feel real good in here.
00 01 45 47	CC	Roger. Good, Tom.
00 01 45 53	CC	10, Houston. We'll have you through the Canaries until 1 plus 55, except for about a 30-second break at about 1 plus 43, when we go from Vanguard to the Canaries. Correction - -
00 01 46 06	CDR	- - Roger.
00 01 46 08	CC	- - a short break at about 1 plus 49, excuse me.
00 01 46 11	CDR	Roger.
00 01 46 35	CC	10, Houston. How's the view from up there? Your windows all look good?
00 01 46 39	CDR	Windows are all clear. Gene has a white streak across his external - just a white streak on the right window.
00 01 46 47	CC	Roger. We copy. How wide is it? Is it significant at all, Tom?
00 01 46 54	LMP	No, Charlie. It looks like someone took a little thin paint bursh and just stabbed it across from top to bottom on the right-hand window.
00 01 47 03	CC	Roger.
00 01 47 17	CC	And, 10, Houston. With the high bit rate, that probe temp is hanging right in there at 85.
00 01 47 23	CDR	Thank you.

CYI (REV 2)

00 01 51 37	CC	Hello, Apollo 10. Houston through the Canaries. Standing by. We are GO for the PYRO ARM at any time.
00 01 51 44	CDR	Okay, Charlie. I'll get it right now.
00 01 51 46	CC	Okay.
00 01 51 48	CDR	SECS LOGIC to BATT A and B on the breakers; LOGIC 1 and LOGIC 2 are coming OFF.
00 01 51 54	CC	Roger. Stand by.
00 01 52 14	CC	10, Houston. Would you verify that the SECS ARM BREAKERS are CLOSED?
00 01 52 19	CDR	Roger. SECS ARMS coming CLOSED now; A, B.
00 01 52 25	CC	Roger.
00 01 52 33	CC	And, 10, Houston. Your PYRO system looks good. We're GO.
00 01 52 38	CDR	Okay. I'll arm it just before TLI.
00 01 52 41	CC	Roger, Tom. And we'd like you go UP TELEMETRY COMMAND RESET at Canaries LOS.
00 01 52 48	CDR	Say again?
00 01 52 50	CC	Roger. At Canaries LOS you can go UP TELEMETRY COMMAND to RESET.
00 01 52 55	CDR	Thank you.
00 01 53 32	CDR	Houston, Apollo 10. We're donning our helmets and gloves now.
00 01 53 35	CC	Roger.
00 01 54 06	CC	10, Houston. Everybody in the room is happy as can be. You're looking great. We'll have LOS at Canaries at 1 plus 56. We'll see you over Tananarive at 2 plus 09.
00 01 54 19	CDR	All right; TAN. Roger.

TAN (REV 2)

00 02 09 52	CC	Hello. Apollo 10, Houston through Tananarive. Standing by. We've got nothing for you.
00 02 09 59	CDR	Okay, Houston. We have our PYRO's armed, and we're all set for TLI.
00 02 10 03	CC	Roger. We'll try to come up through ARIA at about 2 plus 14, Tom. They say the circuit margins look good from ARIA 3. The other aircraft - It's sort of marginal, but we'll probably try.
00 02 10 18	CDR	ARIA at 2 plus 14.
00 02 10 20	CC	Roger.
00 02 16 13	CC	Hello. 10, Houston. Coming up on LOS at Tananarive. We'll give you a call through ARIA 3 in a minute or so.
00 02 16 20	CDR	Roger. We're all squared away for the burn, Houston.
00 02 16 22	CC	Roger, Tom.

ARIA 3 (REV 2)

00 02 17 40	CC	Hello, Apollo 10. Apollo 10, Houston through ARIA 3. How do you read?
00 02 17 47	CDR	...
00 02 17 55	CC	Roger. You're there, 10, but unreadable.
00 02 17 57	CDR	...

ARIA 5 (REV 2)

00 02 23 53	CC	Hello, Apollo 10. Houston through ARIA 5. Do you read?

CRO (REV 2)

00 02 26 15	CC	Hello. Apollo 10, Houston through Carnarvon. Over.
00 02 26 19	CDR	Roger, through Carnarvon. The time base 6 started right on time, Charlie.
00 02 26 23	CC	Roger. Good. Your S-IVB is looking great, Tom. It's pressurizing okay.
00 02 26 27	CDR	And I can see the pressure building up, and I'm at 5305 - 4, 5 -
00 02 26 33	CDR	MARK.
00 02 26 34	CDR	5305, counting up.
00 02 26 36	CC	Roger. We're about 3 seconds ahead of you.
00 02 26 38	CDR	Okay.
00 02 27 45	CDR	Houston, Apollo 10. Fuel tank pressure is up to 30.
00 02 27 48	CC	Roger. Copy.
00 02 30 29	CDR	MARK.
00 02 30 30	CDR	Fifty-seven minutes, counting up.
00 02 30 32	CC	Roger, 10. You're GO for TLI. S-IVB is looking as planned.
00 02 30 35	CDR	Good show. We've got the old 8-ball working on number 2, and powered up P47.
00 02 30 43	CC	Okay.
00 02 31 11	CDR	Go.
00 02 31 17	CMP	13040 turns.
00 02 31 32	CDR	TVC SERVO POWER ON.
00 02 32 11	CDR	S-II SEP light ON.
00 02 32 13	CC	Roger.
00 02 32 17	CDR	... go.
00 02 32 21	CC	Very well.

00 02 32 44	LMP	MAX turn rate; you want 10 degrees?
00 02 32 47	LMP	Exceed 10 degrees. Very well.
00 02 33 10	CDR	SEP light OUT. Right on time.
00 02 33 12	CC	Roger. Copy.
00 02 33 21	CDR	Fuel lead in the starboard. Getting acceleration.
00 02 33 23	CC	Roger.
00 02 33 27	CDR	Light on?
00 02 33 28	CC	Roger.
00 02 33 29	CDR	We're burning.
00 02 33 30	CC	Roger. Burning.
00 02 33 32	CDR	We're on the way.
00 02 33 36	CC	Roger. We confirm.
00 02 33 45	CC	10, Houston. Your S-IVB looks good.
00 02 33 47	CDR	Roger.
00 02 33 50	CC	And guidance looks good.
00 02 33 52	CDR	Roger.
00 02 34 02	SC	... light ...
00 02 34 29	CC	Hello. Apollo 10, Houston. At 1 minute, you're looking great.
00 02 34 32	CDR	Roger. One minute, everything looks good on board.
00 02 34 47	CDR	It's starting to pick up the yaw, just as programed.
00 02 34 50	CC	Roger.
00 02 35 31	CC	10, 2 minutes. You're looking great.
00 02 35 34	CDR	Roger.

00 02 35 54	LMP	What a way to watch a sunrise!
00 02 35 57	CC	Roger.
00 02 36 11	CDR	Three-quarters of a g.
00 02 36 13	CC	Roger. Copy, Tom.
00 02 36 27	CC	Apollo 10, Houston. Coming up 3 minutes; trajectory looks great.
00 02 36 31	CDR	Three minutes. Everything looks good, Charlie.
00 02 36 42	CC	Apollo 10, Houston. We've got a predicted cut-off: 2 plus 39 plus 10.
00 02 36 48	CDR	2 plus 39 plus 10.
00 02 36 55	CDR	Wow! Right into the sun, here.
00 02 36 59	CC	Roger.
00 02 37 29	CC	And, Apollo 10, Houston. At 4 minutes everybody is saying GO. The S-IVB is looking great.
00 02 37 35	CDR	Roger, Houston. 10, here. Looks good on board.
00 02 38 06	CDR	We're getting a ... sequence.
00 02 38 11	CC	Say again?
00 02 38 12	CDR	We're getting small ...
00 02 38 17	CC	Understand. Small yaw oscillation, 10?
00 02 38 21	CDR	Negative. High frequency vibrations.
00 02 38 23	CC	Oh, Ah so.
00 02 38 30	CC	At 5 minutes, we still have you GO, 10.
00 02 39 02	CC	10, Houston, in the blind. At cutoff, UP TELEMETRY, IU to ACCEPT.
00 02 39 11	CDR	SECO.
00 02 39 13	CC	Roger. SECO. We confirm the cutoff.
00 02 39 19	LMP	H dot 422 point 1. UP TELEMETRY, IU ...

00 02 39 23	CC	Roger. Copy.
00 02 39 30	CDR	And would you believe, my DELTA-V_C reads minus 0.6?
00 02 39 35	CC	Roger. Minus 0.6 on the DELTA-V_C. That's beautiful.
00 02 39 39	CDR	Can't beat that, Charlie.
00 02 39 42	CMP	And, Charlie, we've got an O_2 FLOW HIGH and a light in the middle of the burn, here, which we can't account for.
00 02 39 49	CC	Stand by, John.

RED (REV 2)

00 02 40 19	CC	Apollo 10, Houston. In the blind. Have LOS at Redstone 2 plus 41. See you over Hawaii, 2 plus 44.
00 02 40 27	CMP	Roger. In trouble-shooting that thing, I went to AUTO 2 on the suit circuit water accumulator. That's the only thing I could think of. It was right at 10 minutes when it happened.
00 02 40 37	CC	Roger. We think that cabin pressure regs kicked in for that O_2 flow, John.
00 02 40 45	CDR	They just went out, and the flow is starting to drop now, Charlie. Looks like we're in good shape.
00 02 40 48	CC	Okay, fine. You're beginning to fade out. We think we'll be losing you through the Redstone here in about 30 seconds. Hawaii at 2 plus 44.
00 02 41 06	CC	And, 10, in the blind. Everything we got looks nominal. You're on your way.
00 02 44 19	CC	Hello. Apollo 10, Houston through Hawaii. How do you read? Over.
00 02 44 23	CDR	Roger. Houston, Apollo 10. Would you believe the world is starting to fade away?

00 02 44 30	CC	Roger. We believe it, Tom. You're all GO here. FIDO confirms it was a perfect insertion. We'd like you to confirm that you're on omni Delta, and we're all GO.
00 02 44 40	CDR	Roger.
00 02 44 46	LMP	We're on omni Delta, Charlie, and there sure ain't any question about it from here.
00 02 44 50	CC	Roger.
00 02 44 53	LMP	I don't meant the Delta, I mean the world.
00 02 44 56	CC	We got you; we understand.
00 02 45 18	CC	10, Houston. We expect the S-IVB to start to SEP attitude at 2 plus 54 plus 10, right on time. And your SEP attitude is looking good.
00 02 45 33	LMP	Roger.
00 02 45 34	CDR	Okay. John's in the left seat now, and I'm in the center seat. We've already changed.
00 02 45 39	CC	Roger, Tom. Did you get a chance to get that radiation survey meter out?
00 02 45 47	LMP	Yes, I did, Charlie, and I read zero on every scale.
00 02 45 50	CC	Okay. And what was the GET of that, Gene? About 245?
00 02 45 57	LMP	About 243.
00 02 45 58	CC	Okay.
00 02 47 18	CC	10, Houston. We'll have you AOS now until you get to LOS at the moon.
00 02 47 28	CDR	Sounds like Chris has pretty good coverage.
00 02 47 31	CC	Yes, sir. He's sitting back there smiling.
00 02 47 37	CDR	You ought to see us.
00 02 47 43	CC	Chris says there ain't no backing out now.
00 02 47 47	CDR	That's for sure.

00 02 47 49	LMP	You can play our favorite song, Charlie, the one about Fly me Someplace or Somewhere.
00 02 47 53	CC	Roger. That's up to you.
00 02 48 00	CC	We've got three Marshall guys here, smiling from ear to ear, too.
00 02 49 55	CC	Apollo 10, Houston. We'd like you to do a VERB 66 to get the state vector in the right position. And, if you've got time, comment on the ORDEAL tracking there for that backup TLI.
00 02 50 07	CDR	Okay. The initial track was just right on what the nominal was, and the ORDEAL was looking just what it should be.
00 02 50 14	CC	Roger, Tom.
00 02 52 23	LMP	Say, Charlie. Looks like we might have a little closed-circuit TV up here.
00 02 52 27	CC	Okay. How's it looking, Gene?
00 02 52 28	LMP	Well, I can't really tell too much, but at least it works closed-circuit.
00 02 52 33	CC	Okay, fine. Goldstone's all configured. We'll be standing by.
00 02 53 11	LMP	Charlie, it's beautiful closed-circuit.
00 02 53 16	CC	Hey, great, Gene. We can't wait - -
00 02 53 20	LMP	I've got my own little show of these 2 guys up here. It's beautiful, really is.
00 02 53 22	CC	Well, great. I hope it's that good down here. We're sitting on pins and needles waiting for it. And, if you've got a second, we'd like to, Tom, we'd like you to recap these S-IVB oscillations; give the guys one up on starting work on it.

00 02 53 35	CDR	Yes, okay. All the way through even into earth orbit boost the IV-B had just a slight little - it felt like - like both lateral and longitudinal vibrations to it, and after - It felt like it was running rough, at least compared to the Titan.
00 02 53 53	CC	Okay.
00 02 53 55	CDR	And then after 3 minutes superimposed upon the low frequency vibrations came a real high frequency vib; I'd say in the ball park of 20 cps, something like that. And of course we were sweating it all the way, but it shut down right on time; but there was a definite shift to a high frequency superimposed upon the low frequency, at about 3 minutes into the TLI burn.
00 02 54 18	CC	Roger. Is it a - give you a feeling like it - 2.2 Mach in the 104, something like that, just a real rumble?
00 02 54 26	CDR	Yes, kind of. Just about as much. We are starting the maneuver now, so we'll tell you later.
00 02 54 30	CC	Roger.
00 02 54 49	CDR	Okay. Cabin pressure has ... to 57. DIRECT O_2 coming OFF.
00 02 54 51	CC	Roger.
00 02 57 08	CMP	Okay. We show ourselves at the attitude. Over.
00 02 57 11	CC	We confirm, 10. You're GO for SEP.
00 02 57 14	CMP	Roger. We're going to check the thrusters here, now.
00 02 57 22	CC	10, you're GO for PYRO ARM and GO for SEP.
00 02 57 25	CMP	Roger.
00 02 58 45	SC	...
00 02 58 51	CMP	Houston, this is Apollo 10. Could you confirm the firings? Over.
00 02 58 56	CC	Say again.

00 02 58 59	CMP	Could you confirm the thruster firings? Over.
00 02 59 00	CC	Stand by.
00 02 59 10	CC	10, Houston. We confirm all the rotational inputs; we did not confirm the translational. As far as we're concerned, you are GO.
00 02 59 17	CMP	Roger.
00 02 59 23	CC	10, we did see plus and minus X on the translational.
00 02 59 27	CMP	Roger.
00 03 01 14	CC	10, Houston. The NOUN 22 looks good to us.
00 03 02 51	CDR	We have SEP.
00 03 02 53	CC	Roger.

END OF TAPE

00 03 04 23	LMP	That world is just incredible. There goes a panel, Charlie.
00 03 04 27	CC	Roger. How do you read me, Gene?
00 03 04 30	LMP	Loud and clear. We don't have the S-IVB yet, but there goes a panel.
00 03 04 33	CC	Roger.
00 03 04 37	LMP	That world is incredible.
00 03 04 38	CC	Really moving?
00 03 04 40	LMP	Holy Moly, I sure hope we can show it to you, I really do.
00 03 04 51	CDR	Okay. I got the S-IVB.
00 03 04 53	CC	Roger.
00 03 04 55	LMP	And there goes another panel.
00 03 04 59	CC	Roger. All retrograde, we hope.
00 03 05 08	CMP	I don't know what ... it is up here r'ght now.
00 03 05 11	CC	Yes.
00 03 05 30	LMP	Charlie, I've got the world on closed circuit here, so we're going to try and get HIGH GAIN.
00 03 05 34	CC	Roger. Standing by.
00 03 05 40	LMP	Okay, babe. There's HIGH GAIN. The TV is ON. I should be coming down to you, and I'll have to adjust it as we come along into the S-IVB.
00 03 05 49	CC	Hey, it's beautiful, Gene. We got the black and white now with a little time delay on the color.
00 03 05 55	LMP	Okay. And the S-IVB ought to be coming in here in a second.
00 03 05 58	CC	Roger.
00 03 06 01	CC	Hey, we got the S-IVB coming into the top. The sun's really shining on it.
00 03 06 07	LMP	Okay. I'll try to adjust it for you.
00 03 06 11	CC	Hey, we got the color now.

00 03 06 14	CC	You're on the air, babe. Oh, that's beautiful.
00 03 06 21	LMP	Have you got the color?
00 03 06 22	CC	Yes, sir. It's looking great!
00 03 06 23	LMP	I'm sorry it's tilted a little bit. That's the best I could do with the brackets.
00 03 06 26	CC	No sweat; we got it right in the center of the screen, Gene. It looks like the sun's really bright on it.
00 03 06 31	LMP	Tremendously so.
00 03 06 44	CC	The sun's got the S-IVB - the LM sort of blotted out; it's so bright.
00 03 07 06	CC	Hey, your zooming in looks really good, Gene.
00 03 07 21	LMP	Charlie, I've got it closed down all the way. Does that help any?
00 03 07 25	CC	Roger. The - In the center of the LM now, we still got a real - couple of real bright spots, but it's looking real good in color. We can see the probe - correction, the drogue.
00 03 07 53	CC	Gene, it's really looking good. The - It's the silver panels that are reflecting back real brightly.
00 03 08 01	LMP	They're awful ... right now, too.
00 03 08 03	CC	Roger. The resolution is fantastic. You're drifting off just to the right a little bit.
00 03 08 44	CC	10, Houston. You can't believe the picture we're getting. The resolution is really fantastic.
00 03 08 51	LMP	I'll tell you, this monitor makes it great.
00 03 09 11	LMP	How's the color, Charlie?
00 03 09 12	CC	Say again.
00 03 09 14	LMP	How's the color?
00 03 09 16	CC	It's really beautiful, Gene. You've got it framed just perfectly. The resolution - -
00 03 09 22	LMP	Hey, I think the color will be beautiful once we can show you the Earth.

00 03 09 24	CC	Roger.
00 03 09 44	CC	Old Snoopy sure looks good.
00 03 09 48	LMP	Yes. He sure do.
00 03 09 59	CMP	Old Charlie Brown is a mass of cord and wire floating around here, though.
00 03 10 06	CC	I can imagine.
00 03 10 48	LMP	Houston, Charlie Brown. I've settled down now on the zoom, and the closing rate you see is the closing rate we've got.
00 03 10 55	CC	Roger. We copy. Gene, if it looks like to you - We have a bright spot - it may be on your vidicon, coming in on your vidicon tube on the black and white. It's right above the drogue.
00 03 11 09	LMP	Yes, we've got it in real life. The camera is fully in the shade. That's just a reflection coming right off the - right off of Snoopy.
00 03 11 17	CC	Roger.
00 03 11 26	CC	10, we're afraid you might be burning a hole into your vidicon tube. Move it off to the - a little bit off of Snoop. I think those panels are so bright we might be getting problems with the vidicon tube.
00 03 11 39	LMP	All right.
00 03 11 52	LMP	I can just cover it up for a while if you like.
00 03 11 56	CC	Stand by.
00 03 12 33	CC	10, Houston. We'd like the LM - Snoopy back, if you could give it to us.
00 03 12 38	LMP	I'd be glad to.
00 03 12 40	CC	Hey, that's looking great now, except for a couple of fingers there or something.
00 03 12 46	LMP	Good resolution; that's what they were.
00 03 12 48	CC	You got your big hands in the way. Hey, I don't know what you did, but the - It's really beautiful now. Really great.
00 03 12 57	LMP	We're just a little closer.

00 03 12 58	CC	Yes. Hey, the color is great, Gene.
00 03 13 01	LMP	How's that for the front porch?
00 03 13 04	CC	Oh, boy. That's beautiful.
00 03 13 12	LMP	Hell, I got to watch it on TV, too. I've got - can't see out the window.
00 03 13 29	CC	Hey, what's that guy doing on the front porch?
00 03 13 36	CDR	That's a green man, Gordo.
00 03 13 44	CDR	John estimates 50 feet closing.
00 03 13 46	CC	Roger.
00 03 13 57	CDR	How's the resolution?
00 03 13 58	LMP	Well, all I can say is it's really happening, and what hasn't happened you haven't seen yet.
00 03 14 02	CC	Roger.
00 03 14 10	CC	Really great resolution.
00 03 15 20	LMP	Charlie, we can't be more than about 5, 10 feet away.
00 03 15 24	CC	Roger.
00 03 15 41	CC	10, it's looking real stable to us. We show you closing slightly.
00 03 15 43	CMP	Roger.
00 03 16 30	LMP	Be docked in a second, I hope.
00 03 16 32	CC	Roger.
00 03 16 57	CC	10, Houston. You're looking good. We can see the markings on the rendezvous window. Looks like you just docked.
00 03 17 03	CDR	Roger. We've got a capture; we haven't fired yet.
00 03 17 06	CC	Roger.
00 03 17 24	CC	Gene, we can read the numbers on the LM docking window.
00 03 17 38	CDR	Snap, snap, and we're there. Got two grays.

00 03 17 40	CC	Roger.
00 03 17 42	LMP	You saw the docking, Charlie.
00 03 17 50	CDR	We didn't get any MASTER ALARM. Everything looks snug.
00 03 17 53	CC	Roger. Didn't look like there was any - hardly any afterdock - postdocking oscillations.
00 03 18 01	CDR	Check.
00 03 18 25	CDR	Okay. PYRO's coming OFF.
00 03 18 26	CC	Roger.
00 03 18 54	CC	10, that's a great picture of the quads.
00 03 18 57	LMP	I'll try and take you on a quick tour. We're - I may have to hold you up for a little bit here.
00 03 19 03	CDR	Okay. John's going down to the LEB and, I'm going to the left seat now.
00 03 19 06	CC	Roger, Tom. We're standing by.
00 03 19 23	CC	Apollo 10, Houston. We'd like you to SAFE the LOGIC.
00 03 20 27	LMP	Charlie, you're going to have to look at the same picture for a while until we get this integrity check complete.
00 03 20 31	CC	Roger. We understand you are busy.
00 03 21 43	LMP	Okay. I'm watching.
00 03 23 43	CMP	Houston, this is 10. We are in the process of attempting to pressurize the tunnel.
00 03 27 20	LMP	Hello, Houston. This is 10. We're going to go ahead and suspend the TV here for about 10 minutes until we get a little bit squared away.
00 03 27 26	CC	Roger. Understand.
00 03 27 27	LMP	We'll be back with you shortly.
00 03 27 30	CC	Roger, Gene. Give me a call when you've got time to copy an evasive pass.
00 03 27 35	LMP	Okay. I will.

00 03 28 58	LMP	Charlie, go ahead. I'll take the evasive maneuver.
00 03 29 01	CC	Roger. If you're ready to copy, we have a P30 pad evasive maneuver, SPS/G&N: 63556, plus 091, minus 021 004 3909 00; NOUN 81 is plus 3 balls 51, plus 5 balls, plus 00190. How do you copy?
00 03 29 45	LMP	I'm still with you. That's just the right speed; I got gloves on yet.
00 03 29 50	CC	Okay. Want me to slow down?
00 03 29 53	LMP	No. Just go the way you are.
00 03 29 55	CC	Roger. 061 255 358. Apogee and perigee are NA, 00197 003 00150. The rest of the pad is NA, and no ullage.
00 03 30 26	LMP	Roger. Charlie. Repeat roll, pitch, and yaw.
00 03 30 28	CC	Roger. 061 255 358. Did you copy?
00 03 30 58	CC	Apollo 10, Houston. Do you read?
00 03 31 37	LMP	Hello, Houston. This is 10.
00 03 31 40	CC	Roger, 10. We read you now. We had a handover to Goldstone and lost you for a while. How do you read me?
00 03 31 45	LMP	Okay. I've got you on OMNI, and I'll copy the rest of the pad on OMNI and get HIGH GAIN back again. I got roll of 061, pitch of 255, and give me yaw.
00 03 31 54	CC	Roger. Yaw 358.
00 03 31 59	LMP	Okay. Purpose is evasive. SPS/G&N: 63556, plus 091, minus 021 004 390900 981, and plus 00051, plus all balls, plus 00190, roll 061, 255, 358, DELTA-V_T is 00197, burn time is 003, and DELTA-V_C is 00150.
00 03 32 31	CC	Roger. Good readback, Gene.
00 03 32 58	CC	Hello, Apollo 10. Houston. The S-IVB's getting ready to do an auxiliary hydraulic pump cycling which you may feel, and we will have a nonpropulsive vent in a few minutes, also.

00 03 33 09	CMP	Okay. Roger. I would reckon that possibly 10, latches 10, 3 - 3, and 4 are probably going to be one shot in progress from the position of the bungee, but they all are automatically made.
00 03 33 22	CC	Roger. We copy, John.
00 03 33 27	LMP	And it looks just like - just like downtown up here.
00 03 33 31	CC	Okay. You have seen it before.
00 03 37 07	LMP	Houston, this is Charlie Brown. How do you read me? HIGH GAIN?
00 03 37 10	CC	Roger. Five-by, Gene.
00 03 37 14	LMP	Okay. We're just getting the hatch area squared away at this time.
00 03 37 20	CC	Roger. Get the umbilicals connected?
00 03 37 25	LMP	Yes. We just - just now completed that.
00 03 37 28	CC	Roger.
00 03 37 52	LMP	Okay, Houston. We're reading 2 volts on systems step meter 4D, and it just bounced back to four-tenths of a volt, so I guess the heaters are cycling or something in the LM.
00 03 38 07	CC	Roger.
00 03 38 39	CC	Hello, 10. Houston. TEL COMM sees the LM current; it looks nominal.
00 03 38 41	CMP	Okay. Thank you.
00 03 40 40	CDR	Hello, Houston. Apollo 10.
00 03 40 42	CC	Go ahead, Tom.
00 03 40 46	CDR	Okay. When we pressurized the LM, the Mylar all blew out of the tunnel hatch there, and we have got a spacecraft that has beaucoup insulation in it here. It looks like it didn't leave a big enough hole. Just like the same way when the LM forward tunnel insulation used to blow out.
00 03 41 09	CC	Roger. Copy. You lost every bit of the Mylar in the back side of the hatch?
00 03 41 12	CDR	Not every bit, but a whole bunch of it.

00 03 41 14	CMP	Oh, just a little of it, Charlie.
00 03 41 16	CC	Okay.
00 03 41 17	CMP	But, of course, they do away with it on 107 and SUBS.
00 03 41 19	CC	Okay.
00 03 41 25	CC	You got lots of pieces floating around?
00 03 41 28	CDR	A few.
00 03 41 29	CC	Okay.
00 03 41 32	LMP	Just a little snow.
00 03 48 17	CC	Hello, Apollo 10. Houston. We still show the EDS power ON and the EDS breakers closed. Would you turn the power off and open the breakers, if you've got a second?
00 03 48 28	CDR	Okay. Power coming off.
00 03 50 59	CMP	Hello, Houston. This is 10. We've got the logic ON, and we're standing by for your GO for PYRO ARM.
00 03 51 04	CC	Roger. Stand by. You have our GO for PYRO ARM, 10.
00 03 51 11	CMP	Okay. PYRO's coming up and on.
00 03 51 13	CC	Roger.
00 03 51 43	CC	10, Houston. The S-IVB is still venting non-propulsively.
00 03 51 48	CMP	Roger.
00 03 51 49	CDR	Roger. We're going to separate in just a minute.
00 03 51 52	CC	Roger.
00 03 51 53	CC	And, 10. We'd like you to stand by until that vent's over in about 2 minutes.
00 03 51 58	CDR	Okay.
00 03 52 00	CDR	We're standing by for your GO for SEP.
00 03 52 03	CC	Roger, Tom.
00 03 54 29	CC	10, Houston. The vent's over; we're GO for SEP.

00 03 54 32	CDR	Roger. Understand that we are GO for SEP.
00 03 54 44	LMP	Houston, I'll turn the TV on, on this one.
00 03 54 46	CC	Roger.
00 03 56 13	CDR	Okay. I'm going to count down to SEP.
00 03 56 15	CC	Roger. Standing by.
00 03 56 23	CDR	3, 2, 1
00 03 56 25	CDR	GO.
00 03 56 27	CDR	Snoopy's coming out of the doghouse.
00 03 56 29	CC	Roger.
00 03 56 36	CC	And we got the TV.
00 03 56 48	CMP	Houston, we have CRYO pressure light; O_2 tank 1 and 2 are reading about 800.
00 03 56 55	CC	Roger.
00 03 57 05	CC	10, we'd like to have you turn the fans on.
00 03 57 12	CMP	They're on.
00 03 58 38	LMP	Houston, we're maneuvering around right now, acquired the S-IVB, going into SEP attitude.
00 03 58 41	CC	Roger.
00 03 59 15	CMP	Houston, that was fans in AUTO or OFF on the O_2?
00 03 59 20	CC	ON, Gene; ON.
00 03 59 24	LMP	They're ON; ON.
00 03 59 26	CC	Roger.
00 04 00 29	CDR	Okay, Houston. We can see the IVB now.
00 04 00 32	CC	Roger. Out of which window, Tom?
00 04 00 35	CDR	John's looking at it out the hatch window.
00 04 00 37	CC	Roger.
00 04 02 01	LMP	Houston, it's the S-IVB in the TV right now.
00 04 02 06	CC	Roger. We got it right over the quad - thrusters there, Gene.

00 04 02 10	LMP	That's it. I'll see if I can bring it in to you.
00 04 02 12	CC	Roger. Thanks.
00 04 02 35	CC	10, that TV is really fantastic.
00 04 02 41	CDR	It looks like the dome there of the I B is gold.
00 04 02 45	CC	Roger.
00 04 02 49	CDR	It looks like we got good separation distance and no problems.
00 04 02 53	CC	Roger. It looks like about the size of a quarter to us here, Tom. What do you estimate your range?
00 04 03 06	CDR	I'd say at least 300 feet, now.
00 04 03 08	CC	Roger.
00 04 03 22	LMP	Are you getting anything, Charlie?
00 04 03 23	CC	Roger, Gene. That zoom was real good We have the S-IVB; the Sun's real bright on it.
00 04 03 28	LMP	How's the focus?
00 04 03 29	CC	Looks real good.
00 04 03 35	CC	That LM antenna is showing up real bright.
00 04 03 57	CDR	Hello, Houston. Apollo 10.
00 04 03 59	CC	Go ahead, 10.
00 04 04 01	CDR	Roger. I wish you'd tell Dr. Von Braun, Lee James, Kurt Davis, and Rocco Petrone thanks a lot for all thy people who worked on the great ride.
00 04 04 10	CC	Roger. We're going out to the networks now, I think. They probably heard it; we'll pass it on, though.
00 04 04 15	CDR	A few thousand people worked on that machine, and we sure appreciate it.
00 04 04 20	CC	Roger. It looked beautiful from here
00 04 04 26	CC	Did you move the camera, Gene?
00 04 04 29	LMP	Say again.

00 04 04 30	CC	Did you move the camera?
00 04 04 31	LMP	It's out the hatch window; John's got it now.
00 04 04 34	CC	Okay.
00 04 04 37	CDR	In fact, you can see the IVB's attitude thrusters firing, now.
00 04 04 41	CC	We haven't been able to pick that up yet; IVB's really good.
00 04 04 45	CDR	Yes.
00 04 04 52	CDR	I'd estimate now that we're a good 300 to 400 feet away.
00 04 04 57	CC	Roger.
00 04 04 58	CDR	And we're slowly going away. We're starting to see one side of it.
00 04 05 01	CC	Roger.
00 04 05 18	CC	And 10, Houston. "Eagle-Eyes" Cooper said he can see your thrusters firing up there on the S-IVB.
00 04 05 27	CDR	Good show.
00 04 05 33	LMP	I can't even see them from here. He must be about 2500 miles away.
00 04 05 37	CC	(Laughter) Roger.
00 04 05 43	CC	You're looking out the wrong window.
00 04 05 44	LMP	I'm sure going to like Snoopy, because that's all I'm going to see.
00 04 06 58	CDR	Okay. I've got the IVB out my window now.
00 04 07 53	CDR	Okay, Houston. This is CDR. I've got the IVB out of my window, here.
00 04 07 59	CC	Roger, Tom. It's looking great. It's a pretty bright network. We'd like you to keep the camera moving around so we don't burn anything.
00 04 08 49	CDR	Houston, this is 10. Can you see all the particles around us?
00 04 08 52	CC	Negative, Tom. All we got is the S-IVB, and it's a real bright blob.

00 04 09 01	CDR	Yes. Okay. Looks like - -
00 04 09 04	CC	Is your ALC switch on INSIDE or EXTERIOR/INTERIOR?
00 04 09 10	CDR	On INTERIOR. You want to go EXTERIOR?
00 04 09 11	CC	Let's try that.
00 04 09 17	CDR	That better?
00 04 09 19	CC	On the black and white it is. Stand by on the color. We got that delay. Hey, yes. That's a lot better. It took all that washout out. Looks good.
00 04 09 41	LMP	Charlie, we're looking for the Earth right now. We'd like to show it too, but we can't find it.
00 04 09 45	CC	Roger. It's down there somewhere.
00 04 09 49	CMP	That's a smart comment.
00 04 09 52	CC	Ask the navigator. He should know.
00 04 09 57	CMP	He's the housekeeper right now.
00 04 10 05	CDR	Okay, Houston. Now, this is Apollo 10. We want to get ahead and get some other things done. We're going to go ahead and turn off the TV for a while.
00 04 10 11	CC	Roger. Copy.
00 04 12 00	CDR	Houston, Apollo 10. We're still slowly moving away from the S-IVB, but that rascal is bore-sighted right at us.
00 04 12 06	CC	Roger, Tom.
00 04 22 12	CC	Apollo 10, Houston. We would like you to verify that the suit circuit return value is OPEN.
00 04 22 22	CMP	Thank you, Charlie. We got it.
00 04 22 24	CC	Roger.
00 04 25 13	CDR	Hello, Houston. Apollo 10.
00 04 25 15	CC	Go ahead, 10.
00 04 25 17	CDR	Okay. Estimate now that we are out a good 1000 - 800 to 1000 feet from the IVB and it moved out laterally - oh, maybe 400 feet.

00 04 25 28	CC	Roger.
00 04 25 30	CDR	It looks like out of the burn direction that we will be in will put us in the right direction, if we keep moving laterally.
00 04 25 35	CC	Roger. Copy.
00 04 26 32	CDR	Houston, Apollo 10. We are in burn attitude at this time.
00 04 26 37	CC	Roger. We copy.
00 04 30 18	CC	Apollo 10, Houston. We'd like for you to turn off the O_2 CRYO fan.
00 04 30 24	CMP	O_2 CRYO fan. Roger.
00 04 32 23	CMP	Houston, this is Apollo 10. We are back on OMNI. We were getting a bad squeal on our S-band.
00 04 32 29	CC	Roger. Copy.
00 04 32 32	CMP	Is that okay, or do you want to look at this one on high gain.
00 04 32 36	CC	Stand by. It looks good on the OMNI, if you can stay where we are.
00 04 33 57	CDR	Okay, Houston. Apollo 10 coming up to 5 minutes. We are going to start our gimbal drive check.
00 04 34 03	CC	Roger. Copy.
00 04 34 12	CDR	PITCH 1 coming ON. YAW 1 ON.
00 04 34 16	CC	Roger.
00 04 34 27	CDR	PITCH 2 coming ON.
00 04 34 28	CC	Roger.
00 04 34 29	CDR	YAW 2 coming ON.
00 04 34 31	CC	Roger.

END OF TAPE

00 04 37 10	CDR	Okay, Houston. Coming up on 2 minutes. DELTA-V thrust A normal.
00 04 37 14	CC	Roger.
00 04 38 11	CDR	Mark 1 minute to the burn.
00 04 38 12	CC	Roger.
00 04 38 44	CDR	30 seconds.
00 04 38 45	CC	Roger.
00 04 38 52	CDR	20 seconds.
00 04 39 12	CDR	Burn.
00 04 39 14	CC	Roger.
00 04 39 15	CDR	SPS shows 90 psi.
00 04 39 16	CC	Roger.
00 04 39 17	CDR	Switches off.
00 04 39 20	CC	Looks like a good burn to us.
00 04 39 44	LMP	Okay. We have - You see the residuals, plus one-, two-tenths, and five-tenths.
00 04 39 49	CC	We copy.
00 04 40 35	CC	10, Houston. That burn looked real good to us. I think the SPS is GO.
00 04 40 40	CDR	Roger. And we're leaving IVB way behind.
00 04 40 43	CC	Roger.
00 04 41 01	CDR	Houston, Apollo 10. All the postburn items are cleaned up.
00 04 41 07	CC	Roger, Tom. We copy. Stand by.
00 04 41 15	CDR	Roger. Could you give us a - Before we pick up the PTC at 12 hours, could you give us an angle so we can look at the Earth out of one of the windows?
00 04 41 22	CC	Roger. We're going to have an update on that flight plan maneuver for you. Stand by.

00 04 42 09	CC	10, Houston. We're about 95 percent sure that we're going to skip midcourse number 1. Give us some time to look at the data, and we'll get back and confirm that with you definitely.
00 04 42 23	CDR	Okay.
00 04 42 30	CC	And, 10, Houston. When you doff your suits, we'd like each one of you to read - give us a reading on your suit radiation dosimeters, please.
00 04 42 41	CDR	Roger.
00 04 42 46	LMP	Houston, this is 10. You want to go ahead and start charging BATT A?
00 04 42 51	CC	Stand by.
00 04 42 58	CC	That's affirmative, Gene. Go ahead. You can start the BATT A charge.
00 04 43 02	CMP	Okay.
00 04 43 42	CC	Apollo 10, Houston. When somebody is down in the LEB, we'd like a readout of the LM CM DELTA-P.
00 04 43 48	CDR	Roger. John's able to get it for you.
00 04 43 51	CC	Roger.
00 04 43 54	CMP	Roger. We're reading eight-tenths right now.
00 04 43 58	CC	Roger. Copy. Eight-tenths.
00 04 44 01	CMP	Make that 8500.
00 04 44 03	CC	Okay.
00 04 44 41	CC	Apollo 10, Houston. In about 3 minutes, we're going to have a short LOX dump on the Saturn.
00 04 44 48	CDR	Okay. We can't see it. It's just long gone from us.
00 04 44 51	CC	Okay.
00 04 46 08	CMP	Hello, Houston. This is 10.
00 04 46 09	CC	Go ahead.
00 04 46 11	CMP	Okay. I'm reading 100.5 percent oxidizer and 101.2 percent fuel. My unbalance went from - on that short burn - from a minus 50 to a minus 200.

00 04 46 28	CC	Roger. We copy.
00 04 47 07	CC	10, we'll have that attitude for you for the right-hand hatch window for the Earth in a couple of seconds.
00 04 47 15	CDR	Okay.
00 04 47 16	CC	10, this is Charlie.
00 04 47 18	CC	Is that okay, or do you want the hatch window?
00 04 47 20	CMP	Right hand's all right.
00 04 47 21	CC	Okay.
00 04 47 22	CDR	With the right hand, we could use the mount, then.
00 04 47 25	CC	Okay.
00 04 47 32	CDR	The last time I saw it, it started to look - The last time I saw it, it started to look like a medicine ball.
00 04 47 38	CC	Roger.
00 04 47 46	CMP	Okay.
00 04 48 10	CC	Apollo 10, Houston. We have an update for your P23 attitudes and stars if you care to copy at this time.
00 04 48 24	LMP	Okay. Go ahead.
00 04 48 25	CC	Roger, Gene. At 5 hours, this attitude for the P23 as listed in the flight plan is incorrect. We'd like you to have a roll of 180, pitch of 167, a yaw of zero.
00 04 48 45	LMP	180, 167, 000 at 5 hours for P23.
00 04 48 49	CC	That's affirmative, and we've got an update to your stars also on page 3-9 if you're ready to copy.
00 04 48 56	LMP	Yes, go ahead.
00 04 49 00	CC	You ready?
00 04 49 02	CMP	All set.

00 04 49 03	CC	Okay. Roger. Set 1 is now Nunki, number 37, and it's near side. Set 2 is Peacock, number 42, and it's near horizon. Set 3 is also Peacock 42, near horizon. And the last two sets, 4 and 5, are Antares, far horizon.
00 04 49 45	CMP	Did you say Peacock set 3 was far horizon?
00 04 49 50	CC	Negative. Near horizon for both sets 2 and 3 on Peacock.
00 04 49 54	CMP	Okay.
00 04 49 56	CC	Okay. The reason for the update, we forgot we had Snoop out there.
00 04 50 03	CMP	Okay.
00 04 53 06	CC	Hello, Charlie Brown. This is Houston. We've got that attitude for the Earth out the right-hand window. It's a roll of 277, pitch 187, yaw 15.
00 04 54 43	CC	Apollo 10, Houston.
00 04 55 09	CC	Hello, 10. Houston. Over.
00 04 56 28	CC	Hello, Apollo 10. Houston. Do you read me?
00 04 56 41	CC	Apollo 10, Houston. In the blind. If -
00 04 57 10	CC	Hello, Charlie Brown. Houston. Over.
00 04 57 19	CC	Hello, Charlie Brown. Houston. Over.
00 04 58 49	CC	Hello, Apollo 10. Houston. Over.
00 04 59 23	CC	Hello, Charlie Brown. This is Houston. Do you read? Over.
00 04 59 43	CC	Hello, Charlie Brown. This is Houston. Over.
00 05 00 00	CDR	Hello, Houston. This is Apollo 10.
00 05 00 02	CC	Roger. Go ahead, Tom. We are reading you now.
00 05 00 16	CC	10, Houston. We are reading you intermittent.
00 05 00 58	LMP	Hello, Houston. Houston, how you read?
00 05 01 02	CC	Roger. Five-five, Gene. How me?
00 05 01 07	CDR	Houston, Apollo 10. How do you read?

00 05 01 10	CC	Reading you five-by. How me?
00 05 01 15	CC	Apollo 10, Apollo 10, this is Houston. How do you read? Over.
00 05 03 17	CC	10, Houston. Do you read?
00 05 03 26	LMP	Hello, Houston, Houston. This is 10. How do you read?
00 05 03 28	CC	Roger. Reading you five-by, Gene-o. How me?
00 05 03 31	LMP	Reading you all right now. I've been having a lot of trouble with the OMNI's, and the high gain borrows. We get about three-fourths signal strength, and the noise gets so bad, and apparently you're not hearing us.
00 05 03 41	CC	That's affirmative. We've been hearing the same thing. We think you're going from OMNI to OMNI a little bit too fast and not giving us a chance to get locked up real good. Are you with - I guess we're on the OMNI's now, and we're hearing you five-by.
00 05 03 57	LMP	Okay. I'm on OMNI C right now. We've got the Earth here, and we'd like to be able to go high gain and show it to you, if you can figure it.
00 05 04 06	CC	Stand by.
00 05 04 14	CC	We're configured network's ready to go. You can go high gain.
00 05 04 16	LMP	Okay.
00 05 05 27	LMP	Charlie, if you see this, it's going to be out of this world, literally.
00 05 05 30	CC	Roger. Standing by, Gene.
00 05 05 32	CDR	Okay. We can see exactly all of -
00 05 05 39	CC	You're cutting out, Tom.
00 05 05 42	CDR	Are you getting any signal now?
00 05 05 51	CDR	I'm looking right at the good old U.S. of A. there.
00 05 05 54	CC	Roger.
00 05 06 04	CC	10, Houston. We're looking for the TV. How does the high gain signal strength look to you?

00 05 06 11	CMP	It's loud and clear.
00 05 06 13	CC	Roger.
00 05 06 33	LMP	Still nothing, Charlie?
00 05 06 35	CC	We got you on the black and white. Stand by about 12 seconds. It looks great on the black and white.
00 05 06 54	CDR	I figure right there you should be able to see the United States, Mexico, Baja California -
00 05 06 57	CC	Hey, it's really beautiful, Tom. It's coming in great.
00 05 07 01	CDR	You ought to see it up here, Charlie.
00 05 07 03	CMP	We've got the whole globe there.
00 05 07 05	CDR	Yes, you're looking right at the United States there.
00 05 07 07	CC	Roger.
00 05 07 08	CDR	See the Rocky Mountains sticking out? Baja California? Can't tell whether you have any smog in LA or not, but Alaska is pretty much socked in.
00 05 07 20	CC	Roger.
00 05 07 25	CC	It's really a beautiful picture.
00 05 07 32	CDR	We'll just let it go here for a couple of minutes.
00 05 07 34	CC	Okay. Thanks. Hey, Gene-o, on your monitor, which way is the North Pole to you? We've got it up at the northeast corner?
00 05 07 46	CDR	That's right, Charlie. The northeast corner is the North Pole.
00 05 07 50	CC	Okay.
00 05 07 51	CDR	You can see cloud - covers the northern part of Alaska, and it comes down and cloudcovers over the northeastern part of Canada, and I can see out into the New England area. We've got a low pressure area out there.
00 05 08 01	CC	Roger.
00 05 08 07	CC	The color is fantastic. It really is.

00 05 08 10	CDR	Okay. And it looks like the Rocky Mountains are orange colored to me. The rest of U.S., Baja California, that really stands out as all brownish, and the oceans are blue; but there are so many clouds out to the northeast of the United States, you can't believe it. Covers the Far East over to Europe as far as you can see.
00 05 08 26	CC	Roger. We see all that. We've got a brownish spot that's pretty hard to pick out just exactly what we're looking at, but we do see the brown and the clouds out over the ocean about the center of the globe.
00 05 08 37	CDR	Yes. Okay. The brown spot is the Rocky Mountains. It runs down around into New Mexico, up into Colorado.
00 05 08 49	CC	Roger.
00 05 08 54	CC	This resolution is fantastic. The LM, you can count the rivets on it, and yet the Earth and the colors are really beautiful.
00 05 09 02	CDR	Okay. Well, I can zoom in a bit on a certain part of the Earth here; I'll try to zoom in on the Rocky Mountains and California.
00 05 09 07	CC	Roger. Standing by, Tom.
00 05 09 20	CDR	How's that, Charlie? Better?
00 05 09 22	CC	We're looking at it on the black and white. It looks great. Stand by. Here he comes in on the color now.
00 05 09 29	CC	Hey, boy! That is really fantastic. We can pick out Baja and the smog over LA and we see Mexico and we go off to the east, in our picture, and come into the Rockies area. The Baja California and the Gulf, they really stand out beautiful.
00 05 09 46	CDR	Okay. We'll move it around.
00 05 09 49	CC	Looks like we've got some clouds down over New Orleans and down in that way.
00 05 09 55	CDR	Yes. Okay, Charlie. That's full zoom.
00 05 10 05	CC	Okay, this has got to be the greatest sight ever.
00 05 10 08	CDR	You ought to see it up here.

00 05 10 11	CC	Hey, Tom. Boy, it is really fantastic. Could you get Baja in a little bit? We're showing this deal to the Pacific now.
00 05 10 27	CC	Okay. We've got the Baja now on the right-hand side of our screen, and it's right in the center now, and we can see Mexico and the clouds up over the Rockies. It's really a fantastic sight. Almost see the freeways in LA.
00 05 10 48	CDR	Right. Okay, I'm going to move down. You can take a look down by the Gulf of Mexico now.
00 05 10 53	CC	Roger.
00 05 10 57	LMP	Charlie, this is - It's so hard to describe. You can go right up past Alaska, and you can see the polar caps. It's incredible.
00 05 11 08	CC	We see it all here, Gene. The colors are really beautiful.
00 05 11 12	LMP	That's great. And the blackest black that you ever could conceive is the setting for all this.
00 05 11 19	CC	Roger.
00 05 11 22	CDR	Looks like the people of New York have a little bit of cloudcover today. It goes all the way down, in fact, down back by the Cape.
00 05 11 29	CC	Roger.
00 05 11 36	CC	You guys are really giving us a great show. This is fantastic.
00 05 11 40	CDR	We just want to thank all the people who helped get us up here, Charlie.
00 05 11 43	CC	Roger. I know.
00 05 11 49	CDR	That includes the taxpayers, too.
00 05 11 50	CC	(Laughter) Roger.
00 05 11 53	LMP	Charlie, you know, you blink your eyes and you look out there and you know it's three dimensional, but it is just sitting out there in the middle of nowhere and it's unbelievable.
00 05 12 07	CC	We copy, Gene. We are getting a real idea now, for the first time, of what you are really seeing up there. The colors on the oceans are just so blue

as they can be and real white clouds all over, and the land is a real deep brown, almost a reddish brown.

00 05 12 26	LMP	And the North Pole, the Arctic area, is just solidly, whitely, snow-covered.
00 05 12 31	CC	Roger.
00 05 12 33	CDR	It's a brown around in the Rocky Mountains and orange down into New Mexico and becomes a little more of a purplish orange - -
00 05 12 40	CC	Roger. We see all - I cut you off there, Tom. We see all that, and it is looking good.
00 05 12 47	LMP	You can actually pick out what I think is the San Joaquin Valley down there, just on the west side of the hills.
00 05 12 54	CC	Roger.
00 05 13 00	CDR	Okay, I am going to open the zoom and bring it back in the other way.
00 05 13 04	CC	Roger, 10. Would you check your TV servo power. We show it ON.
00 05 13 18	CDR	Sorry. I must have knocked it on there when I was wrestling around here.
00 05 13 21	CC	Roger.
00 05 13 28	CC	Boy, we are looking at a black background now.
00 05 13 46	CDR	There, you have the whole Earth.
00 05 13 49	CC	Roger. We - It is really beautiful. Tom, we can even pick up the little tip of the northern part of South America down below Baja.
00 05 14 00	LMP	Yes, it's coming in now.
00 05 14 04	CC	It's really blue, you guys.
00 05 14 07	CDR	That's for sure.
00 05 14 09	LMP	We are looking right at you. Looks like you may have a few clouds there right now in Houston.
00 05 14 13	CC	It's sort of a constant overcast here in the MOCR but we have never been -

00 05 14 23	LMP	You are right on the edge of what might be some clouds, but certainly to the northeast of that area, it's clobbered.
00 05 14 29	CC	Roger.
00 05 14 33	CDR	Okay. John is going ahead through P52 here.
00 05 14 36	CC	Roger.
00 05 14 37	LMP	I think I can see all the way up into the Newfoundland area now, up along the eastern coast that is not covered.
00 05 14 45	CC	Right, Gene-o. It looks to us that it is just completely clouded up over that way.
00 05 14 58	CDR	You might say we have moved out in the last couple of hours.
00 05 15 00	CC	Boy, I'll say. We got you at about 26 000 miles here - or a little bit more.
00 05 15 12	CDR	Okay. I am going to put the zoom on 55, which will give you the exact resolution we have.
00 05 15 16	CC	Roger.
00 05 15 18	LMP	And, just for the record, it looks to me like a pretty nice place to live.
00 05 15 22	CC	Roger. And we see you at P52.
00 05 15 28	CDR	Okay. 55 on the zoom, and that is about exactly the same thing we are seeing now.
00 05 15 33	CC	Well, that is really fantastic.
00 05 15 46	CC	10, can you see the Hawaiian Islands?
00 05 15 54	CDR	Negative. Too much cloud coverage.
00 05 15 56	CC	Okay.
00 05 16 02	CMP	10. Houston, this is 10. Those GYRO torquing angles look okay to you?
00 05 16 06	CC	Stand by.
00 05 16 11	CC	Roger. They look okay to us, John.
00 05 16 15	CMP	Okay. You can't verify these stars with this LM on right now.

00 05 16 21	CC	Roger. Are these your P23 stars?
00 05 16 29	CMP	Negative. These are P52 stars.
00 05 16 32	CC	Okay.
00 05 16 42	CC	10, Houston. How do the stars look in this attitude?
00 05 16 54	CMP	Houston, in the telescope, I have difficulty telling the stars from the particles, right now.
00 05 17 03	CC	Roger.
00 05 17 05	CMP	There are some that look like stars but I have not been able to stop long enough to really see if they are or not.
00 05 17 11	CC	Okay. Through the sextant they are okay?
00 05 17 15	CMP	Affirmative.
00 05 17 16	CC	Okay.
00 05 17 22	LMP	The Earth is just starting now to take on a - little bit of the terminator is coming across and we are losing the roundness on the bottom side.
00 05 17 33	CC	Roger.
00 05 17 34	LMP	I should say on the eastern side.
00 05 17 36	CC	Roger. We are seeing that now - coming in.
00 05 17 40	LMP	I hope the colors are as good down there as they are up here.
00 05 17 43	CC	Absolutely fantastic. That is the only way I can describe it. It's really beautiful.
00 05 17 51	CDR	Houston, I have a question. Does that picture fill up your whole screen now? I want to correlate it with the monitor.
00 05 17 57	CC	Negative. We got about - quite a ways to go before we fill up our screen, Tom. It looks about the size of a basketball, sort of. It's pretty hard, you are zooming in now and we are just about to fill up the whole picture.
00 05 18 20	CDR	Okay. The monitor has a little different aspect ratio than the standard view.
00 05 18 24	CC	Right.

00 05 18 29	CC	Okay.
00 05 18 40	CC	Apollo 10, Houston. We are ready for the P27 update, if you can give us POO and ACCEPT.
00 05 18 47	CDR	Okay. We want to get busy here. We are going to kill the TV for awhile.
00 05 18 50	CC	Roger. Thanks a lot for a good show, 10. It was beautiful. Right about now, from top to bottom, we have the whole Earth, and we still have some on the side.
00 05 18 59	CDR	Roger. It looks beautiful from here.
00 05 19 28	LMP	We'll go off the air now, Charlie, for a while. But, doggone, I'm glad that came through to you. It's just phenomenal.
00 05 19 35	CC	Roger. We copy. Thanks a lot again for the show.
00 05 19 40	CDR	Guess we know somebody that's crying in his beer.
00 05 19 43	LMP	Yes - No, I think he is happy, too.
00 05 19 44	CC	I am kidding.
00 05 20 26	CC	Hello. Apollo 10, Houston. We'd like for you to put the S-band squelch switch OFF and when you're changing OMNI's to pause 30 seconds in each position so we can get a good lockup.
00 05 20 43	LMP	S-band squelch is OFF.
00 05 20 45	CC	Roger.
00 05 22 33	LMP	Houston, this is 10. How are you reading our OMNI?
00 05 22 36	CC	10, this is Houston. And we're reading you loud and clear. We had a little noise there a minute or so ago. It sounded like the S-band was getting weak.
00 05 22 49	LMP	Okay. We're in now and I believe we're on the OMNI D right now.
00 05 22 54	CC	Roger, OMNI Delta.
00 05 24 06	CC	Apollo 10, this is Houston. Over.
00 05 24 09	CDR	Go ahead, Houston. Apollo 10.

00 05 24 11	CC	Roger. We're through with the uplink. You can have the computer back and UP TELEMETRY to BLOCK and on your primary evaporator we'd like you to secure the H_2O flow. That is H_2O flow to OFF. We recommend not attempting to service the system until after LOI. Over.
00 05 24 30	LMP	Roger.
00 05 31 30	LMP	Hello, Houston. This is Apollo 10.
00 05 31 34	CC	Apollo 10, this is Houston. Over.
00 05 31 36	LMP	Okay. Just for information, I don't know how far away, it's far away, but we can tell that there is still a SLA panel out there just spinning around slowly and reflecting sunlight.
00 05 31 50	CC	Roger. Do you have any more information on apparent size, range, or anything like this on it?
00 05 31 55	LMP	No, it's the size of Venus but it's obviously a SLA panel because you can see it rotating slowly in reflected light.
00 05 32 05	CC	This is Houston. Roger. Out.
00 05 38 03	CDR	Hello, Houston, Apollo 10.
00 05 38 06	CC	Apollo 10, this is Houston. Over.
00 05 38 09	CDR	Okay. We're maneuvering AUTO MANEUVER to an attitude to start DELTA P23.
00 05 38 15	CC	This is Houston. Copy.
00 05 38 18	CDR	Looks like our RCS fuel budget's in real good shape.
00 05 38 24	CC	Roger. We concur on the RCS fuel budget.
00 05 49 30	CMP	Houston, this is Apollo 10. You all have already loaded that W-matrix for us?
00 05 49 37	CC	Stand by.
00 05 49 40	CC	Apollo 10, Houston. Stand by.
00 05 49 41	CMP	It had the right hook-in numbers in there, I just don't know if the option is right.
00 05 50 08	CC	Apollo 10, this is Houston. Roger. We loaded that in erasable and should be good. Over.

00 05 50 24	CC	Apollo 10, this is Houston. Did you copy?
00 05 50 29	LMP	Yes sir. Thank you, Bruce.
00 05 50 31	CC	Roger. Up.
00 05 56 08	CC	Apollo 10, this is Houston. Over.
00 05 56 11	CDR	Roger. Go ahead.
00 05 56 14	CC	Roger, 10. There will be no midcourse correction number 1. We're going to delay until the nominal time of midcourse correction number 2 to start with the midcourses, and instead of just passing you the TLI plus 11 pad at this time, we'd like to pass you the TLI plus 11, the plus 25, and the plus 35 hour pad. The last one will be valid under the assumption that we don't have a midcourse correction 2 and we'll update it after midcourse correction number 2. For your information, the DELTA-V of midcourse correction 2 at 26 hours and 33 minutes will be about 48.9 feet per second which is only about 2 feet per second larger than we would require for a midcourse correction number 1 at the nominal time. Over.
00 05 57 17	CDR	Roger. It sounds like a real great idea. It sounds good.
00 05 57 23	CC	Okay. If you're ready to copy, I've got three P37 pads to pass.
00 05 57 27	CDR	Okay. Stand by.
00 05 57 35	CDR	Looks like the S-IVB did a good job for us and also what we calculated on that separation burn. Put us right down the money.
00 05 57 42	CC	Yes, indeed.
00 05 57 48	LMP	Okay, Bruce. Go ahead.
00 05 57 51	CC	Roger. P37 block data for TLI plus 11 hours: 01330 5201, minus 165 04637. Over.
00 05 58 17	LMP	Go ahead.
00 05 58 19	CC	Roger. TLI plus 25 hours 02730 5795, minus 165 07028.
00 05 58 41	LMP	Okay.
00 05 58 42	CC	Roger. TLI plus 35 hour pad: 03730 5937, minus 165 09435. Readback. Over.

00 05 59 05	LMP	Okay. TLI plus 11 is 013 30 5201, minus 065 04637. Plus 25 is 02730 5795, and minus 165 7028. And 35 is 0373 05037, minus 165 0, minus-correction, 09435.
00 05 59 36	CC	Roger, Apollo 10. Readback is correct and for your information, although you are now in a free return trajectory, your entry angle is very steep, currently about 65 degrees. In the event of lost COMM, you could correct this with P37. Over.
00 05 59 55	LMP	Okay, understand. Thank you.
00 06 00 00	LMP	65 degrees?
00 06 00 02	CC	Yes, like nearly vertical.
00 06 04 56	CMP	Hello, Houston. This is Apollo 10. Over.
00 06 05 01	CC	Go ahead, Apollo 10.
00 06 05 03	CMP	Okay. Should I go ahead and turn my H_2 purge line heater off; I may have forgotten it. I've still got it on now.
00 06 05 10	CC	Stand by.
00 06 05 45	CC	Apollo 10, this is Houston. Roger. Go ahead and turn off your H_2 purge line heater, and under our revised schedule of pas ing pads up, we're not currently planning to send you any pads at GET of 12 hours. Over.
00 06 06 02	CMP	Okay. Fine.

END OF TAPE

00 06 22 39	CC	Apollo 10, this is Houston. Over.
00 06 22 42	CDR	Go ahead, Houston. 10.
00 06 22 44	CC	Roger. We'd like you to do an optics calibration at the end of this P23. Over.
00 06 22 51	CMP	Roger. What star do you suggest? I can't see any of them out here much.
00 06 22 57	CC	Roger. Stand by.
00 06 23 03	CMP	And that was the end of it, near as I can figure.
00 06 23 06	CC	Okay.
00 06 23 32	CC	Apollo 10, this is Houston. We're recommending that you use star 33, Antares, for the optics CAL. Over.
00 06 23 39	CMP	I thought you'd say that.
00 06 23 44	CC	We know you can see that one. And 10, is it your intention after you finish with this to return to TV? Over.
00 06 23 57	CDR	Yes. We'll give you another look as soon as we can.
00 06 23 58	CMP	Yes. Could you give us an attitude - sort of a PTC attitude that would enable us to - to see the Earth? I'd sure - We'd sure appreciate it.
00 06 24 09	CC	Roger. We're working on an attitude now. I don't believe that the TV and the PTC are compatible.
00 06 24 16	CDR	No. Right, Bob. Give us an attitude so we can make an AUTO maneuver to show on the TV after we finish here.
00 06 24 21	CC	Roger. We'll have that for you in a minute or so.
00 06 24 33	LMP	We can hand-hold the camera out the side hatch, and it's compatible with the PTC, don't you think?
00 06 24 43	CC	Stand by.
00 06 27 16	CC	Apollo 10, this is Houston. Over.
00 06 27 20	CDR	Go ahead.
00 06 27 21	CC	Roger. On the TV, we're working toward using the camera out the right-hand window. Although the

		hatch window would be compatible with PTC, we can't keep your high gain antenna lock all the time during PTC. And, did you power down the BMAG's? We show both of them OFF. Over.
00 06 27 43	CDR	Negative. I've got both BMAG's ON.
00 06 27 50	CC	Roger. We'll have to look at that. We're going to hand over from Goldstone to Hawaii at 6 hours 30 minutes GET. The TV will still be through Goldstone. And, have you had your VHF on since TLI? Over.
00 06 28 09	CMP	That's affirmative. We're supposed to turn it off at 7 hours.
00 06 28 13	CC	Roger. We haven't been copying it.
00 06 28 17	CMP	Yes. We've been in VHF Simplex since about Tananarive.
00 06 28 28	CC	Roger. Understand. Simplex Alfa.
00 06 28 31	CMP	That's affirmative.
00 06 33 51	CMP	Houston, this is Apollo 10. We could really do great star landmark on Baja California. Boy, it's wide open.
00 06 33 59	CC	Roger, 10.
00 06 34 06	CMP	Point Conception is clear as a bell.
00 06 34 30	CC	Apollo 10, this is Houston. Over.
00 06 34 33	CMP	Go. Over.
00 06 34 34	CC	Roger. For TV coverage, put the Earth in the right-hand window. We recommend you roll to 263 degrees and hold your present pitch and yaw. Over.
00 06 34 46	LMP	Roger.
00 06 34 48	CC	And in the previous conversation, I asked you about the BMAG status. We had erroneous TM indications down here. It looks like you're in good shape.
00 06 35 03	LMP	Roger.
00 06 35 23	CMP	Los Angeles looks clear today except for a little smog, I believe.

00 06 35 29	LMP	Houston, what was that roll angle again?
00 06 35 32	CC	Roger. Roll 263 degrees. Over.
00 06 35 35	LMP	263. Right.
00 06 41 14	CDR	Hello, Houston. Apollo 10.
00 06 41 19	CC	Apollo 10, this is Houston. Over.
00 06 41 23	CDR	Roger. Just wanted to check one thing on the SPS burn. I show 90 psi on my thrust chamber pressure indicator. I just wondered how that correlated with telemetry, and what do you think of the engine.
00 06 41 38	CC	Roger. Stand by. I'll check that out.
00 06 41 41	CDR	Roger.
00 06 42 13	CC	Apollo 10, this is Houston. It's going to take us about 5 minutes to dig out the data for correlation on the chamber pressure and the SPS status. When you called that down previously, right after the evasive maneuver, I didn't hear any groans down here. People seemed to think it was fairly good and - -
00 06 42 34	CDR	Yo.
00 06 42 36	CC	Go ahead.
00 06 42 37	CDR	Okay.
00 06 42 45	CDR	Houston, Apollo 10. We were looking for about 100 to 105 psi. We know it's a single bank, and would probably be a little less, but we're looking for close to - looking for 100, but we know that a gage error could be close to that.
00 06 42 57	CC	Roger. We'll get you a good correlation from the data. And, did you all successfully complete the optics calibration? Over.
00 06 43 06	CMP	Takes a long time to get to Antares, Bruce.
00 06 43 10	CC	Roger.
00 06 48 19	CC	Apollo 10, this is Houston. Over.
00 06 48 23	CMP	Go ahead. Over.

00 06 48 24	CC	Roger. Further analysis shows that that roll 263 degree angle we gave you is not compatible with the high gain antenna. You're going to have to put the camera out the left-hand window, and we're working on a new attitude for you for that. And, would you verify that your attitude set switch is in the GDC position? Over.
00 06 49 00	LMP	We could go to GDC if you want.
00 06 49 06	LMP	No, Bruce. It's in IMU.
00 06 49 08	CC	Roger. Would you go to GDC, please?
00 06 49 12	LMP	Okay.
00 06 53 48	CMP	Houston, this is Apollo 10. The best guess is that that trunnion calibration is 89995.
00 06 53 57	CC	10, Houston. Understand 89995 for trunnion.
00 06 54 05	CMP	Roger. Now what number do you want us to load into NOUN 87? Four balls 5?
00 06 54 16	CC	Stand by.
00 06 54 50	CC	10, this is Houston. There's no need to load a number in. Just hit PROCEED and go from where you are.
00 06 55 12	CC	10, Houston. You copy?
00 06 55 14	CMP	Roger. That's what we did, Bruce; and, of course, we're all done, so that will be good for the next time we do star-horizon.
00 06 55 22	CC	Roger. Out.
00 06 55 26	CMP	We loaded a zero in there when we first started this thing, which probably accounts for some of the update.
00 06 55 34	CC	Roger.
00 06 55 48	CDR	Houston, Apollo 10. Do you have a new attitude you want us to go to?
00 06 55 53	CC	Roger. Stand by.
00 06 55 56	CDR	Okay.

00 06 56 01	CC	Apollo 10, this is Houston. Your TV attitude is roll 023 degrees, pitch 181, and yaw 041. This gives you high gain antenna angles of pitch plus 28 degrees, yaw 307. Over.
00 06 56 30	CDR	Roger. Roll 02300, pitch is 181, yaw is 041; pitch is plus 28, and yaw is minus 07.
00 06 56 43	CC	Negative. Read back again, please.
00 06 56 46	CDR	Roger. Roll is 023 degrees, pitch 181, yaw 041. The high gain antenna is pitch plus 28, yaw 307.
00 06 57 01	CC	10, readback correct. Out.
00 06 58 06	CDR	Houston, Apollo 10. We're starting maneuver to that attitude.
00 06 58 10	CC	Roger, 10.
00 07 01 57	CC	Apollo 10, this is Houston. Over.
00 07 01 59	CDR	Go ahead, Houston.
00 07 02 01	CC	Roger. On telemetry, we showed 95 psi for SPS chamber pressure during the burn, and that is about right for one-bank operation. All the data that we've got down here looks nominal. The SPS is looking very good. Over.
00 07 02 19	CDR	Okay. Real fine. We showed 90. I knew there could be some instrument error; I just wanted to correlate.
00 07 02 25	CC	Roger. 95 is the numbers we've got.
00 07 02 28	CDR	Okay. Roger. We're going to the TV attitude now.
00 07 02 31	CC	Roger. And, 10, if you'd be interested, there's just a possibility of a waste-water dump during TV.
00 07 02 42	CDR	Okay. Great.
00 07 02 49	CDR	We could substitute another kind if you want to.
00 07 04 53	CC	Apollo 10, this is Houston. On your high gain for the TV pass, we suggest that you go from wide beamwidth to medium due to your increasing distance from the Earth. Over.
00 07 05 08	LMP	Okay. And I suddenly have it over here.

00 07 05 11	CC	Roger.
00 07 05 15	LMP	We'll give high gain a try now.
00 07 09 11	CDR	Hello, Houston. Apollo 10. We have high gain lock.
00 07 09 14	CC	Apollo 10, this is Houston. Roger. Out.
00 07 09 17	CDR	Okay. In fact, I can now see the Hawaiian Islands. The subsolar point is right over the Hawaiian Islands. You can see them from here.
00 07 09 27	CC	Roger. We haven't got you on TV yet.
00 07 09 30	CDR	Okay.
00 07 10 07	CDR	How does that look, Houston?
00 07 10 12	CC	10, Houston. It's not coming through, yet.
00 07 10 15	CDR	Okay. We got it here. It looks real good on the monitor.
00 07 11 01	CC	Okay, 10. We've got the Earth now in the black and white; it will be about a 10-second delay for color.
00 07 11 15	CC	You're filling up about 80 percent of the screen vertically.
00 07 11 31	CDR	Okay. Again, it's kind of an awkward position to hold it, but again, you can barely see Baja California and Mexico real well.
00 07 11 38	CC	Yes, indeed. If you could roll the camera right or left 90 degrees and then zoom a little more, we could fill up nearly the whole screen.
00 07 12 04	CMP	How's that, Bruce?
00 07 12 06	CC	There you go, 10. That's good.
00 07 12 15	CC	Right. And we've got the North Pole on the right of our screen down here, and the Atlantic Ocean was the terminator at the bottom of the screen.
00 07 12 33	CDR	Roger. That's correct. Looks like a beautiful sight. And either you have clouds over the Sierra Nevadas or they're snowcaps at this time. I can't tell which from here. You can still see the San Joaquin Valley.
00 07 12 47	CC	Roger.
00 07 13 03	CC	10, Houston. We're -

00 07 13 06	LMP	Houston, we're going to zoom in on it a little bit; and, also, we're deactivating the VHF at this time.
00 07 13 11	CC	Roger. Copy. Deactivating the VHF and zooming in. Okay. Hold it about there.
00 07 13 21	CMP	You can see that subsolar point very well in this picture.
00 07 13 25	CC	Yes, indeed. We can see the very bright spot on the surface of the water that is the subsolar point.
00 07 13 33	CMP	Does it look gold?
00 07 13 36	CC	Negative. It looks silvery, about the same color as the clouds here, only obviously brighter.
00 07 14 09	CDR	You can see nighttime coming over on the eastern part of the United States, too.
00 07 14 20	CC	Roger. And while you're doing this, we'd like to uplink you a PTC REFSMMAT. Go to POO and ACCEPT.
00 07 14 34	CMP	Roger. POO and ACCEPT, Bruce.
00 07 14 36	CC	Roger.
00 07 14 44	CC	10, this is Houston. Can you describe for us the area that the northern clouds seem to be obscuring?
00 07 14 51	CDR	Yes. They start up in the Northwest Territories of Canada and actually ring out to Alaska, and from there they go down just about to the Canadian-United States border and go on east. But the whole northwest Pacific, across northern Canada and over to Greenland is all obscured with just a solid white mass of clouds as you can see in your - near the North Pole.
00 07 15 16	CC	Roger. We can see the California coastline and Baja California down in the lower right-hand corner of our screen.
00 07 15 33	CDR	I've zoomed down a little bit. Now you can really notice those clouds that cover about the northern - looks about the northern third or quarter of the Earth there.
00 07 15 48	CC	Roger, 10. Up in the vicinity of Alaska, we see a swirl. Does that look like a storm system or low-pressure area to you?

00 07 15 55	CDR	Yes. You've got a swirl out there right on the - off the coast of Alaska.
00 07 16 16	CDR	How are the colors coming through down there, Bruce?
00 07 16 18	CC	Oh, the colors are coming through beautifully. The oceans are a beautiful blue-green. We can see the land masses in a brown to reddish-brown. The vicinity of the North Pole, the clouds and ice caps seems to be saturating a little; but on the whole, it's all coming through nicely.
00 07 16 38	CDR	Okay. Good. And you can - The area right east of the Sierra Nevadas, now - I guess around the Rockies - as nighttime starts to spread over the United States, is becoming more of a purplish-red. You can see Texas, Oklahoma, and that area; it's becoming more of a purplish-red, and the rest of it is still a bright red - a bright red to brown.
00 07 16 59	CC	That's right. We can see the terminator quite clearly moving up from lower right-hand corner of our screen.
00 07 17 05	CDR	Roger.
00 07 17 20	CDR	It's really amazing the cloudcover we have here and the swirls that you can see through.
00 07 17 27	CC	Apollo 10, this is Houston. We had a computer problem here that delayed our REFSMMAT uplink. We're ready to go now, though.
00 07 17 35	CDR	Okay. We are in POO.
00 07 17 38	LMP	POO and ACCEPT.
00 07 17 55	CC	Apollo 10, this is Houston. You all planning any interior shots this pass?
00 07 18 02	CDR	We can turn on the floodlights for just a minute here.
00 07 18 05	CC	Okay.
00 07 18 21	CDR	Okay. We are going to go around and shoot an interior now.
00 07 18 26	CC	Roger.
00 07 18 57	CDR	As soon as we get all arranged around here, we'll show you a quick inside shot.

00 07 19 00	CC	Houston. Roger. Out.
00 07 19 17	CC	Apollo 10, Houston. We've completed the uplink. You can go back to BLOCK.
00 07 19 35	CDR	Roger. We're in BLOCK.
00 07 19 37	CC	Roger. Okay, you're coming through on our black and white monitor now very well. We'll see the color in a minute.
00 07 19 46	CDR	Okay. John is just sitting upsidedown here in the LEB.
00 07 19 49	CC	Yes. We see Smiling John down there.
00 07 19 51	CDR	He's just turning around down here.
00 07 19 53	CMP	In living color.
00 07 20 10	CC	Tom, you can't believe - it's really great. The colors are fantastic.
00 07 20 18	CDR	Okay. We're flipping on John.
00 07 20 20	CC	We're looking into the LEB now, and looking at John Young on the right. You need to focus a little when you get in closer.
00 07 20 51	CDR	How does that look?
00 07 20 53	CC	It's beautiful. Coming through nicely.
00 07 20 56	CDR	Okay.
00 07 21 02	CC	Looks just like you, John.
00 07 21 09	CDR	Wait just a minute.
00 07 21 22	CC	Are you in the interior position on the camera?
00 07 21 37	CDR	Over here is Gene-o.
00 07 21 46	CC	Roger. We're looking at Gene right now. Understand you all haven't got your suits off yet.
00 07 21 54	CDR	John has his suit off and all stowed, and Gene and I don't.
00 07 21 57	CC	Okay. We got a good look at the DSKY a few seconds ago as you panned past it.
00 07 22 03	CDR	Okay.

00 07 22 47	CC	Okay. We see your pack on the screen right now. Can you zoom in on that a little?
00 07 23 01	CC	That's coming through loud and clear, now.
00 07 23 04	LMP	That's the best I can do. I'll try to focus it closer.
00 07 23 07	CC	Roger.
00 07 23 14	CC	That's the one on the front cover of your flight plan, I believe. We can read the writing on the flight plan.
00 07 23 18	LMP	That's affirmative.
00 07 23 32	CC	It's really coming through beautifully down here.
00 07 23 42	CC	Okay, Tom. We see your name plate; there's Stafford.
00 07 23 47	CDR	That's how you can tell who it is, huh?
00 07 23 48	CC	That's how we can tell who it is.
00 07 23 51	CDR	All right.
00 07 23 58	LMP	You can see the sun coming in over my shoulder, and then on Tom, its really tremendous.
00 07 24 05	CC	Yes, indeed. It certainly is bright there.
00 07 24 11	LMP	For information, all these are at f:22.
00 07 24 14	CC	Roger.
00 07 24 17	CDR	In fact, that's what we shot the earth at, was f:22.
00 07 24 20	CC	Roger.
00 07 24 24	CC	Looks like you got some suntan yesterday, Tom.
00 07 24 28	CDR	Right. I have to stay healthy there, Charlie.
00 07 24 39	CDR	I'll take it back over here at my left window and show you Earth again.
00 07 24 43	CC	Roger, Tom.
00 07 25 12	CC	Okay, 10. We're getting the Earth now. We've got the terminator to our left, and it looks like the South Pole on the top of the screen.

00 07 26 15	CC	Apollo 10, this is Houston. We're going to have a communications handover at about 7 hours 30 minutes GET or about 4 hours from now. And the black and white is really looking good. The color is showing a little bit of saturation on the white. Could you tell us the position of your ALC switch? Over.
00 07 26 37	CDR	Stand by.
00 07 26 39	LMP	In OUTSIDE.
00 07 26 40	CC	Roger.
00 07 26 41	CDR	It's in the OUTSIDE.
00 07 27 45	CC	10, this is Houston. We're showing the orientation reversed from what you had it a few minutes ago. Is it convenient for you to turn the world upsidedown or rightsideup here?
00 07 27 57	CDR	Yes. We can do it.
00 07 28 19	LMP	Houston, I was just wondering if this target that I'm tracking out here in the sextant might be the S-IVB, by any chance?
00 07 28 25	CC	I'm sorry. Can you give us some angles on it? Maybe we can do something with that?
00 07 28 30	LMP	Roger. You're looking at them.
00 07 28 34	CC	6517 and 80857.
00 07 28 45	CDR	How's that, Bruce? Are we rightsideup?
00 07 28 47	CC	It's looking good, Tom.
00 07 28 52	CDR	You can see the terminator really starting to move across the United States, now.
00 07 29 05	CC	Yes, indeed. Would you say the terminator is about over the Rocky Mountains now?
00 07 29 11	CDR	No. Now it's starting to get dark. You can see the shadows from the Rocky Mountains out on the plains in eastern Colorado and New Mexico, but it's darker more over toward Louisiana and the east part of Texas.
00 07 29 44	CC	Apollo 10, this is Houston. Over.
00 07 29 46	CDR	Go.

00 07 29 47	LMP	Go.
00 07 29 48	CC	Roger. On the perimeter of the Earth on our monitors, we're showing a few little bulges that look like they're in the scanning equipment - the horizontal scan on the monitor that stays fixed in position on the monitor as the image moves up and down. Do you have these on your monitor?
00 07 30 39	LMP	Hello, Houston. 10. We lost you during that switchover for a minute. I think we got you again.
00 07 30 44	CC	Roger. Reading you loud and clear now.
00 07 30 47	LMP	Okay. What was it you said about bulges?
00 07 30 50	CC	Okay. On our monitor down here, both black and white and color, we're showing a little bulge that looks like it's in the horizontal sweep system, and we were wondering whether this indentation in the surface of the Earth as it appears on your monitor was present, or whether it's in our equipment.
00 07 31 15	LMP	We see it on our monitor, too.
00 07 31 17	CC	Roger.
00 07 31 29	CDR	Okay, Houston. This is Apollo 10. We're going to have to terminate the TV now, and stand by to get some other gear squared away.
00 07 31 47	CC	10, this is Houston. Understand that. Would you be interested in showing a water dump? We're having some problems with the waste-water transducer and we're interested in dumping down to zero to verify the transducer. Over.
00 07 32 04	CDR	Stand by.
00 07 32 23	CDR	Houston. Are we GO for a waste-water dump?
00 07 32 26	CC	Stand by. We'd like to count you down on the dumping and monitor at our TM as well as on board. Over.
00 07 32 33	CMP	Roger. I thought you only wanted to do these things before a maneuver.
00 07 32 42	CC	Yes. Well, we've got midcourse correction number 1 which we cancelled. Stand by.

00 07 32 49	CMP	Okay.
00 07 33 07	CC	10, this is Houston. Roger. We were going to go ahead and do this at about 10 or 11 hours anyway to verify the transducer.
00 07 33 18	CDR	Okay.
00 07 33 30	CDR	How soon do you want to start the waste-water dump, Houston?
00 07 33 33	CC	It'll be ready in about 2 or 3 minutes, Tom.
00 07 33 37	CDR	Okay.
00 07 34 50	CDR	Houston, 10. Are you getting some bright spots on your clouds?
00 07 34 55	CC	10, this is Houston. Roger. We're getting what looks like glare coming off of a window or perhaps glare off the lens - sort of a thin mask over the view of the Earth.
00 07 35 08	CDR	Yes.
00 07 35 13	CDR	Okay. Well, I tell you what, we're going to to ahead and turn it off now.
00 07 35 17	CC	Roger. Out.
00 07 36 47	CC	Apollo 10, this is Houston.
00 07 36 49	CDR	Go ahead.
00 07 36 51	CC	Roger. Why don't you go ahead and run your P52 through the PTC REFSMMAT now, and we'll get the waste-water dump when you're through with that. We'll have a flight plan update for you here shortly, with an eye toward clearing the way for you to commence your sleep period or rest period early, if you so desire; and, if you'd be working on any questions you may have or problems for us that we can work while things are quiet here, we'll be standing by to receive them. Over.
00 07 37 29	CDR	Roger, Houston.
00 07 38 52	CMP	Okay, Houston. We're realigning right now to the PTC REFSMMAT, and we're going to GYRO TORQUE.
00 07 38 58	CC	This is Houston. Roger. Out.

END OF TAPE

00 07 53 21	LMP	Hello. Houston, 10.
00 07 53 25	CC	Apollo 10, this is Houston. Over.
00 07 53 28	LMP	Okay, I have been looking at about 39, maybe 39.2 volts on this battery for about the last 20 minutes. Do you want me to keep going to 39.5?
00 07 53 37	CC	That's on BATTERY A?
00 07 53 40	LMP	That's affirmative.
00 07 53 46	CC	That's affirmative. Keep charging until you get to 39.5.
00 07 53 52	LMP	All right.
00 07 54 07	CC	10, this is Houston. I've got the waste-water dump procedure here.
00 07 54 19	CDR	Stand by.
00 07 54 42	LMP	Okay. You can go ahead with the procedures.
00 07 54 46	CC	Roger. We would like you, when you start to dump - until the quantity indication stops decreasing, and then continue dumping for 5 minutes or until you get a GO from us to discontinue dumping. We would also like to get a Mark from you when you start the dump. Your onboard read-out will probably stop decreasing prior to a zero indication due to the instrumentation calibration. And we will be ready to start this whenever you are through with P52 and it is convenient with you.
00 07 55 28	LMP	Okay. Now you want us to do a waste-water dump until the quantity stops, and then for 5 minutes or until you give us the GO. Right?
00 07 55 38	CC	That's correct.
00 07 56 05	LMP	Okay. We are ready to go ahead with the waste-water dump at any time here.
00 07 56 12	CC	Roger. Proceed with the waste-water dump.
00 07 56 55	LMP	Houston.
00 07 56 56	LMP	MARK.
00 07 56 57	LMP	We are dumping. We started 15 seconds ago.

00 07 57 00	CC	10, Roger. We are showing a slow decrease on our TM data.
00 07 57 23	CC	Apollo 10, this is Houston. It's our intention to secure the TV lines down here unless you desire otherwise. Over.
00 07 57 32	CDR	Roger. That's good. We're all finished here for today. We got some other things we have to take care of.
00 07 57 36	CC	Roger. Out.
00 07 57 43	CDR	Houston, Apollo 10. Did most of the color look pretty good there on your monitor, Bruce?
00 07 57 47	CC	Oh, it really looked beautiful, Tom. It really did.
00 07 57 51	CDR	Okay. Good show. Thank you.
00 07 58 16	CMP	Snoopy has been awful quiet out there. How is he looking to you?
00 07 58 22	CC	Stand by.
00 07 58 51	CC	10, this is Houston. The only parameter we can see from the LM is the current through the translunar bus tie. We have no reason to believe that Snoopy is anything but nominal, though. Over.
00 07 59 06	CDR	Roger. Been monitoring the current here. It looks good.
00 07 59 14	CC	Roger. Likewise.
00 07 59 22	CMP	He's in his normal, relaxed configuration.
00 07 59 27	LMP	CM-LM, CM DELTA-V gage is now down to five-tenths, for some reason.
00 07 59 37	CC	Roger. Your LM-CM DELTA-V down to five-tenths of a psi.
00 07 59 45	CMP	Roger. I guess that goes hand-in-hand with what our cabin pressure is.
00 08 07 41	CDR	Houston, Apollo 10.
00 08 07 48	CC	10, this is Houston. Go ahead.
00 08 08 05	CC	10, this is Houston. Go ahead.

00 08 08 09	CDR	What does your waste water show?
00 08 08 14	CC	Okay, Tom. We are showing about 20.5 percent.
00 08 08 21	CDR	Okay.
00 08 08 44	CC	10, this is Houston.
00 08 08 47	CDR	Go ahead.
00 08 08 48	CC	Roger, Tom. Could you give us a hack on what your waste water is indicating up there, please?
00 08 08 52	CDR	Stand by.
00 08 09 07	CDR	Waste water is indicating now 20 percent.
00 08 09 10	CC	Roger. I understand; 20 percent.
00 08 09 14	CC	Okay. It's about what you said, right?
00 08 09 18	CDR	Now it shows about 18 percent.
00 08 09 21	CC	Roger, Tom. We are showing about 5 percent less than you, down here.
00 08 09 28	CDR	Okay.
00 08 09 35	CDR	Do you want to give us a hack when you want us to stop it?
00 08 09 37	CC	Roger. We'll give you a hack.
00 08 09 39	SC	All right.
00 08 11 31	CC	10, this is Houston. Could you give us a hack when your waste-water quantity stops decreasing?
00 08 11 37	CDR	Okay. I'll keep watching here, Joe. We're indicating about 5 percent.
00 08 11 46	CC	Roger. Okay. We're showing just about zero, and that's just about the same difference we've been running all along.
00 08 11 51	CDR	Roger.
00 08 13 08	CDR	Houston, Apollo 10. Appears that the waste-water quantity has stopped decreasing. It's showing about 4 to 5 percent, as close as I can read the gage.
00 08 13 16	CC	Okay, Tom. Thank you very much.

00 08 13 19	CDR	Do you want us to terminate the dump?
00 08 13 21	CC	No. We want to hold for about 5 minutes here, Tom. And we'll give you a call when to turn it off.
00 08 13 26	CDR	Roger.
00 08 16 56	CC	Apollo 10, this is Houston.
00 08 16 58	CDR	Go ahead.
00 08 16 59	CC	Okay, Tom. You can terminate that waste-water dump now if you want to.
00 08 17 04	CDR	Okay. Turned it off.
00 08 17 08	CC	Roger. And, 10, we've got an update for your erasable memory table here, a few new numbers for you. And we've also got a flight plan update for you when you're ready to copy.
00 08 17 21	CDR	Okay. We're kind of busy right now, Joe, taking suits off and scrambling around in here.
00 08 17 26	CC	That will be fine. Just give us a call when you've got some time. However, we would like to get into that PTC as soon as is convenient for you, Tom.
00 08 17 34	CDR	Okay. John's already realigned to the REFSMMAT.
00 08 17 37	CC	Okay.
00 08 28 21	CDR	Hello, Houston. Apollo 10.
00 08 28 26	CC	Roger, 10. Go ahead.
00 08 28 28	CDR	Okay, Joe. Go ahead with any updates you've got here.
00 08 28 31	CC	Okay. Fine, Tom. I guess the first thing is this erasable memory table. I've got three new numbers for you on that for 03, 4, and 5 in column B.
00 08 29 10	CDR	Okay. Go ahead.
00 08 29 12	CC	Okay. For row 3, 03, the number is 00012; row 04, the number is 13296; and for row 05, the number is 33266. And that's all for that one.

00 08 29 38	CDR	Roger. For row 3, 0012; row 04, 13256; row 05 is 33266.
00 08 29 51	CC	Roger. That's affirmative. On row 3 that was 3 balls 12.
00 08 29 56	CDR	Roger. Three balls 12.
00 08 30 00	CC	Okay, Tom. I got some flight plan update items here if you're ready to note them down now.
00 08 30 08	CDR	Go ahead.
00 08 30 09	CC	Okay. First off we're going to delete all the midcourse 1 burn data, of course. We'd like for you to set up the PTC as soon as it's convenient for you, and we'd like the FDAI scale select to 5015. We'd like to monitor that deadband a little closer. And we'd like for you to go ahead and perform on your schedule the battery vent, and if you could, we'd like to have the manifold pressure before and after the battery vent.
00 08 30 41	CDR	Roger. Just stand by.
00 08 30 44	CC	And, again on your schedule, fuel cell O_2 purge; and, also, canister A change; and, finally, terminate the cabin purge.
00 08 31 02	CDR	Roger. What time do you want the cabin purge terminated?
00 08 31 07	CC	Stand by. I'll find out. Okay, Tom. We'll go ahead with that cabin purge on your checklist the way it is on your schedule right now in your flight plan.
00 08 31 22	CDR	Okay.
00 08 31 33	CC	10, coming back at you on that cabin purge, you can do that whenever it is convenient for you - whenever it looks good - whenever you have the time, then.
00 08 31 43	CDR	Okay. One thing we've noticed here, Joe, is that the O_2 FLOW HIGH light keeps coming on, and we're running pretty high. I guess we can expect this until we close the vent, right?
00 08 31 54	CC	Roger. That's affirmative, Tom.

00 08 31 56	CDR	All right.
00 08 32 35	CC	10, this is Houston, again. Tom, we'd like for you to continue that battery charge, also, as long as we can. We'll terminate that just prior to your sleep period.
00 08 32 47	CDR	Okay.
00 08 32 53	CC	And, I guess two more items is all. We're going to delete the P37 pad: TLI plus 44 and TLI plus 53, and that will be updated postsleep, after your sleep. And you can perform your presleep checklist and start your rest period whenever you want to.
00 08 33 12	CDR	Okay. We still - It takes quite a while to get everything reconfigured around here.
00 08 33 18	CC	Roger. Understand.
00 08 33 23	CDR	Yes. We're just getting around to eating now, too.
00 08 33 26	CC	Okay. Very good.
00 08 33 35	CC	Have you had any problem servicing those bags out of that food preparation spout, Tom? Does the water keep coming out at all after you pull the bag off?
00 08 33 44	CDR	Haven't got to it yet.
00 08 33 45	CC	Okay, fine.
00 08 35 15	CDR	Houston, Apollo 10. Battery vent completed. Manifold read 1.55 on the 4A test meter before, and 0.60 afterwards.
00 08 35 24	CC	Okay. Thank you, Tom, very much.
00 08 39 01	CDR	Houston, Apollo 10.
00 08 39 05	CC	Roger, 10. Go ahead.
00 08 39 07	CDR	Yes. Can we hold on about another 30 or 40 minutes before going to the PTC REFSMMAT? We want to get this food squared away.
00 08 39 14	CC	Roger. Your convenience, Tom.
00 08 39 17	CDR	Okay.

00 08 51 59	LMP	Hello, Houston, 10. We're never going to get up to 39-1/2 volts. I'm still looking at about 39.2 in that BATTERY A charger, but I'll leave it on if you want me to.
00 08 52 12	CC	Okay, Gene. This is Houston. Roger. We'd like to leave it on just as long as we can, and try to get it on up there to 39.5 or so, and we'll take it off before you go to sleep, though; we'll remind you.
00 08 52 23	LMP	Okey-doke, Joe.

END OF TAPE

00 09 20 24	CC	Apollo 10, Houston.
00 09 20 50	CT	Hello, Apollo 10. This is Houston. Do you read?
00 09 21 41	CT	Goldstone, Houston COMM TECH, NET 1.
00 09 21 44	CT	This is Goldstone COMM TECH.
00 09 21 46	CT	How do you read?
00 09 21 47	CT	I hear you loud and clear.
00 09 21 48	CT	Roger. Stand by to monitor CAP COMM's transmissions.
00 09 22 11	CC	Apollo 10, Apollo 10, this is Houston.
00 09 22 16	LMP	Go ahead, Joe.
00 09 22 19	CC	Roger, Gene-o. We'd like to feed up a NAV update to you if you could give us POO and ACCEPT; we could do that while you're eating. You're still eating? Is that affirmative?
00 09 22 28	LMP	Yes. We're eating, and we're finishing getting out of suits and cleaning up. You've got POO and here comes ACCEPT.
00 09 22 36	CC	Okay. Thank you very, very much.
00 09 27 35	CT	Goldstone, Houston COMM TECH, conference.
00 09 27 45	CT	Goldstone, Houston COMM TECH, conference.
00 09 27 53	CT	Voice control, Houston COMM TECH, conference.
00 09 28 30	CT	Goldstone, Houston COMM TECH, conference. Voice check.
00 09 28 40	CT	Goldstone COMM TECH.
00 09 28 42	CT	Roger. Voice check. How do you read?
00 09 28 43	CT	I hear you loud and clear.
00 09 28 45	CT	Roger. Thank you.
00 09 30 31	LMP	George, give me a turn at the computer, and I'll go ahead and start my O_2 purge.
00 09 30 36	CC	That's affirmative, Gene-o. We are through with it. I didn't want to call and bother you; I thought you were still eating, then.

00 09 30 44	SC	No problem. I'll start on fuel cell 3 on the O_2.
00 09 30 50	CC	Okay, mighty fine. We'll monitor.
00 09 37 27	LMP	Hello, Houston, 10. The fuel cell purge is - O_2 purge is done.
00 09 37 33	CC	Okay. Thank you, Gene-o.
00 09 37 36	LMP	Okay, Joe. How are things going down there?
00 09 37 39	CC	Boy, things are just looking real well down here, Gene. You look like you're doing a real good job.
00 09 37 44	LMP	How'd the lift-off look to you?
00 09 37 46	CC	Beautiful.
00 09 37 49	LMP	Oh, I'll tell you, babe, that S-IC is a real ride. There's no question when you're light off and lift off the ground and then you go through MAX Q, and after that it's smooth as silk until you come near staging, and then all Hell breaks lose.
00 09 38 07	CC	Boy, you guys sure made one heck of a racket getting out of there.
00 09 38 13	LMP	Is that right? That's probably because of the east wind.
00 09 38 15	CC	Yes. That wind was drifting and blowing in the right direction. It really rattled the cages around there.
00 09 38 23	LMP	I would have liked to have seen the expression on Tracy's face on that one.
00 09 38 27	CC	I'll bet that was priceless.
00 09 39 47	CC	Apollo 10, Houston.
00 09 39 53	LMP	Go ahead.
00 09 39 54	CC	The T&D looked real good on the TV; it looked just like it does in the simulator.
00 09 40 08	LMP	I'm glad we were able to show it. It worked out pretty good from here. John did a real outstanding job of turning his vehicle around and plugging in.

00 09 40 18	CC	Yes. It looked real good. In fact, I thought there for a while you were just running a taped replay from the simulator.
00 09 40 33	LMP	That's all it is, babe, isn't it? They've just got a better visual for us.
00 09 40 37	CC	That's right. You've got a good model up there to work with.
00 09 57 40	CT	Goldstone, Houston COMM TECH. Voice check, conference.
00 09 57 49	CT	Goldstone. Read you loud and clear. How me?
00 09 57 51	CT	Roger. Loud and clear. Thank you.
00 10 10 13	CMP	Houston, Apollo 10. Over.
00 10 10 23	CC	Apollo 10, Houston here. Go ahead.
00 10 10 30	CMP	Okay. I think we're set up in the PTC REFSMMAT with a 20-degree deadband and around - about 275 degrees, or thereabout.
00 10 10 38	CC	Okay. Thank you, John.
00 10 10 41	CMP	Can you ask ... to take a look at that, and see if it got - got all in there. It's not always clear that some of these optical numbers get down in that thing.
00 10 10 46	CC	Yes, we'll check it out, John.
00 10 13 16	CC	Apollo 10, Houston.
00 10 13 26	CDR	Go ahead, Houston. Apollo 10.
00 10 13 29	CC	Okay, Tom. All that - All that REFSMMAT stuff looks good. What we'd like to do is take over the antennas. Next time you go to either Bravo or Delta, if you'd give us a call, we'll take over, then.
00 10 13 43	LMP	Okay. I'll give you a call.
00 10 13 44	CC	Fine. Thank you, John.
00 10 13 48	LMP	That was Gene.
00 10 17 16	CDR	Okay, Joe. I'll give you the OMNI's at this time. Stand by until I get you one.

00 10 17 20	CC	Roger. Thank you.
00 10 19 48	LMP	Hello, Houston. This is 10.
00 10 19 52	CC	10, go ahead.
00 10 19 55	LMP	Okay. I'm on OMNI on A, but that's not what you want. I can't get a good lockon on B, right now.
00 10 20 09	CC	Okay, that's all right, Gene. When you get to B, let us know.
00 10 20 16	LMP	Okay.
00 10 20 25	CC	Either - 10, this is Houston again - Either Bravo or Delta, let us know, and we'll try and work at it from this end.
00 10 20 33	LMP	All right.
00 10 20 36	CC	Have you changed out that canister in the ECS yet?
00 10 20 41	CDR	The canister has just been changed.
00 10 20 43	CC	Okay. Thank you, Tom.
00 10 20 51	LMP	Houston, I can fly on D right now; only one switch in D and the other in B, if you'd like.
00 10 20 59	CC	Okay. Be fine, Gene-o. Good idea.
00 10 23 35	LMP	Houston, 10. I'm in Delta right now.
00 10 23 42	CC	Roger. Understand, Gene-o. In Delta.
00 10 24 25	CDR	Hello, Houston. Apollo 10.
00 10 24 28	CC	Roger, 10. Go ahead.
00 10 24 29	CDR	Tell your friendly man on the left side there of you, Joe, that ... CDR has taken one aspirin, CMP two, LMP two, and the LMP also has one Lomotil only entered in the log.
00 10 24 45	CC	Roger. Got it. Thank you.
00 10 24 47	CDR	Roger.
00 10 26 26	CC	Apollo 10, Houston. When you get a chance, the man on the left would like to have PRT readouts for all three of you.

00 10 26 35	CDR	Have what?
00 10 26 38	CC	PRD, I'm sorry. Dosimeter readouts.
00 01 26 50	CDR	I think they're all stowed in the suits.
00 10 26 55	CC	Okay.
00 10 34 09	CDR	Houston, Apollo 10.
00 10 34 11	CC	Roger, 10. Go ahead.
00 10 34 21	CDR	Okay, Joe. One thing we'd like to do - We're thinking about going to sack out now - is to go ahead and shut the waste vent there, and so we'll - We won't have any O_2 HIGH FLOW light. And also, what time do you want to terminate the battery charge?
00 10 34 33	CC	Okay. Tom, this is Houston. You can go ahead and terminate that battery charge anytime now. We have a few other things we're going to pass up to you, and let me make sure I get them all lined up here, and I'll give them all to you at once.
00 10 34 54	CDR	Okay. Battery charge coming OFF, and the BATT relay bus circuit breaker coming IN.
00 10 35 00	CC	Okay. Roger. We copy.
00 10 35 03	CDR	Okay. That's it, Joe.
00 10 35 15	CDR	And we want to go ahead and shut that vent now so we won't - Our O_2 HIGH FLOW light ...
00 10 35 20	CC	Roger. That's a good idea, Tom.
00 10 38 52	CDR	Houston, Apollo 10.
00 10 38 56	CC	10, this is Houston. Go ahead.
00 10 38 58	CDR	Okay, Joe. You got an update to the flight plan or anything?
00 10 39 03	CC	We don't have one right now, Tom. We've got some other little things we're going to pass up to you here in just a minute.
00 10 39 10	CDR	Okay. We're all prepared to sack out shortly.
00 10 39 12	CC	Good. We'll have it to you here in about 2 or 3 minutes.

00 10 39 17	CDR	Okay.
00 10 40 30	CC	Okay, Apollo 10. This is Houston.
00 10 40 34	CDR	Okay, Joe. Ready to copy.
00 10 40 36	CC	Okay. We've got about six or seven things here, Tom. First off, we notice that RHC number 2 power switch is still ON, and we'd like to have that OFF.
00 10 40 50	CDR	Okay. You want that OFF?
00 10 40 52	CC	That's affirmative.
00 10 40 54	CDR	It's OFF.
00 10 40 57	CC	Okay. The second thing, we'd like to advise you if you want to get a hold of us during the night anytime, the best mode is DOWNVOICE BACKUP.
00 10 41 05	CDR	It's DOWNVOICE BACKUP.
00 10 41 07	CC	That's affirmative.
00 10 41 20	CC	Okay. The next item, Tom: we'd like to have the LM/CSM DELTA-P pressure, if you can get that for us, please.
00 10 41 29	CDR	Stand by - -
00 10 41 30	CC	Okay.
00 10 41 31	CDR	We'll have that for you in a little bit. Go ahead.
00 10 41 33	CC	Okay. We're going to be watching this waste water H_2O buildup during the night, and we'll keep monitoring that. And we'd like to take over OMNI switching, and to do that, we'd like to have you go to HIGH GAIN, the HIGH GAIN OMNI switch to OMNI, if you would.
00 10 41 51	CDR	Okay. HIGH GAIN OMNI coming up.
00 10 41 53	CC	Roger. And we'd like to confirm - all - Roger. And we'd like to confirm that the S-band antenna is in OMNI and Bravo.
00 10 42 05	CDR	You're in OMNI and Bravo.

00 10 42 08	CC	Okay. Very good. I guess the only other thing is we'd kind of like your comments on how that PTC is going, how it looks from up there.
00 10 42 17	CDR	Okay. I'll ... I got - - (sneeze). Looks very slow, Joe. Very slow.
00 10 42 25	CC	(Laughter) Okay.
00 10 42 28	CDR	We've got all the window shades up, and we're just slowly rotating here, and you can tell the spacecraft started to cool down right away.
00 10 42 35	CC	No kidding.
00 10 42 36	CDR	It feels real good in here.
00 10 42 38	CC	That's real interesting.
00 10 42 41	CDR	Pardon me?
00 10 42 42	CC	I said that's real interesting you could tell it cooling down right away.
00 10 42 45	CDR	Yes.
00 10 42 50	CDR	... is sacked - sacked out. He's underneath the right couch.
00 10 42 54	CC	Who is sacked out?
00 10 42 56	CDR	LMP.
00 10 42 59	CC	Roger. Okay. Are there any questions that have come up, up there, that you'd like for us to work on tonight while you are resting?
00 10 43 07	CDR	No. The only thing, we just - it was just because we probably haven't seen it in the simulator and forgot it in debriefings is that O_2 flow. Like I'm reading 0.8 on the O_2 flow right now. We've got that vent shut. Is that supposed to be the normal flow? Should be lots less than that, shouldn't it?
00 10 43 26	CC	Roger, Tom. EECOMM says it'll take that a little while to come down to a lower - lower value.
00 10 43 33	CDR	Okay.
00 10 43 47	CDR	Okay, Houston. As far as we can see up here, all the systems just look real fine. How about down there, Joe?

00 10 43 55	CC	Okay. It looks pretty good. Let me clarify on switch setting here with FLIGHT, Tom. Give me about half a minute here, and I'll be right with you.
00 10 44 01	CDR	All right.
00 10 44 04	LMP	Okay. The LM/CS - LM/CM DELTA-V gage is reading 0.6.
00 10 44 12	CC	I understand, John: 0.6. Thank you much.
00 10 47 57	CC	Okay. Apollo 10, this is Houston.
00 10 48 01	CDR	Go, Joe.
00 10 48 03	CC	Okay, Tom. I guess about one more thing, or two more things. One of them is: we just want to verify these antenna switches. I may have confused you some on that. On the S-band antenna, we want one in OMNI and one in Bravo. Is that - Is that where you had them?
00 10 48 16	CDR	Roger. That's where we have them.
00 10 48 17	CC	Okay. Very good.
00 10 48 18	CDR	One's in OMNI, and one's in Bravo.
00 10 48 19	CC	Roger that.
00 10 48 28	CC	Okay, Tom. The other thing I guess we need is the onboard readout for the battery. That's for the flight plan there. I'll get that out.
00 10 48 38	CDR	Roger. We'll go ahead and get them for you.
00 10 48 41	CC	Okay. Thank you.
00 10 48 43	CDR	I'll call them down.
00 10 50 14	CDR	Okay. Houston, Apollo 10. Ready to call in the readings to you.
00 10 50 19	CC	Roger. Ready to copy, Tom.
00 10 50 21	CDR	Okay, Joe. PYRO battery C is 36, pardon me, this is BATT C is 36.8. PYRO battery A is 37.1. PYRO BATT B is 37.1, RCS A is 93.0, B is 93.0, C is 99.0, and D is 94.0.

00 10 50 49	CC	Okay. Roger. We got all those, Tom. Thank you.
00 10 50 51	CDR	Roger. And it looks like we should be running well ahead of our RCS budget here.
00 10 50 57	CC	Okay. That's good.
00 10 51 07	CC	Okay - Okay, Tom. I guess the parting shot here - FLIGHT says all the consumables look real good. Everything's looking real good for tonight.
00 10 51 17	CDR	Okay.
00 10 51 22	CC	Okay. I guess that'll do it. Y'all have a good sleep, and we'll see you in the morning.
00 10 51 26	CDR	Yes, it sounds like shortly we'll soon be about 55 000 miles out, right?
00 10 51 30	CC	Yes. That's right.
00 10 51 35	CDR	Sounds like a long way from home, Joe.
00 10 51 38	CC	You guys covered a lot of ground today.
00 10 51 39	CDR	Yes.
00 10 51 40	LMP	I'll tell you, when that Saturn starts moving out, you can tell it's going to cover a lot of ground.
00 10 51 46	CC	(Laughter)
00 10 51 47	CDR	I would sure like to have seen that from the ground, too, Joe. I bet that was when that big bear lifted off.
00 10 51 50	CC	Boy, that was a beautiful sight.
00 10 51 55	CDR	Could you see us all the way through staging?
00 10 51 57	CC	Yes, it - there was a little cloud deck. You disappeared for a while, then you broke out into the open again, and there were - there were two decks actually that you went through, you could - You could track it a long, long way out.
00 10 52 10	CDR	Roger.
00 10 52 18	CC	That wind was blowing just about the direction you were talking about. It really rattled the cages over there at the VAB.

00 10 52 23	CDR	(Laughter) I could imagine.
00 10 52 27	CMP	I tell you, it rattled a few cages during TLI, too, around here.
00 10 52 30	CDR	That TLI frequency was a little bit too much. We thought sure it was coming unglued. It wasn't anything bad or anything, but just those oscillations, not POGO's, but just vibrations.
00 10 52 41	CC	I'll be darned.
00 10 52 44	LMP	Very strange. Very interesting.
00 10 52 46	CMP	Not quite as bad as the 104 when you throttle chop out in Mach 2 and ...
00 10 53 29	CC	10, this is Houston again.
00 10 53 31	CDR	Go ahead.
00 10 53 32	CC	Tom, did that water taste - Could you taste any chlorine at all in that water when you first started using it?
00 10 53 38	CDR	You bet your sweet bippy we could.
00 10 53 41	CC	Has it - Has it gotten any better?
00 10 53 43	CDR	Yes, it's gotten lots better, but there was chlorine in it to start with.
00 10 53 47	CC	Okay.
00 10 53 50	LMP	That is a good theory, Joe, it just don't work. But it's mighty good, though, it tastes like mighty good water right now.

END OF TAPE

00 10 54 16	CDR	Hello, Houston. 10, here.
00 10 54 18	CC	Go ahead, Tom.
00 10 54 20	CDR	Hey, since we got off on time and when they serviced that water, do we have to chlorinate that stuff tonight?
00 10 54 28	CC	Stand by. The man on the left is talking.
00 10 55 08	CMP	Hey, Joe. You're right about that probe; it worked.
00 10 55 12	CC	Well, it's got to work one more time, John.
00 10 55 15	CMP	I know it.
00 10 55 16	CC	Then - Then I'll be around to collect.
00 10 55 19	CMP	Right.
00 10 55 20	CC	Hey, on this chlorination, it looks like - It looks as per flight plan we'd probably better go ahead and chlorinate. If you - -
00 10 55 27	CDR	- - just been chlorinated.
00 10 55 29	CC	Yes, I'm afraid it has. And - and it will - it will cycle. If you chlorinate tonight, you'll get rid of a lot of that taste by the time you use it in the morning. And I'd advise you drinking all you want before you chlorinate, though, and then - and then give it the shot and by morning it won't be quite so bad.
00 10 55 44	CDR	Okay. But I thought they said if we got off on time we could probably go 2 days without it. Is the Cape talking to Houston these days?
00 10 55 55	CC	I don't know; I'll find out.
00 10 55 58	CDR	Okay.
00 11 04 39	CDR	Hello, Houston, Apollo 10.
00 11 04 42	CC	Roger, Tom. Go ahead.
00 11 04 44	CDR	Roger. What's the - the latest consensus on that chlorination?
00 11 04 48	CC	Oh, I'm sorry. I thought - thought we'd passed that on. I'm afraid we got to do that, Tom. As per agreement with the doctors.

00 11 04 58	CDR	All right.
00 11 05 02	CDR	Hey, how about checking - -
00 11 05 03	CC	Hey - -
00 11 05 06	CC	Go ahead.
00 11 05 08	CDR	Yes, there was supposed to be some agreement that if the water was serviced right and we lifted off on time, we wouldn't have to do it for a day or two.
00 11 05 16	CC	Yes, I know. We've already - already wrestled that one out, and we lost on that.
00 11 05 24	CDR	Okay.
00 11 15 06	CDR	Hello. Houston, Apollo 10.
00 11 15 08	CC	Roger. Go ahead, Tom.
00 11 15 10	CDR	Okay. We've put in the chlorine, just shot the buffer to it. Now do you want the potable tank inlet valve OPEN? It's been isolated all this time; do you want it OPEN?
00 11 15 20	CC	Negative. We want to leave it CLOSED, Tom, until tomorrow.
00 11 15 26	CDR	So you want to have some really good chlorinated water, then, right?
00 11 15 29	CC	Boy, I'm afraid so. We've been wrestling that one out, but it looks like we've got to put it in again.
00 11 15 34	CDR	All right.
00 11 15 35	CC	I know what you mean.
00 11 15 38	CMP	Okay. But you - you just want to leave it CLOSED, right?
00 11 15 41	CC	That's right, John.
00 11 15 43	CMP	Okay.
00 11 22 14	CDR	Hello, Houston, Apollo 10.
00 11 22 17	CC	Roger, 10. Go ahead.
00 11 22 19	CDR	Okay. I'm about to finish that ... thing, and we're going to sack out. And I've got the duty

for the night and the sleeping bag up in the left seat so if anything comes up, give me a call.

00 11 22 29 CC Okay, Tom. We sure will. Have a good night's sleep. We got a lot of eyes looking down here.

00 11 22 35 CDR Okay.

00 11 22 42 CC I guess in - in discussing this chlorination thing, Tom, if we get through this first one, why that's the worst one; we get on the schedule then, the 24-hour schedule where you - you give it the chlorine in the evening, and it has time to dissipate by morning, by the time you wake up.

00 11 22 58 CDR Yes, the only question I want to know is we had a brand new load of water; it was completely isolated and plain when they put it on board the spacecraft, then why did we have to give it another shot?

00 11 23 08 CC Well, it - It turns out that I guess they feel that the chlorine becomes pretty inactive as far as killing bacteria in about a 24-hour period, and when we chlorinated this morning, if we were to wait to get on this schedule where you chlorinate in the evening, which is really the best time, because that you get - you drink your water and then you chlorinate and it has time to dissipate during the sleep cycle. Then by morning it isn't quite so bad, and in order to get on that cycle, we had to do it tonight.

00 11 23 37 CDR Okay.

END OF TAPE

00 12 49 57	CMP	Houston, Apollo 10. Over.
00 12 50 03	CC	Roger. Go ahead, 10.
00 12 50 07	CMP	I'm wondering if you can tell me anything about the way this PTC-REFS PTC G&N system is operating? We seem to be noticing quite a few thruster firings from here, and we are wondering what kind of on-time propellant consumption we're going to have out of this sort of thing.
00 12 50 32	CC	Yes. Okay. Let me - Let me take a check and see if that's normal, to be firing that often.
00 12 50 41	LMP	Hey, it seems to be kicking when we get on the edge of the deadband, just about almost all the time.
00 12 50 56	CC	Roger. Okay.
00 12 54 28	CC	Apollo 10, Houston.
00 12 54 31	CMP	Go ahead, Joe.
00 12 54 33	CC	Okay. For no longer than we've been monitoring it, it looks like the fuel consumption in this mode isn't too bad at all. In fact, it's just about what they figured you'd be using. We would suggest that you go back two and zero out your attitude. That'll give us some help there. And, unless the thruster firing is bothering, as far as the sleep concerns, we'd suggest that you stay in the 20-degree deadband. We could go to 30-degree deadband, but we'd rather stay in 20, unless it's bothering you.
00 12 55 44	CMP	All right. I don't reckon I understood exactly what you're saying. You're saying that actually it's going to take less gas to go back and start over again, than it would to keep on going like this? Or not?
00 12 56 00	CC	Well, I think the idea of zeroing out your attitude, Gene-o, is that it'll be - You won't get some firing for a while. Is - is the firing bothering - bothersome as far as the sleep goes? Or are you just concerned about fuel consumption alone?
00 12 56 16	CMP	Well, every time the engine fires, it wakes you up.

00 12 56 20	CC	Yes, I can understand.
00 12 56 26	CC	I don't know that 30 degrees would be that much better. You're still going to get some firing. It'd probably be a little bit longer between firing.
00 12 56 38	CDR	Yes, Joe. The thing that's kind of amazing is what was pointed out on 9. It seems like a real flexible structure when it fires in PULSE. The whole thing shakes and it goes through about three cycles when it fires. I mean the - the structure vibrates for about three cycles.
00 12 56 53	CMP	Also, the roll is up now to three-tenths of a degree per second, just about, and there is some yaw in there, and some pitch.
00 12 57 42	CC	10, this is Houston.
00 12 57 43	CDR	Houston, Apollo 10.
00 12 57 44	CC	Roger. Go ahead, Tom.
00 12 57 45	CDR	Go ahead.
00 12 57 47	CC	Okay, Tom. Look - looking at it, Tom, we don't really see any way to get away from it. We could go to 30-degree deadband but you'd still get the thruster firings. That means they'd still be waking you up. As far as fuel consumption is concerned, it doesn't look, from the data that we've got monitoring it no longer than we have, it looks like it's just about what they figured. The fuel consumption isn't going to be too - too big a factor, but I can understand the thruster firings keeping waking you up, and I'm not real sure how to get away from it. I guess we're going to have to scratch our heads a while on that. The only advantage to zeroing out these attitudes is that it'll be a while before it fires again, but it eventually will start firing.
00 12 58 37	CDR	Yes, I was wondering how much it was going to take us in fuel to go zero them out and get all set up again?
00 12 58 46	CC	Roger. I - I think fuel-wise you're just as well off to leave it like it is. We just thought that we might be able to get away with for - with having - giving you a little time before they started firing again to get back to sleep but -

00 12 59 03	CDR	Yes. ...
00 12 59 13	CDR	We're just going to leave it like it is for a while, okay?
00 12 59 16	CC	Okay. Well, I don't think the fuel that you'd use getting back to the - zeroing out the attitudes, Tom, would be anything to worry about. It will give you a little time to get back to sleep before it starts firing again. So I guess, that's kind of your option depending upon how bothersome it is. If you want to give that a try, why you could.
00 12 59 36	CDR	Well, why don't we give it a try and see how she goes?
00 12 59 38	CC	Okay.
00 13 10 29	CDR	Okay. Houston, Apollo 10. We have reinitialized and we're going back to sleep now.
00 13 10 33	CC	Okay, Tom. We'll keep trying to work out a way to keep those things from firing so often. That's - that kind of caught me by surprise, but I - I can see where that would wake you up, all right. Does that - does it give you pretty much of a jar, or is it noise that wakes you up?
00 13 10 48	CDR	Well, there's a dull thud, Joe, and you - and the whole stack vibrates and it damps in about three cycles. It's kind of a boom - then you can hear it go rum-rum-rum, you know, for about three cycles.
00 13 10 58	CC	Yes - -
00 13 10 59	CDR	- - real mild thud -
00 13 11 12	CC	Okay. We copy, Tom, and we'll keep working that problem trying to figure something out here, a little more satisfactory.
00 13 11 20	CDR	Yes, I think it's the vibration more than the noise. It's not but just a real light thud when the jet fires but the whole stack goes to a real bending vibration for about three cycles. Again, it's a real minor cycle but you can feel it, and that's what keeps you awake.
00 13 11 41	CC	Yes. Okay. I understand. I guess the only only alternate that we've got right now is that

we could go to that wider deadband, but you'd still get the firings; they'd just be little bigger intervals is all.

00 13 11 50	CDR	Yes. We'll stay here and see how this works out. I got all the lights turned back down and I'm going back to sleep.
00 13 11 55	CC	Okay. Sorry about that. See you later.
00 13 12 00	CDR	All right.

END OF TAPE

REST PERIOD - NO COMMUNICATIONS

REST PERIOD - NO COMMUNICATIONS

REST PERIOD - NO COMMUNICATIONS

REST PERIOD - NO COMMUNICATIONS

Sleep & health report

APOLLO 10 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

00 21 31 39	CMP	Houston, Apollo 10. Over.
00 21 31 44	CC	Good morning, Apollo 10. You fellows slept in a little this morning.
00 21 31 51	CMP	Yes, it's really great up here.
00 21 31 54	CC	Yes, we can tell you like it.
00 21 31 56	CDR	Yes, we all ...
00 21 31 59	CC	How did you sleep last night?
00 21 32 04	CMP	Oh, we slept fine. Hey, we've got our morning weather report for you; you may be interested in it.
00 21 32 09	CC	Roger. Go ahead.
00 21 33 10	CMP	Roger. It's a European/African weather report. Portugal - Portugal is clear. Spain - Western Spain is clear, eastern Spain along the Med is under clouds. Italy - Italy is clear south of about Rome. Sicily - Sardinia and Corsica are under partly cloudy to cloudy skies. Greece is clear. Crete's clear. Turkey is under very scattered clouds. Bulgaria is clear with partially scattered clouds, but the rest of Europe is mostly under the clouds. There's a large part of the Soviet Union north of the Black Sea that's in the clear, but the rest of it appears to be under clouds, too. Arabia appears to be clear. Israel, clear. Jordan, clear. Libya and Egypt are clear except for a cloud strip along the center of the country in Saudi Arabia - that runs from Saudi Arabia across the Sinai Peninsula and through Egypt. Africa is clear in the desert to the north and cloudy farther south. It's clear pretty much to the south except for the Cape where South Africa appears to be under the clouds. That's your morning weather report from about 100 000 miles.
00 21 33 34	CC	Roger. Thank you, Apollo 10; the only thing missing was the music.
00 21 33 40	CC	It looks like you're starting out the day real good there; we've go - go ahead.
00 21 33 47	CMP	That's a special effect we're not carrying today.
00 21 33 54	CC	Looks like old Charlie Brown is motoring right along in good shape, there; your consumables are

		ahead on everything, and Snoopy is hanging in there real well, too. Your midcourse correction will be on time and will be only 49 feet per second, and we have a flight plan update when you are ready to copy.
00 21 34 17	CDR	Okay; stand by. We want to get a couple of pictures of Europe; we're in good position right now.
00 21 37 29	CDR	Houston, Apollo 10.
00 21 37 32	CC	Go ahead, Tom. Good morning.
00 21 37 36	CC	How do you read me, Tom?
00 21 37 39	CDR	Roger. Loud and clear. Like I told Jack earlier, we had a real great night's sleep, all three of us feel tremendous this morning, and it looks like we're running ahead on all consumables.
00 21 37 50	CC	Roger. Good show. The only thing we really have for you when you can get squared away is a flight plan update - and we need some RCS totals I think on the consumables - about the only thing.
00 21 38 03	CDR	Okay. You ready to copy?
00 21 38 05	CC	Roger. Go.
00 21 38 06	CDR	I'll give you - okay. On Ring A, 91 percent; Ring B, 94 percent. Ring C, 96 percent; Ring D, 92 percent.
00 21 38 28	CC	Roger. We copy all that.
00 21 39 56	LMP	Morning, Charlie. We're ready to go ahead and copy your update.
00 21 40 00	CC	Roger. On the flight plan, Gene?
00 21 40 03	LMP	Yes, that's affirmative.
00 21 40 06	CC	Okay. At crew convenience, we'd like you to get your personal dosimeters and put them on your person. It's no big deal on this, so if you don't feel like unstowing the suits, it looks like they are still on the suits, so it's your convenience on that. And at no later than 23 plus 30, we need a waste-water dump. And for John's P23 - Go ahead.
00 21 40 46	CDR	Okay. I was going to say John wants to get a P52 in here before the midcourse, before that dump.

00 21 40 52	CC	Roger. That's why we scheduled it no later than 23 30, Tom. We thought that would be a convenient time to get it in, and then schedule the P52 about an hour later.
00 21 41 07	LMP	Okay, Charlie. Go ahead.
00 21 41 10	CC	Okay, and at 25 plus 10 the P23 sightings - again, we forgot that Snoop was out there, so we have an update for your attitude and for the set - set stars - the stars for set 3 and 4. The attitude - We'd like a roll of 078, pitch of 010, and a yaw of 000. Okay, for sets 3 and 4 -
00 21 41 44	LMP	Okay. What about the stars?
00 21 41 49	CC	Okay. I'm giving you those now. Sets 3 and 4 for substitute Nunki, N - U - N - K - I, 37 and far side.
00 21 42 03	LMP	Charlie, you cut off. Start the stars again, would you? All I got was roll, pitch, and yaw.
00 21 42 07	CC	Okay. For sets 3 and 4, Nunki instead of Antares, and we want the far side on Nunki.
00 21 42 31	LMP	Okay. Is 1, 2, and 5 the same?
00 21 42 34	CC	That's affirmative.
00 21 42 38	LMP	Okay. I got 20 - let's see - for P23, roll 078, pitch 010, and yaw all zeros, and sets 3 and 4 changed to Nunki, far star.
00 21 42 50	CC	That's affirmative. And at 27 hours after the midcourse, we'll have an update for you on your P37 pads for 35 and 44 and 53 hours.
00 21 43 05	LMP	All right.
00 21 43 07	CC	And that's all we got this morning on the flight plan.
00 21 43 18	LMP	Okey doke. I think I got it all, Charlie. We'll get that waste-water dump in prior to 23 30 and we'll make a valiant effort on the dosimeters.
00 21 43 28	CC	Roger. We copy. And as soon as you settle down to breakfast, we'll, if you like, we got a news summary here we'll be glad to read up to you.
00 21 43 43	LMP	Okay. Guess you can go ahead and read it right now, if you'd like.

00 21 43 46	CC	Roger. Stand by. Let me get this squared away here with FLIGHT, and we'll be with you in a minute.
00 21 43 54	LMP	Okay. We'll just wait for you to continue on here. Go ahead with the planned O_2 purge at 22 hours, is that correct?
00 21 44 03	CC	Stand by. That's correct, Gene.
00 21 44 07	LMP	Okay.

END OF TAPE

00 21 44 33	CC	Hello, Apollo 10. Houston. We'd like you to give us a little idea of how the thruster activity disturbed you during the night and whether we could go ahead and continue on tonight with the same plan.
00 21 44 48	CDR	Yes, Charlie. Roger. What happens is, if you've ever flown a B-47 or even a C-133, it seems like a loose dynamic structure after the thruster fires. The noise doesn't bother you at all; it's just the dull thud, but then you have an oscillation to three or four cycles after, with just a little minor oscillation that damps out.
00 21 45 09	CC	Right.
00 21 45 10	CDR	There's no problem; just keep on going; we slept good.
00 21 45 11	CC	Okay. Fine, Tom.
00 21 45 12	LMP	Charlie, it gives me the feeling like just a little minor pulse - waves that big engine bell back there around just enough to vibrate until it damps out.
00 21 45 24	CC	Okay. Fine. Well, we will continue on, then. The surgeon, as I came on this morning, said that it looks like you all were sleeping like a log. How was your position on the couch there, Gene? Real comfortable?
00 21 45 40	LMP	Yes. Pretty good.
00 21 45 41	CC	Okay. Fine. Well, we will continue on, then.
00 21 45 44	LMP	Works more -
00 21 45 45	CC	Say again.
00 21 45 46	CDR	Yes. Okay. For your friendly man on the left, my dosimeter reads 26021.
00 21 45 53	CC	Roger.
00 21 45 57	LMP	Okay, Charlie. Mine is 15030.
00 21 46 05	CC	Copy.
00 21 46 09	CMP	And mine is 05027.
00 21 46 15	CC	Roger, John. 05027.

00 21 46 21	CMP	I believe that's right, Charlie.
00 21 46 23	CC	Right.
00 21 46 24	CMP	These are very small numbers.
00 21 46 27	CC	Roger. It's pretty early.
00 21 51 47	CC	Hello, Apollo 10. Houston. We're ready with a summary of news and sports as compiled by your friendly third floor astonisher, Jack Riley, and his office. Are you ready?
00 21 52 02	LMP	Man, we are just about ready for anything.
00 21 52 04	CC	Roger. This is a news team of McCandless and Duke, then. Newspapers, television, and radio are concentrating on the flight of Apollo 10. The Houston Post banner read "Apollo 10 Out of This World," and for the first time in memory, the entire front page of the Post is all space news. The newswires are commenting on the quality and quantity of the TV transmissions yesterday.
00 21 52 30	CC	Senator Barry Goldwater paid surprise visits to the Stafford and Young homes yesterday. He said he came to Houston because he had been to the Cape before and each time the launch had been postponed. Other than the Apollo 10 mission, the world has been relatively quiet.
00 21 52 45	CC	In other news highlights, Leonard Bernstein left his position as conductor of the New York Philharmonic Orchestra.
00 21 52 52	CC	Governor Rockefeller is in Latin America this week on a presidential assignment.
00 21 52 56	CC	And a Siamese cat in Vancouver, Washington, is mothering three baby skunks who are orphans.
00 21 53 04	CC	A Chicago art collector paid $12 000 for a 120-year-old paperweight.
00 21 53 11	CC	And U.S. Air Force planes are seeding clouds in the Philippine Islands to combat drought conditions.
00 21 53 17	CC	In the sports news, the Astros beat the Cubs for the second time in 2 days. The Sunday afternoon battle at the Astrodome ended with the Astros on top 6 to 5 before a crowd of over 13 000. In

other games, it was Los Angeles Dodgers 6, Pittsburg 5; St. Louis 6, San Diego 5; Atlanta 8, Montreal 3; Philadelphia 9, San Francisco 8.

00 21 53 46 CC And in the American League, it was Baltimore 5, K.C. zero; Detroit 8, Minnesota 2; Washington won two games with Chicago, both by 3 to 2; New York beat California twice, 3 to 1 and 1 to 0; and Seattle beat Boston 9 to 6.

00 21 54 07 CC The trials at the Indianapolis speedway were washed out yesterday.

00 21 54 12 CC And Majestic Prince, who won the Preakness on Saturday, may not run in the Belmont Stakes, June 7. The horse's owner reports the horse is tired and has lost weight. Too bad. Majestic Prince is the first horse since 1948 that has a chance to win the Triple Crown.

00 21 54 32 CC And here is your horoscope readings for today, Apollo 10. Tom Stafford: You should concentrate on finishing things that you have already started. Today's pace will be moderate. Use this time to take inventory.

00 21 54 46 CC And, Gene-o, your horoscope reads: Give careful thought to your working and driving habits. Do something nice for your friends.

00 21 54 54 CC John Young: You will have a slow day today. This will give you time to concentrate on the work ahead. You will enjoy your surroundings and companions.

00 21 55 04 CC And the weather in Houston is beautiful this morning. The sky is clear and temperatures will rise to the low to mid-80's. Last night a clear, thin crescent of the moon was visible. And this finishes the first annual McCandless-Duke radiocast. Over.

00 21 55 22 CC Roger. Good morning, Charlie.

00 21 55 23 CC Good morning, Bruce.

00 21 55 26 CDR You guys are too much down there. That's fantastic.

00 21 55 29 CMP Boy, you outdo me. I quit. You can give the weather next time, too.

00 21 55 34 CC Roger.

00 21 55 36	CDR	That was tremendous.
00 21 55 37	LMP	You're going to put someone out of business down there if you don't watch out.
00 21 55 42	CC	Maybe you guys.
00 21 55 45	LMP	Hey, we'll keep panning the "peacock" up here and you guys keep talking.
00 21 55 48	CC	Okay. Fine.
00 21 56 18	CDR	Hello, Houston. Apollo 10.
00 21 56 20	CC	Go, 10.
00 21 56 23	CDR	Okay. We just want to get this on the record. When we woke up this morning and took a drink out of the water gun, everything was just great and everybody had a good drink; and then I took a drink, and it is absolutely horrible.
00 21 56 35	CC	Roger. That's kind of what we figured.
00 21 56 36	CDR	Yes. It started out earlier this morning. It was good, and then I got a horrible slug of chlorine, and my mouth is still burning. No problem. And so did John.
00 21 56 47	CC	Okay. I guess you were getting a good - -
00 21 56 49	CDR	I just wanted to get it on the record.
00 21 56 50	CC	Roger, Tom. I guess you were getting it out - the good stuff was in the lines there out of the tank, perhaps, or something. And once you got the tank water it was bad. We kind of figured.
00 21 57 01	CDR	Yes.
00 21 59 17	CC	Hello, 10. Houston.
00 21 59 23	LMP	Go ahead, Charlie.
00 21 59 24	CC	Hey. Roger, Gene. Last night when you chlorinated the water did you - We'd like to know if you left the potable tank inlet valve open for 10 minutes after you chlorinated.
00 21 59 38	LMP	We discussed that with the ground and they said no.

00 21 59 45	CC	Okay. I don't quite understand the problem from this end. We'll square it away and then get back with you. On this waste-water dump, we'd like you to give us the word exactly when you plan to do it. We have telescopes just about all over the world going to photograph this thing, and we'd like to give them as much notice as possible. Over.
00 22 00 17	LMP	Okay.
00 22 00 19	CC	Roger.
00 22 08 40	CC	Apollo 10, Houston. Before you use any of your water to mix any of your food, would you hold off? We're trying to get this resolved. Over.
00 22 08 52	CDR	Okay, Charlie. We thought the chlorine would taste better in fruit juice than it would by itself. We've already pressed on.
00 22 08 59	CC	Okay. It's probably going to be pretty horrible. Stand by one. We will have some word for you.
00 22 09 38	CC	Apollo 10, Houston.
00 22 09 43	CDR	Go ahead.
00 22 09 44	CC	Roger. Tom, last night when you chlorinated and we told you not to open the potable tank inlet, it turned out we didn't get any of that chlorine mixed and now that stuff is in the lines, and when you draw off from the gun it's not mixed at all with any of the water. So we recommend that you open the potable tank inlet now, and take a bag and draw off about a bag full of water and then get rid of it. Over.
00 22 10 19	CDR	Roger.
00 22 10 31	CMP	Charlie, I'm going to go ahead and give you an O_2 purge now.
00 22 10 35	CC	Roger.
00 22 10 41	LMP	Okay, Charlie. That's why I asked the question last night.
00 22 10 44	CMP	Purging fuel cell 3.
00 22 10 46	CC	Right. Well, I didn't get a briefing on it, John, but it looks like we just gave you the wrong word. Over.

00 22 10 55	CDR	Yes. That's why both of us were asking quite a few questions. If we had a complete isolated service water tank, why would we want to slug a slug of chlorine into it when no new water had come in?
00 22 11 04	CC	That's a good question.
00 22 12 24	CC	10, Houston. On your orange juice this morning, we recommend that you probably not drink - you not drink that and you consider getting rid of it. It's possibly almost pure chlorine in the juice.
00 22 12 46	CDR	Okay.
00 22 16 36	CMP	Houston, Apollo 10. Over.
00 22 16 39	CC	Go ahead, 10.
00 22 16 42	CMP	Okay. The LM's DELTA-V is up to nine-tenths today.
00 22 16 46	CC	Roger. Copy, John.
00 22 16 48	CMP	It's 0.09.
00 22 16 49	CC	Roger.
00 22 16 50	CMP	0.9.
00 22 16 51	CC	0.9. Got you.
00 22 25 55	LMP	Charlie, I'm going to start battery B charge here in the next 30 seconds.
00 22 26 00	CC	Roger. We copy, Gene.
00 22 36 30	CMP	Houston, Apollo 10. How much notice for that water dump? Over.
00 22 36 35	CC	Roger. Just as much as possible, 10, and that's all I can tell you. We would like an hour or so, I guess.
00 22 36 46	CMP	It will be an hour from now then.
00 22 36 48	CC	Okay. Looks like we got - Why don't we go ahead and plan it for 22 30? That will be fine. 23 30.as planned, John? We will put the word out.
00 22 37 00	CMP	Okay. Fine.

00 22 37 02	CC	Roger.
00 22 37 03	CC	We will put the word out.
00 22 37 04	CMP	For 23 30.
00 22 37 05	CC	Roger.
00 22 47 54	CC	Hello, Apollo 10. Houston. We'd like you to close the potable tank inlet valve now.
00 22 48 02	CDR	Okay. I'll get it.
00 22 57 25	LMP	Houston, this is 10.
00 22 57 30	CC	Apollo 10, this is Houston. Go ahead.
00 22 57 35	LMP	On this cycle, the CRYO fans - how long do you want us to leave them on?
00 22 57 41	CC	Stand by.
00 22 58 24	CC	Apollo 10, this is Houston. On the CRYO fans, 2 minutes for each tank. Same for H_2 and O_2. Over.
00 22 58 32	LMP	Okay.
00 22 58 34	CC	Roger. Out.
00 23 04 16	LMP	Houston, this is 10.
00 23 04 20	CC	Go ahead, 10.
00 23 04 24	LMP	Listen. You guys were so good to us with the news this morning that we thought we'd bring you a little disc jockey work from up here, if you're prepared.
00 23 04 32	CC	Roger.
00 23 04 39	LMP	This is Tom and John on the guitar and three of us singing.
00 23 04 43	CC	Okay.
00 23 05 00	LMP	Here it comes.
00 23 05 01	CC	We're ready.
		(Recording of "Up, Up, and Away" played here.)
00 23 07 27	CMP	Sure hope you enjoyed the last one.

00 23 07 28	CC	Hey, that was really beautiful. Somebody's voice is changing, though, or you stowed somebody away up there.
00 23 07 37	LMP	I thought that song was sort of apropos.
00 23 07 40	CC	It really was beautiful; it was really great, you guys. Y'all been practicing a lot.
00 23 07 46	LMP	We had trouble stowing the base drum aboard, but other than that, it came out pretty well.
00 23 07 52	CC	Roger. We got you.
00 23 07 54	CDR	DELTA 5 psi makes your voice a little higher, Charlie (laughter).
00 23 07 56	CC	Oh, oh, that's right. I forgot.
00 23 08 13	CC	Are we having an encore, or are you saving your next rendition for later on?
00 23 08 19	CDR	No, that's enough for 1 day.
00 23 08 22	CC	I believe it (laughter).
00 23 09 03	CMP	Got a few more, Charlie, but we will save them for a while.
00 23 09 06	CC	Roger.

END OF TAPE

00 23 18 21	CC	Hello, 10. Houston.
00 23 18 28	CDR	Go ahead.
00 23 18 29	CC	Roger. We were wondering, when you drew off your water to purge the lines, at what point you took it off. We think you ought to do both the drinking water supply and the food preparation unit. Over.
00 23 18 47	CDR	It's too late now, Charlie. We've already gone through it.
00 23 18 50	CC	Roger. Could you tell us where you drained it off, Tom?
00 23 18 56	CDR	Yes. In my grape juice.
00 23 18 59	CC	Okay.
00 23 19 04	CDR	Yes. It came off the food servicing thing.
00 23 19 07	CC	It came off ... Okay, the - -
00 23 19 13	CDR	By the time you had already got the word to us - Don't sweat it, Charlie. Okay?
00 23 19 22	CC	Roger.
00 23 26 43	CMP	Houston, Apollo 10. Over.
00 23 26 47	CC	Go ahead, John.
00 23 26 51	CMP	Got a GO for the dump at 23 30?
00 23 26 53	CC	Stand by.
00 23 27 09	CC	10, Houston. You are GO for the dump at 23 30.
00 23 27 18	CMP	Roger. Thanks.
00 23 30 04	CDR	Okay. Houston, Apollo 10. We've started the water dump.
00 23 30 07	CC	Roger. Copy, Tom.
00 23 30 11	CDR	And it's really filling the sky out here, Charlie.
00 23 30 13	CC	Roger.
00 23 30 17	CMP	Boy, it really is.
00 23 31 08	CMP	Hey, Charlie? Is this to fix the problem so it doesn't mess up the tracking? Is that what you're trying to do?

00 23 31 12	CC	That's affirmative, John. We would have to dump before - we wanted to dump as close as possible to a midcourse - before midcourse, and if this one goes as planned, we wouldn't do another one until LOI, and we'd be over the - over the limit.
00 23 31 33	CMP	Understand.
00 23 31 49	CC	10, Houston - -
00 23 31 50	CDR	Houston, Apollo 10. For comparisons - Go ahead, Charlie.
00 23 31 54	CC	I'm sorry; I cut you out, Tom. Go ahead.
00 23 31 58	CDR	I was just going to say, for comparative sizes, if we try to look at this stuff with the telescope there is a factor of 10 or 20 times the number of particles we have from our other dumps, but the particles are all about - maybe one-tenth the size.
00 23 32 12	CC	Roger. We copy.
00 23 32 21	CC	10, [illegible]'s just corrected me. It looks like we'll have to do the dump once a day. We scheduled it at this time as close to midcourse as possible and yet still allow you, we hope, to clear it away so you can do the P52.
00 23 32 40	CMP	Yes. There's a lot of stars out there right now.
00 23 32 42	CC	Yes. I'll bet.
00 23 32 47	CC	10, I overlooked the consumables update we owed you at 23 hours. If you'd like to copy that, we have it for you any time.
00 23 33 02	CDR	Okay. Go ahead.
00 23 33 03	CC	Okay. Your R - At 22 30 GET, your RCS totals were 92 percent across the board. We had an H_2 of - total of 48.2 pounds and an O_2 total of 565 pounds.
00 23 33 29	CMP	Okay, Charlie. That's at 22 30?
00 23 33 31	CC	Roger.
00 23 34 50	CMP	Houston, Apollo 10. Over.
00 23 34 52	CC	Go ahead.
00 23 34 56	CMP	Okay. I've got something out here now tracking that - wonder if that could be the S-IVB? It

		keeps - seems to rotate and glimmer. It's not a - it's not a particle. Over.
00 23 35 08	CC	Roger. Stand by, Tom. I'll see if we can get you - Correction, John, I'll see if I can get you some word on that.
00 23 35 23	CMP	It's a long ways off.
00 23 35 26	CC	Okay.
00 23 35 29	CMP	It doesn't even fill the center of the reticle. It goes about half - half the width of the reticle.
00 23 35 38	CC	Roger.
00 23 35 39	CMP	Half the width of the lines in the center of the reticle.
00 23 35 43	CC	Roger. Copy.
00 23 36 12	CMP	Shaft is 947 and trunnion is 387 right now.
00 23 36 18	CC	Roger. We copy, 10. We're copying down your attitude and your shaft and trunnion, and it will take us a while to run it out. The FIDO's are busy with the midcourse right now.
00 23 36 33	CMP	Okay. Sure. That's something you can do post-flight if you want to.
00 23 36 39	CC	Roger. And your water dump's okay. You can turn it off.
00 23 36 44	CMP	Roger.
00 23 36 55	CMP	We're in PRESSURE RELEASE 2, now.
00 23 36 58	CC	Roger.
00 23 42 48	CMP	Houston, this is 10. We're going to run through the main regulator checks. You want to watch it?
00 23 42 53	CC	Roger. We're standing by.
00 23 44 56	CC	Hello, 10. Houston. We'd like you to repeat the second REG check here. We noticed a funny on the manifold pressure.
00 23 45 06	CMP	Okay. Well, I let in - I pushed it in and then I let it out. Would that account for it?
00 23 45 10	CC	Stand by. I think so.

00 23 45 12	CMP	I didn't hold it in the full time.
00 23 45 18	CMP	I pushed it in for about 2 seconds, and then I let up on it, and then I pushed in on it again.
00 23 45 23	CC	Roger. The EECOMM's would feel warmer if you'd just do it one more time for us, John.
00 23 46 24	CC	10, Houston. Check looks okay to us.
00 23 46 30	CDR	Okay.
00 23 46 32	CMP	I'm sure glad about that, Charlie.
00 23 46 35	CC	Say again.
00 23 46 39	CMP	I said, I'm sure glad that thing works.
00 23 46 42	CC	Yes.
00 23 52 38	LMP	Hello, Houston. This is Charlie Brown.
00 23 52 42	CC	Go ahead, Charlie Brown.
00 23 52 45	LMP	We finished the ECS redundant component checks, and everything looks good from here.
00 23 52 51	CC	Roger. We copied it all, Gene. Looks GO to us, too.
00 23 52 57	LMP	Okey doke.
00 23 53 04	LMP	Sure appreciated the little news bulletin. Plan another one tomorrow, will you?
00 23 53 08	CC	Roger. We'll have our morning report when we first come on for you.
00 23 53 17	CDR	Yes, Charlie. We just can't tell you how great that sounded this morning. That was just tremendous.
00 23 53 22	CC	Well, I'm glad you enjoyed it.
00 23 53 24	CDR	When you come - -
00 23 53 25	CMP	Especially that horoscope; we wouldn't want these guys to do anything wrong.
00 23 53 29	CC	No, sir. You got to watch them, John. We appreciated your little rendition from 90 000 or so out, too.

00 23 53 40	CMP	Got that through the sextant. Boy, you could see everything. We could see the - You could see the Nile delta just like you were down there; you could see the whole island of Crete; you could see Italy. You could see the whole - You could see the whole - whole coast of Europe all the way around, except it's all under the clouds.
00 23 54 01	CC	Roger. Must be a fantastic sight. How - -
00 23 54 08	LMP	It is, babe. A little later if we can show it to you, it - It's just beautiful.
00 23 54 12	CC	Roger.
00 23 54 16	CC	How does the sextant bring out the landmarks, John? Do you think you'd have any trouble tracking from way out there?
00 23 54 24	CMP	I don't think you'd have a bit of trouble; I think it'd be a piece of cake. Those places that are open that we always planned to use for landmarks, like that coastal land down off of Arabia, down there is just as clear as a bell right now. And yesterday Baja California was wide open, too.
00 23 54 44	CC	Roger. We could see that real clearly on the TV.
00 23 54 50	CMP	Yes, and it would really be a piece of cake to track - to do any star landmark work.
00 23 54 57	CC	Roger.
00 23 55 06	CC	You have any trouble looking at the stars before the dump? Could you see all the stars you wanted to see, John?
00 23 55 21	CMP	Can't see any - Can't see any stars with the LM on there, Charlie, except in AUTO OPTICS.
00 23 55 28	CC	Well, that's what I meant.
00 23 55 33	CMP	Sometimes you can see stars; there's about a 10- or 20-degree angle when you're directly opposite the Sun where you can see stars.
00 23 55 43	CC	Roger.
00 23 55 44	CMP	But, you can't see them - You can't tell what stars they are, so they wouldn't be any good for a PSI. However, I did recognize what I believed

to be Mars, off the Earth, and Jupiter, because of its four moons, so you could use those for a P51.

00 23 56 01	CC	Roger.
00 23 56 04	CC	How do - How are the particles? You still got the particles around now, or are they all gone?
00 23 56 15	CDR	I can see a few out the left side window, but within 5 to 10 minutes, most of them have dissipated.
00 23 56 23	CC	Roger.
00 23 56 46	CMP	The dump particles are so fine; they don't seem to be as big as the other ones that come from the waste system dump that we make, and they are not as persistent, apparently, too.
00 23 56 58	CC	Roger. We copy.
00 23 59 18	CMP	Well, I can tell you from here that Cuba's under - got some thunder bumpers over it today.
00 23 59 23	CC	Roger.
00 23 59 31	CMP	John, can you really - Through the sextant, can you really get an idea of the three-dimensional effect of the clouds?
00 23 59 40	CMP	No. It just sort of looks like a picture.
00 23 59 43	CC	Roger.
00 23 59 45	CMP	To me, anyway.
01 00 01 25	CMP	I don't know how far along the coast I could see before the - before the Earth went out of the optics, but it - It looked like the Gulf Coast was open today, too. Maybe - Maybe I was looking at the wrong place here; that's real hard to see right now.
01 00 01 38	CC	Roger. When we came in this morning, it was clear as a bell outside. I don't know what it's done the last couple of hours, though. Just got the word - It's still clear outside.
01 00 01 49	CMP	It looked clear down that way. Except for the smog.
01 00 01 54	CC	Yes.

01 00 05 53	LMP	Hello, Charlie.
01 00 05 57	CC	Go ahead.
01 00 05 58	LMP	Hello, Houston.
01 00 05 59	CC	Go ahead, 10.
01 00 06 00	LMP	I've been looking at the Earth with the monocular, and it's quite a sight. But right to the left of it in my field of view is this rotating object John saw a little while ago. And I'm looking at it through the monocular, and it - sometimes it appears to be the S-IVB, or else it's a SLA panel. But it's definitely got three dimensions, and it's rotating at quite a fair speed. I can sometimes be able to pick the nozzle up on it, which makes me believe it might be the S-IVB.
01 00 06 37	CC	Roger. Say again the position with respect to the Earth, Gene.
01 00 06 43	LMP	Well, I've got the Earth out the right side of my right-hand window, and it's perpendicular to the terminator of the Earth.
01 00 06 52	CC	Okay. On the left side or the dark side of the terminator?
01 00 07 02	LMP	Well, it's perpendicular. The terminator's got both sides, doesn't it? I'd say it's from North to South Pole; it's toward the east.
01 00 07 14	CC	Okay. That's what I was trying to dig out. I probably said it wrong, though. We got the back rooms working on where the S-IVB should be. We should have you some word here in an hour or so, probably. How big does this thing look to you in the monocular, Gene?
01 00 07 36	LMP	Well, I can see it rotating, and it's bright all the time, and I get bright glare glints off it. It's rotating, and it's definitely got three dimensions. I've seen something for the last day that I thought was the SLA panel along with it, so this may be what it is.
01 00 07 54	CC	Roger.
01 00 08 13	CC	Hello, 10. Houston. We're going to switch ground stations. You may get some noise for a couple of seconds.

01 00 08 44	LMP	Houston, this is 10.
01 00 08 46	CC	Go ahead.
01 00 08 50	LMP	Okay. And then down quite a ways, maybe 30 degrees from the first one, I've got a second rotating object that's glistening in the center up there; and, of course, it's much, much further away. All I can tell is that it's rotating and that it's glistening.
01 00 09 08	CC	Roger.
01 00 09 48	CMP	Hey, Houston. Maybe we got that PROGRAM ALARM by accidentally hitting the MARK button, but I don't think we did.
01 00 09 56	CC	You don't think you accidentally hit it, John?
01 00 10 01	CMP	No.
01 00 10 04	CC	Roger. We thought that's what had happened.
01 00 10 12	CMP	Tell me this. Calling up VERB 5, NOUN 9 just ... got to reset the PTC?
01 00 10 21	CC	Stand by.
01 00 10 42	CC	10, Houston. That's negative. You do not disturb the PTC.
01 00 18 17	CDR	Hello, Houston. Apollo 10.
01 00 18 20	CC	Go ahead, 10.
01 00 18 35	CC	10, Houston. Go ahead.
01 00 18 36	CDR	Hello, Houston. Apollo 10.
01 00 18 38	CC	Go ahead.
01 00 18 51	CC	Hello, Apollo 10. Houston. We are reading you five-by. Go ahead, Tom.
01 00 19 17	CC	10, Houston. Do you read?
01 00 19 21	CDR	Yes. How do you read now, Charlie?
01 00 19 23	CC	Five-by, Tom. You were coming five-by all the time.
01 00 19 27	CDR	Okay. I just wanted to give you a star visibility data point. Just a second ago, when the Sun was

		in the right side window, number 5 window, I could barely see the Southern Cross, Acrux, and Alpha and Beta Centauri out my left window, and that's the first time we've been able to see it.
01 00 19 44	CC	Roger. Good show.
01 00 19 48	CDR	We couldn't - And, Mr. Charlie, we couldn't see many other stars, just the real big ones, you know, like Alpha and Beta Centauri and Acrux. Now, as the Sun moves on around, they've completely disappeared, but that's the first glimpse of any stars I've gotten.
01 00 20 00	CC	Roger. We copy.
01 00 20 03	CDR	Alrighty.
01 00 22 54	CMP	Houston, this is 10. Looks like most of the East Coast is under clouds today.
01 00 22 58	CC	Roger. You've got a better view than we have. We haven't even seen the weather map in the paper. Hey, John. On this 122 alarm, we're continuing to research it, but at the present time, the only thing we can come up with was that it was an accidental hit of either the MARK REJECT or the MARK button. But we're continuing to look at it.
01 00 23 27	CMP	Okay. No problem. I don't think it's any problem.
01 00 23 29	CC	Okay.
01 00 23 54	CC	Apollo 10, Houston. John, would you verify that you did not think that you hit either the MARK or the MARK REJECT?
01 00 24 04	CMP	That's affirmative.
01 00 24 06	CC	Okay.
01 00 24 10	CMP	Houston, could we go ahead and start this REFSMMAT realign and this - and this land - and this star horizon a little early here to maybe stay ahead of it a little?
01 00 24 22	CC	Stand by.
01 00 24 25	CC	No problem, 10. Go ahead.
01 00 24 29	CMP	Okay.
01 00 37 34	CDR	Houston, Apollo 10. We're automaneuvering around for the [illegible] navigation.

01 00 37 39	CC	Roger. We copy, Tom. And, John, the guys in the back room yesterday on your NOUN 49 were really hopping. If you could pause a little bit longer today on that display, they'd appreciate it. And when you calibrate the trunnion bias, they say we'll get a better reading if you - between each calibration, if you'll move the trunnion off and then back to its position so we get a better average on the calibration. Over.
01 00 38 14	CMP	That's what I was doing. I was moving it off and bringing it back on.
01 00 38 18	CC	Roger. That's fine.
01 00 38 21	CMP	How far off? How far off do they want to go?
01 00 38 23	CC	I didn't get that number. Stand by.
01 00 38 33	CC	John, the GUIDO's say any movement will be fine - a degree or so and then back is all we need.
01 00 38 40	CMP	Okay. I was moving it in both directions, too.
01 00 38 43	CC	Okay. Fine. Good show.
01 00 38 44	CMP	Not a degree -
01 00 40 25	CC	Hello, 10. Houston. In this maneuver to your P23 attitude, if you have to switch antennas it'll take a COMMAND RESET.
01 00 40 36	CDR	Okay.
01 00 46 16	CC	Hello, 10. Houston. We'd like you to try to get the high gain locked on for the P23, so we can have the high bit rate.
01 00 46 27	CDR	Okay. We'll give it a try, Charlie.
01 00 46 29	CC	Roger.
01 00 46 54	CDR	Houston, I'll give you a VERB 64 as soon as we finish this AUTO maneuver.
01 00 46 58	CC	Roger.
01 00 47 10	CC	10, Houston. We got the - some angles for you on the high gain: minus 52 on the pitch and 270 yaw.
01 00 47 22	CMP	Okay. Fine.

01 00 48 08	LMP	Hello, Houston. 10. That should be high gain.
01 00 48 13	CC	Roger. We got it. Thanks a bunch.
01 00 48 17	LMP	Okay. And that's medium bandwidth.
01 00 48 19	CC	Roger.
01 00 53 14	CMP	Houston, I hate to admit this, but there aren't any stars that I can find right now to calibrate these optics on.
01 00 53 20	CC	Roger. Stand by.
01 00 53 26	CMP	It's got to do with the position of the Earth and how much light we're getting through there and everything.
01 00 53 32	CC	Say again, John. You were cut out.
01 00 53 36	CMP	It's got to do with the way the sunshine is shining on the Earth, how much light is getting scattered back in the telescope, and how much is coming in off the LM. It's really - It's really blanking out all the stars.
01 00 53 51	CC	Roger. Stand by.

END OF TAPE

01 00 55 25	CC	Hello, 10. Houston. If you don't - things don't get better in 5 minutes or so, and you still can't see anything, we'll just skip it and try it again later when the geometry gets better.
01 00 55 41	LMP	Okay.
01 00 56 11	CC	Hello, 10. Houston. We'll be having a ground handover in about 4 minutes. You may hear some noise. We'll do it on the high gain.
01 00 56 25	CDR	Okay.
01 01 04 15	CMP	Houston, this is 10. What do you want me to use for a trunnion angle? What we got yesterday, or put in zeros?
01 01 04 23	CC	Stand by.
01 01 05 46	CC	10, Houston. Leave the bias as it was yesterday.
01 01 06 56	CC	10, Houston. Did you copy on the trunnion? You can leave it the same as yesterday.
01 01 07 03	CMP	Roger. That's what I did.
01 01 07 05	CC	Roger.
01 01 08 24	CMP	That 649 four balls, plus four balls 1 must be a mistake.
01 01 08 29	CC	Roger. We copy you.
01 01 08 44	CC	That's a pretty good mistake.
01 01 08 49	CDR	Yes. That's what I'm saying. Up here in the left seat, it's the best mistake I've seen, Charlie.
01 01 08 52	CC	Roger.
01 01 09 41	CDR	How about that, Charlie?
01 01 09 44	CC	That's really beautiful.
01 01 09 48	CMP	It's unbelievable, as a matter of fact. They must have zeros listed as W-matrix.
01 01 09 53	CC	(Laughter)
01 01 13 37	CDR	There we are again.

01 01 13 40	CC	You guys are really sharp.
01 01 13 46	CDR	Yes. John's doing a great job. He's having trouble seeing that from all the Sun reflecting around him.
01 01 13 50	CC	Yes. We were imagining he was. Excuse me: I cut you out. Go ahead, John.
01 01 13 56	CMP	When the star gets down beneath the - on the Earth, you can't see it in the background. You just have to pull it out of the Earth and imagine which way you ought to pull that handle to bring it out above the horizon so you can see it.
01 01 14 11	CC	Roger. Well, whatever you're doing is right; looks good.
01 01 14 19	CMP	I don't know whether it's right or not.
01 01 14 27	CC	Eisele's sitting here; he said you set the W-matrix to zero.
01 01 14 40	CMP	Good idea.
01 01 18 59	CDR	Houston, did you get the first one on Munki?
01 01 19 02	CC	Roger. Sure did.
01 01 19 46	CDR	Here's number 2.
01 01 19 48	CC	Roger.
01 01 21 48	CDR	Okay, Houston. That finished the first set on star 37. We'll do set 3 and 4 on the same star as your direction.
01 01 21 56	CC	Roger. It's primarily for an altitude calibration.
01 01 22 03	CDR	Okay.
01 01 26 24	CC	10, we've seen that.
01 01 26 31	CDR	Roger. Looks good from here.
01 01 26 35	LMP	Okay. How much time do you really need to get that kind of stuff? Can you give me a GO when you see each one of them, Charlie?
01 01 26 42	CC	Stand by. I think I can.

01 01 27 13	CC	10, when we get the data, we'll give you a GO.
01 01 27 22	CDR	Roger.
01 01 27 24	CC	And, John, you've been giving us plenty of time on that so far.
01 01 27 28	CMP	Okay.
01 01 27 43	CC	You can GO.
01 01 28 51	CC	You can GO.
01 01 28 59	CMP	Roger. That complete Kunki right there?
01 01 29 05	CC	Stand by.
01 01 29 08	CMP	Or is there another one to go?
01 01 29 27	CMP	We can make another one if you want to, if it's just for horizon CAL.
01 01 29 31	CC	Roger. John, we need one more Mark on Kunki.
01 01 30 07	CC	You can GO.
01 01 32 50	CC	10, you can go ahead.
01 01 33 40	CC	You can GO.
01 01 34 46	CC	10, you can GO.
01 01 34 56	CDR	Okay, Houston. That completes the total of five sets there, and we're ready for your P27 update for the midcourse.
01 01 35 06	CC	Roger. Stand by.
01 01 35 10	CDR	Okay.
01 01 37 03	CC	Hello, 10. Houston. If you go to POO and ACCEPT we have a load for you: state vector, target load, and a PIPA bias update.
01 01 37 13	CDR	Okay. Going CMC ACCEPT and POO, and you've got it.
01 01 37 17	CC	Roger, Tom, and if you're ready to copy, we have a pad for you.
01 01 37 24	CDR	Stand by.
01 01 37 30	LMP	Okay, Charlie. Fire it.

01 01 37 52	CC	Roger. As you know it's a midcourse 2 SPS/G&N: 63153, plus 090, minus 021 026 325610, minus 00398, plus 00109, minus 00258 099 184 359; apogee and perigee are NA. 00487 04 - correction 007 00440; sextant star is 45 2050 292. The rest of the pad is NA.
01 01 39 30	LMP	Okay, Charlie. For MCC 2, SPS/G&N: 63153, plus 090, minus 021 026 325610, minus 00398, plus 00109, minus 00258 099 184 359: apogee and perigee are NA; burn time - or DELTA-V_T, rather, is 00487; burn time is 007, and 00440; sextant star is 45 2050 and 292.
01 01 40 19	CC	Roger. That was a good readback, Gene-o. Your set stars are Deneb and Vega: 148, 013, and 018; no ullage.
01 01 40 35	LMP	Roger. Give me pitch and yaw again, please.
01 01 40 38	CC	Roger. 013 and 018. And you're going to be - In the burn attitude you're going to be looking at the Sun. The Sun is 4 degrees off from the X-axis, and we think with this roll angle that the LM will block it out completely, though.
01 01 41 01	LMP	Okey doke. I've got Deneb and Vega at 148, 013, and 018; no ullage; and Roger on the Sun.
01 01 41 07	CC	Roger.
01 01 41 11	CDR	Okay. Houston, 10. I have one other question.
01 01 41 13	CC	Go ahead, 10.
01 01 41 15	CDR	Yes. Okay, Charlie. You know in the flight plan we penciled in that if we did this correction we'd trim plus-X to two-tenths of a foot per second if the residual was less than 2 feet per second. You still want that to go?
01 01 41 27	CC	That's affirmative.
01 01 41 30	CDR	Okay. Thank you.
01 01 41 32	CC	Roger.
01 01 41 45	CC	10, we've got your state vector and the target load in, and we're doing the PIPA bias now.

01 01 41 53	CDR	Roger.
01 01 42 49	CC	Hello, Charlie Brown. This is Houston. Your high gain angles for in the burn attitude will be yaw of 180, pitch of minus 55.
01 01 44 10	CC	Hello, 10. Houston. We got the load in. The computer is yours.
01 01 44 16	CDR	Roger. Going to BLOCK.
01 01 44 18	CC	Roger. And - -
01 01 44 19	CDR	And - Go ahead.
01 01 44 20	CC	Roger, Tom. I cut you out, there. Did you copy the high gain antenna angles for the burn attitude?
01 01 44 27	CDR	Roger, Charlie. We sure did. And I'm going to go ahead to the P30 and P40 so we can do the star sextant check, and then we'll swap seats for the burn.
01 01 44 36	CC	Roger.
01 01 44 37	CDR	...
01 01 45 14	CC	Hello, 10. Houston. Hey, when you guys get to burn attitude, if you'll take the sextant to a shaft of 161.5 and a trunnion of 032.1, you should see the S-IVB. Over.
01 01 45 36	LMP	Okay. That was a shaft of 161.5 and 032.1 on trunnion.
01 01 45 41	CC	Affirmative.
01 01 45 45	LMP	How far away do you suppose it is?
01 01 45 47	CC	We didn't get that number; hold on, Gene. It'll take us a minute or two.
01 01 46 51	CC	Hello, 10. Houston. The FIDO's say that the S-IVB should be 1680 miles away - that's nautical.
01 01 47 02	LMP	1680. Roger. That's a long way.
01 01 47 05	CC	Sure is.
01 01 47 12	CDR	Okay. We're starting the UNTO maneuver to the burn attitude.

01 01 47 16	CC	Roger.
01 01 48 39	CDR	Hello, Houston. Apollo 10.
01 01 48 41	CC	Go ahead, 10.
01 01 48 44	CDR	Okay, Charlie. Since we used bank A on the first separation maneuver, we assume you want us to start this with bank B. And then do you want us to open both banks after 3 seconds? Over.
01 01 48 54	CC	Stand by.
01 01 48 57	CDR	Okay.
01 01 49 18	CC	10, this is Houston. We'd like you to start on bank Bravo and put bank Alfa in at 3 second.
01 01 49 29	CDR	Okay. Roger. That's what we thought; just wanted to reconfirm.
01 01 49 33	CC	That's affirmative, Tom. And we'd like you to discontinue charging battery B at 26 hours.
01 01 49 40	CDR	Okay. At 26 hours.
01 01 58 51	CMP	Hello. Houston, Apollo 10.
01 01 58 53	CC	Go, 10.
01 01 58 56	CMP	Hey, we've finally got a good view of the Moon.
01 01 58 59	CC	Hey! Roger. That waxing crescent there is not very much, but glad you see it.
01 01 59 05	CDR	Yes. We can see the sunlight and, also, we can see - Actually, we can see the other part of the Moon in the earthshine.
01 01 59 11	CC	Good. Can you - -
01 01 59 15	CDR	Nice to know where we're going.
01 01 59 16	CC	Roger. Can you pick out any landmarks?
01 01 50 20	CDR	No. Not from this distance. We've got a lot of reflected light coming off of the LM, Charlie.
01 01 50 26	CC	Roger.

01 01 50 27	LMP	But it does look bigger, Charlie.
01 01 50 29	CC	Yes. I bet it does.
01 01 50 31	CDR	Looks bigger than it did.
01 01 50 36	CC	Hey, I keep cutting you guys out. I'm sorry.
01 01 50 42	CDR	It's amazing to see how much of it you can see in earthshine.
01 01 50 46	CC	Roger.
01 01 50 49	CMP	And the whole back side of it is lit by earthshine. It looks like it's a full, full moon from earthshine.
01 01 50 56	LMP	You know, as the Earth gets smaller. It's sure nice to be able to see where you're going.
01 02 00 01	CC	Yes. I guess it is pretty comforting. Well, we've got you pretty close. After this mid-course, we will have a perigee of about 58 miles.
01 02 00 16	CDR	But in relative ratio, it hasn't gotten that much bigger as the Earth has gotten that much smaller.
01 02 00 22	CC	Roger.
01 02 04 25	CC	Hello, Apollo 10. Houston. Is the Sun bothering you in this attitude?
01 02 04 31	CDR	Not yet. We're just about to finish the roll maneuver in about 20 more degrees, and I can't see that it is. I think you did a good job of blocking it out - the Sun with the LM.
01 02 04 41	CC	Roger.
01 02 04 42	CMP	Looks like we're going to be able to see stars, because the LM is shielding us from the Sun.
01 02 04 46	CC	Roger. Good.

01 02 06 06	CDR	Hello, Houston. 10.
01 02 06 09	CC	Go ahead, 10.
01 02 06 12	CDR	Okay. I can see the stars real great out my side window. I've got Sirius out my side window, but even out through the rendezvous window - I can look up there - and I've got Orion and Rigel, there.
01 02 06 23	CC	Roger. Boy, old Snoop really - when he's - the Sun's on the side. He really must block it all out.
01 02 06 31	CDR	Yes. And I've got the Moon right up above the X-axis, now. It's a beautiful sight.
01 02 06 35	CC	Roger. We envy you.
01 02 07 16	CC	Hello, Charlie Brown. Houston. We'd like you to discontinue battery B charge now.
01 02 07 24	LMP	Roger, Charlie. Thank you.
01 02 12 47	LMP	Hello, Houston. Charlie Brown. On that trunnion for the S-IVB, was that 32.1 or 3.21?
01 02 12 59	CC	It was 32.1, 10.
01 02 13 03	LMP	Okay.
01 02 13 45	CDR	Okay, Houston. The star check went good, and I've moved to the center seat. John's moved to the left seat.
01 02 13 53	CC	Roger.
01 02 13 54	LMP	... was just about a half of a degree off.
01 02 13 58	CC	Roger, 10. We copy.
01 02 20 57	CDR	Coming up on 10 minutes.
01 02 20 59	CDR	MARK.
01 02 21 00	CDR	Ten minutes to the burn, and we're in burn attitude all squared away, Houston.
01 02 21 04	CC	Roger.
01 02 21 25	CC	Hello. Apollo 10, Houston. We'd like to get a time hack with you. We're counting down to the burn, and we have 11 minutes 25 seconds.

01 02 21 32	CC	MARK.
01 02 21 39	CDR	Okay. Our event timer may have goofed up on us a little bit.
01 02 21 43	CC	Roger. We showed you load the proper take time of 26 32 56 10.
01 02 21 53	CDR	Yes. That's what we - We set our event timer at 47 minutes from event, counting down.
01 02 22 05	CC	Roger. I can give you a hack at 10 45.
01 02 22 10	CDR	Okay. The event timer jumped 2 minutes on us some way.
01 02 22 14	CC	Roger.
01 02 22 15	CDR	We were all right on the seconds.
01 02 22 21	CC	Coming up on 10 30, Tom. I'll give you a Mark.
01 02 22 27	CC	MARK.
01 02 22 28	CC	10 30.
01 02 22 32	LMP	Charlie, you give us another hack in 10 minutes so we can set our timer.
01 02 22 35	CC	Roger.
01 02 22 50	CC	Apollo 10, Houston. Passing 10 05. Stand by for a Mark at 10 minutes.
01 02 22 57	CC	MARK.
01 02 22 58	CC	Ten minutes.
01 02 23 02	CDR	We're SYNCED.
01 02 23 03	CC	Roger.

END OF TAPE

01 02 30 50	LMP	Okay, Houston. Coming up on 2 minutes. Going to NORMAL on bank B.
01 02 30 54	CC	Roger. Copy.
01 02 33 12	CDR	Burn is complete.
01 02 33 13	CC	Roger. Copy.
01 02 33 17	CDR	And I'm going to proceed to ...
01 02 33 20	CC	Roger, Tom. Burn looks good to us.
01 02 33 23	CDR	Okay. There's plus X and minus nine-tenths. I'm going to ullage it back to two-tenths.
01 02 33 27	CC	Roger.
01 02 33 43	CDR	There's two-tenths.
01 02 33 46	CC	Roger.
01 02 33 50	CDR	Residuals: minus two-tenths, zero, and plus three-tenths.
01 02 33 52	CC	Beautiful.
01 02 33 55	CDR	Proceeding.
01 02 33 56	CC	Roger.
01 02 34 19	CC	10, Houston. It looked really good to us. One question: could you guys feel the second bank coming in?
01 02 34 30	CMP	I didn't feel it, as a matter of fact.
01 02 34 36	CC	Roger.
01 02 34 38	CMP	I was busy turning it on. I really didn't check the chamber pressure too well. It looked like it jumped a little.
01 02 34 43	CC	Roger.
01 02 34 45	CMP	About 4 psi. Our DELTA-V_C on that was minus 4.4.
01 02 34 54	CC	Copy.
01 02 34 59	LMP	Charlie, the fuel remaining is 99.4. Oxidiser is 98.0, and the PUGS meter bounced around quite a bit and ended up at 400 DECREASE.

01 02 35 19	CC	Roger. Copy, Cene.
01 02 38 30	CDR	Hello, Houston. Apollo 10.
01 02 38 32	CC	Go ahead, Apollo 10.
01 02 38 35	CDR	Okay. Why don't we try to kill two birds with one stone? Let's go ahead to the PTC attitude, and also we can get HIGH GAIN to the Earth and get a picture of the Earth with the TV as it comes up.
01 02 38 50	CC	Roger. Will do. We'll have the set angles for you in just a minute.
01 02 38 52	SC	Roger.
01 02 38 54	CC	And, Apollo 10, Houston. We'd like to move the pad updates down to about 27 45 so as not to interfere with the TV.
01 02 39 06	SC	Okay.
01 02 40 54	CC	Apollo 10, Houston.
01 02 40 58	CDR	Go ahead.
01 02 40 59	CC	Roger, 10. If you - When you go to the PTC, if you point it north, we can give you a set of angles that will give you the Earth through one window and the Moon through another.
01 02 41 12	CDR	Okay.
01 02 42 12	CC	Hello, Apollo 10. Houston. We have some PTC angles for you, and then some high-gain angles; and also we'd like for you to reinitiate battery B charge. Over.
01 02 42 22	CDR	Okay. Stand by.
01 02 42 33	CMP	Go ahead with those angles.
01 02 42 36	CC	Roger, John. Roll 307, pitch 090, yaw 000. That places the Moon in window 5 and the Earth in window 1. High-gain antenna: pitch 005, yaw 265.
01 02 43 05	CMP	Thanks much, Charlie.
01 02 43 07	CC	Roger.
01 02 43 53	CMP	Houston, we get this hydrogen pressure light on hydrogen tank 1, which we heard we might get,

and wonder if we hadn't ought to - It went back out - if we shouldn't maybe cycle the fans. I guess they just cut in the heater itself automatically.

01 02 44 13	CC	Stand by.
01 02 44 15	CMP	Looks like the heaters just came on automatically and are kicking it back up themselves.
01 02 44 19	CC	Roger. Stand by.
01 02 44 53	CC	Apollo 10, Houston. We'd like to hold off cycling the fans and wait until our next scheduled time and see what happens.
01 02 45 05	CMP	Okay, Charlie. The light just went back out. I theorize that the heater may have come on and kicked it back within limits.
01 02 45 11	CC	Roger. We concur.
01 02 45 12	SC	And the caution and warning lights ...
01 02 45 13	CC	Roger. We concur.
01 02 49 24	CDR	Houston, Apollo 10. We're maneuvering into the new attitude now.
01 02 49 27	CC	This is Houston. Roger. Out.
01 02 49 35	CDR	And, Houston, Apollo 10. How soon will you have the results of the midcourse we made?
01 02 50 08	CC	Apollo 10, this is Houston. Superficially, the burn looked pretty good, but it will take about an hour for us to reduce the high-speed data. Over. And to get tracking.
01 02 50 21	SC	Roger. Thank you.
01 02 53 28	LMP	Charlie, that's going to be a good attitude. We got the Earth in the left window and the Moon in the right, but I don't think we'll ever see the Moon on TV. It's just too thin and too dim.
01 02 53 39	CC	This is Houston. Roger. Out.
01 02 53 47	CDR	It looks like you've got a great attitude for the Earth. I've got it out my left window. It looks like the Gulf Coast is clear.

01 02 53 54	CC	Roger, 10. The network down here is ready for the TV whenever you are. I have an update to your PTC attitude mode, though.
01 02 54 06	CDR	Stand by.
01 02 55 12	CDR	Okay, Bruce. Go ahead with that new attitude.
01 02 55 18	CC	Stand by one, Tom.
01 02 55 33	CC	Roger, Apollo 10. Last night in your PTC mode, apparently you were bouncing off the edge of the YAW DEADBAND, causing more thruster firing than we'd anticipated. So, we've come up with a revised procedure which, we hope, will get the spacecraft settled down more smoothly into the PTC mode. Basically, it follows the procedure on page Golf 1-94 of your checklist, except that you select 0.5-degree deadband. And then I have some thruster configurations for you. Are you ready to copy?
01 02 56 16	CMP	Roger. Go ahead.
01 02 56 16	CC	Roger. After you get through the ENTER at the end of flashing 50 18 in the checklist, we'd like you to disable all jets on quads Charlie and Delta using the AUTO RCS SELECT switches. Wait 20 minutes; then switch MANUAL ATTITUDE PITCH and YAW ACCELERATION COMMAND mode, and enable all jets using the AUTO RCS switches. Initiate your desired roll rate, which we show as three-tenths of a degree per second, and then, when roll rate is attained, go to ACCEL COMMAND in roll. Increase the deadband to the desired value; MANUAL ATTITUDE PITCH and YAW RATE COMMAND of 30 degrees deadband. Over.
01 02 57 40	CMP	Okay. You said after you do the interim at 50 18, disable Charlie and Delta jets with AUTO RCS switches. Then wait 20 minutes, go to MANUAL ATTITUDE PITCH and YAW ACCEL COMMAND, and enable all the jets. Initiate your three-tenths of a degree per second roll rate, and then go ACCEL COMMAND in roll and MANUAL ATTITUDE RATE COMMAND in pitch and yaw. Was that what you said there, Bruce?
01 02 58 20	CC	Roger. That's what I said.
01 02 58 28	SC	...
01 02 58 47	CC	10, Houston. Say again.

01 02 58 54	CMP	Could you - Why don't you explain what we're doing here?
01 02 59 00	CC	(Laughter) Okay. We're trying to get you set up in a stable position and all damped out and then initiate, very carefully and slowly, PTC and then open up deadband. We hope this will cut down on the thruster firing and keep you from bouncing off the side of the YAW DEADBAND with more thruster firings and consequent noise and vibrations than you had last night.
01 02 59 31	CMP	I got you.
01 02 59 36	CC	And - -
01 02 59 38	CMP	- - But you ...
01 02 59 42	CC	Go ahead, 10.
01 02 59 47	CDR	Okay. John's copying that down, and we've got the tube locked onto Earth.
01 02 59 52	LMP	Okay. But really what we're trying to do here is just get the thing real stable before we start, and then we're going to a 30 degree deadband just like before. Right?
01 02 59 59	CC	That's right.
01 03 00 01	LMP	Okay.
01 03 00 05	CC	And, down there on steps E and F: you can go into MANUAL ATTITUDE ROLL ACCEL COMMAND in order to initiate your roll rate, if you like.
01 03 00 28	LMP	Okay. You've got the TV coming at you, now.
01 03 00 31	CC	I don't show it on the color yet. Let me check it out on the black and white monitor.
01 03 00 41	CC	Okay. We're seeing the Earth on the black and white. It's filling up about one-third of the screen vertically. Looking good. Okay. You're on the color now and looking beautiful.
01 03 01 16	CC	Okay. We've got the North Pole over to the upper right-hand corner - the right-hand edge of our screen. Do you have a commentary from up there, 10?
01 03 01 25	CDR	Yes. Okay. It looks like the North Pole and most of Russia is covered with clouds. The United States

		is pretty much wide open. In fact, the solar subpoint is right over the Gulf of Mexico now.
01 03 01 39	CC	Roger, 10. Could you give us a narrow beam on the high gain antenna?
01 03 02 00	CDR	Okay, Houston. I've got the full zoom on it, so you can see we're quite a bit further away today than we were yesterday.
01 03 02 07	CC	Yes, indeed.
01 03 02 08	CDR	Roger. What you see there - What you see there is a little bigger than we actually see it, since I have the full zoom on it. If you look to the south, you can see all of South America there, and west of the Andes is clear.
01 03 02 23	CC	Roger.
01 03 02 28	CDR	And in the tropical rain forest over Venezuela and Brazil and Columbia, you can see the clouds that hang over there all the time. I noticed how clear it is west of the Andes.
01 03 02 39	CC	Roger. We can see that on the left of our screen. The landmasses don't seem to stand out quite as clearly today as they did yesterday.
01 03 02 51	CDR	That's correct. A lot of it is the cloudcover, and also you can see nighttime moving over Europe now.
01 03 03 02	CDR	You've got a real weird cloud formation coming around down - Just a minute. Let me get it focused.
01 03 03 46	CMP	It's a real peculiar-looking cloud swirl. It comes off of what looks like Labrador and goes all the way across the ocean into Europe.
01 03 04 04	CDR	I'm having a little harder time holding it today because of the narrow beam that we have with the zoom lens. We're out at maximum zoom now.
01 03 04 12	CC	Roger. It's coming very nicely here. Would you confirm you are in the EXTERIOR on ALC?
01 03 04 20	CDR	Right. We're EXTERIOR on ALC.
01 03 04 23	CC	Thank you.
01 03 04 24	CDR	I'll open it up to about a 55mm and show you exactly how it appears to us.

01 03 04 28	CC	Roger. We're - -
01 03 04 29	CDR	- - Sure are a lot of clouds down there today.
01 03 04 32	CC	We are standing by for your zoom - out to show us the relative size as it appears to you.
01 03 04 38	CDR	Okay. Right. Right there is about how the Earth appears to us now. We've made a few miles since yesterday.
01 03 04 55	CC	Yes, indeed. Roger. We show you about 115 000 nautical miles out, here in our plots. Looks like about halfway.
01 03 05 10	CDR	Yes. How are the colors coming into today, Bruce?
01 03 05 12	CC	Oh, the colors are coming beautifully. I'm amazed at the fidelity. The sea seems to reproduce the same color from day to day, so it looks like you guys have a pretty stable piece of equipment.
01 03 05 25	CDR	Okay. Again, you can see Baja California coming in there just real clear, and the Rocky Mountains, particularly starting into Mexico going up through Colorado and Wyoming, are coming in.
01 03 05 36	CC	Roger. I'm having a little difficulty picking out the landmasses down here today.
01 03 05 44	CDR	That's because of cloudcover. It looks like broken clouds over the southeastern part of the United States. Northeast has a little bit more. Looks like Canada is all socked over today, and over that big cap that goes up over the North Pole and over to Russia it's just solid overcast.
01 03 06 04	CC	Roger. We can pick up part of South America. Must be the Andes, just above or just to the west of the terminator down in the southern portion of the globe.
01 03 06 14	LMP	Bruce, you should see all of North and South America from where you are. We're going to zoom it in again here. Show you a little bit closer.
01 03 06 39	LMP	That's maximum zoom right now on the camera.
01 03 06 45	CC	Roger.
01 03 07 04	LMP	You know, it's a beautiful sight. We're sitting here, and it's almost like science-fiction looking back at it, Bruce.

01 03 07 12	CC	Right. We can pick out the continents a little more clearly.
01 03 07 39	CMP	I'm voting for the world being round, if there's any dissenters.
01 03 07 40	CC	Roger. We'll record your vote on that issue.
01 03 07 45	CMP	And, you know, yesterday we said the San Joaquin Valley was very evident. It sits on a bowl. Even though we're looking at it obliquely, you can still pick it out in the western United States. It's just like a big bowl carved out of the coastal and the Sierra Nevada Mountains.
01 03 08 04	CC	Roger.
01 03 08 27	CC	Apollo 10, Houston. The SPS data has been looked at on both the midcourse 2 and the evasive maneuver, and all the data is good. We'd like to get you to cycle the ALC switch once, so we can observe the effect on the picture down here.
01 03 08 47	CDR	Okay. Let me go back and get our monitor. Okay. Here we are.
01 03 08 50	CC	Roger. You just hold it steady, and then cycle it a few seconds to INTERIOR and back to EXTERIOR for us.
01 03 09 03	LMP	There's INTERIOR now.
01 03 09 06	CC	Boy, we can really see it working out down here.
01 03 09 09	LMP	Coming back to us again.
01 03 09 10	CC	Beautiful.
01 03 09 18	LMP	And, Tom's cutting down the f-stop now a little bit.
01 03 09 24	CC	Beautiful. What f-stop are you using? If you can stop it down one or two stops more it seems like the definition is better.
01 03 09 37	LMP	There's f:22 right there.
01 03 09 39	CC	Okay. Hold it there.
01 03 09 51	CC	10, this is Houston. When you stop it down, we get a second or so of excellent definition and no saturation, and then it tends to saturate again up in the North Polar region as though the ALC weren't quite picking up the intensity of the highlights.

01 03 10 29	LMP	Bruce, we will not be able to see the Moon because - through the TV - because we got the Sun right along side of it out the right-hand window.
01 03 10 35	CC	Roger. Understand.
01 03 10 44	LMP	We'll bring you on inside the spacecraft, if you like.
01 03 10 48	CC	Okay. Before you do that, would you open the lens up about two stops slowly and then stop it down fairly rapidly for us?
01 03 11 02	LMP	Okay. They are coming open now. Up and back.
01 03 11 30	CC	Roger. Go ahead and bring the camera inside now, if you like.
01 03 11 35	CDR	Yes, I can see what you mean about the saturation. From this kind of a candid view down here looking down at this distance, you could never tell anybody inhabited the place.
01 03 11 46	CC	Roger.
01 03 11 50	CDR	Okay. We're going to take you inside.
01 03 11 52	LMP	That's probably been said before.
01 03 12 18	CC	Okay. We're picking up your transmission from inside now.
01 03 12 48	LMP	Houston, this is obviously our patch. How is it coming through in color?
01 03 12 54	CC	Not so good really. It looks like you got some rather intense lighting from the back and the side - If you could get the lighting more directly on the patch, it would be better.
01 03 13 09	LMP	Yes, that's the Sun coming in.
01 03 13 13	CC	Roger.
01 03 13 30	CC	We got John coming through nicely on the tube. What was the three fingers for?
01 03 13 55	LMP	Do you see our emblem of today?
01 03 13 56	CC	Oh, that's beautiful.
01 03 14 06	LMP	We're going to put some more things in, but we [illegible] out of time.

01 03 14 10	CC	(Laughter) Roger! Is this also your emblem?
01 03 14 20	LMP	This is another emblem. Do you see any resemblance between the card and the guy holding the card?
01 03 14 26	CC	Now that you mention it.
01 03 14 35	LMP	Does he carry the briefcase?
01 03 14 38	CMP	Roger. Good grief, Charlie Brown!
01 03 14 39	LMP	Now you're going to bring on that whizzer here.
01 03 14 44	CC	Okay. We got Snoopy now.
01 03 14 56	LMP	Boy, he's been quiet for 2 days; he's going to get a chance to do a little woofing here in the next couple days.
01 03 15 04	CC	Roger. We notice the resemblance there, too.
01 03 15 08	LMP	Thanks a lot. I didn't know Tom had a big nose like that.
01 03 15 14	CDR	Ugh.
01 03 15 34	CDR	Take you over to Gene-o's side of the spacecraft.
01 03 15 40	CC	Roger. Picking up Gene now. You've got rather strong backlighting from the window.
01 03 16 13	CC	That's the spirit. You all drawing the window shades there?
01 03 16 18	LMP	How's that? Any better?
01 03 16 20	CC	Yes, indeed.
01 03 16 24	CMP	We didn't get a chance to shave this morning before this show. I hope that doesn't bother anybody.
01 03 16 29	CC	No, it doesn't bother us. The definition is real good; we can just about read your wristwatch there, Gene.
01 03 16 46	CC	Roger. Looks like it says about 1600. 16 05?
01 03 16 52	LMP	16 05 Cape time. 16 05 Cape time.
01 03 16 56	CC	Roger. We copy.
01 03 17 05	CMP	Got it.
01 03 17 06	CC	Roger. We synchronized our watches here.

01 03 17 11	CMP	Beautiful. Beautiful.
01 03 17 13	CDR	Looks like we have a good piece of gear here.
01 03 17 16	CC	Yes, it does.
01 03 17 17	CMP	I'll give you a whizzer, give you a whizzer of TP over here.
01 03 18 10	LMP	One of our problems is trying to figure out which way is up and which way is down.
01 03 18 20	CDR	And it's beautiful one time you have your choice. If you don't like things rightsideup, you can go upsidedown.
01 03 18 22	CC	Roger, down here. Okay. We've got one of you in each direction.
01 03 18 30	CDR	It's really a ball up here living in zero g, believe me.
01 03 18 34	LMP	It's the only way to fly.
01 03 18 40	CDR	Once you get going, the cost for individual passenger mile becomes rather reasonable.
01 03 18 51	CC	Roger. We copy.
01 03 18 54	LMP	I notice, boy, it sure picks up the Sun's reflection and density no matter where you go. That little reflection is coming out of my window behind me.
01 03 19 09	CC	Roger. What f-stop are you all using now?
01 03 19 10	LMP	We're on about f:28, I believe, here. Wait a minute. Yes, about 22 to 28.
01 03 19 21	CC	Houston. Roger. Out.
01 03 19 24	LMP	Still good color?
01 03 19 25	CC	Yes, indeed.
01 03 19 27	LMP	You might notice the dynamics here.
01 03 19 36	CMP	I just do whatever he says.
01 03 19 41	CC	Say, Tom, the flight engineer wants you to be sure you log all your exercises.
01 03 19 48	CDR	I got you.
01 03 19 54	LMP	Like I said earlier, this isn't fanning the peacock, but it's the best we've got.

01 03 20 12	CC	Boy, with dynamics like that, you guys ought to be pretty good at this PTC mode.
01 03 20 18	CMP	I mean to tell you.
01 03 20 20	CDR	Right. That's why we got about 10 hours sleep last night.
01 03 20 22	CC	Roger.
01 03 20 33	LMP	That's perfect zero gravity there. Boy, I'll tell you there's nothing like it.
01 03 21 02	CC	10, this is Houston. Is there - -
01 03 21 03	CDR	- - perfect balance.
01 03 21 04	CC	Roger. Are there any sort of air currents there affecting anything you can feel?
01 03 21 12	CDR	Roger. It's blowing a little movement. But it's not out here much really.
01 03 21 20	LMP	That's an effect we discovered a long time ago. If you watch it long enough, it'll go up.
01 03 21 25	CMP	It's really hard to stabilise something so it won't move.
01 03 21 30	CC	Roger. I remember that from Gemini 10.
01 03 21 35	LMP	We discovered a Cernan effect up here, but we can't find which way is up.
01 03 21 39	CC	Yes, Gene. Could you move the camera around slightly? I've got a very bright spot coming in the window, I just want to make sure that you don't burn the target with the f:2 - f:23 f-stop.
01 03 21 52	LMP	Yes. I'll try it here, Bruce, to get it away from some of that if I can.
01 03 21 55	CC	Roger.
01 03 22 07	CC	Oh, it's really looking good now. Beautiful color here.
01 03 22 14	CDR	Now we got three objects going.
01 03 22 21	CC	This is a real testimonial to prove you were there, in case there were any doubters.
01 03 22 27	LMP	If people want to know what kind of a man go to the Moon, there's a good look at one right there. Could

01 03 22 35	CDR	Some people still don't.
01 03 22 52	CC	I'm surprised you all have not set this to music.
01 03 22 58	LMP	Oh, you want music. Well, we'll give you some music at the conclusion here.
01 03 23 10	CDR	Okay. We'll take you back outside now.
01 03 23 14	CC	Roger.
01 03 23 28	LMP	While Tom shows you that, we've got another little rendition we'd like to put your way.
01 03 23 33	CC	Roger. We're standing by.
01 03 23 54	LMP	Here it comes. This - This is just so that you guys don't get too excited about the TV and forget what your job is down there.
01 03 24 05	CC	We're ready for what we're about to receive.
01 03 24 07	SC	(Music being played)
01 03 24 36	LMP	We don't need it all.
01 03 25 16	CDR	Just wanted to send some thoughts back to you.
01 03 25 18	CC	Roger. Thank you for your thoughts, and with this view of the Earth, it looks like the United States - The landmass of the U.S. is showing up better now than it was a few minutes ago.
01 03 25 30	CDR	Right, Bruce. I can really see them. Looks like the New England states are kind of clobbered in there.
01 03 25 36	CC	Right.
01 03 25 37	CDR	But the main part of it's coming in real good. And again you can see the great American desert, the Rocky Mountains, and the Sierra Nevadas there.
01 03 25 50	CC	Oh, it's just beautiful on the - the transients before it saturates there.
01 03 25 57	LMP	Okay. I'll try to give you another one.
01 03 26 24	CC	All those little glimpses are good, but you've got to be fast to catch them.
01 03 26 30	CDR	Is it - I'm trying to hold it as steady as I can. Is it looking okay?

01 03 26 33	CC	Yes. You're doing a good job on holding it.
01 03 27 15	CDR	Houston, Apollo 10. On the monitor, it appears that I have a couple of little bumps and ragged edges. Is that coming through on the black and white?
01 03 27 21	CC	Yes, it is. It's coming through on the black and white; and, of course, in the color that we've got here, it looks like it's in the horizontal sweep.
01 03 27 35	CDR	Yes. I noticed it when we first turned it on; it didn't have that, then it slowly started to saturate.
01 03 27 40	CC	All right. We saw those little bumps yesterday also.
01 03 27 45	CDR	Well, I think it was at the end of the transmission yesterday.
01 03 27 48	CC	Right.
01 03 27 53	CDR	Okay. We'll go ahead and terminate the TV pass here. I just wanted to play a little music for you so we have something up here when it gets lonely during the PTC mode.
01 03 28 05	CC	Roger, Apollo 10. We enjoyed the TV and the music.
01 03 28 15	LMP	We'll be talking to you tomorrow.
01 03 28 18	CMP	Adios.
01 03 28 20	CC	Roger. I hope you will be talking to us before tomorrow.
01 03 28 24	CDR	Oh, we plan to.
01 03 28 26	CMP	About this PTC stuff, Bruce.
01 03 28 28	LMP	About this in the Moon stuff. You better keep at it.
01 03 28 50	CC	Roger.
01 03 31 33	CC	Apollo 10. This is Houston.
01 03 31 36	CC	MARK.
01 03 31 37	CC	You're halfway. Over.
01 03 31 43	CDR	Roger. Thank you.

01 03 31 46	CC	And, based on present trajectory analysis, it looks like no more midcourse corrections will be needed prior to LOI. Over.
01 03 31 53	CDR	That sounds beautiful.
01 03 31 55	CC	You're right on the money - -
01 03 31 57	LMP	- - it's cheaper to keep going than turning back, right?
01 03 32 01	CDR	I tell you it looks beautiful going away, and it is going to look even better coming back.
01 03 32 03	CC	Roger.
01 03 32 04	CDR	What kind of - What kind of perigee you show us in these days there, Houston?
01 03 32 11	CC	About 60 miles pericynthion. And, did you all see the S-IVB from your burn attitude?
01 03 32 20	CMP	No, we couldn't see it. We might have been off in roll. I didn't want to fool with that too much.
01 03 32 25	CC	Roger.
01 03 32 26	LMP	But I didn't see it, but we were on the star, all right.
01 03 32 30	CC	Roger. We were just curious to know if you had seen it.
01 03 33 30	CDR	Hello, Houston. Apollo 10.
01 03 33 31	CC	Go ahead, 10.
01 03 33 33	CDR	Roger. Just want you to give our regards to Chris and all of the people in MCC and the tracking networks. It looks like all those computers are working right down to the last bit. To give us that 60 miles perigee is pretty fantastic.
01 03 33 45	CC	Roger, Tom. We'll pass that along.
01 03 34 00	CMP	Probably better watch it for the next couple of days just to make sure, don't you reckon?
01 03 34 05	CC	Oh, I don't reckon that we'll desert the MOCR here. I think there are a few people planning on sticking around, at least until you get into orbit.

01 03 34 13	CMP	Okay. That's really ... it right down to the old slot, though, man. That's great if it - if it does it.
01 03 34 38	CDR	You can tell Phil Shaffer to keep smiling. I can probably see him from here.
01 03 34 46	CC	Say again. Who am I supposed to tell, Tom?
01 03 34 51	CDR	Phil Shaffer.
01 03 34 52	CC	Roger.
01 03 35 14	CC	Apollo 10, this is Houston. Prior to midcourse correction 2, we set your X-PIPA BIAS to zero and, as a result of this, you have to update your erasable memory table and the contingency book. I've got a one-line update for you.
01 03 35 36	CDR	Okay. We are getting it out now.
01 03 35 47	LMP	Go ahead, Bruce.
01 03 35 48	CC	Roger. The E-memory table, column A, line 3: All balls. Over.
01 03 36 15	LMP	Okay. Got all balls, column A, line 3.
01 03 36 19	CC	Okay. And when you're ready to copy, I've got your P37 block data for TLI aborts, 35, 44, and 53 hours.
01 03 36 33	LMP	Stand by half.
01 03 36 53	LMP	Okay, Bruce. Go ahead.
01 03 36 57	CC	Roger.
01 03 37 37	CC	Roger, 10. I am ready to go ahead.
01 03 37 42	LMP	Go ahead. Fire.
01 03 37 43	CC	Okay. TLI plus 35 hours: 03730 5071, minus 165 09435. Over.
01 03 38 04	LMP	Why don't you read them all, Bruce, then I'll get them back to you.
01 03 38 06	CC	Roger. TLI plus 44: 04630 6695, minus 165 09414. TLI plus 53: 05530 5499, minus 165 11833. Over.
01 03 38 48	CMP	Okay. TLI plus 35 is 03730 5071, minus 165 09435. Plus 44 is 04630 6695, minus 165 09414; plus 53 is 05530 5499, minus 165 11833.

01 03 39 17	CC	Roger. Readback correct. Out.
01 03 40 17	CMP	Okay. Bruce, we've done your maneuver to the place where we disable all the jets, and we're going to wait here 20 minutes. Is that right?
01 03 40 26	CC	That's affirmative. Roger. All the jets in quads Charlie and Delta.
01 03 40 42	CMP	Okay. You know we've got AC - the AC jets OFF right now. You know that, don't you?
01 03 40 49	CC	Stand by.
01 03 41 01	CC	Roger, 10. What we're attempting to do is get you down to a single thruster firing at a time for attitude ... corrections. Smallest couple we can get.
01 03 41 22	CMP	Roger.
01 03 45 00	CMP	Hey, Bruce, the theory behind this PTC is that once initiated it never fires another jet. Isn't that the theory?
01 03 45 09	CC	I think that's the theory. Stand by, and I'll confirm it.
01 03 45 14	CMP	I'm just - I'm just pulling your leg.
01 03 45 21	CC	They say that's the theory, but I see a lot of fingers crossed.
01 03 45 27	CMP	Yes, that's why I brought it up.
01 03 45 30	CC	Roger.
01 03 45 32	CMP	Man, if it works, it will be the greatest thing since -
01 03 45 36	CC	You cut out after - -
01 03 45 37	CMP	Peanut butter.
01 03 45 41	CMP	Yes, there was a delay in the transmission there. The speed of light. That's peanut butter.
01 03 45 49	CC	Roger. Copy. Greatest thing since peanut butter.
01 03 57 44	CC	Hello, Apollo 10. Houston. We'll have a ground handover at 28 hours even GET.
01 03 57 52	CMP	Roger. Who are you handing us to, Charlie?

01 03 57 56	CC	Say again. Oh, we're handing you over to Madrid.
01 03 58 05	LMP	Okay. That's a nice place. Will you start speaking Spanish to us now, Charlie?
01 03 58 20	CC	I don't believe I could do that. How about buenos dias? Is that good enough?
01 03 58 26	LMP	Ah, Si senor. Muy bien, gracias.
01 03 58 29	CC	Buenas noches.
01 03 58 30	CMP	- - English is good enough for me.
01 03 58 31	CC	Roger.
01 03 58 32	CMP	Buenas noches.
01 03 58 33	CC	I got a hard enough time speaking English.
01 03 58 37	CMP	That's all right, Charlie. You just keep talking grits. I understand it.
01 03 58 51	LMP	Charlie, not to sound corny or trite, but it really is like another world out here.
01 03 58 56	CC	Say again, Gene.
01 03 58 59	LMP	I said at the expense of sounding corny and trite, it's really another world out here.
01 03 59 04	CC	Roger.
01 03 59 10	LMP	I like to say Roger.
01 04 00 55	LMP	Houston, 10. We - We're starting a roll right now. You want me to initiate OMNI's and take care of the high gain?
01 04 01 04	CC	Stand by.
01 04 01 13	CC	Roger, 10. We'd like you to select OMNI Bravo.
01 04 01 49	LMP	Houston, this is 10. How do you read on Bravo?

END OF TAPE

01 04 01 48	LMP	Houston, this is 10. How do you read on Bravo?
01 04 01 52	CC	Roger. Your're coming through about four-by with a lot of background static, Gene.
01 04 02 03	LMP	Okay. How now?
01 04 02 04	CC	That's fine.
01 04 02 41	CMP	Okay, Houston. We've got the deadband set up. You want us to go back to the CMC and all the -
01 04 02 50	CC	Stand by.
01 04 03 50	CMP	Don't look to me like it's going to last very long there, Charlie.
01 04 03 54	CC	Roger, John. When you did that VERB 46 ENTER a couple of seconds ago it collapsed the deadband back to five-tenths of a degree in the DAP. You'll have to reinitialize again.
01 04 04 08	CMP	Okay.
01 04 04 17	CMP	I'm showing a - I'm showing a 5-degree - showing a 5-degree deadband.
01 04 04 28	CC	Roger. We wanted a - We want you to do us a 40 - a 30-degree deadband.
01 04 04 40	CC	Stand by one. We'll get you squared away.
01 04 04 41	CMP	You mean - okay.
01 04 05 21	CMP	Okay. There's your 30-degree deadband, which is what we had unless the numbers didn't get in there.
01 04 05 26	CC	Roger. Stand by.
01 04 06 48	CMP	Houston, what I want to find out is, do you want us to go back to CMC in AUTO on the pitch and yaw channels from ACCEL COMMAND? Do you want us to RATE COMMAND giving it back to the DAP?
01 04 07 05	CC	That's affirmative. We want you to go to CMC in pitch and yaw MANUAL ATTITUDE and RATE COMMAND.
01 04 07 07	CMP	Okay. And that's where we are.
01 04 07 11	CC	Roger.
01 04 18 23	CC	Hello, Apollo 10. Houston. Over.
01 04 18 28	CMP	Go ahead there, Houston.

01 04 18 30	CC	Roger. We'd like to proceed with the PTC AUTO REACQ check at 28 hours. Follow the procedure as in the flight plan except for one change and that's one addition I should say, and that's tape recorder to FORWARD.
01 04 18 52	LMP	Understand. Proceed with the AUTO REACQ check at 28 hours with one addition: tape recorder to FORWARD.
01 04 19 00	CC	Affirmed.
01 04 19 03	LMP	You want to go ahead and do that now, Charlie, is that correct?
01 04 19 04	CC	That's affirmative, Gene.
01 04 19 07	LMP	You want - Okay.
01 04 19 25	LMP	Apollo 10, Houston. Your high gain antenna angles of 90 minus 40 are good for the roll left.
01 04 19 36	LMP	Roger. Hey, Charlie, we're up there eating a new meal, a little late as usual, and what do you know? We had a chicken salad sandwich.
01 04 19 48	CC	Hey, how does it taste?
01 04 19 52	LMP	Would you believe, like a chicken salad sandwich?
01 04 19 56	CC	Hey, great!
01 04 19 57	LMP	A first.
01 04 19 58	CC	Sounds like a real gourmet special, there.
01 04 20 03	CC	We'll record that comment: "good chicken."
01 04 20 05	CDR	That's real improvement.
01 04 20 07	CC	Roger. We'll record that comment: "Good chicken salad sandwich."
01 04 20 14	LMP	You noticed I didn't say, "Good corned beef sandwich."
01 04 20 17	CC	Yes, I got that. We were going to ask about that next.
01 04 20 24	LMP	No need to ask.
01 04 20 28	CC	Hey, you guys, how's the water tasting now? Have you got up enough nerve now to try any more of it?

01 04 20 36	CDR	Yes, it's real good there, Charlie. No problem at all.
01 04 20 39	CC	Roger, Tom.
01 04 21 04	LMP	The taste is okay, Charlie. There's an awful lot of air bubbles in it, which you know -
01 04 21 12	CC	Roger.
01 04 21 14	CMP	Which is hard to understand since we kept it closed off.
01 04 21 18	CC	We'll have the EECOMM guys scratch their heads on that and see if they can come up with the reasons for that.
01 04 21 26	LMP	We had this same problem in Gemini. It's just hard to keep air out of water, I guess.
01 04 21 30	CC	Okay.
01 04 23 13	CMP	Houston, it looks like we just went to deadband START.
01 04 28 26	LMP	Hello, Houston. Houston, how do you read?
01 04 28 28	CC	Roger. You are coming in five-by now, Gene.
01 04 28 43	CC	Hello, Apollo 10. Houston. Do you read?
01 04 28 59	LMP	Hello, Houston. Are you reading?
01 04 29 02	CC	Roger. We are reading you five-by.
01 04 29 07	LMP	Okay. This is OMNI D. Haven't been able to do anything with this REACQ mode. My signal strength goes from about one-quarter to two-thirds back and forth, but apparently you haven't been reading it all.
01 04 29 21	CC	That's affirmative. We have had nothing but static. Stand by one. Let me see what the EECOMM says.
01 04 31 16	CC	Hello, Apollo 10. Houston. Those numbers we gave you were too late. When you went to HIGH GAIN, they were too late. We'll recompute some angles for you and get passing off to you. Over.
01 04 31 32	LMP	Okay, Charlie.
01 04 33 28	CC	Apollo 10, Houston. Those numbers in the flight plan for the roll left are good in about 5 minutes. If you'll try in about 5 minutes, Gene-o, it should work.

01 04 33 39	LMP	Okay, Charlie.
01 04 37 23	CT	You have NET 1 on the 525 at this time.
01 04 38 17	LMP	Charlie, I'm going to HIGH GAIN now.
01 04 38 21	CC	Roger. I'm reading five-by through the high gain, Gene.
01 04 40 14	LMP	Hello, Houston. Houston, this is 10.
01 04 40 18	CC	Roger, 10. Go ahead.
01 04 40 22	LMP	Okay. I'm in REACQ and when I went to REACQ in high gain, I'm reading about minus 30 on my indicator - my pitch indicator - and 270 on yaw.
01 04 40 35	CC	Roger. Stand by.
01 04 40 38	LMP	I'm in a REACQ mode now.
01 04 40 41	CC	Roger. We copy on the high gain, 10. We'd like you to set your thumb wheels to the roll left indications: 90 and a minus 40 and configure your panel as shown in the flight plan with the addition of the tape recorder to FORWARD.
01 04 41 00	LMP	That's the way we are right now.
01 04 41 02	CC	Roger. Good.
01 04 41 16	CC	10, Houston. We're all configured now and we think we'll be breaking lock here in a little while and then the next time around we should REACQ and we'll see how that comes out.
01 04 41 33	LMP	Okay.
01 04 52 42	CC	Hello, Apollo 10. Houston. Over.
01 04 52 49	LMP	Go ahead, Houston.
01 04 52 50	CC	Roger. Reading you five-by. Looks like we're right on it.
01 04 52 52	LMP	...
01 04 52 56	CC	Say it again, Gene.
01 04 52 59	LMP	Go ahead, Charlie.
01 04 53 00	CC	Roger. Reading you five-by. Looks like we locked up again on the REACQ.

01 04 53 04	LMP	I guess so, but we never really seemed to lose lock for any great length of time for it to go back to those REACQ angles. It has been wavering down between two-thirds and zero signal strength, but never seems to lose lock long enough for the REACQ mode to put it back at the angles.
01 04 53 21	CC	Roger. Stand by.
01 04 53 46	CC	Hello, Apollo 10. Houston. Do you have us on the high gain?
01 04 53 51	CMP	That's affirmative. High gain, REACQ mode.
01 04 53 55	CC	Roger.
01 04 54 12	LMP	Looking right at you with the eyeball, Charlie, too. Right over Houston.
01 04 54 16	CC	Roger.
01 04 54 20	CMP	Come out and smile and I will take your picture.
01 04 54 23	CC	They won't let me out of this constant overcast here.
01 04 54 38	CMP	How long do you want to stay? Do you want to try this REACQ mode continually again? How it looks like we are picking up good strong strength at those angles.
01 04 54 47	CC	Roger. Stand by.
01 04 55 05	CC	10, Houston. It looks like you switched to narrow beam and it looks good. We'd like to try it one more time.
01 04 55 13	CMP	Okay.
01 04 56 23	CMP	Boy, we've got the world's brightest sunshine up here.
01 04 56 27	CC	Roger. In which window?
01 04 56 32	CMP	It depends on where you are in the PTC mode.
01 04 56 37	CC	Roger.
01 04 56 46	CMP	I can see why they got all that thermal insulation on the lunar module. They need it.
01 04 57 06	CC	Hello, Apollo 10. Houston.
01 04 57 10	LMP	Go ahead, Charlie.

01 04 57 14	CC	Roger. I want to talk to John a little bit. I think we misled you on this PTC setup, John, last time. We would like to reinitiate this thing after this REACQ test, and I would just like to run through this procedure again. On the 194 on the CMC the checklist is good down through step 4. Then, we would like you to disable all the jets on quads C and D. Then wait 20 minutes again. Then the MANUAL ATTITUDE to pitch and yaw to ACCEL COMMAND. Then, make sure you ENABLE all the jets and then initiate the desired roll rate with the procedures listed in the checklist. And when you get the roll attained, then MANUAL ATTITUDE roll to ACCEL COMMAND and increase the deadband to the desired value on page 193 and then MANUAL ATTITUDE pitch and yaw RATE COMMAND. Over.
01 04 58 23	CMP	Roger. I figured you were going to say that, Charlie.
01 04 58 29	CC	I don't get it. Excuse me; little slow now.
01 04 58 34	CMP	No, that's all right. I understand what you are saying.
01 04 58 39	CC	Roger. It looked like to us that to get the roll rate started we didn't have all the jets and the thing coupled in on us and started. We got a pitch and yaw out of it, also, instead of just pure roll.
01 04 59 01	CMP	Well, I would be right surprised to see if you can get a pure roll rate out of these things on account of the roll thrusters, they just ain't there.
01 04 59 12	CC	Roger. Well the G&C guys say that with the damp doing it with the two jets, it ought to give us as close to a couple as we can get and they will admit that we get some pitch and yaw, but we shouldn't get too much and then it should damp out for us.
01 04 59 35	CMP	Okay. What damps it out?
01 04 59 36	CC	Roger. When you go back, as I understand it, when you go back to pitch and yaw RATE COMMAND in the last step of the procedure, then we ought to damp those rates out.
01 04 59 56	CMP	But don't you make the deadbands big and everything?
01 04 59 59	CC	Okay. Everybody is shaking - G&C is shaking his head no, that when you make the deadband big, then you won't get any damping out until you hit the edge of the deadband, then it will bring you back in. And

		I guess you just have to ACCEPT those pitch and yaws when you start up the roll rate, if you do get it.
01 05 00 26	CMP	I see.
01 05 01 36	CC	Hello, Apollo 10. Houston. On this next REACQ test, we would like you to check - monitor your pitch and yaw gimbals on the S-band and see how close it comes to the gimbal and if it is listed on your card - in your checklist.
01 05 01 56	CMP	Okay.
01 05 05 00	CMP	Charlie, let me run this by you again and see if we got it straight now.
01 05 05 03	CC	Roger.
01 05 05 09	CMP	Okay. We're going to go to the attitude in tight deadband. Now we're going to ENTER 5018, and we're going to DISABLE C and D quads and wait 20 minutes, then we're going to enable all the jets that go to pitch and yaw and RATE COMMAND, and we're going to initiate a three-tenths of a degree roll rate and ACCEL COMMAND. All this time we are still a tight deadband, and then we're going to go to Y-DEADBAND. Is that correct?
01 05 05 33	CC	That's negative, John. You - you wait 20 minutes - all that down to "wait 20 minutes" is good. Then you go to MANUAL ATTITUDE pitch and yaw to ACCEL COMMAND. You enable all the jets, and then you let the DAP start - stop - start the roll rate by doing the VERB 21 901 ENTER and the VERB 24 ENTER, and on the last ENTER, the thing ought to take off and roll, and when the roll is attained, the MANUAL ATTITUDE roll goes to ACCEL COMMAND. Then you increase the deadband to the desired value and the MANUAL ATTITUDE pitch and yaw to the RATE COMMAND. Over.
01 05 06 29	CMP	It looks to me like a good way to use gas.
01 05 06 34	CC	Stand by. I know -
01 05 06 37	CMP	I'll try though.
01 05 06 38	CC	I cut you out. Go ahead.
01 05 15 00	CDR	Hello, Houston. , Apollo 10.
01 05 15 05	CC	Fine shot, 10. Go ahead.

01 05 15 10	CDR	Okay. We can read you now. We want to go over this step-by-step again because we think there is still one step that's out of sequence. We want to go through it after it's finished the REACQ mode here. Just go through the whole thing step-by-step and then we'll give it a go. Okay?
01 05 15 25	CC	Roger, 10. We copy.
01 05 15 30	LMP	Okay, Charlie. I've got a couple of points for you on that gimbal limit.
01 05 15 34	CC	Okay, shoot.
01 05 15 37	LMP	Okay. You can plot them if you want. Pitch plus 60, and yaw 220. Pitch plus 60, and yaw 240, plus 60 and 270, and then pitch minus 10 and yaw 90. Pitch zero and yaw 120, and pitch zero and yaw 130. That gives you an idea of the ones I was able to plot - how close we come to it.
01 05 16 18	CC	Roger. Thank you much, 10. We copy them all.
01 05 16 24	LMP	Okay. Let me know how long you want us to stay in high gain.
01 05 16 28	CC	Roger. Stand by.
01 05 17 10	CC	Hello, Apollo 10, Houston. We're ready to discuss the PTC setup if you guys are still go ahead.
01 05 17 20	LMP	Go, still go.
01 05 17 24	CC	10, you want me to start out with the procedure as we have it, or do you want to ask questions?
01 05 17 33	LMP	Why don't you run through it just one time and then let me write it all down and then I'll ask questions, okay?
01 05 17 39	CC	Roger. Okay. On the setup, your procedure on page - on the G&N checklist, on 194 is good down to the - through step 4 on 5018. ENTER when the maneuver is complete to the PTC attitude. Then we'd like you to DISABLE all jets on quads Charlie and Delta, wait 20 minutes, then MANUAL ATTITUDE pitch and yaw ACCEL COMMAND. Then ENABLE all jets. Then initiate the desired roll rate via the VERB 24, NOUN 01, and the VERB 24 ENTER. When roll is obtained, MANUAL ATTITUDE roll to ACCEL COMMAND. Then increase your deadband to the desired value, and MANUAL ATTITUDE, pitch and yaw, to RATE COMMAND. Over.

01 05 19 05	CDR	Okay. You went too fast on the last part there, Charlie. Okay, again you wanted to initiate the initial roll rate with VERB 24, right?
01 05 19 13	CC	That's affirmative. You know you set into the DAP the three-tenths via the VERB 24, NOUN 01 and then the VERB 24 and on the last ENTER on that sequence you get, the DAP will start the roll rate.
01 05 19 38	CDR	Okay. We set the decimal up here - he said we DISABLE C and D jets, we wait 20 minutes, MANUAL ATTITUDE, pitch and yaw ACCEL COMMAND. Then we ENABLE all jets to initiate the desired roll rate, but we can't use the DAP if the pitch and yaw are in ACCEL COMMAND.
01 05 20 04	CC	Roger, but - Stand by.
01 05 20 08	CDR	Do you want to use the DAP - ?
01 05 20 14	CC	We got roll - We have roll in RATE COMMAND and we want you to initiate the roll.
01 05 20 21	CDR	Okay.
01 05 20 22	CC	Rate in using the DAP. See if you have pitch and yaw -
01 05 20 25	CDR	Okay.
01 05 20 26	CC	Okay?
01 05 20 29	LMP	Yes, well, my question is, what keeps the roll from coming into pitch and yaw if you've got it in ACCEL COMMAND?
01 05 20 39	CC	Stand by.
01 05 20 51	CC	Apollo 10, this is Houston. We'll admit that some roll rate will couple into pitch and yaw with pitch and yaw in the ACCEL COMMAND when the roll rate is initiated, but we feel that this is a procedure that will minimize that coupling. Over.
01 05 21 11	LMP	Well, I'll tell you, Charlie, I really don't see a bit of difference between this and what he did when we set it up manually. We'd be doing the same things and you see where we are right now.
01 05 21 22	CC	Roger.
01 05 21 24	LMP	We'll try it.

01 05 21 25	CDR	We'll give it one go and see how it works out and follow us right through it. Okay?
01 05 21 29	CC	Roger.
01 05 21 49	LMP	Okay. One question, Charlie. Do you want to go to the attitude in tight deadband? Is that not correct?
01 05 21 56	CC	That's affirmative. On the VERB 48 we select 0.5-degree deadband.
01 05 22 04	LMP	Okay.
01 05 22 30	CC	10, Houston. We're dumping your tape. We'd like, when we finish the dump - we'd like for you to go to OMNI Bravo and also one flight plan update, at 2855 delete the closing of the O_2 VAC ION MAIN A and B breakers.
01 05 23 00	LMP	Yes, we've got it, Charlie.
01 05 23 02	CC	Roger.
01 05 23 03	LMP	When are you going to be done with the dump?
01 05 23 04	CC	Stand by. EECOMM say, in a minute, Gene.
01 05 23 14	LMP	Okay.
01 05 24 28	CC	Hello, Apollo 10. Houston. We have the dump completed; select OMNI Bravo, please.
01 05 24 35	LMP	Okay. Go on OMNI Bravo.
01 05 26 43	CMP	Hey, Charlie, when we get the desired roll rate then go MANUAL ATTITUDE in roll to ACCEL COMMAND, and what's the third step in there?
01 05 26 54	CC	That's affirmative. MANUAL ATTITUDE roll to ACCEL COMMAND then you can increase your deadband to the desired value and then put the MANUAL ATTITUDE pitch and yaw to RATE COMMAND. Over.
01 05 27 09	CMP	Okay.
01 05 27 53	CMP	Okay. We are at the attitude. We have C and D jets disabled.
01 05 27 56	CC	Roger.
01 05 28 00	CDR	We started the clock to wait the 20 minutes.

01 05 28 03	CC	Roger. Copy, 10. Our last time out to the 20 minutes, we had rates down to a thousandth, less than a thousandth of a degree.
01 05 28 20	LMP	Yes, but Charlie, here's the thing. We'll go ahead and do this, but what happened was that when Tom initiated a three-tenths of a degree per second roll rate with pitch and yaw, in ACCEL COMMAND, and it coupled, I don't see how, we're right up against a deadband in about 20 minutes or however long it was.
01 05 28 41	CC	Roger. Did you ENABLE all the jets at that time, when you started that roll rate? Over.
01 05 28 56	CDR	Nope. Okay. I'm not sure. We'll go ahead right down through the procedure here.
01 05 29 06	CC	Roger.

END OF TAPE

01 05 41 58	CDR	Okay, Houston. Apollo 10. We're going to go ahead and load the DSKY, as you can see, and will not hit ENTER until 20 minutes has elapsed.
01 05 42 07	CC	Roger, 10. We copy.
01 05 43 12	CC	10, Houston. Before you hit the final ENTER, we'd like you to hold off right where we are until we can get some verification on what this will do to us by just standing here.
01 05 43 28	CDR	Okay.
01 05 43 49	CDR	Okay. We're down to the last step, and we'll hold off.
01 05 43 53	CC	Roger. We copy. Stand by, Tom.
01 05 43 59	CDR	All right, Charlie.
01 05 45 37	CMP	Okay, Charlie. When we get to 20 minutes, you mean you don't want us to keep on going?
01 05 46 05	CMP	Houston, Apollo 10.
01 05 46 07	CC	Roger. Go ahead, 10.
01 05 46 11	CMP	When we get to 20 minutes, you do not wish us to proceed with the test?
01 05 46 15	CC	Negative, 10. That wasn't my intention. We're discussing with the G&C now. When you did the VERB 24, NOUN 01 ENTER, it set up a rate of some sort that I'm trying to get explained to me right now, and I'll be back with you in just a moment. At the end of the 20 minutes, you can proceed on. If you'll stand by, I'll have an explanation for you. Over.
01 05 46 53	CMP	I don't see much rates here.
01 05 46 59	CC	Roger. We - They're very small, 10. We saw something on the downlink. It's damping out now. When you get to 20 minutes, you can proceed.
01 05 47 10	CMP	Roger.
01 05 48 44	CDR	Okay. Coming up on 20 minutes. Going to put the MANUAL ATTITUDE, pitch, and yaw, to ACCEL COMMAND.
01 05 48 50	CDR	MARK.

01 05 48 51	CDR	Twenty minutes. MANUAL ATTITUDE, pitch and yaw, to ACCEL COMMAND, and all jets are coming on enabled.
01 05 48 57	CC	Roger.
01 05 49 01	CDR	Okay. Are you ready for us to rehit this final ENTER to set up the roll rate?
01 05 49 06	CC	Stand by.
01 05 49 12	CDR	Okay. We're standing by.
01 05 50 18	CMP	Houston, Apollo 10.
01 05 50 21	CC	Go ahead, 10.
01 05 50 25	CMP	Okay. If that roll jet fires, it's going to couple into the other axis before we even get started on this thing.
01 05 50 31	CC	Roger. We're having a little discussion down here. We'll be back with you in 5 seconds or so. Hold on.
01 05 50 39	CMP	Okay.
01 05 51 04	CMP	And it just fired.
01 05 51 05	CC	Roger. You can ENTER.
01 05 51 14	CMP	It's entered, and there it goes.
01 05 51 17	CC	Roger.
01 05 51 26	CDR	Okay. Roll's going to ACCEL COMMAND.
01 05 51 29	CC	Roger.
01 05 51 30	CDR	And we're going to put the deadband to wide - and we're going to put the deadband to wide now. Affirmative?
01 05 51 38	CC	That's affirmative, to 30 degrees.
01 05 52 17	CDR	Okay. Now, MANUAL ATTITUDE, pitch and yaw, now going to RATE COMMAND.
01 05 52 21	CC	That's affirmative, 10, and I think we're finally in configuration. Let's see what happens.
01 05 52 30	CDR	Okay. ...
01 05 52 31	CMP	... Charlie ...

01 05 53 25	CC	Hello, Apollo 10. Houston. After your comments on MANUAL ATTITUDE, pitch and yaw, to RATE COMMAND, you faded out, Tom. Say again what you had.
01 05 53 38	CDR	Okay. That was the last step on the total sequence.
01 05 53 45	LMP	And honestly, the only difference between this one and the last one was that this time the DAP did it and the last time we did it - roll rate.
01 05 53 52	CC	Roger. If - one point here: we couldn't - since we didn't have the high bit rate, we couldn't tell, but if you had not - did not ENABLE all the jets, then when you started the roll manually in ACCEL COMMAND, then it would only fire one jet, and that would couple - Due to the c.g. problems with the LM on board, it would couple into pitch and yaw. And we feel that that's what's happened, but we weren't able to verify that due to the telemetry.
01 05 54 24	CMP	Okay. Well, I think it's a good theory, but that - that isn't what happened, because we had the same procedure for the last one except - with the exception that we replaced the DAP with the stick-and-throttle guy.
01 05 54 36	CC	Roger. We - Stand by. We'll see if we can come up with an answer, but I doubt it, John. There's a lot of disagreement here on this.
01 05 54 47	CMP	Okay. Well, that's very interesting. We'll watch it.
01 05 54 50	CC	Roger.
01 06 00 26	CDR	Houston, Apollo 10.
01 06 00 30	CC	Go ahead, Apollo 10.
01 06 00 33	CDR	Okay. At 30 hours, we have a LM/CM DELTA-V for you as per flight plan. It is now reading 1.05 psi.
01 06 00 42	CC	Roger. Copy, Tom.
01 06 00 46	CDR	Roger.
01 06 00 47	CMP	This thing's really tight over there.
01 06 00 49	CC	Roger. We agree.
01 06 01 02	CC	And, 10, this is Houston. There is no need to reinitiate the CM purge now.

01 06 01 12	CMP	Roger.
01 06 27 11	CC	Hello, Apollo 10. Houston.
01 06 27 16	CMP	Go ahead. Over.
01 06 27 17	CC	Roger. We'll have a station handover in about 3 minutes and 45 seconds. We're going back to Goldstone, it looks like.
01 06 27 25	CMP	Roger.
01 06 31 38	CDR	Hello, Houston, Apollo 10. How do you read now?
01 06 31 53	CC	10, Houston. Go ahead.
01 06 31 57	CDR	Roger. Just wanted to check with you on the new COMM station. One thing we're doing here during all this spare time, we're getting out our lunar operation cards and charts and going through the whole thing, just having a skull session. And we'll be doing this for about the next 2 days, just reviewing the stuff. Just like going through a simulation.
01 06 32 18	CC	Roger, Apollo 10. We copy. We - -
01 06 32 23	CDR	We might have a few questions coming down.
01 06 32 27	CC	Roger. We'll be standing by with all the guys, Tom, and we finally located our backup set, and we'll be doing the same thing.
01 06 32 38	CDR	Okay. Real fine, Charlie.
01 06 32 42	CC	Any other requests you guys got? Looks like to us this PTC is beginning to work. We see it going off in pitch and yaw, but it is not coupling and going to one - spiraling out to one edge of the deadband. It's just going back and forth between pitch and yaw, well within the deadband.
01 06 33 01	CMP	Yes. It looks like it's going to work.
01 06 33 03	CC	Well, we hope so after all that.
01 06 33 04	CDR	We apologize.
01 06 33 05	CC	Well, we apologize to you guys for not being straight on the procedure.
01 06 33 11	CMP	Well, I still - I don't know why the other one wouldn't have worked either.

01 06 33 17	CC	We can't answer it either, John, really. It's just one of these black magic ones, I guess.
01 06 33 29	CC	We've had a shift change down here. Too bad you guys have to work 24 hours a day up there. Well - We got the Maroon Team, it is, is on now.
01 06 33 45	CDR	Okay, Charlie. Take it easy.
01 06 33 46	CC	Roger.
01 06 33 48	CMP	We'll see you tomorrow.
01 06 33 49	CC	We'll see you tomorrow.
01 06 33 51	CDR	Okay. One thing about working 24 hours a day, we've got a beautiful view up here.
01 06 33 54	CC	Yes. It's well worth it, Tom. We're real envious.
01 06 34 01	CDR	Yes. One thing of interest to note: you know the total clouds we described to you on TV?
01 06 34 06	CC	Yes.
01 06 34 07	CDR	From our angle now, it looks like the whole northern quarter of the whole globe is completely socked in there; and, again, the United States is what really stands out and part of Mexico. We can see the Gulf Coast from here real well, right through the hatch window.
01 06 34 21	CC	Roger. It's still - Everybody who just came in from outside said it's still clear, so that's a good description.
01 06 34 29	CDR	We'll see you tomorrow, Charlie.
01 06 34 30	CC	Roger. Good night.
01 06 55 43	LMP	Hello, Houston. This is Apollo 10.
01 06 55 47	CC	Apollo 10, this is Houston. Over.
01 06 55 52	LMP	Hey, Bruce. We just want you to eye overnight on the SPS oxidizer - ullage pressure. I've seen it - after yesterday's burn - drop maybe about 5 psi, and after today's burn, it appeared like it's slowly dropping. It may be a temperature effect, but I'd like you to keep an eye on it overnight.
01 06 56 18	CC	Roger. We'll keep a watch on it.

01 06 56 22	LMP	Okay.
01 06 57 13	CC	Apollo 10, this is Houston. Over.
01 06 57 19	LMP	Go ahead, Houston.
01 06 57 21	CC	Roger. This oxidizer tank ullage pressure decrease was also noticed on 8. We saw some of it last night. The explanation is that the oxidizer is absorbing the helium that is present in the tank, causing the pressure to decrease. When it becomes saturated with helium, then things will remain static in this respect for the rest of the mission. Over.
01 06 57 51	CDR	Fantastic there, Bruce.
01 06 57 55	LMP	Okay. I'm just glad to hear those kind of answers, because I've been looking here at it, too, for a couple of days.
01 06 58 01	CC	Roger. We will keep an eye on it, though, for you.
01 06 58 05	LMP	Okay. That makes me feel a little bit warmer.
01 06 58 09	CC	Roger.
01 06 58 43	CC	Apollo 10, this is Houston. We've been having some difficulties with the data storage equipment under ground command here, so we've started the tape. We'd like to record a few minutes worth of random data, and then try dumping it back down to verify our system here.
01 06 59 06	LMP	Okay. I have the gray up here so I guess it's on okay, Bruce.
01 06 59 10	CC	Roger.

END OF TAPE

01 07 36 34	CC	Apollo 10, this is Houston. Over.
01 07 36 44	CMP	Go ahead, Houston.
01 07 36 46	CC	Roger, 10. If you're through with your meal, we've got some conversation for John regarding the P23 sightings. Over.
01 07 36 55	CMP	Okay. Go ahead.
01 07 36 58	CC	Okay. The noise in the data is about 8 to 12 arc-seconds, which is considered to be very good. The nominal noise on the sextant with zero errors is 10 arc-seconds, so it looks like you're doing things perfectly on the sightings. With respect to the DELTA-H, we got two different values. The one from yesterday implied using a reference at 33 to 34 kilometers. The sightings from today implied DELTA-H of 13 to 14 kilometers. We suspect that the background light during today's sightings was higher than yesterday. This would probably cause difficulty in sensing the upper threshold at the same place as yesterday. You tend to pick out a brighter and hence lower horizon locator. The problem is not serious. It shouldn't cause any concern, but we'd like some comments from you specifically if you can compare the lighting background for today's sightings with the background that you had yesterday. And, can you determine where this light, if it was brighter, came from? Over.
01 07 38 35	CMP	Well, there was a distinct horizon yesterday and I was marking on the uppermost limit of where it looked like the - Actually, there was a pretty definite, defined limit that I was seeing there yesterday. And today I didn't see that. It just looked like there was no - It just looked like there was a - if there was such a band, it was too narrow for me to notice.
01 07 39 07	CC	Roger. You also made a comment about losing a star in the horizon. Can you elaborate on that?
01 07 39 14	CMP	You know, sometimes the AUTO tracking tracks both the star and the - It puts the optics down on the Earth. The Mark on the horizon, you bring it up to the horizon and Mark on it. Well, when it doesn't - puts it down on the Earth. It was so bright today that I couldn't

see any of the stars. Every time it would be too bright to see the stars, so I don't really know how you would do under those kind of conditions. It would be difficult to do star landmark, I believe.

01 07 39 53	CC	Roger. We copy. Thank you.
01 07 41 06	CDR	Hello, Houston. Apollo 10.
01 07 41 09	CC	Apollo 10, this is Houston. Go ahead. Over.
01 07 41 14	CDR	Roger. Bruce, could you make a check and see if it was tested on the ground, prior to flight, for this little hand-held centrifuge to separate air from water? We have some strange phenomenon, that the bubbles go to the bottom of the bag.
01 07 41 32	CC	Roger. It may take us a few minutes to track down the party responsible for the testing on this, but we'll check it out.
01 07 41 43	CDR	Yes, I wish you would. It's utterly phenomenal.
01 07 41 46	CMP	What happens is that we start out with a bagful of water and bubbles - little bitty bubbles - and we end up with a bagful of water and great big bubbles. But there is no way to separate the bubbles from the water. That I can see.
01 07 42 02	CC	Did you try spinning it the other way?
01 07 42 07	CDR	(Laughter) Dutifully. Yes, we have.
01 07 42 12	CC	Roger. We'll look into it.
01 07 50 13	CC	Apollo 10, this is Houston. Over.
01 07 50 19	LMP	Go ahead.
01 07 50 20	CC	Roger, 10. At this time, we'd like you to select H_2 tank 2 heaters to OFF. We're doing this in order to avoid giving you a master caution and warning light during your sleep period, if at all possible. Over.
01 07 50 38	LMP	H_2 tank 2 heater is OFF.
01 07 50 41	CC	Roger.

01 08 05 00	CC	Apollo 10, this is Houston. Over.
01 08 05 07	LMP	Go ahead, Houston.
01 08 05 08	CC	Roger, 10. To facilitate our DSE dump, we'd like to try high-gain antenna acquisition once without disturbing the PTC. If we can't do it, we'll wait until tomorrow. Your procedure for high-gain antenna pointing to VERB 64 in the checklist starts out with a VERB 37 ENTER. Do not do the VERB 37 ENTER. Just start right out with the VERB 64 ENTER so that we don't disturb the PTC. Over.
01 08 05 52	LMP	Roger. You want us to put the VERB 64 to DSKY. Is that right?
01 08 05 56	CC	Roger. And acquire with high-gain antenna.
01 08 06 08	LMP	Okay. And the theory is, they probably don't disturb the PTC.
01 08 06 16	CC	Roger.
01 08 07 31	CDR	Houston, do you have high-gain now?
01 08 07 36	CC	Negative, 10. Not yet.
01 08 13 40	CDR	Houston, we have it now.
01 08 13 44	CC	Roger. We confirm high-gain antenna acquisition. And, I got a few other notes for you prior to your sleep period. Are you ready to copy?
01 08 13 56	CDR	Stand by.
01 08 14 08	LMP	Go ahead, Bruce.
01 08 14 11	CC	Roger. We'll be using OMNI antennas tonight during PTC, and this will be OMNI Bravo. We'd like to request that in setting up your COMM modes for this evening you ensure that the S-band NORMAL MODE VOICE switch if OFF, and use DOWN VOICE BACKUP if you need to contact us during the night. There will be a waste-water dump after GET of 45 hours tomorrow. We'll give you an exact time tomorrow. We show rotational hand controller number 2 direct power to be ON. We'd like it turned OFF. The general consumables analysis for this point in the mission is that you're in good shape. If you need any specific numbers, why, we can supply

them. Your PTC mode looks good so far. In fact, the angular excursions in pitch and yaw which had built up to about 7 or 8 degrees a half-hour or so ago seemed to have damped down and decreased to on the order of 4 1/2 or 5 degrees at the present time. We'd like you to report after you finish chlorinating the potable water tank. And, we'd remind you to leave the potable tank inlet valve OPEN. Over.

01 08 15 52	LMP	Okay. I think we got the chlorination information, and we'll let you know. And if we use OMNI's. I imagine it will be a Delta and Bravo like we normally have been using. And, you want the S-band NORMAL VOICE - MODE VOICE switch OFF and you want to go DOWN VOICE BACKUP?
01 08 16 10	CC	Roger.
01 08 16 12	LMP	And we will be waiting for a water dump after 45 hours tomorrow.
01 08 16 18	CC	Roger. That's affirmative. Over.
01 08 16 24	LMP	Okay.
01 08 16 30	LMP	And, when you are through with the dump, you let me know and I will set up the OMNI's.
01 08 16 35	CC	Roger. We will give you a call.
01 08 18 40	LMP	Houston, this is 10.
01 08 18 44	CC	Go ahead, 10. Over.
01 08 18 48	LMP	Bruce, are you going to want to knock off the battery charge before sleep time tonight?
01 08 18 52	CC	That's affirmative.
01 08 18 57	LMP	Okay.
01 08 19 45	CC	Apollo 10, this is Houston. We have a state vector to uplink for you, if you give us ACCEPT on UP TELEMETRY. Do not, I say again, do not ENTER VERB 37. Over.
01 08 20 01	CMP	You want ACCEPT, huh? Okay. Here comes ACCEPT.
01 08 20 07	CC	Roger.
01 08 20 08	CMP	You are in ACCEPT now.

01 08 20 31	CMP	Can you guys send a vector with that thing running like that?
01 08 20 33	CC	10, this is Houston. Negative. You need to hit PROCEED for us.
01 08 20 39	CC	Roger. Thank you. For your information, your trajectory is looking good. We'll have a lunar flyby pad for you here shortly. You're GO for flyby in the event of lost COMM. Over.
01 08 20 54	CMP	Sounds good.
01 08 20 55	LMP	Thank you.
01 08 20 57	CC	You are welcome.
01 08 25 52	CC	Apollo 10, this is Houston. We are through with the uplink. You can go back to BLOCK on UP TELEMETRY and we'd like to continue charging batteries as long as it's convenient prior to your turning in for the evening. Over.
01 08 26 09	CMP	Okay. Roger.
01 08 28 52	LMP	Houston, 10. Looks like we're about to break lock. You want me to go OMNI?
01 08 28 54	CC	Roger. You can go back to OMNI at this time.
01 08 29 01	LMP	Okay.
01 08 32 19	CC	Apollo 10, this is Houston. We would like you to confirm that you selected OMNI - OMNI antenna Bravo - on board, and we'll take over the switching between Bravo and Delta from down here. Over.
01 08 32 50	LMP	Hello, Houston. How do you read?
01 08 32 52	CC	Roger. We are reading you weak, with noise in the background. Over.
01 08 32 57	LMP	Okay. In order to get you, I had to go to OMNI Delta and it looks like we may be losing you. I'll go ahead to OMNI Bravo and you can do the switching.
01 08 33 07	CC	Roger. Thank you.
01 08 33 30	CC	10, Houston. Radio check. Over.
01 08 33 35	LMP	Roger. Reading you loud and clear in OMNI Bravo. How do you read?

01 08 33 40	CC	Roger. We are reading you the same.
01 08 33 42	LMP	Okay. We are in DOWNVOICE BACKUP.
01 08 33 44	CC	Okay. A little clarification on that. We meant that when you secured for the evening, if you should need to contact us at that time, you would select DOWNVOICE BACKUP, not that you should stay in DOWNVOICE BACKUP all night.
01 08 34 04	LMP	Okay. We will just do it to VOICE again, and if we need you at night time, we'll go to DOWNVOICE BACKUP.
01 08 34 10	CC	Roger.
01 08 34 23	LMP	Hello, Houston. We're in NORMAL VOICE. How do you read?
01 08 34 28	CC	Roger. That is much clearer, and no noise in the background.
01 08 34 31	LMP	Okay.

END OF TAPE

01 08 48 38	CC	Apollo 10, this is Houston. I have your flyby pad P30 maneuver, when you are ready to copy.
01 08 48 46	LMP	Stand by one.
01 08 49 15	LMP	Go ahead, Houston.
01 08 49 21	CC	Roger. Apollo 10, this is Houston. Maneuver pad flyby SPS/G&N: NOUN 47 weight 93353, plus 093, minus 021 070 44 20 27. NOUN 81 stuff, plus 02256, minus 00327, minus 05263, 102 351 017, H_A H_P not applicable, DELTA-V_T 05736 117 05685, sextant star 40 2221 334; the boresight star block, not applicable. NOUN 61 latitude minus 2636, minus 16502 11804 36171; GET of 0.05G, 166 23 38. Your GDC align stars Vega 36, Deneb 43, roll align, 148 013 018; no ullage. Remarks: this pad is based on the PTC REFSMMAT docked configuration. Your height of pericynthion will be 886 nautical miles following this maneuver. CSM weight, 62634; LM weight, 30719. Read back. Over.
01 08 52 07	LMP	Okay. Purpose is flyby, SPS/G&N: 93353, plus 093, minus 021 070 44 20 27, plus 02256, minus 00327, minus 05263; roll is 102 351 and 017, NOUN 44, NA. Are you with me?
01 08 52 38	CC	Roger. So far correct.
01 08 52 42	LMP	05736 117 05685 40 22 21 334, boresight star is NA, latitude is minus 2636, minus 16502 11804 36171, 0.05G is 166 23 38.
01 08 53 10	CC	Roger. So far so good.
01 08 53 13	LMP	Vega is 36, Deneb 43, 148 013 018, no ullage. Based upon PTC REFSMMAT docked, gives us a flyby at 886 miles. And the CSM weight is 62634; LM weight is 30719.
01 08 53 36	CC	Roger, Apollo 10. Readback correct. And be advised that we are satisfied with the DELTA-H values from the P23 sightings. Do not plan to update the value already loaded in erasable memory. Over.
01 08 53 56	LMP	Okay. Fine.
01 08 54 01	CMP	Fine, Bruce. What was loaded?
01 08 54 04	CC	Roger. 24 kilometers was loaded.

01 08 54 09	CMP	Okay. Thank you.
01 08 54 10	CC	So you were over and under by about the same amount on 2 different days. We figured the first set of sightings is probably the more reliable one.
01 08 54 28	CMP	Roger.
01 08 57 05	LMP	Houston. I got the onboard read-outs.
01 08 57 10	CC	Roger. Go ahead.
01 08 57 14	LMP	Okay. The CRYO fans have been cycled, BATT C is 36.8; PYRO BATT A is 37; PYRO BATT B is 37; RCS ring A is 87 percent, B is 88, C is 92, and D is 86.
01 08 57 35	CC	Roger, 10. Understand battery Charlie is 36.8; PYRO batteries Alfa and Bravo are both 37.0; RCS Alfa 87, Bravo 88, Charlie 92, Delta 86. Over.
01 08 58 00	LMP	That's affirmative.
01 08 58 02	CC	Roger. Out.
01 09 36 37	CC	Apollo 10, this is Houston. About all we've got left before you close up for the evening is your crew status report. Over.
01 09 36 50	CDR	Okay, Bruce. We're just changing out the canisters at this time.
01 09 36 56	CC	Roger.
01 09 37 04	CDR	We'll be with you in a minute.
01 09 37 21	CDR	Okay. We're going to end - terminate the battery charge at this time, and we'll purge the fuel cells.
01 09 37 29	CC	Roger.
01 09 38 48	CDR	Okay. Houston, Apollo 10.
01 09 38 52	CC	Roger, 10.
01 09 38 55	CDR	Okay. With respect to anything out of the kit, the CDR had one Lomotil, CMP one Lomotil, LMP one Lomotil, and the LMP also had two aspirin.
01 09 39 10	CC	Roger. Understand. One Lomotil each, and two aspirin for the LMP.

01 09 39 16	CDR	That's correct.
01 09 39 21	CC	Do you have the personal dosimeter readings?
01 09 39 27	CDR	Stand by.
01 09 39 48	CMP	Okay. You can add one to mine. This is the CMP.
01 09 39 54	CC	Understand. CMP is plus one from the last one.
01 09 40 00	CMP	That's right.
01 09 40 02	CDR	Okay. CDR. Forgot what the total was on the last one. Mine now reads 26029.
01 09 40 09	CC	Roger. 26029.
01 09 40 13	LMP	And the LMP is 15031. I believe that's up one.
01 09 40 18	CC	Roger. And for your information, the last significant digit there is actually 1/100. Over. You're not moving much.
01 09 40 27	LMP	Roger.
01 09 40 29	CDR	No.
01 09 40 31	CC	Did you get the chlorine ... in okay?
01 09 40 37	CDR	We're going to do that later on. We haven't gone to bed yet.
01 09 40 41	CC	Roger. Out.
01 09 40 42	CDR	The only thing left open I can think of.
01 09 50 08	CC	Apollo 10, this is Houston. Over.
01 09 50 13	CDR	Go ahead, Houston. Apollo 10.
01 09 50 14	CC	Roger, 10. We have nothing else for you at the present time. If you have no further transmissions for us, we'll bid you a good night and remind you to put the S-band normal mode voice switch to OFF.
01 09 50 32	CDR	Roger. The S-band normal mode switch to OFF after we shut down here.
01 09 50 39	CC	Roger.

01 09 50 40	CDR	Roger. And after that, we're going to ... DOWNVOICE BACKUP. We're going to chlorinate the water in a little bit, and then sack out.
01 09 50 46	CC	Roger. And if you need us give us a call on VOICE BACKUP.
01 09 50 52	CDR	Okay, Bruce. Sure will.
01 09 50 54	CC	Good night.

END OF TAPE

REST PERIOD - NO COMMUNICATIONS

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01 19 33 38	CMP	Houston, Apollo 10. Transmitting on regular S-band OMNI voice. How do you read? Over.
01 19 33 51	CC	Reveille! Reveille! All hands muster on the flight deck for calisthenics. How do you read?
01 19 34 01	CMP	Loud and clear. We had a little trouble rousing up all hands this morning.
01 19 34 13	CC	Well, we decided to let you sleep in, a little bit, and if you want to get up at your leisure, that's fine with us.
01 19 34 24	CMP	Yes. Sort of looks like we've got a hard day of PTC. That thing didn't fire thrusters once last night. My hat's off to you. That's great.
01 19 34 35	CC	You were right. We were going to mention that to you, and it looks like a good way to go. That's a good solution.
01 19 34 46	CMP	Economical, too.
01 19 35 10	CC	Apollo 10, Houston. John, are you the only one who is up yet?
01 19 35 17	SC	... on that one.
01 19 35 23	CC	Roger.
01 19 40 05	CC	Apollo 10, Houston. When you get settled down and get breakfast, there, we've got some information just to pass along, when you've got time to listen.
01 19 40 25	CMP	Roger. I better go down to the end compartment and hold reveille.
01 19 40 28	CC	Say again, please.
01 19 40 35	CMP	I said I've got to go back to the aft compartment and hold a little reveille.
01 19 40 49	CDR	Hello, Houston. Apollo 10.
01 19 41 09	CC	Good morning, Apollo 10. This is Houston. How do you read?
01 19 41 18	CDR	Loud and clear. Hey, this is really a great place to sleep on the way to the moon, I'll tell you.
01 19 41 24	CC	Well, we let you sleep in, a little bit. Have a good rest?

01 19 41 30	CDR	Yes. About 9 hours solid.
01 19 41 34	LMP	Good morning, Jack. How are you?
01 19 41 36	CC	Good morning. Great shape. Understand you are a little slow on reveille this morning.
01 19 41 44	LMP	Yes. If we had known you were down there, we probably would have heard the bugle.
01 19 41 48	CC	I expected to hear your feet collectively hit the deck before I finished reveille.
01 19 42 00	LMP	Pretty hard to find out which way the deck is, up here. How does the spacecraft look to you?
01 19 42 11	CC	The spacecraft is in real good shape. The CSM and LM systems are both in very good health, and your consumables are considerably ahead of your flight plan. During the night - During the night with this PTC mode, since initialization yesterday at about 30 hours, there were no jet firings.
01 19 42 36	CDR	Roger. We could tell that last night; it doubles our analysis that we haven't fired one thruster since we started. Looks like we have a real winner here, Jack.
01 19 42 45	CC	Roger. That was a good solution. And also, you are riding right down the slot. Your third midcourse correction would be seven-tenths of a foot per second, and so we are recommending deletion of that, and your present perilune prediction without midcourse 3 is 61.8 nautical miles at 76 hours.
01 19 43 11	CDR	Roger. Sounds great.
01 19 43 16	CC	And, in addition, your data on both command module RCS rings remains the same; your leak rate on ring number 1 is the same as yesterday. And, when you have time to listen, we've got a little bit of news down here.
01 19 43 30	CDR	Why not go ahead while we are fixing breakfast? Might as well listen to the news.
01 19 43 45	CC	Okay. You are right in the headlines. Among the biggest of news events of yesterday, were the three astronauts of Apollo 10. Millions of people throughout the world saw some or all of what one wire-service writer called the

"Mini Show." Tom Stafford was called the star, and John Young the supporting player, because he appeared upside-down throughout the show. Gene Cernan was listed as camera man. A now-unemployed philosopher has pointed out that due to your efforts color television has reached new heights. Coleman Hawkins, jazz saxophonist, died at the age of 64. He was one of the innovaters of Be-Bop during the late 1940's. President Nixon is reportedly in favor of keeping the 10-percent surtax past its deadline of June 30, 1969. His spokesman, speaking to a House of Representatives committee, proposed that the 10-percent surtax be extended to the end of this year, and then lowered to 5 percent. President Nixon also announced that he will meet with South Vietnamese President Thieu within the next 2 weeks, probably at Midway Island or some other Pacific Ocean location. In the sports world, there were no major league baseball games played yesterday. Gardner Dickinson won the National Invitational Golf Tournament at Ft. Worth on Sunday with a two-under-par 278. The PGA tour moves to Atlanta this week for the Atlanta Classic.

END OF TAPE

01 19 45 31	CC	One closing note of special interest to the Apollo 10 crew is this story: Chief Winnie Red Fox of Philadelphia, who remembers his Uncle Crazy Horse fighting at the Little Big Horn, would like Man to leave the moon alone because it's ruining the rainfall. The 99-year-old Ogalala Sioux Chief summed up his reaction to the Apollo 10 moonshot in this manner and I quote: "It doesn't seem to rain much since man started messing around with the moon." (Laughter) And we're tracking you guys out there now at 154 221 miles, and you have slowed down to 300 - 3000 - correction 3853 feet per second.
01 19 46 25	LMP	Hey, Jack, pass the word. I don't think I'll be able to slip back in time for the Classic at Atlanta.
01 19 46 31	CC	Roger. There will be another time.
01 19 46 34	CDR	Also, Jack, would you pass the word on to the Indian chief that I grew up in the Dust Bowl in Oklahoma, but I still don't think flying to the Moon has anything to do with the rainfall.
01 19 46 46	CC	Roger. We'll pass the word, Tom.
01 19 46 48	CMP	It's always nice to - to run across somebody who's not a proponent of the atomic theory of weather production.
01 19 47 11	LMP	We haven't had a chance to look out here and give you much of a weather report, yet.
01 19 47 18	CC	Roger. We're standing by, and how's that Moon look? Is it getting bigger?
01 19 47 24	LMP	I'm sort of afraid to look.
01 19 47 27	CDR	We still have all the window covers on since we just woke up.
01 19 47 32	CC	Roger. Relax and have your breakfast and let us know when you are ready to press on with the plan of the day.
01 19 47 38	CDR	Roger.
01 19 49 32	LMP	Jack, here comes the world. Looking right over Suez Canal, Saudi Arabia, the Mediterranean, Africa, back into the parts of Europe.

01 19 50 04	CC	Houston. Roger.
01 19 50 53	LMP	Jack, right now I'm looking at all of Africa, which is almost totally clear with the exception of a few clouds on the western side. I can see across the Straits of Gibraltar, some cloud cover just on the eastern side of the Straits. I can see Spain which is totally clear, Portugal, almost all of the Mediterraneean except the north - northwest corner of the Med, Greece, Crete, Turkey, Italy. They all look clear from here. Saudi Arabia, back up into the Soviet Union, is partially clear in great areas and actually almost back into parts of China where the terminator is, it's just sort of partly cloudy. There appears to be a big, long, wide cloud swirl out into the Atlantic west of Spain. Generally, it looks like I can see Zanzibar. Generally, it looks like that whole portion of Africa and eastward - northeastward - is pretty clear today.
01 19 52 02	CC	Roger. Thank you, Gene, for the weather report.
01 19 52 11	LMP	And - and it's a magnificent sight, Jack. Beautiful.
01 19 54 23	CMP	Houston, this is 10. The LM/CM DELTA-V gage is reading 1.4 today.
01 19 54 29	CC	Roger. Copy 1.4. Thank you.
01 20 04 12	CDR	Houston, Apollo 10. We're ready to copy the consumables update when they're available.
01 20 04 50	CDR	Hello, Houston. Apollo 10.
01 20 04 56	CC	Apollo 10, this is Houston. Here we go with the consumables update. At GET 44 plus - -
01 20 05 04	CDR	- - Jack?
01 20 05 06	CC	Say again, please.
01 20 05 09	CC	Apollo 10, Houston. How do you read?
01 20 05 11	CDR	Go ahead.
01 20 05 15	CC	Roger. The consumables update - -
01 20 05 16	CDR	Roger. Reading you loud.
01 20 05 17	CC	Consumables update at GET of 44 hours, RCS total 86 percent, Alfa 87 percent, Bravo

		85 percent, Charlie 86 percent, Delta 86 percent, H_2 total 42.7 pounds, O_2 total 526 pounds. We'd like today, in order to balance the RCS up, to use AC roll instead of BD roll. Over.
01 20 05 56	CDR	Roger on the consumables, and we will switch over to AC roll instead of BD roll.
01 20 06 01	CC	Houston. Roger. And this is 4 percent above the flight plan on RCS.
01 20 06 07	CDR	Roger.
01 20 06 39	CDR	Houston, Apollo 10.
01 20 06 43	CC	Go ahead, 10.
01 20 06 46	CDR	Roger, Jack. Wish you'd pass on to Chris and Johnny Mayer that we think that this attitude for the PTC is really great because you can see the Moon for just - and also the Earth - for just about a half of each REV; it's really tremendous.
01 20 07 01	CC	Roger. Copy, Tom.
01 20 29 18	CDR	Hello, Houston. Apollo 10.
01 20 29 23	CC	Go ahead, 10.
01 20 29 27	CDR	Okay, Jack. There's one thing we'd like for you to pass on to the Project Office and it's been about the only type of thing we want to pass on in real time as up to this day on the system and again that's due to the water. There was lots of air in it on the initial servicing, and it's continued just to get ... just a little bit, and the little hand-held centrifuge, all it does is slink the big bubbles to the bottom. I guess there's something about physics we don't understand, but if you could pass that word on to them and get working on it and save some time, save about - oh - 7 or 8 days for our debrfeing.
01 20 30 05	CC	Roger. We'll get the word to them, Tom, and also we have a flight plan update when you're finished with breakfast.
01 20 30 14	CDR	Okay. It'll be about another 15 minutes.
01 20 46 24	LMP	Hello, Houston. Apollo 10.

01 20 46 27	CC	Go ahead, 10. This is Houston.
01 20 46 31	LMP	Jack, just after I put the H_2 and O_2 fans on, we got a CRYO pressure light. I guess it could be H_2 tank 1 or O_2 tank 2 at this time.
01 20 46 44	CC	Roger. We copy.
01 20 46 52	LMP	And, it just went on at this time.
01 20 46 56	CC	Roger. Understand you have a CRYO PRESS light. Is that affirmative?
01 20 47 00	LMP	And I'm ... Yes, it just went out now. It - it came on just as I cycled - turned the fans on, and now it's out. And I'm ready to copy that flight plan update.
01 20 47 11	CC	Roger. Here's the flight plan update. We'd like for you to initiate charge on battery A, and we'd like to have you give us a Mark. And at 51 45 we have a waste-water dump due.
01 20 47 33	LMP	That's 51 45?
01 20 47 35	CC	That's affirmative. And, we're standing by for your crew status report and your PRD readings.
01 20 47 58	LMP	Okay. We'll give you the dosimeter readings first.
01 20 48 02	CC	Roger. Go ahead.
01 20 48 07	CDR	Okay, Jack. Mine reads 26030.
01 20 48 13	CC	26030.
01 20 48 15	CMP	5030 on the CMP.
01 20 48 18	CC	Say again.
01 20 48 20	CMP	5030 on the CMP.
01 20 48 24	CC	Understand, 5030.
01 20 48 25	CMP	5 - affirmative.
01 20 48 29	LMP	And the LMP is 15033. That's up 2 from 10 hours ago.
01 20 48 34	CC	15033. Then a report on how you rested last night.

01 20 48 52	CMP	Tom was sleeping on his back and Gene was sleeping on his stomach and I was sleeping in the couch. And that's how we did it.
01 20 49 02	CC	Sounds pretty simple.
01 20 49 04	CMP	And it was great. It was great.
01 20 49 09	LMP	Yes, Jack, LMP probably got about 6 to 8 hours of pretty good sleep.
01 20 49 15	CC	Roger. Copy. That's good.
01 20 49 21	LMP	Okay. And you want a Mark on when to start charging A. Is that correct?
01 20 49 26	CC	That's affirmative.
01 20 49 46	LMP	Okay. I'm ready to - to charge battery A right now.
01 20 49 51	CC	Roger.
01 20 49 56	LMP	And the charge is ON.
01 20 49 59	CC	Roger. Charge, ON.
01 20 50 31	LMP	Houston, is that all the flight plan update?
01 20 50 37	CC	Apollo 10, Houston. Affirmative. That's the end of the flight plan update for now, and we're about ready to go on a state vector update and would like to have the computer. Over.
01 20 51 00	LMP	Okay.
01 20 55 10	CC	Apollo 10, Houston. We're ready to uplink your state vector now if you'll go to ACCEPT on your up-TLM. Over.
01 20 55 17	CDR	We're ACCEPT in P00.
01 20 55 21	CC	Roger. And I have a couple more items on flight plan update when you're ready to copy.
01 20 55 27	LMP	Go ahead, Jack.
01 20 55 31	CC	Okay. We had, on our sextant calibrations during P23, some differences in DELTA-H from yesterday and the day before, and we need to check the trunnion bias to see if it's drifting. In order to do this, we'd like you to,

either before or after your P52 which is coming up, to do the steps of P23 which refer to the sextant calibration. And you can use any star, and I have the steps for performing this without going through the whole P23 if you need them. In addition, we've noticed, as you have, an imbalance in our hydrogen CRYO tanks; namely, that tank number 1 is lower than number 2. And we'd like to reverse this imbalance by reversing the heater configuration. However, we'd like to do this on our Mark so that we can get the heaters in the proper point in the cycle. And so, when the time comes up what we'd like you to do is turn off the heaters in tank number 1 and turn the heaters in tank number 2 to AUTO on our Mark. Over.

01 20 56 54	LMP	Okay. Standing by for your Mark.
01 20 56 58	CC	Roger. It'll be a while before this time comes up.
01 20 57 04	LMP	Okay. Let us know, and we'll do it.
01 20 57 06	CC	Roger. It's likely to be as much as half an hour. And, do you copy the information regarding the trunnion bias check?
01 20 57 20	LMP	Roger. We'll do the steps in P23 that refer to the sextant calibration, either before or after P52.
01 20 57 28	CMP	And we don't need any data on how to do that.
01 21 00 01	CC	Apollo 10, Houston. The uplink to state vector is complete, you can go to ACCEPT. Correction, you can go to BLOCK.
01 21 00 14	CDR	We're in BLOCK.
01 21 17 16	CMP	Houston, Apollo 10.
01 21 17 22	CC	Apollo 10, Houston. Go ahead.
01 21 17 27	CMP	Roger. I don't know if the GUIDO is watching this or not on the high bit-rate or whatever, but what I'm doing here is taking advantage of the PTC to check this celestial - to check the planet optional. I've already got Jupiter and you can recognize it because of its moons, and now I'm looking for Mars.
01 21 18 00	CC	Roger. We copy. Thank you.

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01 21 20 53	CMP	Tom has the Earth out his window, and that's the reason for the PROGRAM ALARM, and got Mars vector in there and it's open by Tom's window.
01 21 21 04	CC	Houston. Roger.
01 21 32 23	CMP	Okay, Houston. We've just checked Saturn, and it's definitely recognizable because of the rings, of course, and it's pretty close to the Sun for a data point, I think, but it's easily visible.
01 21 32 40	CC	Roger, 10. We copy.
01 21 33 51	CMP	Houston, this is 10. We can't do that optics calibration without stopping our PTC. Over.
01 21 34 00	CC	Roger. Stand by.
01 21 34 05	CMP	I guess everybody knew that, didn't they? We did the realign while we still had PTC, and it seemed to work okay.
01 21 34 16	CC	Stand by one, please.
01 21 35 34	CDR	Houston, Apollo 10.
01 21 35 40	CC	Apollo 10, Houston. We thought we were going to come out of PTC to do the P52. There is no need at this time to do the sextant calibration. We can do that when you come out of PTC for the television later on in the flight plan. Over.
01 21 36 04	CDR	Hello, Houston. Apollo 10.
01 21 36 07	CC	Go ahead, 10.
01 21 36 11	CDR	Okay, Jack. Just for a minute to look ahead in the flight plan, are we still planning the fuel cell H_2 purge after 46 hours?
01 21 36 25	CC	Houston. That's affirmative.
01 21 36 29	CDR	Okay. We'll go ahead and get the H_2 purge line heaters on as called in the flight plan.
01 21 36 36	CC	Roger. We copy. And did you copy my last about the sextant calibration? Over.
01 21 37 37	CC	Apollo 10, Houston.
01 21 37 43	LMP	Go ahead. Over.

01 21 37 44	CC	Roger. Did you copy our last about the sextant?
01 21 37 49	LMP	Go ahead, Houston.
01 21 37 51	CC	Roger. This is Houston, 10. Did you copy our last about doing the sextant calibration when we come out of PTC for the television as opposed to doing it now? Over.
01 21 38 00	CMP	Negative. We didn't. I was just fixing to get Arcturus, and do it on Arcturus. Looks like that would be a good one.
01 21 38 07	CC	Roger. We had - -
01 21 38 08	CMP	That's fine with us. There's no sense in - we'd kill two birds with one stone that way.
01 21 38 14	CC	Roger. We prefer not to interfere with the PTC. This is not - The sextant calibration is not time critical; however, we thought that you would come out of PTC to do the P52, so let's hold off on the sextant calibration until the TV pass. Over.
01 21 38 40	CMP	Roger. That sounds fine to us.
01 21 38 44	CC	Houston. Roger.
01 21 43 27	CC	Hello, Apollo 10. Houston. Over.
01 21 43 35	CMP	Good morning, there.
01 21 43 36	CC	Good morning, you guys. Your friendly Black Team's coming back on duty for the daylight hours, and we got one thing for you. When you did the callup of the P52, John, you collapsed your deadband. We'd like you to widen it again out to the 30 degrees. Over. When you get through the 52.
01 21 43 58	CMP	Okay. What we did was - Yes. Well, we just went to pitch and yaw in ACCEL COMMAND, and with this thing not coupling, it doesn't - you know, it doesn't make any difference, Charlie. But we're going to establish the deadband back when we get done.
01 21 44 12	CC	Roger.
01 21 45 31	CMP	Houston, this is 10. As a result of that P52, sort of "on the fly," so to speak, the AUTO optics is not positioning the stars right in the center of the reticle. They're off - They're

within the lines but they're not in the center like they usually are, so I'd like to do another realign whenever we stop for TV or whatever, and we can get that optics calibration at the same time.

01 21 46 07	CC	Roger, John. I'm pretty sure we'll concur. Stand by. Yes, 0 - -
01 21 46 14	CMP	I don't - I think it's good - It's within the R and M lines on the sextant which is really pretty good. In fact, it puts all the planet options inside the sextant field of view with no problem at all. We checked three options: Jupiter, Mars, and Saturn; and it put them all right in there.
01 21 46 44	CC	Roger. We copy. We concur if you want to do the P52 - another one - down after the TV when we do the sextant CAL. You can do it if you want to. Over.
01 21 46 59	CMP	Okay. And I think this one's okay. I just want to verify it from the torquing angle.
01 21 47 05	CC	Roger. Can you give us your torquing angles and your star angle differences there?
01 21 47 23	CDR	Okay, Charlie. We used star 36 and 44. The star angle difference was four balls 1. The torquing angles: X was plus 00431; Y, minus 00366; Z, minus 00063.
01 21 47 47	CC	Roger. Thank you much, 10. We had data dropout during the time, and we couldn't copy it. Thank you.
01 21 47 58	CDR	Roger.
01 21 48 00	CC	Was that on or about 45 or 44, thereabouts, Tom?
01 21 48 07	CDR	Okay. It was 45 06 30.
01 21 48 13	CC	Roger.
01 21 48 26	CMP	What it was, Charlie, was I did the first P52 using the stars, and then checked the planet options without actually using those to align with.
01 21 48 38	CC	Okay, 10. I copied.
01 21 48 45	CMP	So the actual realign was kind of early this [illegible]

01 21 48 48	CC	Roger. Before we came in. Thank you.
01 21 52 17	CC	Hello, Apollo 10. Houston. We're ready to configure the CRYO H_2 heaters, if you're standing by.
01 21 52 27	LMP	Okay, Charlie. All set.
01 21 52 30	CC	Roger. On my Mark, it's - Stand by. Roger, 10. On my Mark it's tank 1 heaters OFF, tank 2 heaters AUTO. Stand by.
01 21 52 45	CC	MARK.
01 21 54 43	CC	Hello, Apollo 10. Houston. Over.
01 21 54 47	LMP	Go ahead, Charlie.
01 21 54 49	CC	Roger. I think we lost you with the antenna switch there, Gene-o. Did you copy the Mark on the heater switch?
01 21 54 58	LMP	No, I'm sure we did lose you. Go ahead.
01 21 55 00	CC	Roger. On my Mark, H_2 tank 1 heaters to OFF, and tank 2 heaters to AUTO. Stand by.
01 21 55 10	CC	MARK.
01 21 55 11	LMP	Okay.
01 21 55 15	LMP	Okay, you got it. H_2 tank 1 is OFF, and H_2 tank 2 is AUTO.
01 21 55 20	CC	Roger. And the EECOMM's say that during the day here you probably can expect some MASTER ALARM's from this configuration, due to the heaters, but it should set us up for the night so it won't be -- They won't wake you up tonight with the same things. We'll go back to normal - -
01 21 55 37	LMP	Okay. That's great.
01 21 55 38	CC	Yes. We'll go back to normal configuration for presleep.
01 21 55 47	CMP	Roger. Houston, we reinitialized these deadbands quite a ways from our 90-degree point. And we probably ought to reinitialize them when we get back around 90 degrees. Do you concur?
01 21 56 00	CC	Stand by.

01 22 01 26	CC	Hello, Apollo 10. Houston. On reestablishing the deadband: when you went to ACCEL COMMAND, you really didn't hurt a thing. When you selected the VERB 37 you collapsed it, but we noticed that you've increased your deadband and it's still established plus or minus 30 degrees around 90 degrees on the pitch; so, we're still in good shape. Over.
01 22 01 50	CDR	Roger, Charlie. Sounds real good. Thank you.
01 22 01 53	CC	Roger.
01 22 09 13	LMP	Hello, Houston. This is 10.
01 22 09 15	CC	Go ahead, 10.
01 22 09 19	LMP	Okay. I'm ready to purge the H_2, if you're ready.
01 22 09 22	CC	Roger. Stand by.
01 22 09 25	CC	We're ready, 10. Go ahead.
01 22 14 05	LMP	Houston, the H_2 purge is complete. The line heater is OFF.
01 22 14 12	CC	Roger. Copy. Hey, Gene-o, did you guys have any - Have you had any trouble with the canister changes?
01 22 14 23	LMP	No. We're about to make one right now. I don't think we've had any trouble. Stand by.
01 22 14 27	CC	Roger. The only reason I asked was I remember during the C-squared F-squared, we had some sticky ones, and was wondering how it was going.
01 22 14 43	CDR	Thus far, Charlie, none have stuck.
01 22 14 46	CC	Roger.
01 22 40 28	CMP	Hello, Houston. This is 10.
01 22 40 32	CC	Go, 10.
01 22 40 36	CMP	Roger. I'm making a report on that optics tracking that we did this morning, catching it during the REFSMMAT. On the - While we're still in PTC REFSMMAT realign, the optics tracking is about 10 to 20 times smoother and easier than it is in the simulator. It's just beautiful. The optics tracking is absolutely no problem on medium speed in putting that star right in the middle of the reticle and working on it - just, just fantastic

01 22 41 08	CC	Roger, John. We copy. In medium speed it's really easy to track the star and put it right in the center. How's the visibility - -
01 22 41 19	CMP	This AUTO optics has just been working - Well, there's still no way to recognize stars from P51's that I can see other than - Probably you could do it if you put the whole lunar module and point it directly at the Sun. In other words, if you went to gimbal lock or something like that, then you could point the - If you didn't have any other recourse, you could point the whole lunar module right at the Sun, and I think that would shield you enough so that you could recognize stars as constellations. But other than that, I haven't seen a single star or constellation through the telescope that I can recognize by itself.
01 22 42 06	CC	Roger. Thank you for that report. We'll pass it on.
01 22 42 18	CMP	Well, there's nothing we can do about that; I'll tell you that. But it's sure comforting to see those things like constellations, you know.
01 22 42 25	CC	Yes. I know what you mean there if you dump that platform. This optics tracking is good news, though, if we can make that thing a lot easier.
01 22 42 41	CMP	Well, it saves you quite a bit of fuel, because to reinitialize that REFSMMAT - reinitialize that PTC is probably going to cost you a little.
01 22 42 50	CC	Roger. You don't think the three-tenths of a degree has - Didn't give you any trouble, did it, when you first got started there? Is it a little learning curve?
01 22 43 07	CMP	We're looking at about 2500, maybe a little less right now. No, there's no problem at all with it.
01 22 43 14	CC	Great - -
01 22 43 15	CMP	It's easy. And the AUTO optics track the stars, too.
01 22 43 17	CC	Right. This thing has really - I don't know whether you guys can tell it or not, but if you - The thing is really coupling up great. It looks like our angle of momentum vector is just right off - just off the roll axis, and the thing goes off in pitch a little bit and couples back into

yaw, and then the yaw goes off as the pitch decreases. And it looks like we're going to be rock-solid here as long as we want to stay.

01 22 43 43 CMP Right. I don't know who thought of it, but it sure works good.

01 22 43 47 CC Roger. It took us a little while to get it - -

01 22 43 50 CDR It's interesting to note that, even though we haven't fired a thruster up here for the past 12 to 15 hours, this whole stack has a little motion all to itself.

01 22 44 00 CC Roger.

01 22 44 02 CDR ...

01 22 44 07 CC 10, you're fading out so we'll switch your antennas and get a better signal. Over.

01 22 44 13 CMP Yes. Ever so often the whole stack just gives a little shudder. I don't know what it is.

01 22 45 25 CMP Another thing that we were concerned about that doesn't seem to be a problem is that the LM on - except for a temperature from - except for reducing the brightness that prevents you from seeing stars and recognizing as constellations - actual occlusion of the telescope and sextant - doesn't appear to be near the problem it was thought to be when we started.

01 22 45 48 CC Roger. Good show. Does it look like what the pictures that you had been shown, John?

01 22 45 57 CMP Yes. It actually looks even less than that, and it's a good deal less than the thing we had - worst-case - fixed up in the simulator to practice with.

01 22 46 07 CC Roger. If you'll put your artistic talent to work - when nothing to do - the next couple of hours, how about sketching us up a little view so we can maybe update the CMS when we get back down, and maybe they can put a little cut-out in there and get their picture to be real-life. When you guys - We switched antennas on you. And, Tom, we lost most of your conversation about the thrusters. If you'd like to repeat that, we're standing by.

01 22 46 41	CDR	I guess John amplified it some more, Charlie, that even though we haven't fired a thruster for, I'd say, 12 to 15 hours now, this stack has a motion all of its own. And on occasion, you'll get a little shudder in it, a little noise, and we are getting very sensitive now, and acclimated to every little motion. And it is amazing that the whole stack has its own little motions and noises in it.
01 22 47 04	CC	Roger. We copy.
01 22 47 07	CDR	We didn't know the glycol pumps to the suit ... sounds like it might be some tank slosh or something of tha nature, but it's really amazing how we can pick up these little things. Occasionally the whole thing will just give a little shudder.
01 22 47 19	CC	Roger. I was talking to the 9 crew this morning about it, and they said they had the same sensations when the LM was out front - that anytime they came up with any little movement, that the whole thing just seemed to shudder. We're - It's really amazing to sit here and watch how you're coupling up in pitch and yaw and the PTC - The thing is that it never gets out of more than 20 degrees off from our initial attitude, then couples back in, and goes the other way. We think we are in pretty good shape.
01 22 47 56	CDR	Yes. Sounds like you came up with a real great solution here to save fuel and everything, so far as the PTC goes. Also, like I passed on to Jack this morning, this attitude is fantastic because we can see the Earth for about half of each one of our REV's here.
01 22 48 10	CC	Hey, well, really great. Is the old orb getting a little bit smaller out there?
01 22 48 18	CDR	You can tell we're a long ways from home now, Charlie.
01 22 48 21	CC	Roger. I bet it was the SPAN people that came up with - -
01 22 48 25	CDR	Say, as a matter of fact - -
01 22 48 28	CC	I was going to say it was the SPAN people that came up with the PTC procedure, so once we got it straightened out on how to read it up to you, things seem to be working real great. We are all real pleased with it.

01 22 48 43	CDR	Yes. It feels good in the air, and looks good as far as the attitude for the outside reference - We're getting a lots of pictures of the Earth. And, also, the main thing, we're saving fuel.
01 22 48 52	CC	Roger. Are your sequence cameras and the Hasselblad working okay?
01 22 49 00	CDR	Working slick as a whistle.
01 22 49 01	CC	Beautiful.
01 22 49 05	CDR	Say, Charles. I was wondering - We got a little time to kill here. Again, each day we've been going over our lunar activities, just doing homework up here, about a couple hours each day, so we'll be well ahead of the game when we get there, at least try to be. But one thing you people have never seen is Africa, and we got high gain lock. We can call VERB 64 and we'll show you a picture of what Africa looks like and you can - or I assume that we are working through Madrid now.
01 22 49 29	CC	Stand by. That's affirmative. We're coming through Madrid. Would you like to just put it on when you come around with high gain and not stop the PTC?
01 22 49 42	CDR	Yes. We don't want to stop the PTC. We want to save every ounce of fuel we can. We can show you just a few minutes of it, since we've got some time to kill here in the high gain out through the hatch window and the side window. We'll have to get configured.
01 22 49 54	CC	Stand by, 10. Let's see if we get the networks configured right. Okay?
01 22 50 01	CDR	Alrighty.
01 22 50 53	CDR	Houston, Apollo 10.
01 22 50 57	CC	Go ahead, 10.
01 22 51 01	CDR	Okay. Just to reiterate: the only two anomalies we've seen on the whole spacecraft - and by and large, the spacecraft is just performing beautifully - are these two items. I called one of them down to Jack and you heard about the other one, but just to summarize them - one was when the Mylar insulation, you know, kind of blew out of the tunnel hatch when John pressurized the LM. Then

		the second one is all the air in thy water. Now that was the initial servicing of the water at the Cape. As soon as we got into orbit, the stuff had lots of air in it. That's continued to bug us just a little bit, but those two are about the only - the major things now that they can start working on before we splash down.
01 22 51 40	CC	Roger. We'll pass it on, Tom, and we're going to start on that. 108 has got a hydrogen separator in it and, hopefully, it's going to work. I don't know what we can do about it for 107, but we will pass this on and see what they can come up with. This TV stuff - we don't - -
01 22 52 00	CDR	Okay, Charlie - -
01 22 52 01	CC	I was going to say, the TV stuff, we haven't got any lines called up and any time scheduled for the satellite right now, but Madrid is configured to record the stuff and then we can play it back later. Over.
01 22 52 17	CDR	Okay. We will just give them about a short, 5- to 10-minute setup and then you can take a look at it later.
01 22 52 23	CC	Roger. If you will stand by, we will have you some high gain angles for you.
01 22 52 30	CDR	Okay. I don't think you've ever seen Africa and Saudi Arabia and that part of the world yet, have you?
01 22 52 36	CC	Negative. Is it real clear down there at this time?
01 22 52 41	CDR	Yes. Africa is great. It looks like, though, that all of Europe, the Soviet Union, all down through the Balkans are socked in in that giant cloudcover you saw yesterday. But Saudi Arabia, India, and all of South Africa is completely open, and the intertropical convergence zone is really beautiful. You can really see the total line down there, so we will just give you a quick picture of it.
01 22 53 06	CC	Roger. Fine. We will let you know when Madrid is configured and we will have you some angles in a moment.

END OF TAPE

01 22 53 13	CC	Later on, when we've got some time, we have got a few things we would like to discuss with you on the LOI, part of the LOI on your cue cards and some mission rules. Over.
01 22 53 29	CDR	Okay.
01 22 53 30	CMP	That's a good idea, Charlie.
01 22 53 32	CC	Roger. And we will be up with that - -
01 22 53 36	CMP	I was just about to ask you if - -
01 22 53 37	CC	Go ahead, John.
01 22 53 43	CMP	Okay. I was just about to ask you, in view of the chamber pressures a little lower than nominal, if we didn't want to hedge a little on that chamber pressure that we talked about the other day. I don't know.
01 22 53 56	CC	Well - -
01 22 53 57	CMP	- - Maybe our gage reading is just low.
01 22 54 01	CC	Roger. I think - kind of think it's right. On our second cues, after the manual REPRESS attempt for propellant PRESS less than 160, we don't believe that if you see that first cue - propellant PRESS less than 160 - that the PC is going to actually get that low. You know, as we see in SIM's, it really didn't go that low. That's a soft point on the second cue and also in the mode 1 and 2 regions, second from the bottom down there with the SPS injector valve closed after commanded on. With the one bank, you know we saw PC of about 95 on the evasive maneuver, and with one bank actually closed, that PC down to less than 80 is really not a good indication. And what we're recommending is that if you have, as an example, bank B is closed or appears closed on your panel, then you close bank A. And if you're still burning, then you've had an instrumentation failure, obviously, and turn bank A back on and keep burning. If it shuts down, then you should abort anyway. Over.
01 22 55 13	CDR	Okay. I think we've got that. We'll talk about it a little more.
01 22 55 17	CC	Okay. I just wanted to let you start thinking - -
01 22 55 19	CDR	- - Why don't you give us what you have?

01 22 55 23	CC	Keep talking, Tom. Go ahead.
01 22 55 27	CDR	Okay. And what we'd like to know is - It'll take you a little time to dig it up - What did you indicate on telemetry for the thrust chamber pressure when we had both banks on yesterday during that midcourse?
01 22 55 35	CC	Stand by. I saw 95, but let's see what the descript chart says. Hang on. The engine was perfectly normal ... Tom, at 100 psi.
01 22 55 45	CDR	Okay. Real good. Looks like we have about - a gage error bit of around 5 psi in here.
01 22 55 56	CC	Roger. I just wanted y'all to start thinking about these - the cue card, and we'll get all squared away down here and let you - And when we get some time, we'll discuss. I'll let you stand by for the angles and the network configuration.
01 22 56 13	CDR	Okay.
01 22 56 15	CMP	Charlie, would you please - You got through that conversation before I could get the cue card out.
01 22 56 19	CC	I figured that's what was happening about halfway through. Since I was - had a one-track mind down here, I just kept talking. Stand by. I think we've got some angles for you.
01 22 56 31	LMP	You sure do get excited, Charlie.
01 22 56 44	CDR	That's okay. We just love to hear you keep talking.
01 22 56 47	CC	Okay. Hey, we've got some angles for you. If ya'll go yaw 270, pitch 45, you should be able to pick this up right now.
01 22 57 30	LMP	Okay, Charlie. How are you reading HIGH GAIN?
01 22 57 32	CC	Reading you five-by, Gene.
01 22 57 38	LMP	Okay. I have to wait a couple of minutes for the world to come around.
01 22 57 40	CC	Roger.
01 22 57 59	CC	Hello, 10. Houston. Madrid is standing by. You can turn on the tube any time.
01 22 58 20	CDR	Okay. Looks like we're going to be a while before the Earth gets around here ... as soon as the Earth gets bright, we can see a beautiful Moon ...

01 22 58 38	CC	Hello, Apollo 10. You're barely readable. We request - If you read me, request you go NARROW BEAM.
01 22 58 50	LMP	Charlie, we are NARROW BEAM. How do you read?
01 22 58 54	CC	Roger. Reading you five-by now, Gene. Tom's conversation was unreadable, however.
01 22 59 01	LMP	Okay. Well, we've been NARROW BEAM ever since we locked up.
01 22 59 07	CC	Roger. It's - COMM's beautiful, now.
01 22 59 56	CC	Hello, Apollo 10. Houston. We request that you give us a Mark when you turn the TV on, so Madrid will get the word.
01 23 00 07	LMP	TV is on on the interior now until we can get the world to come around.
01 23 00 11	CC	Roger.
01 23 00 31	CC	10, Houston. Madrid is getting your FM ... carrier.
01 23 00 41	CMP	You say they are receiving?
01 23 00 47	CC	Roger. It's weak now, but they're picking up your interior shots.
01 23 00 50	LMP	Okay.
01 23 02 09	LMP	Okay, Charlie. We got the world now out of Tom's window, and it looks pretty small in our monitor right now. And we'll try zooming it.
01 23 02 17	CC	Roger. Madrid is copying.
01 23 02 21	LMP	Okay. It's going out of sight there, and we'll shoot a little bit of interior and then it ought to come inside my window here in a minute or two.
01 23 02 30	CC	Roger.
01 23 03 15	LMP	Interior-wise, we're giving them a look at the star chart which has got some colors of both the Earth, the Sun, and the Moon, and some of the planets: Saturn, Jupiter, Venus, Mars.
01 23 03 30	CC	Roger. How about putting that pretty patch up there again?
01 23 03 40	LMP	Okay. We'll do that.

01 23 04 05	CDR	Tell them this is our star chart and how we identify the stars and the planets that we're looking at right now.
01 23 04 11	LMP	This is what we use - -
01 23 04 14	CC	10, Houston - -
01 23 04 16	LMP	- - for our star navigation. The Earth is over here - Go ahead.
01 23 04 19	CC	Roger. Our signal's down about - -
01 23 04 21	LMP	- - Go ahead, Houston. This is 10.
01 23 04 22	CC	Roger, Gene-o. Our signal strength is down about 10 dB. We'd like you to go HIGH-GAIN to MEDIUM width and then back to NARROW. Over.
01 23 04 36	LMP	Okay. It's MEDIUM, and now I'll go back to NARROW.
01 23 04 40	CC	Roger.
01 23 04 44	LMP	How's that?
01 23 04 47	CC	Stand by.
01 23 04 50	LMP	Okay. The blue ball here, the big one, is the Earth as it progresses through the - through the heavens here while we're on this trip. The Moon is in yellow, and it also progresses through the heavens.
01 23 05 17	LMP	Might bring out the famous Apollo 10 symbol patch.
01 23 05 22	CC	Roger. We'd like to - Wish we were seeing this now, but Madrid is going to record it for us and then we'll see it later on. That was a beautiful astronomical description of the star chart there, Gene.
01 23 05 38	LMP	I thought you could follow it a little bit closer there, Charlie, if I told you about that.
01 23 05 43	CC	Roger. Takes me a little while to catch on to those things.
01 23 05 49	LMP	Where better can you give an astronomical description than in the astronomical heavens?
01 23 05 53	CC	(Laughter)
01 23 05 54	LMP	I think that's where we are.

01 23 05 59	CMP	This PTC REFSMMAT really helps you with the orientation of the stars, both - even if you can't see them you can - you can have a feel for where they ought to be, which is - I think - is going to help us out.
01 23 06 18	CC	Roger, 10. We're still having problems locking up, so we'd like to have you go to WIDE BEAM for 30 seconds and then back to NARROW. Over.
01 23 06 33	LMP	Okay. We're in wide beam.
01 23 06 36	CC	Roger. We'll probably lose the TV for a little while. We'd like you to keep going the next time around, and maybe we can get a better picture. Madrid is having a little bit of trouble.
01 23 07 35	LMP	Charlie, you - You wouldn't believe this, but right now outside my window I've got something. I don't know how far. I assume it might be the S-IVB, just spinning around in reflected sunlight out there.
01 23 07 49	CC	Roger. If we get our expert FIDO's on - on going and compute and see how far away the S-IVB should be right now from you.
01 23 07 58	LMP	Well, I can see it with the naked eye, and then I put the monocular on it and I can see it spinning around. I wouldn't bet my life on it being the S-IVB, but it sure has - sure has got to be something like it.
01 23 08 12	CC	Roger. We hope so. We could - We'd like you to go back to NARROW BEAM width now, 10.
01 23 08 18	LMP	Roger. We're back in NARROW now, Charlie.
01 23 08 23	CC	Okay. And we're getting a great signal strength now, so we should be in good shape if you can give us one more pass on the - on the tube, we - We should get a good picture at Madrid.
01 23 08 58	CC	10, Houston. Madrid is reporting a much better picture now. So we fixed it up.
01 23 09 06	LMP	Okay. The Earth ought to be coming through my window here in a minute, Charlie, if you can stand by.
01 23 09 09	CC	Roger. We're standing by.
01 23 09 26	CC	10, Houston. EECOMM are saying that it looked like we locked up on side lobe there the first time when

		we acquired with the high gain. Request that you stay in the WIDE BEAM width - for about 30 seconds, or a little bit longer before you select NARROW. Over.
01 23 09 49	LMP	Okay. We're all right now, though?
01 23 09 51	CC	Roger. We're in good shape now. That was just for future reference.
01 23 10 33	LMP	For all the folks at home, that should be a pretty good picture of the Stars and Stripes.
01 23 10 39	CC	Roger. Wish we were seeing it.
01 23 10 58	CC	10, Houston. We are expecting high gain loss in about 1 minute. Over.
01 23 11 06	LMP	Okay. And here comes the Earth. Let me get it for you first.
01 23 11 54	CDR	Okay. Now we've got it, Charlie.
01 23 11 57	CC	Roger. We've got about - still about a minute - -
01 23 11 58	CDR	- - taking a good picture of the Earth right now.
01 23 12 04	CC	Roger. Madrid's got it.
01 23 12 24	LMP	Okay, Charlie. That's maximum zoom. You should be seeing all of Africa - Matter of fact you should be looking right down at Madrid.
01 23 12 30	CC	Roger. We're beginning to lose the high gain - -
01 23 12 32	SC	...
01 23 12 34	LMP	... antenna.
01 23 12 38	CC	Roger. We're beginning to lose the high gain antenna, 10. We're going to OMNI.
01 23 12 41	CMP	Okay. That's a shame, cause it sure is pretty.
01 23 12 44	CC	10, Houston. If you'll go to MANUAL on the high gain, and we'll switch to OMNI.
01 23 12 55	LMP	You're there.
01 23 12 57	CC	Roger. We have them.
01 23 13 07	LMP	Boy, she's in a perfect spot now, Charlie; that was a shame.

01 23 13 13	CC	10, Houston. Due to our lockon, side-lobe problem, about a quarter or half of that pass was a little weak, at Madrid. If you'd like to, Madrid is still configured, and the next time you come around, they'd like some more TV. Over.
01 23 13 30	CDR	Okay. We got plenty - We got plenty of time here, and we're just going through reading about the lunar activities. And how soon before we can get high gain lockon?
01 23 13 44	CC	Stand by.
01 23 13 52	CC	It'll be approximately 10 minutes, 10.
01 23 13 59	CDR	Okay. We'll note that, and let us know as soon as we have high gain locked. We should be able to get it out the hatch window and my side window.
01 23 14 05	CC	Roger. And we'll come up with some more angles for you in just a minute.
01 23 04 13	CDR	Okay.
01 23 04 22	CC	Apollo 10, Houston. If you've got your LOI abort card out, we can talk about it.
01 23 04 38	LMP	Okay. We got it out, Charlie.
01 23 04 41	CC	Okay. Second line down, after manual REPRESS attempt, your first cue - propellant PRESS less than 160 and you got the second cue listed as PC less than 80; that's a soft number. We don't think on the basis of SIM's and systems data that you'll see a PC down that low, with the propellant PRESS down at 160 and ... below that before we get down to 80. So, just think about it, and it's a soft number and we can discuss this later on; what we want - whether we want to scratch that or not. The only other comment on the card was down at - next to the bottom - was mode 1 and 2 only. On the SPS injector valve CLOSE, after commanded ON. Your second cue again is PC less than 80. If you'll recall the evasive burn, we were getting a PC of about 95 or thereabouts. So, that's really soft on that one. We suggest that we eliminate that cue and that we replace it with a statement that says, "Close the bank that indicates OPEN," and if you're still burning, it's an apparent instrumentation failure. If the engine shuts down, then you're in abort mode anyway, and you'd continue with the LOI 1, mode 1 abort, at the proper time using one bank. Over.

01 23 16 23	LMP	Okay. Let me write that down, and we'll go over it here.
01 23 17 03	CMP	Charlie, I'm just looking through our rendezvous procedures here, and I just wondered if those guys have any second thoughts about some of those procedures. You know, we can change them now, but in a couple of days we won't be able to.
01 23 17 15	CC	Roger. Stand by.
01 23 17 21	CMP	Charlie. I'm just kidding about the changes.
01 23 17 26	CC	(Laughter) Okay. We - We really did go through them. We took the backup set last night, and from cover to cover, and everybody's happy as a clam with all the procedures now, finally.
01 23 17 43	CDR	We're even ... satisfied with your Marking schedule.
01 23 17 47	CC	Say again, Tom.
01 23 17 53	CC	I told Tittle not to have any more data priority meetings.
01 23 17 57	CC	He is locked out of the MOCR right now. We refuse to let him in.
01 23 18 07	CC	Back to the LOI abort card, my first statement, after manual REPRESS attempt with propellant PRESS less than 160, we think we should substitute as a second cue, instead of the PC less than 80, there, that if you can confirm a drop in PC, then that's enough to indicate a true propellant pressure drop, and it would be enough to shut down on. Over. 10, Houston. Would you select OMNI Charlie for us?
01 23 20 33	CC	10, Houston. Have you got any thoughts on the updates for your LOI-1 abort card? Or, do you want to think about it some?
01 23 20 47	LMP	Let us think about it for a minute, Charlie. Based upon that PC which we saw, with single bank, I guess maybe you got a point.
01 23 20 54	CC	Roger. We'll be standing by any time on this. We'll have you some high gain angles momentarily for your next pass around.
01 23 21 11	CDR	Okay.

01 23 21 25	LMP	Hey, Charlie. I bet the - I bet the FIDO has an LOI pad for us, doesn't he? Right now?
01 23 21 33	CC	Say again, 10. I cut you out.
01 23 21 37	CMP	I said I was betting that FIDO has an LOI-1 pad for us right now.
01 23 21 42	CC	He's working on it; we got some - FIDO says he's got your - the S-IVB about 3970 miles away.
01 23 21 55	LMP	Well, that must be it, then, that I saw, because it's really reflecting and tumbling out there.
01 23 22 02	CC	Roger.
01 23 22 05	LMP	If you can see that far, but there's something out there.
01 23 22 19	CMP	Is there any way you could give us a vector to it? We could put it in the AUTO optics and let it go look for it.
01 23 22 31	CC	Stand by. We've got a yaw of - a yaw of 270 and a pitch of plus - plus 30 for the high gain at 24 for the lockon. Over.
01 23 22 35	LMP	Okay. We'll be with you.
01 23 24 13	LMP	Hello, Houston. We should be locked on narrow now in high beam - high gain.
01 23 24 20	CC	Roger. And our signal strength looks great, 10.
01 23 24 25	LMP	Okay. You should be having something here pretty quick.
01 23 24 30	CC	Roger.
01 23 24 58	CC	10, Houston. Madrid has a good TV picture.
01 23 25 02	LMP	Okay.
01 23 26 04	CC	10, Houston. The picture is still looking great at Madrid.
01 23 26 30	LMP	Charlie, the Suez Canal appears now to be going into darkness. We're looking at most all of Africa, the Mediterranean Sea, Spain, Portugal are in view. So the folks down in that part of the area ought to be getting a good picture of themselves right now.

01 23 26 49	CC	Roger. I think they can ... that stuff out - -
01 23 26 54	LMP	The whole ...
01 23 26 55	CC	I was just going to say, Gene-o, I think they can ... that stuff out in black and white live. For the color, it has to come over here, be converted, and then be transmitted back into color for the people over in that area, but they're probably seeing it in black and white.
01 23 27 12	LMP	Well, it's a beautiful sight. All of Africa is brown again, of course, and the waters are very, very blue.
01 23 27 19	CC	Can you differentiate between the - the - -
01 23 27 22	LMP	Looks like it - -
01 23 27 24	CC	Go ahead. I'm sorry.
01 23 27 31	LMP	Charlie, our picture just went off beyond the corner of our window now, so it looks like that's about it for right now.
01 23 27 37	CC	Roger.
01 23 27 39	LMP	And what did you want me to differentiate between?
01 23 27 41	CC	I was just going to ask you, looking at Africa -
01 23 27 46	LMP	What was your question, now?
01 23 27 48	CC	Okay. Looking at Africa, could you tell the difference between the Congo and the tropical forests and the - and the - say, the mountains around Morocco and all the Atlas Mountains, and up around the Mediterranean, or is it all sort of the same brownish color?
01 23 28 02	CDR	No, the - Once you get to the tropical rain forests, it changes colors. You can definitely see the Sahara and the Atlas Mountains. When you go south of the rain forests it's not as green as you would expect, but it gets a less red and more of a, really a purplish-green tinge there, Charlie.
01 23 28 23	CC	Roger.
01 23 28 25	LMP	You don't see the great - the bright - the bright green rain forest you'd think you might, but it's the shade - it's the contrast that you notice.

01 23 28 34	CC	Roger. Yesterday when we were looking at South America live here, you could see the - above the timberline in the Andes Mountains, just very distinctly - a brownish color, and in the - in the Amazon Basin and in the jungles around it, it was sort of a - a deep bluish, darker than the ocean by a considerable factor, but it was more of a oluish tinge down here.
01 23 29 04	CDR	No, it's - It's a purplish-bluish tinge, and we can see - again, a lot of it has to do with the amount of haze and cloud cover on it.
01 23 29 10	CC	Roger.
01 23 29 14	LMP	Charlie, it sounds to me like you're seeing it pretty much as we are.
01 23 29 17	CC	It was really spectacular color, 10. We're really - Everybody is really pleased and happy with the quality. All the networks and all are just ecstatic over it, as we are here in the room. It's - You guys have really been putting on a great show for us and we really appreciate it.
01 23 29 39	LMP	Yes. Well, it's not a show. We just want to show you what we can see from out here. Not many people get a chance to get this far, and it really is a pretty exciting view.
01 23 29 48	CDR	Yes. We also just wanted to thank all the people that helped make it possible for us to get here, too, Charlie.
01 23 29 57	CC	Roger. We're passing it on, Tom, to the networks. This afternoon when we got the scheduled TV, we'd like you to do the water bag trick, the food separator stuff and - Let's see how that will look. We might be able to pick up something on the - on the live TV. Over.
01 23 30 15	CDR	We'll show you a new law of physics: how the bubbles go to the bottom.
01 23 30 21	CC	Okay. That's what we'd like.
01 23 30 23	CDR	Roger.
01 23 30 45	LMP	Forgot to tell you, Charlie. I got your picture walking to work this morning.
01 23 30 50	CC	Oh, great. Walking to work?
01 23 30 57	LMP	Yes. How come you were late?

01 23 31 00	CMP	Charlie, it looks like Spain is mostly open today. I'm looking at it through the sextant. It really looks - It's beautiful.
01 23 31 06	CC	Roger. Can you differentiate the - -
01 23 31 09	CMP	... Barcelona.
01 23 31 12	CC	Excuse me. I was just going to ask you if you could differentiate the cities. Tell us about what you can see.
01 23 31 18	CMP	Well, all you can make out is - It looks just like a map, a small map. And well, you can see, for example, the Pyrenees. And you can see there, maybe cloudcover down along the coast there, down on the Mediterranean coast. You can see, almost see, I think, Gibraltar.
01 23 31 42	CC	Roger.
01 23 31 43	CMP	And the Lisbon area over by Portugal seems to be clear. In France, Marseilles is open, and it looks like there's a little cloudcover in northern France. England is under the clouds.
01 23 31 56	CC	Can you pick out any of the islands off of Greece, or say, Sardinia, or down around Italy, Capri, Sicily? Can you see those islands?
01 23 32 08	CMP	They're pretty close to the terminator right now, and it's a little smoggier today than it was yesterday, but yesterday Crete was very clear. I could see Cyprus; the Nile Delta is very clear right now. You can see the Nile; the Nile Valley really stands out, and, of course, the Sahara Desert is very clear. You can see geological features in the desert. It looks like Lake Chad down there in the middle of the - middle of Africa.
01 23 32 39	CC	Roger. Start talking about geology and we will have Jack Schmidt in the room, in just a minute.
01 23 32 48	CMP	I thought he was already there.
01 23 32 50	CC	No, he's doing something over in the office today.
01 23 33 12	CMP	That certainly is an interesting weather - weather patterns going across there. Now, I can see - I can see right now in Brazil, it stands out very clearly on the horizon. And Brazil is covered with those little thunderstorms that build in a tropical area. It just seems like each tree has its own separate thunderstorm down that way.

01 23 33 33	CC	Roger.
01 23 33 35	CMP	Boy, it's really a fantastic, just fantastic view. We can see right across the top of the world right now, and it sort of looks like, I don't know exactly how we are oriented, but it sort of looks like the North Pole is open today, but it isn't very much open. The whole northern part of the world is right under the worst cloud bank I've ever seen.
01 23 34 03	CC	Roger. That thing has been there constantly almost since, it seems like, since you guys started showing us the pictures back. Do - Can you still see that strange-looking storm system up over the Bering - I guess it was just south of the Bering Straits out over Alaska there. Is that thing still there? It was a funny-looking swirl.
01 23 34 26	CMP	We're right - The terminator runs down through Africa right now, Charlie, so we're starting to look at only about three-quarters of the world.
01 23 34 37	CC	Roger.
01 23 34 42	CMP	So that part of the world hasn't come around to us yet.
01 23 34 49	CC	Roger.
01 23 35 03	CC	10, Houston. We're estimating high gain loss at 37. We'd like you to - at high gain loss, to return to OMNI Bravo, and then we'll handle the OMNI's from there. Over.
01 23 35 20	LMP	Okay, Charlie.
01 23 35 58	CC	10, Houston. Bruce has got a little message here he cut out of the paper, and I'd like to read it up to Tom if you're ready.
01 23 36 08	LMP	Stand by. Let us switch to OMNI's here in a second, Charlie.
01 23 36 10	CC	Roger.
01 23 40 30	LMP	Hello, Houston. You reading us?
01 23 40 32	CC	Roger. Reading you five-by, now.
01 23 40 37	LMP	Okay. I went to OMNI Bravo, there, and left it there for about 2 minutes. I'm in Delta and when we lose signal strength, I'll give it back to you. I'll just go to OMNI in Bravo, and let you do the switching.

Seeing the S IVB at 3000 miles

01 23 40 49	CC	Roger.
01 23 40 53	LMP	Okay. You can read that message up, if you would like.
01 23 40 56	CC	Roger. It's from Weatherford, Oklahoma, dateline. It says two young Oklahomans had high hopes Sunday when they tried to send greetings to Apollo 10 Commander Thomas P. Stafford, an Oklahoma native. The two youngsters, about 10 years old, were seen from a busy interstate highway by a passing motorist. They were standing on a hillside about 4 miles east of Stafford's hometown of Weatherford, holding aloft a printed sign with two small U.S. flags attached to it. The sign said, "Hello, Tom." Did you see it?
01 23 41 29	CDR	No. We were trying to, but couldn't quite make it there, Charlie. Tell them thanks a lot for the effort.
01 23 41 33	CC	Roger - -
01 23 41 34	CDR	- - We appreciate it.
01 23 41 35	CC	Roger.
01 23 44 00	CC	10, Houston. If you'll select Bravo on the OMNI's, we've got the D command in and we'll just take over.
01 23 44 09	LMP	Okay. You've got it.
01 23 44 11	CC	Roger.
02 00 01 44	CMP	Hey, Houston. This is 10.
02 00 01 48	CC	Go ahead, 10.
02 00 01 52	LMP	Hey, Charlie. Do you suppose a guy can really see 3000 miles with the naked eye in space? Something like the S-IVB?
02 00 02 03	CC	Yes. Everybody is nodding their heads "yes," here. We think so. It - You ought to be able to see 4000 miles or so; that's a pretty big target out there, and we think you ought to be able to see it.
02 00 02 18	LMP	Okay. Well, I - I could definitely see it. We've been seeing it for a couple of days I guess, and - with the monocular - and it looks more and more like, you know, it might really be the S-IVB.

02 00 02 32	CC	Roger. FIDO said it's about 4000 miles. I guess that's about the same plane as y'all are. FIDO says you'll have an update on your range - -
02 00 02 47	LMP	Yes, we see it - -
02 00 02 50	CC	Go ahead.
02 00 02 56	LMP	We see it fairly regularly, I guess, if we look for it as we rotate through this PTC.
02 00 03 01	CC	FIDO will have an update on the range in about an hour or so for you.
02 00 03 07	LMP	Okay.
02 00 10 03	CDR	Hello, Houston. Apollo 10.
02 00 10 06	CC	Apollo 10, this is Houston. Over.
02 00 10 10	CDR	Okay. We're going to go ahead and get the ECS redundant component check out of the way at this time. Then we're going to have our own little skull session in here about the lunar operations for about 2 or 3 hours. So, we won't be talking to you after this for a couple of hours unless we have some questions about the lunar operations.
02 00 10 29	CC	Roger. We copy. We're working on an S-IVB location vector for you. Do you want us to send that up when we get it?
02 00 10 37	LMP	Yes. Go ahead.
02 00 10 41	CC	Okay. Copy redundant component check.
02 00 11 52	CMP	Okay. Houston, if you are watching, we're going to do the main regulator checks here.
02 00 12 12	CC	Apollo 10, this is Houston. Can you hold off on the component check for another minute or so until we get the high gain antenna acquisition?
02 00 12 29	CMP	Okay. We just - already started on it but - -
02 00 12 30	CC	Roger. We -
02 00 12 37	CC	We're showing about - yaw about 270, pitch plus 30 on the high gain antenna.
02 00 12 48	LMP	Ah so.
02 00 12 53	CC	You should have acquisition right now.

02 00 13 37	CMP	Houston, 10. How do you read?
02 00 13 39	CC	Roger. Loud and clear, and ready for you to proceed with the redundant component check.
02 00 13 45	CMP	Okay.
02 00 15 57	CC	Apollo 10, this is Houston. We copy the secondary evaporator operating now. We'd like you to let it run for 3 to 5 minutes this time if you would. Over.
02 00 16 13	CMP	That's affirmative.
02 00 16 15	CC	Very good.
02 00 18 57	LMP	Hey, Bruce. How are things back there on the home front?
02 00 19 02	CC	Oh, they are pretty good. Everybody is watching you all via TV and the newspapers, and things are going along nicely here.
02 00 19 12	LMP	What about the home-home fronts?
02 00 19 28	CC	Roger. The two Barbaras were over here at Mission Control to watch the TV yesterday. Things seem to be going along pretty well.
02 00 19 40	LMP	Okay. Thank you.
02 00 21 17	LMP	Houston, 10. If you are satisfied with the secondary loop, I'll go ahead and deactivate it.
02 00 21 23	CC	Roger. It looks good here, you can go ahead and deactivate, and we'll do a little checking on the - the home front situation for you and report back in a little while.
02 00 21 32	LMP	Okay, fine. And the loop looks like it's operating pretty good here.
02 00 21 45	CC	Roger. We concur.

END OF TAPE

02 00 26 24	CC	Apollo 10, this is Houston. Stand by for the news from the home front. Over.
02 00 26 28	CC	Hey, 10. We just talked to - -
02 00 26 29	LMP	Go ahead.
02 00 26 30	CC	Okay, Gene-o. We just talked to Barbara Young, and she's the only one that's at home. The other two are at least not home. May be out to lunch or something or out spending all your money. But Barbara Young is the only one at home, and she says everything is all right, John, and said that she and Barbara Cernan almost fell out of the chair yesterday with your little demonstration of dynamics in zero g and thought it was real funny. But everything else is peachy keen at home, and we'll try to raise the other two gals later on today.
02 00 27 13	LMP	Okay. Thank you, Charlie.
02 00 27 17	CC	You're welcome.
02 00 27 18	CDR	Tell mine to quit spending all the money. Okay?
02 00 27 21	CC	Okay. We'll do that, Tom.
02 00 27 29	LMP	I can see nothing's changed at my house.
02 00 27 30	CC	Roger.
02 00 27 38	CC	Apollo 10, this is Houston. Would you give us OMNI Bravo and MANUAL on the high gain antenna? Over.
02 00 27 50	LMP	Socking it to you. Here it comes.
02 00 27 54	CC	Roger.
02 00 41 39	CC	Apollo 10, Houston.
02 00 41 50	LMP	Go ahead. Over.
02 00 41 51	CC	Roger. Gene, just talked to Barbara and she said she was home and that I didn't let the phone ring long enough, so she's mad at me. She said she received your letter yesterday and she ruined her makeup after reading it, and that everything was really fine; she appreciated it very much, and that Tracy is fine, back in school, and they're really enjoying all your TV shows. Over.

02 00 42 16	LMP	Very good, Chas. Thank you.
02 00 42 18	CC	Roger. Tom, we'll keep trying with Faye.
02 00 45 20	CC	Hello, 10, Houston. We'll be having a handover to Goldstone in about 3 minutes.
02 00 45 29	LMP	Roger, Charlie.
02 01 30 38	LMP	Hello, Houston. This is Apollo 10.
02 01 30 43	CC	Roger, 10. Go.
02 01 30 47	LMP	Charlie, I'm looking at the Earth now through the monocular, and I can see the west coast of Africa. I can see Spain and Gibraltar very, very well. I can see just about 90 percent of South America, up through Central America. I can see the whole Gulf Coast all the way to California, and on this side now, Cuba is very visibly clear. All of Florida is clear. The whole Gulf Coast is clear. I can look up the East Coast maybe to about the Carolinas, and then it appears to get a little bit cloudy. And it appears that the Great Lakes, I think I can make out Lake Michigan and probably Lake Superior. And then there are some clouds up in the northwestern central United States.
02 01 31 43	CC	Roger. We copy.
02 01 31 44	LMP	There's some. Okay. Coming out of the North Pole down into the Central Atlantic are some very weird, picturesque cloud formations. Swirls, not definite low areas, but big large swirls.
02 01 32 03	CC	Roger. We copy.
02 01 32 04	LMP	This is about the best view I think I've had - -
02 01 32 08	CC	Go ahead.
02 01 32 09	LMP	It appears to be about the best view that I've been able to have of the whole Atlantic and South and North America from where I am, and it ought to be getting a little bit better as we go along.
02 01 32 19	CC	Sounds pretty spectacular, 10. Can you distinguish the Bahamas region? In most of the photos it looked like it is definitely a greenish rather than a blue area. Can you pick out any

of the islands or just - is Cuba the smallest - the largest - you can define?

02 01 32 42 LMP Charlie, she's out of my view right now. As soon as she comes in in the right-hand window, I'll take another look at it, but I think probably you can. Now there are some clouds down in there as you just go off of Miami and off the Keys. There are some scattered cloud coverage down in the Caribbean which may make it difficult to pick some of those islands out.

02 01 33 03 CC Roger. Just giving you an eye test.

02 01 33 06 LMP It's - Okay, it appears that the whole Gulf Coast all the way across Mexico through Arizona, from Florida to California, you know, up J2 and J86 is clear as a bell.

02 01 33 22 CC Roger. Copy. It was beautiful when we came to work this morning outside. I don't know what it's looking like now, though. Hold on.

02 01 33 36 LMP You don't even have to go out; I'll tell you.

02 01 33 39 CC Okay. Everybody - The front row standing here says it looks beautiful outside.

02 01 33 51 LMP We'll have it coming around here in the other window in just a few minutes.

02 01 33 55 CC Roger.

02 01 34 03 CC IO, can you comment on any other - -

02 01 34 06 LMP How do you guys like it down there - -

02 01 34 07 CC Say again, Gene; I cut you out.

02 01 34 08 LMP Go ahead, Charlie.

02 01 34 09 CC I was going to ask you, can you comment on any of the - you made a distinct comment on the Nile Delta and the Nile Valley; can you pick out any others as they come into view, say the Mississippi? Is it as clear and is as distinguishable as the Nile and the desert, or would you have a difficult time? Over.

02 01 34 37 LMP We'll take a look at it as she comes through the window over here.

02 01 34 40 CC Roger.

02 01 39 21	CDR	Hello, Houston. This is Apollo 10.
02 01 39 23	CC	Go ahead, 10.
02 01 39 27	CDR	Okay, Charlie. ...
02 01 40 31	CDR	Hello, Houston. Apollo 10. How do you read now?
02 01 41 05	CDR	Hello, Houston. Apollo 10.
02 01 41 07	CC	Roger, 10. Go ahead. We switched antennas on you, 10, and you were cut out, Tom, right when you began your conversation. Go ahead.
02 01 41 17	CDR	Okay. We're working through the Goldstone now. Right?
02 01 41 26	CC	10, you're breaking up. Can you stand by about a minute until we get a better signal?
02 01 41 30	CDR	Okay.
02 01 43 57	CC	Apollo 10, Houston. How do you read now?
02 01 44 02	CDR	Roger. Read you loud and clear. How me?
02 01 44 04	CC	You're about three- to four-by, 10. Go ahead. I think we can read you now.
02 01 44 12	CDR	Yes. Okay, Charlie. If you have a good contact with Goldstone, we might just show you - we've got some time to kill - we just might show you a quick 2 or 3 minutes of the Earth on TV you might never see on our normal transmission because we're way past here. We can get Africa, part of Europe, North and South America, and it's pretty good. If we can go high gain into Goldstone, we could probably get it in about 10 minutes for you.
02 01 44 38	CC	Roger. Stand by. We're at Goldstone active now. We'll see if we can configure the network and give you some angles. Stand by.
02 01 44 48	LMP	Okay, Charlie. While you're doing that, your answer is I can see the Mississippi Delta very well as outlined against the Gulf of Mexico. Compared to the surrounding areas, it's a grayish area. You can't really see the river basin or anything that might be a delta, except the contour of the land.
02 01 45 14	CC	Roger. We copy, 10.

02 01 45 18	LMP	Okay. And your inlets from Florida all the way down towards Trinidad. There's a lot of broken cloudcoverage, but I can yet pick out islands other than Cuba down in that area all the way down through Trinidad, possibly islands in the areas of San Lucia and Martinique and down in that area.
02 01 45 41	CC	Roger. You really got some eagle eyes up there. We'll be with you in a moment with some angles.
02 01 45 54	LMP	Well, I'm cheating. I'm using a monocular.
02 01 46 33	LMP	I'll tell you one thing, Charlie. The map makers are pretty good.
02 01 46 36	CC	Roger. They'll appreciate that.
02 01 46 44	LMP	I can definitely see up in the Great Lakes region now.
02 01 46 48	CC	Roger.
02 01 46 50	LMP	Lake Superior and Lake Michigan are very clear. I can pick out one of the Eastern Lakes and then there is a big, long, thin cloudbank that runs from northeast to southwest, probably starts around the middle of Missouri and then goes on up into the northeastern part of the United States. That covers a couple of the other lakes.
02 01 47 13	CC	Roger. Say, we're getting a better weather report than the 6 o'clock news.
02 01 47 21	CDR	Okay. We've got the tube all set up. When you give us the angles, we can give you a quick 2 or 3 minutes of it and still continue with the PTC.
02 01 47 29	CC	Roger, 10. The Goldstone is configured. Stand by. The EECOMM's will have some angles for you in a second.
02 01 47 38	LMP	You ought to get an outstanding picture of the Gulf of Mexico, Florida. The United States is almost 80 percent clear, and you'll get South America, and on the right-hand side near the terminator you ought to be looking at Spain and the west coast of Africa.
02 01 47 52	CC	Roger. We're configured now. Your angles are pitch 27[illegible] - correction - pitch 30, yaw 270, and it's a plus on the pitch. And those angles are good for 3 minutes from now, at 51.

Studying on the way to the moon

(GOSS NET)

02 01 48 08	LMP	That was 030 on the pitch plus and 270 on the yaw. Right?
02 01 48 11	CC	Roger. If you try it now, you can probably get it. Stand by. The EECOMM's are shaking their heads "no" on that. Try 51, 10.
02 01 48 26	LMP	At 51. Okay.
02 01 48 36	LMP	Tell them I'm going to lead them, in a little bit, to see if we can do a little better than that.
02 01 48 42	CC	10, we don't have the lines in from Goldstone. It should be recorded at Goldstone, and we'll play it in as soon as we get the lines up for the live TV coming up at 54 hours.
02 01 48 55	LMP	Okay, Charlie. Very good.
02 01 48 59	CC	Since we don't see it down here, if you guys will give us a running commentary, we'd appreciate it.
02 01 49 07	LMP	Okay.
02 01 49 24	CC	And, 10, if you've come up with any questions out of your 2 hour skull session on the lunar orbit work, if you'd like to pass them on, we'll get the experts working on them. Over.
02 01 49 39	LMP	Okay.
02 01 51 08	LMP	Houston, can you tell when we've got good high gain lock?
02 01 51 11	CC	Stand by.
02 01 51 16	LMP	Doesn't appear here that we've got a solid lock.
02 01 51 24	CC	Roger. We made an error in the calculations, 10. And we're estimating now at 53 before a good solid lockon, on the main lobes.
02 01 51 34	LMP	Okay.
02 01 53 49	LMP	Okay, Houston. There's solid lock on narrow beam width.
02 01 53 54	CC	Roger, 10. We're reading you five-by. Stand by and see if we confirm.
02 01 53 58	CC	Roger. We got a good lockup.

02 01 53 59	LMP	And you ought to be getting a good picture.
02 01 54 02	CC	We got a good lockup. Goldstone is configured. Ready to go.
02 01 54 08	LMP	Okay. You ought to be looking at it now.
02 01 54 10	CC	Roger.
02 01 54 46	CDR	Houston, how do you read on?
02 01 54 51	CDR	Hello, Houston. Apollo 10. How do you read on VOX?
02 01 54 55	CC	I read you five-by on VOX, 10.
02 01 54 59	CDR	Okay. I'll kind of narrate this, Charlie. I'm kind of at an odd angle to hold it out the window. Again, you can see the west coast of Africa, the Sahara Desert, there, all in orange. You can see the Atlantic Ocean with swirls of clouds over to the eastern part of Brazil. You can see the very weird cloud patterns that Gene described out over the northeastern part of the United States. Again, it looks like the North Pole, in that whole area around Canada is completely socked in.
02 01 55 34	CC	Roger.
02 01 55 36	CDR	Again, the one thing that is really so amazing, as you look at the Earth, is the amount of cloud-cover that we have down there. Over the tropical rain forest of South America, there's just numerous small cumulus clouds.
02 01 55 55	CC	Roger. Can you describe the color as contrasted to say, the Andes or the American Desert?
02 01 56 03	CDR	Roger. The color of the tropical rain forest there is more of a greenish brown. It's a greenish brown versus a brown-orange on the tropical - on the American Desert and the Sahara Desert.
02 01 56 18	CC	Roger. Can you pick out the Amazons?
02 01 56 20	CDR	I'm giving you - -
02 01 56 22	CC	Roger. Can you pick out the Amazon River?
02 01 56 23	CDR	Negative. No. I can't pick out the Amazon. I am looking at it with my naked eye where

Gene had the 28-power monocular. I do have the zoom on here, so you are seeing it a little bit bigger than we are on the standard vision, so the Earth as you see it there is bigger. And you can see the terminator, or nighttime, has moved over most of Africa at this time, and is starting to move over to Europe. It'll soon be nighttime in Spain, and also, it is getting daylight over in Hawaii, there. The cloud patterns are utterly fantastic as you look out at it.

02 01 57 04	CC	Roger, 10. We copy. How about up around the clouds that I asked you about earlier up around the Bering Strait? Is it daylight over there yet?
02 01 57 13	CDR	They are just starting to come into view and when we have our programed TV pass, - that's through Goldstone, we should be able to take a look at that cloud frontal situation. It was a beautiful swirl yesterday.
02 01 57 26	CC	Roger.
02 01 57 27	CDR	But it's also amazing how some of the clouds are pure white and the other ones will look more of a brownish white - kind of a dirty white. Again, if you look you could see, by Mauritania going over to Brazil, the intertropical convergence zone that's always pictured on our weather map is just a straight line right around the Earth. It's really beautiful with occasional outcroppings of cumulus clouds.
02 01 57 54	CC	Roger. Where are the brownish clouds located? Over the deserts, or just where, Tom?
02 01 58 01	CDR	Right now the brownish clouds are over the tropical rain forest and the Atlantic Ocean.
02 01 58 09	CC	Roger.
02 01 58 10	CDR	- - tropical rain forest in Brazil.
02 01 58 11	CC	Roger. Copy.
02 01 58 12	CDR	We're about to lose you out our window.
02 01 58 17	CC	We'll stand by. Goldstone and Madrid were both recording the TV. Get good signals both places.
02 01 58 24	CDR	Okay.

02 01 58 25	CC	We'll stand by till you come out through the hatch window.
02 01 58 31	CDR	Okay. As we say adios - disappeared behind our hatch window now. We will see you later.
02 01 58 37	CC	Roger.
02 01 58 38	CDR	Cut it.
02 01 58 40	LMP	Roger.

END OF TAPE

02 01 58 46	CDR	That VOX worked okay, I guess.
02 01 58 50	CC	Hey, 10. That VOX was perfect. None of the words were clipped or anything. It was like talking to you in the same room, 10. It was really great.
02 01 59 04	CDR	Okay. That's the first time, I guess, we've really used VOX. It seems to be okay up here, Charlie.
02 01 59 08	CC	Roger. You're not clipped at all. We're real pleased with it here, 10.
02 01 59 39	CC	10, Houston. We'll have you on the high gain for about another 8 minutes. Over.
02 01 59 47	CDR	... coverage on the Earth at all, now. You're completely out of view. John will be able to pick you up down in the optics.
02 01 59 54	CC	Roger.
02 02 04 43	CMP	Houston, Apollo 10. Over.
02 02 04 45	CC	Roger. Go ahead, John.
02 02 04 49	CMP	Roger. In about another hour and a half, you ought to be right underneath us. And, boy, it ought to be the most remarkable picture of the United States ever made. The whole North American continent is just standing out. It's really - and there's not too much clouds, for a change; it's open.
02 02 05 06	CC	Well, great.
02 02 05 08	CMP	... see right down from Florida - -
02 02 05 12	CC	Go ahead.
02 02 05 13	CMP	You can see Puerto Rico, Haiti, Jamaica, Cuba, Florida. The Bahamas are under cloudcover right now, but, in general, the whole United States, except for the New England states and a path cutting down through the middle of the United States, wide open. You can see the Great Lakes very well.
02 02 05 42	CC	Good show. We'll be looking forward to your TV show live here at - in a couple of hours, and we should be, as you say, about right underneath you and ought to get a good view. Thanks a lot.
02 02 05 56	CMP	Roger. Mexico and the Yucatan peninsula and even some of Central America. I can't see Panama. I

can see parts of Venezuela, Colombia, and, of course, most of Brazil is wide open. Chile seems to be open along the coast down there. Peru and Bolivia are probably under scattered clouds today.

02 02 06 19	CC	Roger. You guys are giving us - -
02 02 06 20	CMP	You can sure see a lot.
02 02 06 21	CC	- - great weather reports.
02 02 06 25	CMP	You can sure see a lot of the world from up here.
02 02 06 28	CC	Yes (laughter). Like maybe all of it.
02 02 08 02	LMP	Charlie, I've got it out my window now, and, like John said, it's so remarkably clear. Lake Superior and Lake Michigan stand out very brightly. There's just a patch, a little patch of clouds, or the Chicago-Milwaukee area, or else there's snow on the ground. I really think it's probably cloud but you can almost pick out the states by the contour of the sea and the oceans and the lakes. And I can actually see the Mississippi, not see the river, but you can sort of see the Mississippi River Valley as it goes up on north from the delta
02 02 08 48	CC	Is this through the monocular or naked eye, Gene?
02 02 08 52	LMP	It's through the monocular, Charlie.
02 02 08 55	CC	Roger. Well, it sounds like a spectacular sight. Wish we had had a stowaway up there with you.
02 02 09 08	LMP	Hey, you know, you almost did until they wrote it in the OCP to get Joe Engle out of here.
02 02 09 11	CC	Yes (laughter).
02 02 09 18	LMP	It's also very interesting just to watch the continents come out over the horizon as the world turns more towards us - as the U.S. continent turns more towards us.
02 02 09 33	CC	Roger. We copy.
02 02 09 38	LMP	And I agree now with John. You can see practical that whole island chain all the way down to Trini
02 02 09 45	CC	We copy.
02 02 10 03	LMP	It's hard to believe we is really here.

02 02 10 05	CC	Yes, you guys are a long way away. We've got you at about 170 000 miles, little bit more than that right now.
02 02 10 13	LMP	170. Okay.
02 02 10 15	CC	Roger. You're still below - If the drawing's right there, you're still below the Earth/Moon plane; and, be coming up at about 195 000, you'll be crossing through the plane and going a little above.
02 02 10 29	CC	Hey. We're trying to get some angles - -
02 02 10 31	CMP	... Charlie ...
02 02 10 33	CC	Go ahead, John.
02 02 10 38	CDR	We're not much below it, right? We're pretty close.
02 02 10 42	CC	Roger. Yes, real close.
02 02 11 04	CDR	Hey, you can watch the Earth through the optics plus or minus 57 and a half degrees in the sextant, so if you can pick it in time, you can follow it for over 100 degrees.
02 02 12 50	CC	10, Houston. We'd like you to select OMNI Bravo and MANUAL on the high gain. Over.
02 02 13 01	CDR	Roger.
02 02 34 33	CC	Hello, Apollo 10. Houston. Over.
02 02 34 39	CMP	Go ahead, Charlie.
02 02 34 40	CC	Roger, John. We're looking here ahead in the flight plan, and we'd like to give you your P27 update at 52 05 or thereabouts; and, hopefully, we won't have to kill the PTC for you to do this realignment. You did such a good job this morning, we think we can continue on in the PTC and let you do the realign; and we can get an update to you also in PTC mode. And we're suggesting, since this thing is going so great, that we just keep it going and put TV - that we could do TV also during PTC, since it seems to be working fine. And we'll have about - At the present roll rate, we'll probably have about 10 to 15 minutes coverage with the high gain; so we can get the whole live TV, and it will be partial exterior and partially interior, and if that's agreeable with you guys, that's the way we'd like to play it.

02 02 35 43	CDR	Okay, Charlie. But I - Remember we were going to do a trunnion CAL here one of these days. And I guess today isn't the day.
02 02 35 52	CC	Well - -
02 02 35 53	CDR	You can't do that unless you stop the PTC. Over.
02 02 35 59	CC	Stand by. We'll see if that's worth stopping for. Hold on.
02 02 36 30	CC	10, while we're waiting for the answer from the experts on the trunnion CAL, we'd like you to turn to the back of your flight plan to the mission rules summary, and like to talk about a few updates that we feel are justified at this time. Over.
02 02 36 55	CDR	Okay. We're turning to them, Charlie.
02 02 36 57	CC	Roger.
02 02 37 05	CDR	Okay. We've got the flight plan out for this one. We're looking at it.
02 02 37 14	CC	Roger. It's on the back page, Tom, on the LM stuff, primarily. Looks like the command module's side is in good shape. But on the LM side, if you'll notice under the column "Do Direct Return Abort For Loss Of," we have an X beside the primary loop. We'd like to change that to both loops, that we'd have to lose both loops before we did a direct return. Over.
02 02 37 46	CDR	Okay. In other words, you said it can go secondary loop because you figure the PGNCS would last for a period of time?
02 02 37 57	CC	Roger. If we went on the secondary, we would do the PDI abort sequence. But it's such a short time frame from between the DOI and the direct return that we don't think that we should go that route just for losing a primary loop and we feel we'd be satisfactory coming back on a secondary loop with a PDI abort. Over.
02 02 38 22	CDR	Okay. That sounds good to us since we've seen from the - how the - the G&N system has worked in the altitude chamber without the cooler. We'll go along with that for sure.
02 02 38 30	CC	Roger. These are suggestions, of course, and let y'all have time to cogitate over them and then you

		can come back with us if you - to us, if you disagree. And at the bottom of the page under the "Do Not Perform Rendezvous For Loss Of," next to the last line, we list RCS systems, and we had just an X. We say that we would not perform the rendezvous for loss of either RCS, A or B. Over.
02 02 39 02	CDR	I think we agree with that completely, either one.
02 02 39 05	CC	Roger. Well, that's just slight clarification. And, also, moving over under the same heading, RCS systems for the PDI abort sequence, we recommend that we do not go to that sequence for loss of one system. In other words, if we lose one RCS system, we continue with the nominal plan. Over.
02 02 39 32	CDR	I think we ought to talk that one over.
02 02 39 35	CC	Roger.
02 02 39 37	CDR	Let us think about it for a little while. Okay?
02 02 39 38	LMP	I'm a little bit lost, Charlie. You say do not perform rendezvous for loss of either RCS system, and then you say do PDI abort sequence for loss of either one? You continue the rendezvous, or what?
02 02 39 54	CC	After you're committed to the rendezvous, is our feeling, that - In other words, once we've done DOI, that after you've committed to the rendezvous, then you would not change that sequence for loss of an RCS system, that we would continue on nominally. And that's a trade-off, though. If you need time to figure in all that stuff, when you look at it, we just think we're better off with a nominal time line once we're committed. Over.
02 02 40 21	CDR	Yes. We certainly like the nominal time line, but the main thing is - depends on what you say the mean time to failure for that other system. If we lose attitude control, we could be in trouble.
02 02 40 32	CC	Roger. We agree, 10. We'll go - It's 2 hours we're talking about, of course, and we'll go either way you guys want to go. This is strictly a recommendation.
02 02 40 48	CDR	Okay. Let us think about it for a little while, Charlie.
02 02 40 50	CC	Roger.

02 02 42 48	LMP	Hey, Charlie. This failure is obviously between DOI and phasing, because once you've done phasing, you're committed to the nominal anyway.
02 02 42 59	CC	That's affirmative, 10. We like - We look at also that - Really, we feel what you're talking about is just 2 hours of stationkeeping, because once you're past phasing and you're down to one system, then you're on the RCS for most of the burns anyway. I shouldn't say 2 more hours of stationkeeping; I should say 2 more hours of attitude control.
02 02 43 31	CDR	Yes.
02 02 43 38	LMP	I guess one reason or one question we have in mind, you know, is what caused you to lose that one ring. What was the circumstance that caused you to lose it, and what are the chances that 2 hours is going to make a difference, you know, in whether you do a PDI abort or whether you do the nominal.
02 02 43 58	CC	Roger. We -
02 02 44 00	CDR	Charlie, I ...
02 02 44 01	CC	Go ahead, Tom. I cut you out. Excuse me.
02 02 44 05	CDR	Yes. I think you're ... the time ... If it occurred earlier after DOI, we might ... If it occurred real late ... real bad time ...
02 02 44 19	CC	10, you're fading out. Unreadable now. We'll switch the antennas on you. We'll be back in a moment.
02 02 45 46	CC	10, Houston. We're back; do you read me?
02 02 45 51	CDR	Okay. How do you read now, Charlie?
02 02 45 53	CC	Okay. Five-by, Tom. Look, we aren't just suggesting this. We feel like it's more of a real time situation here, and about what kind of failure we've had and how much time we've got, and we play it real time. There are certainly situations where you'd want to come back with a - doing a PDI abort sequence, so it was just something for you to think about; and I think it's more of a real time situation than a hard and fast rule, anyway. Over.
02 02 46 21	CDR	Yes. That was just exactly what we were coming around to. It's awful hard to write that rule

down on paper, and to say like, if it happened early, you can see what happens when you might do the PDI abort. But after - Later on where we'd be time-rushed to do the PDI abort in other combining circumstances, you would probably go ahead with the nominal.

02 02 46 38 CC Roger. We agree.

02 02 46 39 CDR So I'd just leave it up to real time.

02 02 46 42 CC Roger. We agree 100 percent. We're with you.

02 02 46 48 CDR Alrighty. Fine.

02 02 46 49 CC And, 10, it looks more and more like the trunnion CAL is becoming less and less of a priority here. And we're recommending tentatively now that we continue the PTC on through that and get this later on, but we're checking with a few more experts on the problem. Over.

02 02 47 13 CMP Okay. That's your decision.

02 02 47 15 CC Roger. We'll let you know, John.

02 02 47 33 CDR Charlie, would you pass on the word to Christopher C. that we're saving all this fuel so we can get him some good landmark tracking.

02 02 47 39 CC Roger. We sure will. And, Tom, I talked to Faye on the telephone just a minute ago, and all's real fine at home, and they've really been enjoying your TV shows. And all three of the gals think they're married to a bunch of hams up there after yesterday's show; and they've really enjoyed it a lot, and everything's just real fine.

02 02 48 01 CDR Okay. Thank you.

02 02 48 06 LMP How can you be a ham when you're just trying to show that the world's round?

02 02 48 10 CC It's the interior shots that they were referring to, I'm sure.

02 02 48 15 LMP Oh, were those live?

02 02 48 18 CC (Laughter) Roger.

02 02 48 22 LMP Hey, Charlie, I want to talk you a bit about the data, since you were in charge of it. We've got some pretty interesting flight plan notes that

		were penciled and taped in at the last minute. We're wondering if you want to see some of those down there?
02 02 48 37	CC	Roger. It's up to you guys, whatever you think. Most of this goes out live, so if you want to show it, it will be fine.
02 02 48 49	LMP	Well, since you did such a fine job on the data, we thought we'd like, you know, to express our thanks.
02 02 48 54	CC	Roger. Well, I take really not much credit for that.
02 02 49 00	CDR	You might have to clear that with Gordo and Ed.
02 02 49 02	CC	Roger. Ed's sitting here right now grinning from ear to ear. We didn't think you guys were looking through - -
02 02 49 10	CDR	... grinning about another - -
02 02 49 13	CC	We didn't think you guys were -
02 02 49 14	CC	(Laughter) All right.
02 02 49 22	CDR	Now we're trying to spare him. He's going to wade all the way through the flight plan to the end.
02 02 49 26	CC	Roger. I'm glad to see you're reviewing all that data.
02 02 49 32	CDR	We're trying to do our homework up here, Charlie.
02 02 49 35	CC	Roger.
02 02 50 00	CC	10, Houston. We're GO without a trunnion CAL, and we'd like to say in PTC. Over.
02 02 50 10	CDR	Okay. Sounds good to us. I don't think we've had a thruster fire in a long time.
02 02 50 14	CC	Roger.
02 02 57 39	LMP	Hello.
02 02 57 51	LMP	Houston, were you trying to call 10?
02 02 57 54	CC	Negative.
02 02 57 58	LMP	Okay. You know, for information, I guess it caught me a little bit unexpected, but even with

		the S-band squelch on, you know we can hear this very fine, not annoying at all, but very fine, soft crackling in the background, but not typical loud S-band that drives you out of your mind.
02 02 58 19	CC	Roger. Stand by.
02 02 58 24	CC	Roger. We got this when we - -
02 02 58 27	LMP	Looks pretty much - -
02 02 58 30	CC	Go ahead, Gene.
02 02 58 32	LMP	Go ahead, Charlie.
02 02 58 33	CC	I was going to say, on this end, when you break lock, it really is grim. We've got to get synced up on this delay here.
02 02 58 43	LMP	Yes. I know. When we cut each other out, I can hear my voice coming back to me that I said a second or two ago. But we don't - When we break lock or we're changing antennas or one thing or another, with that squelch on, we can tell it, but it's very acceptable. And even right now, I've got a very low crackling in the background. Normally, on a good lockon, I don't.
02 02 59 07	CC	Roger. I can hear that too down here in the MCCR. When we break lock, it really is loud down here. Of course, we don't have our equipment turned on, and when we start getting a bad signal, it really is deafening almost.
02 02 59 25	LMP	I guess the only reason I mentioned it, I was surprised that I hear anything at all with that squelch on, but I do. And it's really very good, because it's acceptable and yet detectable.
02 02 59 33	CC	Roger.
02 03 09 49	CDR	Houston, Apollo 10.
02 03 09 52	CC	Go ahead, 10.
02 03 09 55	CDR	Okay, Charlie. Looks like we finally drifted out of the deadband and fired a couple of thrusters.
02 03 10 00	CC	Roger. We see you at 30 on the pitch here.
02 03 10 30	CDR	Okay, Charlie. Does it look like we should go back and start all over again or just continue on as is?

02 03 10 39	CC	G&C says it looks good just the way it is. We just ought to continue in. An/ it looks like we're coming back into the deadband now, 10, so let's just leave it like it is and watch it for awhile.
02 03 10 52	CDR	Okay. I looks like - I'm guessing we've run about 20 hours without a thruster firing. That's pretty good.
02 03 10 58	CC	Roger. We concur. It was great.
02 03 18 52	CDR	Hello, Houston. Apollo 10.
02 03 18 55	CC	Roger. Go ahead, 10.
02 03 19 00	CDR	Roger. We seem to be waltzing off here against that yaw deadband, and the thrusters are continually firing.
02 03 19 07	CC	Roger. Copy. Stand by. We'll look at it. We might want you to start up again. Stand by.
02 03 19 16	CDR	Okay.
02 03 20 37	CDR	Houston, Apollo 10. I don't know if you can read our telemetry, but we've had about a steady stream of firing for the last 4 minutes.
02 03 20 45	CC	Roger, 10. We're not copying your - We're in low bit rate. We're not copying your thruster firings. We noticed you're on the edge of the deadband; we're discussing this. Stand by.
02 03 20 57	CDR	Okay.
02 03 21 55	CDR	Okay, Houston. Apollo 10. It's continuing to fire about once every 4 or 5 seconds.
02 03 22 02	CC	Roger, 10. We copy. We're - Stand by just 1 more minute.
02 03 22 10	CDR	Okay.
02 03 22 23	CDR	There we go again.
02 03 22 27	CC	10, Houston. We recommend you go MIN IMPULSE, try to pulse it away from the edge of the deadband and then back to RATE COMMAND, and then let's watch it. We're having a debate whether we should just stop PTC for a couple of hours or not. We're checking with the thermal people. Stand by.

02 03 24 59	CC	Hello, 10. Houston.
02 03 25 05	CDR	Go.
02 03 25 06	CC	Roger. You can discontinue PTC at this time. And we recommend you select an attitude of pitch 90 and roll 307. Put us in a good TV attitude, and then you can go to - just drift, and we'll watch it for you. And if you start getting out of that attitude, then we can MIN IMPULSE back. Over.
02 03 25 33	CDR	Roger. Pitch 90, yaw zero, and roll 307.
02 03 25 37	CC	That's affirmative.
02 03 25 40	CDR	Okay.
02 03 26 59	CC	10, Houston. In this attitude, we'll have a high gain antenna in a pitch of 023, yaw of 265.
02 03 27 15	CMP	023 and 265. Roger.
02 03 27 18	CC	Affirmative. And, we're going to try and come up with some stars for you for P52, and then maybe a sextant correction; a trunnion CAL, too. We'll let you know on that.
02 03 27 33	CMP	Roger.

END OF TAPE

02 03 34 40	CDR	Okay, Houston. Apollo 10. We've maneuvered to roll 307, pitch 90, and yaw zero, and holding in that attitude.
02 03 34 48	CC	Roger.
02 03 35 34	CMP	Houston, you want us to just turn the thrusters off now?
02 03 35 38	CC	Stand by. We're discussing that right now, 10.
02 03 35 42	CMP	We maneuvered there at wide deadband. If we turn them off now, we'll just go all over the place, I guess.
02 03 35 51	CC	Roger. It's your choice. We'd like you to stay near this attitude, and we don't think you're going to use too much in wide deadband; so just keep them on, and we'll be in good shape.
02 03 36 03	CMP	Roger.
02 03 36 04	CC	John, it looks like you got a pretty good star for the trunnion CAL. We're coming up and rechecking it for you. And you'll probably do your P52 in this attitude, also, and we'll have some stars for you in just a minute.
02 03 36 25	CC	10, Houston. Have you got a good view of the Earth out of one of your windows? That's why we came to this attitude.
02 03 36 34	CDR	Yes, it's a beautiful view out of the left side window.
02 03 36 37	CC	Roger.
02 03 36 38	CDR	Couldn't ask for any better. And we're going to change our seats around here.
02 03 36 44	CC	Roger, Tom.
02 03 36 49	CC	And we're coming up about 9 minutes away from the waste-water dump. We're ready any time you guys are.
02 03 37 45	LMP	Hey, Charlie?
02 03 37 46	CC	Stand by - Yes. Go ahead, 10.
02 03 37 51	LMP	The nozzle on this bag is on the wrong end.

02 03 37 58	CC	Roger.
02 03 38 05	CC	You're defying the laws of physics.
02 03 38 09	CDR	Yes. We'll show it to you in a little bit.
02 03 38 12	CC	Okay. We're standing by.
02 03 38 17	CDR	Okay. John is all set to start on his P52, here. And do you want the waste water dump first?
02 03 38 23	CC	Negative. I think that'll ruin your P52. We're thinking about doing the P52 first. I don't think there's any really big sweat on the water dump, but if you'll just stand by 2 seconds - Go ahead. You can do your P52 - -
02 03 38 42	CDR	Okay.
02 03 39 57	CC	10, Houston. We should be able to get the high gain now with a pitch of 023 and a yaw of 265.
02 03 40 10	CDR	Pitch 023 and yaw 265.
02 03 40 13	CC	Roger.
02 03 45 44	CC	10, Houston. We recommend for your trunnion CAL that we - Star number 31, Arcturus, probably requires just a little bit of maneuvering. It looks like the best to us. Over.
02 03 46 01	CDR	Roger.
02 03 46 04	CC	And, 10. Looks like - I think we passed on to you earlier today that we're skipping midcourse 3, and we probably will skip midcourse 4. It's in the order of 3.6 feet per second right now. And we're leaning towards skipping that one, also. Without the midcourses, we have a perigee of 60.7 nautical; and, at LOI 1, we can achieve a 60 by 170. And with LOI 2, we can get a 60 circular. So, it looks like we are leaning towards skipping midcourse 4, also.
02 03 46 47	CDR	Okay. That sounds real good.
02 03 46 51	CC	Roger. It looks like pretty good shooting here.
02 03 52 45	CC	10, we copy your torquing angles and your star angle difference.

02 03 55 06	CDR	Houston, Apollo 10. You want us to go ahead with the calibration test at this time?
02 03 55 11	CC	That's affirmative. We recommend star Arcturus, 31.
02 03 55 19	CDR	Okay.
02 04 02 27	CDR	Houston, Apollo 10. Have you copied VERB 06, NOUN 87 there with us?
02 04 02 32	CC	Roger. We - Stand by. We copy it.
02 04 04 30	CC	10, Houston. We're satisfied with the trunnion calibration. It's looking good to us. You needn't do any more.
02 04 05 11	LMP	Okay, Houston. I believe that 89992 is probably the best number. These are right on the edge of the sextant. It's about to disappear out of it.
02 04 05 21	CC	Roger, 10. We copy. It's looking good to us. You can discontinue that. We have a loaded site for you. If you'll give us POO and ACCEPT, we'll send you a state vector.
02 04 05 34	LMP	Roger. I'll load - unload the 89992.
02 04 05 38	CC	Roger. We copy.
02 04 06 03	CDR	Okay. You are in POO and you have ACCEPT.
02 04 06 07	CC	Roger.
02 04 09 37	CDR	Houston, Apollo 10. When do you want our water dump?
02 04 09 40	CC	10, we're through with your update. You can go back to BLOCK, and we are debating now on the dump. We got to get all the cameras configured. They want to try to photograph this again. We're looking probably at 52 15, but we'll have an exact figure in just a minute.
02 04 09 59	CDR	Okay.
02 04 10 14	CMP	Houston, this is 10.
02 04 10 16	CC	Go, 10.
02 04 10 20	CMP	The reason for the delay in between the start of P52 and initiating it was, when I went to look at the sextant, the eyepiece had floated

		off; and, though we spent about 2 minutes scrambling around in here, and it was over behind Gene's sleeping bag, if you can believe that. How it got there, I don't know, because it couldn't have been gone - It couldn't have been off more than about 3 minutes.
02 04 10 48	CC	Roger. You can sleep with it in your pocket tonight.
02 04 10 55	CMP	Yes. We're taping it on, but that's the kind of thing I would think that ought to be sort of held in place by something better than tape.
02 04 11 03	CC	Roger. We agree.
02 04 11 10	CMP	I think that happened to Dave on 9, too.
02 04 11 17	CC	Roger.
02 04 11 57	CC	10, Houston. You can proceed with the dump at 52 15. Over.
02 04 12 07	CDR	Roger. 52 15.
02 04 12 49	CC	10, Houston. We'd like to give you a GET time hack. We're coming up on 52 13, and it will be on my Mark, 52 13.
02 04 12 59	CC	10, Houston.
02 04 13 00	CC	MARK.
02 04 13 01	CC	52 13.
02 04 13 05	CDR	Roger. We are SYNCED.
02 04 13 06	CC	Roger.
02 04 13 07	LMP	Did you allow for the speed of light there, Charlie?
02 04 13 09	CC	Yes, sir. I got it 1 second early, so you should have had it.
02 04 13 15	CMP	Okay.
02 04 13 16	CC	Me and the RETRO can really count - -
02 04 13 18	CDR	...
02 04 13 22	CDR	Taking lots of lessons from Llewellyn there, huh?

02 04 13 25	CC	Roger.
02 04 13 29	CDR	Okay. I've got the CMC clock going. It looks SYNCED, here.
02 04 13 32	CC	Roger.
02 04 15 06	CDR	Here comes the water dump.
02 04 15 07	CMP	Houston, we're dumping.
02 04 15 09	CC	Roger. Copy.
02 04 16 06	CDR	Houston, Apollo 10. Have any of the telescopes been able to see the water dump yet?
02 04 16 10	CC	We haven't got word back on that yet, 10. It will probably be a while before they get their plates and things developed. I think they're taking pictures of everything, and it takes them a while to get all that information back. And, so far, we haven't heard where they've been able to see it or not. We'll keep trying to find out that word for you and let you know.
02 04 16 32	CDR	Alrighty.
02 04 24 16	CDR	Houston, Apollo 10. Did you transfer the CSM state vector to the LM slot, or do you want us to?
02 04 24 22	CC	That's affirmative. We sure did.
02 04 24 26	CDR	Okay. I didn't catch it until last.
02 04 24 29	CC	Roger.
02 04 27 43	CC	10, Houston. You can stop your dump now.
02 04 27 49	CDR	Okay.
02 04 39 58	CC	Apollo 10, Houston. John, we noticed after your trunnion bias check, when you entered the 89992, that - We saw a flashing 59 come up instead of a 92, and we don't think that number got in. It's not any big deal, but whatever the number is is okay. But we don't think it went in - what you were trying to load.
02 04 40 38	CMP	Let me think.
02 04 40 44	CMP	Can you see that, Charlie? Or you guys gotten ... now.

02 04 40 47	CC	Roger. We see those - We see your register. It looked like to us that when - that instead of the PROCEED, you did a VERB 32. We saw the 59 down here when you entered that - entered that number, John.
02 04 41 06	CC	Stand by on this display.
02 04 41 08	CMP	Now, I just called up - I just called up 687. Didn't the second register 89? Whatever it was supposed to be?
02 04 41 17	CC	Stand by. That's what it's supposed to be. I'm not sure - Hold on a minute, let me talk to the guidance guy.
02 04 41 30	CMP	Please don't tell me it's not in there.
02 04 41 51	CC	10, that location 87 is time shared, and those numbers that we're looking at are results of marked data. The 89992 - We don't care whether it's in or not. The point was that - that - instead - to incorporate that, when you entered it, it appeared to us that a VERB 32 was done instead of PRO to incorporate, because we saw a 59 display instead of a 0692.
02 04 42 28	CMP	Roger. Oh, yes. Okay.
02 04 42 32	CC	And that's really all we were trying to say, John.
02 04 42 37	CMP	Okay. Yes. I know that. Well, that's why I loaded it in there.
02 04 42 41	CC	Roger.
02 04 42 43	CMP	And the next time we do one, if I don't get a chance to do a trunnion CAL, I'll load that number.
02 04 42 50	CC	Okay. Fine. That's great.

END OF TAPE

02 05 06 49	CDR	Hello, Houston. Apollo 10.
02 05 06 54	CC	Apollo 10, Houston. Go.
02 05 06 59	CDR	Okay. John was asking earlier about that storm center over Alaska. It's finally started to rotate around and has developed into quite a system. We'll show it to you later on during the TV pass.
02 05 07 11	CC	Okay.
02 05 07 17	CMP	How's it going, Donn?
02 05 07 21	CC	Oh, pretty good, John. How are you getting along up there?
02 05 07 26	CMP	Great. This is just as great as you said it was, man.
02 05 07 29	CC	Kind of neat, isn't it.
02 05 07 33	CMP	Man. Yes.
02 05 07 37	CDR	Hey, Donn. For the first pass since we have been up, most of the United States is wide open today and will be in the middle of the Earth as you see it.
02 05 07 42	CC	Okay.
02 05 07 43	CDR	Should be a pretty good view.
02 05 07 45	CC	All right. Thank you.
02 05 07 56	CC	You guys are getting close; coming up on 180 K.
02 05 08 02	CDR	Yes. We're about to pass over.
02 05 08 04	CC	Yes.
02 05 10 01	CMP	Houston, this is 10. Over.
02 05 10 03	CC	Go ahead.
02 05 10 08	CMP	Roger. Yesterday, I asked them to give us a detailed briefing on how to use that water bag, on the theory that we are probably doing something wrong because it wasn't working. We never got that. Over.
02 05 10 21	CC	Stand by.
02 05 12 15	CC	Apollo 10, Houston.

02 05 12 18	CDR	Go ahead.
02 05 12 20	CC	Roger. About this water bag stuff. We've got a procedure here that we can read up to you, if you'd like to listen to it. As far - While it is not working, we got no ideas, other than reading this procedure to you. We'd like to see it on TV when the time comes. I don't know whether that will help us or not, but watch you twirl it and see what happens, and maybe somebody will have a smart idea at that time. Right now, all we got to offer is a procedure that we can read up. Over.
02 05 12 56	CMP	Okay. Why don't you do that? See if that's what we're doing. Maybe that's why it's not working.
02 05 13 00	CC	Okay. Here we go. It says: step 1 is fill the bag to approximately one-half full of water using the water dispenser.
02 05 13 11	CMP	We did that.
02 05 13 12	CC	Okay.
02 05 13 13	CMP	We did that.
02 05 13 14	CC	I copied. You did that. Second step: squeeze the bag. (Laughter)
02 05 13 15	CMP	Yes, sir.
02 05 13 20	CC	Squeeze the bag. Stand by.
02 05 13 30	LMP	Yes. I was afraid it was going to sound about that smart.
02 05 13 35	LMP	It's a pretty complicated mechanism we've got here.
02 05 13 40	CC	Okay. Second step: squeeze the bag at the valve end to force the water into the opposite end of the bag. This will shorten the time task of collecting gas during the spinning operation. Okay. Third step: using the handle, spin the bag until separation is accomplished. This operation is to cause the gas to be collected in the valve end of the bag and the water at the opposite end. Number 4 is pinch off or fold across center seam to maintain the separation of gas and water. Okay. Then you open the probe valve and bleed the gas off and then close the valve, and they say that ought to do it. Over.
02 05 14 31	LMP	Babe, that's quite a theory there. We'll give you a real-time evaluation right now, Charlie.

02 05 14 36	CC	Okay. We can't wait for the TV. That's all - the only help we've got for the whole thing. Over.
02 05 14 45	CDR	Just wait for the TV, Charlie.
02 05 14 47	LMP	Charlie, you'll love it, babe; you'll love it.
02 05 14 50	CC	Defies the laws of physics, huh?
02 05 14 55	LMP	I found a way: we spin it - -
02 05 14 57	CC	Go ahead.
02 05 15 01	LMP	We spin it until the air bubble goes to the bottom and then suck the water out around the bubble.
02 05 15 04	CC	Roger. We copied. (Laughter)
02 05 15 09	LMP	Try it, it works.
02 05 15 14	CC	I don't know about you guys.
02 05 15 20	CC	Hey, did you guys try just using one of the plain fruit juice bags to separate it out? How - Did you ever try that?
02 05 15 29	CDR	Yes. And Donn, the water stays with the air. The bubbles condense from a thousand bubbles into one or two big bubbles but that's all she writes. You can't get it out.
02 05 15 43	CMP	It's not clear how you get rid of the bubble, once you get the big bubble, you end up drinking it along with the water.
02 05 15 49	LMP	Like I told Charlie, the valve's on the wrong end. I'm going to spin the other end.
02 05 15 56	CDR	Would you believe that air is heavier than water?
02 05 15 58	LMP	That's my theory.
02 05 16 01	CC	Roger. Maybe we've discovered something here.
02 05 16 08	CC	It's all relative.
02 05 16 19	CC	It may be that the surface tension on the inside of that bag is enough to keep the water from flowing through that constriction very well.
02 05 16 31	CDR	Well, at the end of the centrifuge turns, the big bubble is right in the bottom, quite a ways away from the constriction.
02 05 16 40	CC	Roger.

02 05 16 41	CDR	It won't condense all the bubbles in the water tubing.
02 05 16 44	CC	Yes.
02 05 16 52	CC	Looks like maybe the swing handle's on the wrong end of the bag, huh?
02 05 16 57	LMP	The swing handle is on the right end, but the valve is on the wrong end.
02 05 17 01	CC	Well, whichever.
02 05 18 04	CMP	It's a very interesting thing to study these bubbles in this water.
02 05 18 09	CC	Roger.
02 05 22 44	LMP	Houston, Apollo 10.
02 05 22 50	CC	Go ahead, 10. Go ahead, 10. Go ahead, 10.
02 05 22 56	LMP	Houston, Apollo 10.
02 05 23 03	CC	Go ahead, 10.
02 05 23 06	LMP	Okay. I mentioned this morning, earlier when we were looking at the Earth, just to give you a preview - John will describe it because it's out his window when we get there - But the eastern seaboard from about Carolinas on up, just on the seaboard, is going to be covered with clouds and then into the Atlantic. I mentioned a cloud bank - Go ahead.
02 05 23 31	CC	Go ahead. We're hearing you.
02 05 23 37	LMP	Okay, Charlie. And I mentioned this morning there was a long cloud bank from the northeastern part of the United States into Missouri. It looks like now that that cloud bank goes from central Indiana up across Lake Erie, north-northeastward into Canada.
02 05 23 56	CC	Roger.
02 05 23 57	LMP	Michigan, Lake Superior, and the Midwest are very clear except for that cloud and there's some clouds which appear to be over - oh, maybe Kansas, Nebraska, I hate to say it, but Oklahoma. I may get some disagreement up here but I think it's Oklahoma, Colorado, Montana, up in that area; and then the West Coast is clear and the Southwest is all clear.

02 05 24 24	CC	Roger, 10. We're looking at a weather map that was just brought in, and we cast our vote with you, Gene-o. The clouds are over Oklahoma and your description is excellent. It follows a - There's a low pressury up in the very far north turning from the Great Lakes northeastward into - and from - I guess it's up around the - almost to Greenland, it looks like here; and from there, the low pressure weather system with a front comes down into the United States and touches the pan-handle of Texas and then goes back on up into Canada again pointing towards Alaska. And there's a band of clouds associated with that on this map, so your description is very accurate.
02 05 25 13	LMP	Yes. Yes, I understand. I think you'll see that big swirl of clouds Tom was talking about up Alaska way.
02 05 25 21	CC	Roger. There's a - -
02 05 25 22	LMP	Tom, you talk about the - Charlie, you asked Tom about the dense vegetation in South America. But if you look at the United States, the Mexican and greater American deserts are that orangish-brown as he described them; but when you look into the Midwest and into the East you go the greenish-brown. It's not the bright orange-brown, it's a darker, more subdued brown - maybe with subtle hints of dark green in it.
02 05 25 56	CC	Roger. We copy that. It looks like this cloud system out in the Pacific is associated with another low-pressure system that's sitting probably north of Hawaii at about 40 degrees latitude. It's located about 150 degrees west, so that's probably what's giving us the cloud pattern up off of Alaska.
02 05 26 21	LMP	That's affirmative. That's going to be very easy to see.
02 05 26 24	CC	Okay. We're all - -
02 05 26 25	LMP	And again, the San Joaquin Valley - The SanJoaquin Valley looks like someone took a big spoon - and it seems to be the one thing at least that I'm able to pick out very easily every time we take a look at the States - looks like someone took a big spoon and just carved it right out of the coast.
02 05 26 42	CC	Roger.
02 05 26 50	CC	10, through the monocular or through the sextant, were you able to distinguish the features around say, the San Francisco Bay area?

02 05 27 07	LMP	Let me take a look, Charlie.
02 05 27 18	LMP	There are lots of features down there. I sure ought to be able to distinguish some.
02 05 27 20	CC	Okay.
02 05 27 26	LMP	Charlie, it is sort of semi - appears semiclouded up north if you follow the coast past the San Joaquin Valley, and I can't really see anything that I can call San Francisco Bay from here.
02 05 27 40	CC	Okay. Roger. Probably some haze - Is it pretty hazy out on the coast there, up along the California coast north of the San Joaquin?
02 05 27 51	LMP	You've got some clouds just off the west coast of California that seem like they come just short of the coastline.
02 05 27 58	CC	Roger. We copy.
02 05 28 33	LMP	Charlie, if I hold this monocular low enough, I can distinguish features up there on the coastline, up around the San Francisco area.
02 05 28 41	CC	Okay. Roger, Gene. Copy.
02 05 28 46	LMP	And I tell you, if we had an apple to drop, it would fall right on Houston from where we are. Right smack underneath us - right in the center of the world.
02 05 28 53	CC	Roger. We are looking forward to this TV transmission, here.
02 05 29 05	CDR	Okay. I wanted to ask you about that, Charlie. Were they planning to go live with us on the hour, or could we turn it on earlier? What do you want?
02 05 29 14	CC	Stand by. We're seeing if Goldstone is configured for live. Stand by. Goldstone is ready. We are talking to PAO right now.
02 05 30 26	CC	Hello, Apollo 10. Houston. The networks and the Goldstone is all configured. You can turn on the tube.
02 05 30 36	CDR	Okay. We will get it out here and play it.
02 05 33 51	LMP	Hello, Houston. This is Apollo 10. You ought to be receiving something now.

02 05 33 57	CC	Stand by. It is not coming in here yet.
02 05 34 02	LMP	Okay. We are just starting.
02 05 34 03	CC	Roger. Will it be exterior shots, Gene-o?
02 05 34 08	LMP	Negative. We'll just start interior right away and then take you outside.
02 05 34 12	CC	Roger.
02 05 34 13	LMP	And then we'll bring you back inside. But we will start inside, take you outside, and bring you inside for the water bag.
02 05 34 21	CC	Roger.
02 05 34 30	LMP	Okay. Let me know when you are receiving us.
02 05 34 32	CC	Roger. We will. The networks and all are configured for this, so we are standing by.
02 05 35 20	LMP	Let us know when you are getting a "pic," Charlie.
02 05 35 22	CC	Roger. Sure will. EECOMM's are saying we got a 90-second warmup on that transmitter, so it might take just a little bit longer. Okay. We got the black and white coming in now. The black and white just came in.
02 05 35 35	LMP	Let us know when - -
02 05 35 36	CC	Okay.
02 05 35 42	LMP	Let us know when you get color.
02 05 35 45	CC	Okay. We are seeing your patch now in black and white. Be just a few more seconds.
02 05 35 55	CC	Okay. We just got the color, 10, on the vidicon here and it is looking real good, maybe a little bit focus; but the colors are good and it is a nice, simple little patch we see.
02 05 36 13	LMP	This is the peacock of Apollo 10.
02 05 36 16	CC	Roger.
02 05 36 18	LMP	And we'd like to say hello from the five of us, if we may.
02 05 36 22	CC	Roger.

02 05 36 34	CC	Okay. You want me to be a straight man on that question and ask it?
02 05 36 37	LMP	Stand by one.
02 05 36 38	CC	Okay.
02 05 36 40	LMP	Negative. Stand by one. Got a little technical difficulties here.
02 05 37 03	CC	We are still getting the color, 10.
02 05 37 05	LMP	Okay, 10. Here's the hello.
02 05 37 08	CC	Okay. Go ahead.
02 05 37 11	LMP	Here's hello from the five of us from on Apollo 10. Here's Tom Stafford.
02 05 37 19	CC	He's a beautiful Tom Stafford there. He's in living color.
02 05 37 27	LMP	John Young.
02 05 37 35	CC	We've got John. He's a little dark down there now, with his lights not on him, but we can tell it's John with his chin strap loose.
02 05 37 43	LMP	And yours truly, Gene Cernan.
02 05 37 49	CC	Roger. We got you, Gene. The sun is up pretty bright.
02 05 37 52	LMP	Are you still with us?
02 05 37 55	CC	Yes, sir. The Sun is pretty bright coming back out - Now you are coming in better. We see you slipping down in the LEE.
02 05 37 59	LMP	Okay. That's the three of us. Here's the other two on Apollo 10, your friendly Charlie Brown and our everloving companion, Snoopy.
02 05 38 14	CC	Roger. We got it coming in now. Okay. Color on Charlie Brown and Snoopy is a little dark. If you could get a little bit more light on them, it would be fine, but we can recognize the characters. They look pretty happy up there.
02 05 38 38	LMP	How's that?
02 05 38 39	CC	That's fine. It looks a little dark on the color. Could you stop it open a little bit more? Wait a minute. Okay. That is fine now. There you go.

The red and the background on the cards are coming in fine. We are washing out a little bit on the white of Charlie Brown's coat and Snoop's face.

02 05 39 10 LMP Okay. Now, you know that there are five of us up here. We'd like to take you outside and show you what the five of us are looking at.

02 05 39 16 CC Roger.

02 05 39 40 CC Okay.

02 05 39 56 CC We got the big Earth in color and it looks like about a half-Earth to us. It's a beautiful blue. We see the tremendous cloud coverage that you were talking about throughout the day, 10.

02 05 40 12 LMP Okay, Charlie. You are looking at the world right-sideup, as we know it. The Gulf of Mexico - Mexico goes down and to the right of the picture toward the terminator, South America is in the lower right-hand corner of the picture on the terminator. You can look up right smack in the center of the whole picture. You can make out Mexico, is Houston, right on the Gulf, and then North America goes up to about the 11 o'clock position on your picture.

02 05 40 48 CC Roger. We copy. We see primarily just the blues of the ocean and the whites of the clouds. We have a - the cloud patterns are pretty evident. Agree quite - real closely with the weather map I have. It is pretty difficult to pick out the landmasses, though, I must admit. We see one brownish area which appears to be in the American desert, about the center of the globe right now.

02 05 41 21 CDR Yes, Charlie. That's Mexico and the southwestern United States, right there; and Baja California is on the left of that, and the right-hand edge happens to be the Gulf of Mexico. If you can follow it all up, you will follow it right to Houston and thence New Orleans.

02 05 41 36 CC Roger.

02 05 41 38 CDR It's awfully hard to ascertain the difference - Okay, Charlie. It's hard to ascertain between the water down there in the Gulf and the landmass, because the whole eastern coast of the United States looks a greenish brown versus water.

02 05 41 58 CC Roger. That helps us out here to locate ourselves, at least for me, 10; and I think I see where you are

talking about now. We have one section of clouds that looks like it is almost a circular area - a clear area and then clouds appear to come out of South and Central America - swing out into the Pacific and in the center of that it looks like the clear area which I am saying is the southern part of the United States, from Mexico along the Gulf Coast. Is that correct?

02 05 42 35 LMP That's it, Charlie. The Gulf of Mexico is right smack in the center up and down of the world. If you follow the terminator down and went halfway and then went about halfway from there toward the rounder part of the Earth, you will find the Gulf of Mexico on that brown area you are looking at, between Mexico and the southeastern United States. That's Houston right smack in the center of that clear area.

02 05 43 02 CC Roger. It appears - -

02 05 43 03 LMP That clear area goes from Central America right on up into the States.

02 05 43 11 CC Roger. We copy. It appears that the landmasses are washing out just about as much as the clouds. Could you open it up a couple of stops and then stop it down fast so we can get a little bit - a second or two of sharper definition?

02 05 43 29 LMP Okay. Let us know when it is a little better.

02 05 43 38 CC Okay. It was a little - there you go, if you can hold that, but I think - That's good right there. It is a lot better, 10.

02 05 43 48 LMP Okay.

02 05 43 53 CDR Charlie, we are full zoom on you and it's even hard for us to make out things with the naked eye unless we know where they are. So, I imagine it is going to be difficult for you.

02 05 44 02 CC Roger.

02 05 44 03 CDR Okay, Charlie. The total globe that you see there is bigger than what we actually see, since we have the zoom lens on and it is probably about one and one-quarter times as big as we see it.

02 05 44 17 CC Copy, 10. As I said earlier, we are primarily getting the globe on a black background, and we see the whites of the clouds and the blues of the sea with an occasional glimpse of what I make out as landmasses in

		the brownish. But, it is really difficult for an untrained eye to pick out the exact landmasses. We are sitting here with the in-pad book that - We got it to show the various sizes and with this diagram, it is a big help.
02 05 45 05	CMP	What you are saying, Charlie, is that we are too far away to give you a good picture.
02 05 45 08	CC	Boy, you sure are a long way away.
02 05 45 12	CC	I think what it is, 10, is the landmasses and the clouds tend to wash out and it is a little hard to discern the difference; but looks like we can pick out the shapes of Yucatan, Florida, and Cuba, and the Gulf of Mexico.
02 05 45 28	LMP	Charlie, let me ask. Do you see the area you said was a clear area, and do you think you could pick up Mexico there?
02 05 45 38	CC	Roger.
02 05 45 40	LMP	Okay. If you follow up - but you might think it is the Gulf of Mexico there - and then go straight nort you see a little bit of V in the clouds and there's one going off to the right and a little thin sliver going to the right is the one I've been mentioning all day that goes from Indiana on through the north-east part of the country; and then that bigger blob that forms the left-hand side of the V is over the north-central United States and then right smack in center of the V is Lake Superior and Lake Michigan.
02 05 46 10	CC	Roger. That is a good description, 10. It clears it up for me, anyway. I can see what you are talkin about, now.
02 05 46 20	LMP	And then way up on the upper left-hand, maybe about 10 o'clock on the globe, you will see a funny cloud pattern that sort of looks like a sea serpent of some sort with his beak pointing to the right. That that cloud pattern that Tom was referring to up in the Alaska area.
02 05 46 37	CC	Roger. That's nearly apparent to us. When you stop it down, we can see that pattern. Some of the time, though, it's washed out due to the tremendous cloud coverage in that area.
02 05 46 53	LMP	There it is, Charlie. That ought to be good.

02 05 46 58	CC	Okay. It just came in on the black and white. We'll see it in just a second. Okay, now we see what you're talking about. Looks like an inverted view, almost.
02 05 47 06	LMP	Now you ought to be - Right, now you ought to be able to see that V-area I was talking about better, too.
02 05 47 13	CC	Roger. It's coming in a lot better, Gene.
02 05 47 21	CDR	Okay. If you got a pretty good view of the outside, we'll take you back inside for one last quick minute.
02 05 47 27	CC	Thanks a lot, 10, for that view. It's real good. We'll be standing by for the water-bag trick.
02 05 47 37	CDR	Okay. We'll take you back inside here, now.
02 05 47 50	CDR	I'll take care of it.
02 05 48 25	CDR	Question for today:. who is that?
02 05 48 27	CC	It looks like John Young with four sets of eyes, there. Two sets of eyes.
02 05 48 34	CDR	There you go.
02 05 48 35	CC	Let's call it four eyes.
02 05 48 38	CC	Looks like a World War I aviator.
02 05 48 40	CMP	That's what happens when you look through the telescope to see the Sun.
02 05 49 00	CMP	Okay. It may sound like we've been loafing for the past couple of days, but we haven't. We've been real busy, and every spare minute we get we study our flight plan. So you see that pretty soon we're going to be going into orbit, and we have a completely different set of operations to go into that shows our patch profile all around the Moon, for the first revolution. Tomorrow's a big day, and we're very much looking for it. Even though we're about 180 000 miles away from the Earth here, you never get away from studying.
02 05 49 44	CC	That's a great picture, 10. We can see the various spacecraft attitudes with the dark side of the Moon and the bright side. And we see the LM and the command module linked together and going into a LOI 1 burn attitude. It's real clear. You can almost read the writing on the pages.
02 05 50 09	CMP	Roger. Don't adjust your set. It's in black and white.

02 05 50 12	CC	Roger.
02 05 50 25	CC	We can read on the -
02 05 50 26	LMP	If you want to know where we're going - We'll show you a little bit of a chart of where we're going. Day after tomorrow, we ought to be seeing this in living Moon color. Right now, it's in the best black and white we've got. This is the area around Landing Site 2.
02 05 50 51	CC	Roger. Could you open it up a little bit, 10? We think maybe if you get a little bit wider f-stop, it'll help us out. Your pictures are a little bit dark.
02 05 51 06	CC	That's a lot better, 10.
02 05 51 07	CDR	I can't see the f-stop, yet.
02 05 51 10	CC	Okay, 10. When Gene moved back, it helped out a lot. If you'll just pull the chart back - that's good now. We can - It's coming in a lot better. Gene, could you -
02 05 51 24	LMP	The moral of the story is, John - The moral of the story is, John just said, "You know you can study all your life and you never finish studying," and here we are almost a quarter of a million miles away, and we're still studying. Like Tom said, he's got two girls taking final exams this week, and this is his way of saying, "Get to work."
02 05 51 51	CC	Roger.
02 05 51 52	CDR	Yes, and if those girls are listening, they had better be studying tonight.
02 05 51 54	CC	Okay. I'm sure they're listening. Would - Gene, how about pointing to a Landing Site 2 on the map for the folks?
02 05 52 05	LMP	Okay. Landing Site 2, I'll show you here in just a second. We'll be coming up from the bottom and I'll stop my finger up on Landing Site 2.
02 05 52 30	LMP	That's the area we hope to bring back some good pictures of in a couple of days.
02 05 52 36	CC	Roger.
02 05 52 37	LMP	We'll eventually - That's the area where we'll eventually be actually landing on the surface of the Moon. This area is probably just about visible from - in the

		lighted - with the terminator of the Moon lighted, I mean, from the Earth at this time. Just about.
02 05 52 58	CC	Roger. We copy.
02 05 53 02	CMP	That's one advantage we have. If you don't like to turn your pages, you can always turn yourself instead.
02 05 53 12	CC	Commander, you're in rare form today.
02 05 53 19	LMP	We figure that, you know, there's always a way of making pigs run downhill and maybe even knowledge will make it run that way.
02 05 53 28	CDR	Well, I guess that's the message to the kiddies in the country. If they can't get their homework rightsideup, go upsidedown. They might be able to absorb more that way.
02 05 53 36	CC	Roger.
02 05 53 51	CC	Looks like John's trying to hog the picture there, Gene. Why don't you - there you go, you pushed him out of the - you got - You got center stage now.
02 05 54 00	CC	What a ham.
02 05 54 01	LMP	You want to see me push; watch what happens.
02 05 54 14	CDR	That's called one-finger power.
02 05 54 16	CC	Roger.
02 05 54 24	CDR	Okay, this is Apollo 10 signing off. We'll give you one more picture of the Earth here, and call it a day. Oh, hold it. We want to show you the bag, too.
02 05 54 33	CC	Roger. We'd appreciate that.
02 05 55 15	CMP	The bag is full of - half full of bubbly water.
02 05 55 20	LMP	And for those of you who are unfamiliar, there's the valve where the air - and then the water comes out, and here's the handle. And notice, they're both on the same side. Are you ready?
02 05 55 31	CC	Go ahead.
02 05 55 37	CC	It's pretty difficult - get some more light on it, 10. It's pretty difficult to see the bubbles from that position.

02 05 55 44	LMP	I'll show you the bubbles, after I stop.
02 05 55 48	CMP	Okay. It was full of the ... thousands of minute little bubbles. You wouldn't pick them up. You can barely see them with the naked eye, but they're there.
02 05 55 58	CC	10, try spinning a little bit harder, and maybe that'll put the bubbles to the top.
02 05 56 05	LMP	Man, I spinned it so hard a little while ago, I was going in the other direction (laughter).
02 05 56 10	CC	Roger. Gene. Hold it up next to the LEB DSKY. We couldn't see any bubble there. If you got one together.
02 05 56 25	CC	Hey, that's a good spin; you're really spinning it now.
02 05 56 31	LMP	Okay. How's that for a bubble now?
02 05 56 35	CC	Okay. We got it.
02 05 56 43	CC	Okay. We see that bubble. Really a big one.
02 05 56 54	CMP	And it's in the bottom.
02 05 56 57	LMP	Charlie, about the only thing we get by spinning them is making the little bubbles into a big one and then it stays in the bottom.
02 05 57 03	CC	Roger. Is there any water left in the top of the bag, 10?
02 05 57 08	LMP	No, there's no water in the top of the bag. All the water's out. We have tried it with semifilled bags, with full bags, with half-full bags. What we really have been able to do, I think, is to get the bubble concentrated and then suck the water out from around it.
02 05 57 27	CC	Roger. Have you tried it filling up - filling the bag - both top and the bottom of the bag and then spinning it?
02 05 57 37	LMP	Yes. We tried that, too.
02 05 57 41	CC	Well, it doesn't look like it works then, does it?
02 05 57 58	CDR	Charlie, you can see the bubble real good, can't you?
02 05 58 00	CC	Roger. We have it, Tom. It's quite evident here to us. We'll have the experts look at this and maybe

they can come up with something for later on this evening for you.

02 05 58 18	LMP	Hey, Charlie, it is true, though, that water goes to the bottom of the bag.
02 05 58 22	CC	Roger.
02 05 58 23	LMP	And that phenomenon we have proved.
02 05 58 28	CDR	Also, when the air gets down there, we can stop spinning; the big bubble is at the bottom.
02 05 58 31	CC	Roger. We copy.
02 05 58 36	CDR	Okay. This is Apollo 10. We'll take you outside for one last look at the Earth and sign off.
02 05 58 40	CC	Roger. Thank you very much.
02 05 59 10	CC	Okay, 10. We just got the exterior view, and we got the Earth in the center of the screen, and it's a little bit different orientation this time. We see the North Pole up in the northeast about the 2 o'clock position on our screen now.
02 05 59 31	LMP	And he'll rotate the camera over a little bit. He was just tilting it for ease of handling here. He's rotated it back now, Charlie.
02 05 59 37	CC	Roger.
02 05 59 56	LMP	And from the five of us on Apollo 10: Tom Stafford, John Young, Eugene Cernan, Charlie Brown and Snoopy; we hope you've enjoyed it today.
02 06 00 02	CC	Thank you much, 10. We appreciated the show; it was very nice. We'll see you tomorrow.
02 06 00 10	CDR	Okay. And tomorrow we should be around the Moon.
02 06 00 12	CC	Roger.
02 06 00 16	CDR	Okay.
02 06 02 04	CC	10, Houston.
02 06 02 08	CDR	Go ahead.
02 06 02 09	CC	Roger, Tom. On this water bag, the only thing we can suggest is fill the bag up completely full and then spin; and then if you got - need more water, fill it up again and then spin and try until it's completely full, and then maybe slowly kneading that bubble up to

		the top. And if that doesn't work, then our only suggestion is going to the fruit juice bag and/or food bag and filling it up and then spinning it until you get a big bubble, and then kneading it up to the top where the food port is and evacuating it that way.
02 06 02 46	CDR	Roger. We've tried most of that but we'll press on here. And again, we're all thinking here, if that's the only problem we've got on this mission, we're going to be in great shape.
02 06 02 56	CC	Roger. We concur.
02 06 02 57	CMP	Yes, I mean. You can tell what kind of shape we're in when we can talk about things like that.
02 06 03 05	CC	Roger. Hey, it - -
02 06 03 06	CDR	There is one thing I want Charlie to check.
02 06 03 13	CC	Go ahead, 10. It appears just - -
02 06 03 15	LMP	You sure like to talk a lot, Charlie.
02 06 03 17	CC	I'm sorry. This time delay I think is giving us some problem. If you just keep talking, and when you hear me you're still downlinking and I'm still receiving you; so if I interrupt you, I'll just stop talking if you start or when I'm talking. Over.
02 06 03 43	CDR	Okay. Real good, Charlie. We'll try to be more observant on that. And again, you might give us a time when you want us to start the PTC mode again, and also I just want to check, is the color still looking pretty good on the TV?
02 06 04 01	CC	Roger. We thought it was real good here, 10. The Earth - the interior - Hold on.
02 06 04 15	CC	Back with you, 10. The interior shots in some of the darker portions of the spacecraft looked a little dull. However, when you're in the floodlights, everything was real fine. The exterior was very good, we thought. The whites and the blues and the Earth looked fine. We think the colors are real good. Everybody's real pleased with the operation of the camera. Over.
02 06 04 44	CDR	Okay. Real good, and the main thing too, I'm hoping that from the resolution that we have on the device, that when we get around the Moon tomorrow, we should show you some real good terrain features with the resolution we have on the instrument. Over.

02 06 04 59	CC	Roger. We're looking forward to that. We think we'll be in pretty good shape. And we'll come up with a PTC time for you momentarily.
02 06 05 09	LMP	Charlie, were the pictures that we shot over the Straits of Gibraltar and the ones where we picked up South and North America over the whole Atlantic through Madrid, did they get played back to you?
02 06 05 21	CC	We haven't seen them yet. The ones from Madrid will take 30 hours for us to get those. The Goldstone we're going to play back shortly, 10.
02 06 05 32	LMP	Okay. I guess we're at about the distance where the resolution on the camera doesn't really give you a chance to look at the Earth too closely. So, I guess we'll probably wait till we get on back to get any good Earth pictures.
02 06 05 47	CC	Roger. The colors are still brilliant, but the resolution is fairly marginal now. You really have to have a map in front of you to pick out what you're describing.
02 06 06 28	CC	Hello, Apollo 10. Houston. You can initiate PTC at your convenience with the same procedure as utilized last night. Over.
02 06 06 42	CDR	Okay. We're going to go ahead now and start to pick it up.
02 06 08 29	LMP	Hey - -
02 06 08 52	CC	Apollo 10, Houston. We'd like you to do a VERB 45. We saw you when you loaded the DAP - that 44 accidentally which set the circuit flag - and we'd like to reset that bit.
02 06 09 07	CDR	Yes. We just caught it, and we're getting out the G&N dictionary to do it ourselves.
02 06 09 10	CC	Roger.
02 06 09 34	LMP	I believe we're one mission too soon for that one.
02 06 09 38	CC	Roger.
02 06 13 00	LMP	Houston, this is Apollo 10. Is that procedure still good for today? When we disable the C and D jets, do we disable the C and D - the C roll jets, also?
02 06 13 11	CC	Stand by. That's affirmative, 10. We want you to disable all jets on quads C and D.

02 06 13 21	CMP	Roger. They're disabled.
02 06 13 23	CC	Copy.
02 06 13 28	CDR	Okay. The clock is started, then after 20 minutes, we'll go ahead with normal procedure.
02 06 13 35	CC	Roger.
02 06 34 31	CDR	Houston, Apollo 10. Now we're 20 minutes after having started the PTC entry exercise.
02 06 34 44	CC	10, Roger. We're watching.
02 06 35 01	CC	Roger. We'd like you to disable BD roll.
02 06 35 16	CC	10. We'd like you to disable BD roll and have AC roll ON. Okay, we're in good shape. Excuse me.
02 06 35 24	CDR	That's affirmative.

END OF TAPE

02 06 39 31	CDR	Houston, Apollo 10. We have set up the PTC mode again.
02 06 39 36	CC	Say again, 10.
02 06 39 41	CDR	Roger. We have set up the PTC mode, and it looks good.
02 06 39 46	CC	Roger, 10. We are observing your roll rate, and we'll be looking at it and be with you shortly.
02 06 39 54	CDR	Roger.
02 06 39 55	LMP	And, Houston, how do you want me to handle the antennas? You want me to switch to OMNI Bravo at this time or wait?
02 06 40 01	CC	Stand by. We'll have some word on that. We would like you to discontinue battery A charging now.
02 06 40 08	LMP	Okay.
02 06 47 25	LMP	Hello, Houston. This is 10.
02 06 47 27	CC	Roger, 10. Houston. Go ahead.
02 06 47 31	LMP	Looks like we're going to be losing high gain track here in a minute.
02 06 47 35	CC	That's affirmative. We'd like for you to go OMNI Bravo and high gain antenna to MANUAL, please.
02 06 47 43	LMP	Okay, Giuseppe. Will do.
02 06 48 06	CC	Okay, 10. This is Houston. We'll be taking over control of the antenna now, and flight advises - it looks like your PTC - you've got it set up as good as - as good or better than it was last night when you had it - when you went 18 hours there without another thruster firing.
02 06 48 26	LMP	Okay, Joe. Understand. Thank you.
02 07 09 10	CMP	Houston, Apollo 10.
02 07 09 15	CC	10, this is Houston. Go ahead.
02 07 09 19	CMP	Roger. You can now see the Earth and the Moon in the both windows. The Moon is in the right window - the Moon is in the left window and the Earth was in the right window. And you can see

the Moon just as the Sun sets occluded behind the right window. There's a period of time in there, less than a minute you can see the Moon. It's a - practically a new Moon. It's only a sliver from where we are.

02 07 09 51	CC	Roger. Copy.
02 07 09 57	CC	I bet that's a pretty good sight from there, too. Right, John?
02 07 10 03	CMP	Right now, the Moon looks as big as the Earth. Does that seem about right to you all?
02 07 10 14	CC	That looks about right from the little Earth/ Moon transit graph we've got. They should look about the same to you. Can you feel them pulling about the same?
02 07 10 27	LMP	No. We feel the Moon pulling just a little bit harder right now, Joe.
02 07 10 35	CC	Okay. Something's wrong.
02 07 10 48	CMP	You're saying we're not in the lunar sphere yet?
02 07 10 52	CC	Not quite.
02 07 10 57	LMP	You forgot - We can pull from here, too.
02 07 11 00	CC	Okay.
02 07 11 23	CC	You guys are really slowing down out there. You don't want to stall it out now.
02 07 11 31	CDR	I guess we're just barely chugging along here.
02 07 11 36	LMP	What's the stall speed of this one, Joe?
02 07 11 41	CC	I'm not real sure. I'll check that out.
02 07 11 45	CC	Push your nose over when you feel it burble.
02 07 11 55	CMP	All right. We're getting close to that burble.
02 07 56 50	CC	Apollo 10, Houston.
02 07 56 56	CDR	Go ahead, Houston. Apollo 10.
02 07 56 58	CC	Roger, Tom. We'd like to switch your hydrogens around a little bit. Let's go to sleep configuration, tank 1. Tank 1 to AUTO and tank 2 OFF.

02 07 57 12 CDR Tank 1 heater to AUTO, tank 2 OFF.

02 07 57 17 CC Roger. Verify.

END OF TAPE

02 08 11 37	CC	Apollo 10, Houston.
02 08 47 06	LMP	Hello, Houston. This is Apollo 10.
02 08 47 11	CC	Go, Apollo 10.
02 08 47 17	LMP	Roger. I got some onboard read-outs for you.
02 08 47 20	CC	Roger. Ready to copy.
02 08 47 26	LMP	Okay. These were taken at 56 hours, ... BATT C is 36.8, PYRO BATT A is 37.0, PYRO BATT B is 37.0, RCS Alfa is 86, Bravo 86, Charlie 91, and Delta 87. The radiation dosimeter read-outs are commander 26032, the CMP is 05032, and the LMP is 15035.
02 08 48 21	CC	Okay, Apollo 10. I read back: battery C is 36.8, PYRO A 37, PYRO B 37, RCS A 86, Bravo 86, Charlie 91, Delta 87. ... RDU commander 26032, CMP 05032, LMP 15035.
02 08 48 46	LMP	You got it, Ed. And we're in the process of cycling the H_2 and O_2 fans right now, and - I think the private conversation handles the crew status report this time.
02 08 49 05	CC	Roger. Roger. I've got a couple of things for you. We'll use the same COMM setup we had last night - on your OMNI's B and S-band nominal voice mode OFF. If you need to call us, do it on the downvoice backup, and this configuration ought to give us about 50 percent high bit rate. The decision has tentatively been made to skip midcourse 4. You can sleep in until 71 hours if you so desire. We'll give you a buzz if there's any change on that. Your consumables right now look real great, Gene. We've got single tank capabilities at 200 hours at 50-amp consumption. Your BATT's are all above the red line, and at this point, we can go even if your BATT charger fails. And query: Did you pass on, on the other conversation, any exercise info? We'd kind of like to know if you're using the exerciser and how you like them.
02 08 50 16	CDR	Okay. Right now, we've done a lot of isometrics up here today, and ... spent most of our time studying today. We've made - done a lot of isometrics, and we haven't got the exerciser out. We plan to use it after we get through that big exercise with the suits that day.

02 08 50 36	CC	You think you'll be strong enough after that?
02 08 50 56	CC	Okay, Apollo 10. I guess that's all we have at the moment. You're free to start turning in and get 15 hours of sack time in - if you want it.
02 08 51 05	LMP	- - Say that again about the single tank. I'm not sure I fully understood you.
02 08 51 13	CC	We cut each other out, Apollo 10. Try me again.
02 08 51 25	LMP	Hello, Houston. Apollo 10.
02 08 51 34	CC	Go ahead, Apollo 10.
02 08 51 58	LMP	Hello, Houston. This is Apollo 10. Over.
02 08 52 02	CC	Apollo 10, this is Houston. Reading you loud and clear. Go ahead.
02 08 52 22	CC	Apollo 10, stand by. Goldstone having communication problems with Houston.
02 08 52 30	LMP	Roger.
02 08 52 47	CT	Goldstone, Houston. COMM TECH voice check.
02 08 52 51	CT	Goldstone.
02 08 52 52	CT	Roger. How do you read?
02 08 52 53	CT	Loud and clear.
02 08 52 54	CT	Roger. Stand by. I'll send you three short keys.
02 08 52 57	CT	Alrighty.
02 08 53 02	CT	Keys are GO.
02 08 53 03	CT	Roger. Thank you.
02 08 53 12	CC	Apollo 10, this is Houston. How do you read now?
02 08 53 17	LMP	Okay. We're reading you loud and clear now.
02 08 53 22	CC	Roger, Apollo 10. We lost our link out to the site. Where were we when you lost me?
02 08 53 31	LMP	We were talking, Ed. I don't know how much you got about the exerciser info. We haven't really had a chance to take it out and use it. We've been doing isometrics - against the seat, the struts, and so forth.

02 08 54 48	LMP	Hello, Houston. This is 10. Are you reading now?
02 08 54 53	CC	10, this is Houston. You're coming in rather broken. I got the info on the exerciser, Gene. That about concludes all we have for you at the moment. You're free to go ahead and get 15 or so hours of sleep if you can, and the surgeon wants me to remind you to be sure and chlorinate your water.
02 08 55 15	LMP	Okay, Ed. Understand. I do have one question. Repeat to me what you said about the single hydrogen tank capability. Would you, please?
02 08 55 31	CC	Roger. We have a single tank capability for 200 hours at a 50-amp consumption.
02 08 55 41	LMP	Is that 200 hours from this point or GET at 200 hours?
02 08 55 47	CC	GET.
02 08 55 51	LMP	Okay. Fine. Thank you.
02 08 55 55	CDR	Okay - Ed, this is John. My question is - With regard to this sleeping in until 71 hours, okay; but we need to be able to reschedule those events that occurred before 71 hours, and some sort of a plan. And preferably I'd like to get the re-aligned change in our REFSMMAT in as soon as we wake up, so if we have any problems with it we can reshuffle them and get going.
02 08 56 25	CC	Roger, John. We'll get to work on that. There's - there doesn't seem to be too many things to shuffle here. I personally doubt if you'll be able to sleep 15 hours anyhow.
02 08 56 40	LMP	It's an admirable goal.
02 08 56 42	CC	I completely agree.
02 08 56 43	CDR	What we plan to do is stay up a little bit later tonight.
02 08 56 50	CC	Say again, Tom. You were cut out on the last one.
02 08 56 55	CDR	Roger. What we had planned to do is just to - When we saw this was coming up ahead, we thought we could cycle ourselves better. We planned to stay up a little bit later tonight, and tell the friendly gentleman on the left we have not forgot the chlorination.

02 08 57 09	CC	Roger. Roger. One item I omitted, Apollo 10, is with the omission of the midcourse, you can expect about 3 feet per second to get to the middle of the corridor if you have to fly by it. Belay that - It was 13 feet per second to get to the middle with no midcourse, and take about 3 feet if we were to do it, which we've decided not to at this time.
02 08 57 37	CDR	I think we should be able to afford that.
02 08 57 40	CC	That doesn't seem unreasonable at all.
02 09 00 23	CC	Apollo 10, Houston.
02 09 00 27	CDR	Go ahead, Joe.
02 09 00 28	CC	Roger, Tom. Just to clarify here, I think Ed was talking to you about your trajectory and referenced the midcourse burn - correction on the midcourse burn in your flyby. That was the LOI-minus-5 burn that he was talking about. If you make it there, it's a 3-foot-per-second correction; and if you wait until flyby, it will be a 13 foot per second.
02 09 00 55	CDR	Roger. That's what we understood there, Joe. Over.
02 09 00 57	CC	Okay. Fine. I thought he said midcourse. I wanted to clarify that.
02 09 01 04	CMP	Boy, that's a fantastic target until RETRO. That's great.
02 09 01 11	CC	Boy, agree there.
02 09 01 15	CDR	Yes, Joe. Tell Glynn Lunney and Bill Shaffer and just all those good people who got the - total network and guidance operating, we can't thank them enough. That targeting is just utterly fantastic.
02 09 01 28	CC	Roger that. They say it's their pleasure.
02 09 01 33	LMP	Okay. Tell them - Tell them I'm going to save my praise until I see 60 miles above the Moon.
02 09 01 40	CC	Roger that.

END OF TAPE

REST PERIOD - NO COMMUNICATIONS

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REST PERIOD - NO COMMUNICATION

02 21 56 53	CC	("On a Clear Day" played here)
02 22 00 01	CMP	(Whistling) Reveille! Reveille! Up all hands, heave out, trice up, clean sweep down, fore and aft.
02 22 00 15	CC	Apollo 10, Houston. Sounds like we're ready for a Naval drill on the flight deck.
02 22 00 30	CMP	That's good music.
02 22 00 33	CC	How'd it come through this time, John?
02 22 00 38	CMP	It's loud and clear. It's beautiful. Sounds like we've got stereo.
02 22 09 35	CMP	Houston, this is 10. The world doesn't look very much littler than it did yesterday.
02 22 09 42	CC	10, Roger. I bet you the Moon looks a little bigger, though.
02 22 10 26	CDR	Hello, Houston. Apollo 10. How do you read?
02 22 10 41	CDR	Hello, Houston. Apollo 10. How do you read?
02 22 11 00	CC	Apollo 10, Houston. Go ahead. Over.
02 22 11 15	CDR	Hello, Houston. Apollo 10. How do you read?
02 22 11 18	CC	Apollo 10, Houston. Loud and clear; how me? Over.
02 22 11 44	CC	Apollo 10, Apollo 10, Houston. Over.
02 22 11 50	CT	I'm keying.
02 22 11 53	CC	Apollo 10, Houston. How do you read?
02 22 12 38	CC	Apollo 10, Houston. How do you read? Over.
02 22 12 40	CDR	Hello, Houston. Apollo 10. How do you read? Over.
02 22 12 42	CC	Apollo 10, Houston. How do you read?
02 22 1_ 24	CDR	Hello, Houston. Apollo 10. How do you read?
02 22 13 34	CT	Madrid COMM TECH, Houston COMM TECH, GOSS conference, NET 1. Goddard Voice. Houston COMM TECH NET 1.
02 22 13 58	CDR	Houston, Apollo 10. Over.

02 22 14 00	CT	Goddard Voice, Houston COMM TECH.
02 22 14 02	CT	Goddard Voice.
02 22 14 03	CT	Roger. I cannot raise Madrid.
02 22 14 09	CT	Do you want Madrid to come up on here?
02 22 14 11	CT	Yes, sir.
02 22 14 12	CT	Roger.
02 22 14 19	CT	Madrid COMM TECH, Houston COMM TECH, NET 1.
02 22 14 21	CT	Apollo 10. This is Madrid COMM TECH.
02 22 14 28	CDR	Roger, Madrid COMM TECH. We can read you loud and clear. How us?
02 22 14 33	CT	Loud and clear. Houston is having a problem contacting you.
02 22 14 40	CDR	Roger.
02 22 15 07	CDR	Madrid COMM TECH, Apollo 10. Is Houston reading us at all?
02 22 15 12	CT	Negative. Not at this time.
02 22 15 15	CT	COMM TECH.
02 22 15 23	CC	Apollo 10, Houston. How do you read? Over.
02 22 15 30	CC	Apollo 10, we are reading you loud and clear.
02 22 15 31	LMP	Loud and clear, Jack.
02 22 15 32	CC	How do you read us? Over.
02 22 15 38	LMP	Loud and clear.
02 22 15 40	CC	Roger. You are coming through good now. Have you got all those lazy bones up there?
02 22 15 49	CMP	Yes. They're all up.
02 22 15 53	CDR	Everybody's up, and everybody feels great, Jack.
02 22 15 56	CC	Good. Glad to hear it. You ought to with that kind of sleep. You missed the music, though.
02 22 16 04	CDR	What's the news this day?

02 22 16 08	CC	We're standing by for news. We'll get it to you.
02 22 16 13	CDR	Okay. We wanted to go ahead and get to the consumables update and go through a couple of things here, before we get into it.
02 22 16 22	CC	Okay. We've got a consumables update for you and flight plan update, when you're ready.
02 22 16 31	CDR	Okay. I'm ready to copy. Go ahead.
02 22 16 38	CC	Here's your consumables update which is current GET of 70 hours: your RCS total 85 percent, quad A 85 percent, quad B 85 percent, quad C 84 percent, quad D is 86 percent. Your H_2 total is 40 pounds, your O_2 total is 484 pounds, your RCS is 7 percent ahead of flight plan. We have a considerable - -
02 22 17 02	CDR	Okay, copy that.
02 22 17 03	CC	- - bit of flight plan updating to do. Are you ready to copy the flight plan update?
02 22 17 23	CDR	Okay. Stand by and we'll go. We got the consumables update, and we are ready to copy on the flight plan.
02 22 17 31	CC	All right. The flight plan update follows.
02 22 17 34	LMP	Say Jack, where are you going to start?
02 22 17 35	CC	We're going to start at the - 70 hours.
02 22 17 45	LMP	Okay.
02 22 17 47	CC	Okay. We deleted all midcourse correction 4 activities. And starting about this time, when you are ready, we would like to begin the fuel cell O_2 purge. We would like at 70 30 to get the postsleep checklist. At 70 45 we will do the P27 update and pass along our new pads. At 70 50 do the canister change. That leaves our TV update on schedule.

END OF TAPE

02 22 18 28	CC	And at 71 15 you can begin the P52. And this would then put us back on our nominal time line with ECS redundant component check at 71 plus 55. I'd like to point now, however, that - -
02 22 18 53	LMP	Okay. Do you want to - -
02 22 18 58	CC	Go ahead.
02 22 18 59	LMP	You want to commence that O_2 purge about this time, sleep checklist at 70 30, about 70 45, P27 update, about 71 hours canister change, about 71 15 at P52, and the TV pass is the same as scheduled.
02 22 19 20	CC	That is affirmative. Also, we would like you to know that LOI is now about 11 minutes later than our preflight planning, because we didn't burn midcourse correction 1 and made our translunar trajectory adjustment at midcourse 2 instead. So this puts us 11 minutes behind on LOI and 11 minutes behind throughout all of our lunar orbital activities. I have some additions to make.
02 22 19 52	LMP	Roger. That means we will burning LOI late.
02 22 19 59	CC	Roger. You will be burning LOI approximately 11 minutes late. All other activities will be retarded by 11 minutes, and we will come up with a more accurate pad in a moment. I'd like you to make some additions to your flight plan. At 73 15, verify on panel 382 that your primary evaporator water control is in AUTO and, along with that, reservice the primary evaporator. And then at 73 30, on schedule, you can activate the primary evaporator. Then, Apollo 10, we would like you jump over to 84 hours and 20 minutes and make a change there. Change the battery A charge to battery B charge: that is, B vice A.
02 22 21 23	LMP	Roger, Houston. At 84 20, we'll initiate battery B charge instead of A, and at 73 15 we'll reservice the primary EVAP and then activate the EVAP at 73 30 on schedule.
02 22 21 46	CC	That's affirmative.
02 22 22 23	LMP	Houston, this is 10. I'll go ahead and initiate that fuel cell O_2 purge on schedule now, and I did, however, do one last night before turning in, I'm sure you're aware of.

Television impact

02 22 22 33	CC	Houston. Roger. We copy. At 73 15 or when you reservice the primary evaporator, we want to make sure that you verify that the primary EVAP water control is in AUTO. You didn't read that back. Over.
02 22 22 46	LMP	That's affirmative. We checked it. It is in AUTO. It is in AUTO.
02 22 22 52	CC	Roger. Thank you.
02 22 30 54	CC	Apollo 10, Houston. We have the morning newspaper if you've got time to listen now.
02 22 31 03	CMP	Go ahead. We'd like to.
02 22 31 06	CC	Roger. During the night, you entered the lunar sphere of influence: at 61 50, to be exact. And you are now 13 957 miles from the Moon at 4056 feet per second. Technically, there is no change in the CSM systems status or your LM heater currents, and you are ahead of your flight plan on all consumables. And now the newspaper: the flight of Apollo 10 has been temporarily knocked out of the lead story position in the Houston Post. William Forster has resigned his position as Administrator of the Harris County Hospital, but never fear! As the Apollo 10 nears the Moon, news services around the world have followed the flight. It's been estimated that over a billion people have seen at least some of the television pictures from the Apollo 10. Whether you want to be or not, you're famous. But in spite of this enthusiasm, that now-unemployed local philosopher to whom we referred yesterday, says now he thinks color television is on its way out, way out. In other news highlights, Governor Nelson Rockefeller continues his South American tour. His reception in Peru was not too friendly. President Nixon will meet with South Vietnamese Premier Thieu on the island of Midway on June 8. Leaders of the Presbyterian Church, meeting in San Antonio, have called for the Nixon administration to restore diplomatic relations with Cuba. Texas International Airlines has won the privilege of sending the first plane into the new Houston International Airport on June 8; 99 VIP's will be aboard the flight that will depart from Hobby Airport and land at 1 minute after midnight. A 2-day open house featuring air show will be held on May 31 and June 1. The Soviet Union launched an unmanned spacecraft

into orbit yesterday. It had been designated Cosmos 282. An old buddy of ours, world traveler Frank Borman, has arrived in Prague, Czechoslovakia, for the 12th plenary session of COSPAR. Although the Czech press did not mention Frank's arrival, there were several hundred people on hand to greet him. Frank waved back and said, "Hey, Hey." Frank doesn't speak Czech too well, you know. In sports news, it was Houston over Montreal 5 to nothing, and Cincinnati over Philadelphia 4 to nothing. In the American League, Detroit defeated Chicago 7 to 6, New York over Oakland 2 to 1, Washington beat Seattle 6 to 5, Cleveland over Kansas City 4 to 1, and Minnesota downed Baltimore 3 to 2 in 13 innings. In today's big sports story, the former scourge of the Big Ten, the University of Chicago, will resume intercollegiate football. This fall, the Maroons, once coached by the famous Amos Alonzo Stagg, will play such big midwestern football giants as Wheaton College, Lake Forest College, North Central Illinois, and Valparaiso at Indiana. That's the University of Chicago, that's a town up north, you know. In golf, today is Pro-Am day at the Atlanta Classic. That's today's newspaper.

02 22 34 04	CMP	You're a good newsman, Jack. That's fine stuff.
02 22 34 06	CC	That came from the Public Affairs Office here.
02 22 34 10	LMP	What was the name of that town up north?
02 22 35 17	CC	Let's see: C-h-i, Chicago, Chicago.
02 22 35 19	LMP	Oh, yes. I was looking at it yesterday. I saw them out there practicing. Speaking of Chicago, did the Cubs play ball?
02 22 35 38	CC	I don't have them listed, Gene. Do they play ball?
02 22 35 43	LMP	Oh, you're really bad; you're really bad. Say, listen, I've got some random readings for you. How about the commander 26034, the CMP is 05034, and the LMP is 15036.
02 22 36 04	CC	Oh, you tried to catch me there, didn't you? The CDR is 26034, the CMP is 05034, and the LMP is 15036.
02 22 36 17	LMP	I knew, being a Marine, you'd be on your toes. Listen, we just cycled the fans, we purged

		the fuel cells, we'll change the canister here in about 20 minutes, and we're grabbing a bite of chow right now.
02 22 36 33	CC	Houston. Roger. We copy.
02 22 36 42	LMP	With your military background I bet it really hurts you to see us sleep, doesn't it?
02 22 36 53	CC	I was just about to ask you how you slept. I know John, he probably either slept on his back, his side, or his stomach; but how about the rest of you?
02 22 37 15	CDR	The CDR slept great.
02 22 37 19	CC	Roger, CDR. We know that.
02 22 37 26	LMP	I slept with those other three guys under the couch down there - those three guys with the big suits.
02 22 37 37	CC	Okay. They probably didn't keep you awake.
02 22 37 40	LMP	And believe it or not, I slept pretty well.
02 22 37 41	CC	Roger. Thank you.
02 22 37 42	LMP	I slept pretty well, Jack. I got - I don't know - about 6 or 8 hours of pretty good sleep.
02 22 40 18	CMP	Houston, Apollo 10. Over.
02 22 40 32	CMP	Houston, Apollo 10. Over.
02 22 40 35	CC	Go ahead, Apollo 10.
02 22 40 41	CMP	Roger. We decided maybe we can get around this delay problem by trying to remember to say "over" after every conversation, but it hasn't worked too well so far. Over.
02 22 40 53	CC	Apollo 10, this is Houston. Let's get back to that one in a couple of minutes. We're getting a lot of background noise.
02 22 42 39	CC	Apollo 10, Houston. Say again your last transmission, please.
02 22 42 48	CMP	Roger, Jack. We thought maybe we could get around this delay problem by taking a cue from

something we were doing last night, and that's by saying "over" at the end of every conversation. Over.

02 22 43 02	CC	Roger. We copy. Over.
02 22 43 07	CMP	Roger. And we have been operating with the S-band SQUELCH in Able for the last 2 days and request to know if that's been bothering you down there, or if that affects our operations. Over.
02 22 43 22	CC	Roger. Stand by one, please... Over.
02 22 44 18	CC	Apollo 10, Houston. The S-band SQUELCH switch position doesn't affect us in any way. At this time, we'd also like you to - on your H_2 cryo heaters go to OFF on tank 1 and to AUTO on tank 2, and we'd like to verify a valve position on 382 that the - panel 382 that the primary EVAP flow water control is in AUTO as opposed to the switch on the panel. Over.
02 22 44 58	CMP	Roger. That valve is in AUTO, and it's been in AUTO since lift-off. Over.
02 22 45 04	CC	Roger. Over.
02 22 45 14	CMP	That's "Roger. Out," Jack. Over.
02 22 46 31	CMP	Houston, this is Apollo 10. Over.
02 22 46 48	CC	Apollo 10, Houston. Stand by one, please.
02 22 49 48	CC	Apollo 10, Houston. Go ahead. Over.
02 22 49 56	CMP	Roger. I was just wondering what we - Are we going to knock off the PTC to do the realign to the new REFSMMAT? I guess we are. I would like to get an attitude to go to which will avoid that desired gimbal angles - use gimbal lock, PROGRAM ALARM if possible.
02 22 50 20	CC	Roger. Stand by.
02 22 50 24	CMP	And, the second thing is, does this change in our flight time at the Moon affect this lunar umbra that we get into before we get to the Moon? Over.
02 22 50 51	CC	Apollo 10, Houston. You'll be entering lunar penumbra 10 minutes later; that will be at

		approximately 72 50, and sunrise will be 10 minutes later, at about 74 50. Over.
02 22 51 12	CMP	Roger.
02 22 53 03	CC	Apollo 10, Houston. We're coming up with a P52 realignment attitude, and in the meantime, we're standing by with the P27 update computer and several pads to call down when you are ready.
02 22 53 32	LMP	Roger. Go ahead, and we will go to ACCEPT on the computer; and, if you can stand by on the pads for a couple of minutes, we will be with you.
02 22 53 45	CC	Apollo 10, Roger. Copy.
02 22 54 32	CC	Apollo 10, Houston. Your uplink is coming at you now.
02 23 01 43	CC	10, Houston. The attitudes which you want for your lunar Landing Site 2 REFSMMAT, P52 IMU realign: stop your roll at 330 degrees and then pitch down to 30 degrees. Over.
02 23 02 07	CMP	Roger. Stop the roll at 330; pitch down to 30.
02 23 02 26	CDR	Houston, Apollo 10. What time do you want us to do the realign? As outlined in the flight plan?
02 23 02 37	CC	10, this is Houston. According to the flight plan, we have that at 71 plus 20, roughly.
02 23 02 52	CDR	Yes. We've got that, Jack.
02 23 02 55	CC	Roger.
02 23 05 11	CC	Apollo 10, Houston. Uplink complete; you can go to BLOCK. Over.
02 23 05 22	CMP	Okay. We're at BLOCK.
02 23 05 26	CDR	Houston, Apollo 10. On that attitude, besides the 330 roll, you said pitch down 30 degrees. Was that down 30 degrees from 90 to 60, or down to an inertial angle of 30 degrees? Over.
02 23 05 40	CC	Stand by one, 10.
02 23 05 48	CC	Apollo 10, Houston. The angle to which you want to pitch down is 30 degrees. Over.

02 23 07 01	CDR	Roger.
02 23 10 17	LMP	Hello, Houston. This is 10. I'm ready to copy up your pads.
02 23 10 24	CC	Roger, 10. Maneuver pad follows. This is a PC plus 2 pad. SPS/G&N: NOUN 47 is NA, 077 - correction - NOUN 47 is NA, NOUN 48 is also NA, 077 55 2900, plus 43184, minus 03459, minus 13910, roll is blank, pitch is 312, all the rest is NA. Over.
02 23 11 35	LMP	Okay. It's PC plus 2. Is that correct?
02 23 11 39	CC	Affirmative.
02 23 11 45	LMP	SPS/G&N: NOUN 47 is NA, 48 is NA, NOUN 33 is 077 55 2900, plus 43184, minus 03459, minus 13910, roll is blank, and pitch is 312, and everything else is NA.
02 23 12 10	CC	Roger, 10. That is affirmative. Another maneuver pad follows. Over.
02 23 12 21	LMP	Go ahead.
02 23 12 26	CC	This is preliminary LOI-1. SPS/G&N: 62554, plus 095, minus 017, 075 55 5371, minus 29139, minus 05614, minus 02968, 355 230 342 01692, plus 00595, 29823, 554 29751, 16 2140 392. The rest is NA. Your set stars are Vega, number 36, and Deneb, number 43. Roll align is 241, pitch align 240. Yaw align is 013, no ullage. Your LM weight is 30727. Over.
02 23 14 31	LMP	Roger, Jack. That's PLOI-1, SPS/G&N: 62554, plus 095, minus 017, 075 55 5371, minus 29139, minus 05614, minus 02968, 355 230 342 01692, plus 00595, 29823, 554 29751, 16 2140 392. The rest is NA. Set stars are Vega, 36, and Deneb, 43. 241 240 013, no ullage, and the LM weight is 30727.
02 23 15 21	CC	Roger, 10. That's affirmative, and another maneuver pad. TEI number one. SPS/G&N: 38766, minus 057, plus 059, 078 11 42 00, plus 31139, minus 01028, plus 00725, roll is blank, pitch is 034, the rest is NA. Over.
02 23 16 18	LMP	Roger. TEI one, SPS/G&N: 38766, minus 057, plus 059, 078 11 42 00, plus 31139, minus 01028, plus 00725, roll is blank, pitch is 034.

02 23 16 39	CC	That's affirmative, and another maneuver pad: TEI plus four. SPS/G&N: NOUN 47 and NOUN 48 are NA. 084 39 1200, plus 34087, minus 01518, plus 00464, roll is NA, pitch 027, and the rest is NA. Over.
02 23 17 31	LMP	Okay, Jack. TEI plus 4 is SPS/G&N: NOUN 47, 48 NA. I got 084 39 1200, plus 34087, minus 01518, plus 00464. Roll is NA and pitch is 027.
02 23 17 52	CC	That is affirmative. And, the next is your TV attitude, when you are ready to copy. Over.
02 23 18 05	LMP	Okay. I'm ready.
02 23 18 16	CC	Okay, Gene. For the television, your inertial - -
02 23 18 21	LMP	Go ahead, Jack.
02 23 18 27	CC	Apollo 10, Houston. Go ahead. Over.
02 23 18 29	LMP	I'm ready to copy. Over.
02 23 18 33	CC	Roger. I just have some new dope on the TV attitude. TV attitude is the same as your inertial attitude for the P52; that is, roll 330 degrees, pitch 030, yaw three balls. And for the above attitude, your high gain antenna angles are pitch plus 38, yaw 299. Over.
02 23 19 17	LMP	Hey, Jack, are those attitudes going to change as soon as we do a P52 realign?
02 23 19 29	CC	Stand by one, 10.
02 23 19 34	CMP	The attitude will stay the same, but the inertial reference system will switch its little whatcha-callits.
02 23 19 56	LMP	Houston, 10.
02 23 20 00	CC	Apollo 10, Houston. The attitude that was just passed up is the attitude in which you should stay to have TV looking at the Earth. However, when you torque your platform after the alignment, you will have different angles read out. Over.
02 23 20 21	CDR	Roger, Jack. ...
02 23 20 28	CC	Apollo 10, Houston. I didn't copy your last transmission. Say again, please.
02 23 20 36	CDR	There's no hurry ...

02 23 20 48	CC	Apollo 10, Houston. Tom, I'm not reading you, but I'm reading John okay. Could you have a relay there, please?
02 23 21 01	LMP	Okay, we're squared away, Jack. We got the Earth out of Tom's window now; we will be able to handle it. And I've got a question. Who has been feeding Snoopy? He's 8 pounds heavier than he was a little while ago.
02 23 21 16	CC	Well, peculiar things happen out there, you know. We will check on that.
02 23 21 24	LMP	He's eaten 8 pounds of something since yesterday.
02 23 23 09	CMP	Houston, Houston. This is 10. We are commencing the redundant component check. We will check the main regulators here in a second.
02 23 23 21	CC	Roger, 10. We copy.
02 23 23 57	CMP	Coming at you, Houston.
02 23 24 03	CC	Say again, 10.
02 23 24 07	CMP	Well, if you didn't get it, that was a main regulator being checked there.
02 23 24 15	CC	Roger. Understand. MAIN REG check. The reason for the increase in LM weight is that we pumped a few pounds of oxygen in there, and this was not included in the pad update yesterday. Over.
02 23 24 36	CMP	How about that.
02 23 24 38	CMP	Have you got any? ... No.
02 23 25 07	CMP	Boy, Houston, you all think of everything. I never would have considered that.
02 23 29 50	CDR	Houston, Apollo 10. How do you read me now, Jack?
02 23 29 53	CC	I'm reading you loud and clear now, Tom.
02 23 29 59	CDR	Okay. I didn't have the mikes up close enough I guess, so that was the main trouble. Over.
02 23 30 04	CC	Roger. You're real good now, Tom. Out.

02 23 38 43	CMP	Houston, this is Apollo 10. Good news tonight. I can see Acrux, and Alpha and Beta Centauri, and it's the first time I've been able to see a constellation I could recognize since we got up here.
02 23 38 59	CC	Roger. Good news, 10. Your friendly Black Team is now on duty here in the MOCR.
02 23 39 09	CMP	We thought we could hear you changing shifts. We could hear a lot of noise in the background, there, when Jack was passing up the update.
02 23 39 18	CC	Yes. We were trying to get up to speed here. Did you guys sleep well?
02 23 39 27	CMP	Jack's already asked that.
02 23 39 29	CC	Okay. I'll get it from Jack, then.
02 23 39 45	LMP	I thought you guys go through a formal change-of-the-command ceremony down there every morning.
02 23 39 51	CC	Say again. Over.
02 23 39 57	LMP	The ECS redundant component check is complete, and our secondary loop looks good. And my other comment was that I thought you'd have to go through a formal change-of-command ceremony to get ahold of the microphone down there.
02 23 40 11	CC	The CAP COMM position is definitely fully manned, I'll tell you that. We have about five of us sitting around.
02 23 40 23	LMP	I guess only a Marine could sound as chipper as Jack does in the morning.
02 23 40 28	CC	Roger.
02 23 45 01	CMP	Okay, Houston. We're going to torque the platform now. Those are pretty small torquing errors, considering it sat around all night and then got itself all torqued up.
02 23 45 10	CC	We copy, 10. Over.
02 23 45 16	CMP	Roger. Can you see the GYRO torquing errors down there now?
02 23 45 22	CC	That's affirmative. We have them. Over.

END OF TAPE

02 23 55 47	LMP	Hello, Houston. Houston, this is 10. How do you read in high gain?
02 23 55 51	CC	10, Houston. Reading you about four-by on the high gain.
02 23 56 00	LMP	Okay. We're now AUTO HIGH GAIN NARROW at the present time.
02 23 56 03	CC	Roger, 10. You're just a little scratchy.
02 23 56 11	LMP	Okay.
03 00 02 27	CC	Hello. Apollo 10, Houston. Over.
03 00 02 34	LMP	Go ahead, Houston. This is 10. Over.
03 00 02 38	CC	Roger, 10. We have a problem with the Goldstone. We won't acquire the 210-foot dish until 72 49. That means that we'll have to get the color down through the 85-foot dish at Goldstone at 72 14. Now, we're not sure just exactly how good the color quality will be through the 85. So, we can work it your choice on the thing. We can go, as scheduled, at 72 20 and see what the quality of the color is, and if it's bad, and it won't impact your time line, we suggest that we then delay until 72 50 when we pick up the 210 and try another show. Also, that would give us - At this time you are in the lunar umbra and your friendly geologist, here, says that there should be a spectacular shot looking right through the Moon into the solar corona. Over.
03 00 04 21	CMP	Houston, this is 10. We're kicking around shooting the TV at the solar corona. I don't know. Do you think the thing would handle it? Seems like it would damage it, from the light standpoint.
03 00 04 33	CC	Stand by. Everybody is shaking their heads back here - the experts. As long as the sun is completely down, or completely set, it should be all right. We'll be looking at just a shafting from around the Moon. We think it'll be all right; you could probably take a peek out your window and if it looks all right to you, then you could turn the camera over that way.
03 00 05 17	CMP	We don't see the sun. We don't see it.
03 00 05 31	CDR	...
03 00 06 08	SC	...
03 00 07 28	SC	... six.

03 00 07 40	CC	Roger, 10. We're just barely reading you, Tom. We are looking at your display: 29 for perilune of 2906. You are very scratchy, 10; at least Tom is. Almost unreadable.
03 00 08 31	CMP	Houston, this is 10. Radio check. Over.
03 00 08 36	CC	Roger. You are five-by, John. Over.
03 00 08 42	CMP	Roger.
03 00 08 47	CDR	Roger, Charlie. How do you read me now? Over.
03 00 08 49	CC	Roger, Tom. You are five-by. Over.
03 00 08 55	CDR	Okay. Real fine.
03 00 12 03	SC	...
03 00 12 08	CC	Roger, 10. Go ahead. Over.
03 00 12 15	SC	...
03 00 12 21	CC	10, you - You'll have to say again, Tom. You're barely readable. Over.
03 00 12 31	CDR	... our distance to the Moon and our present velocity.
03 00 12 41	CC	Roger. Understand. You want distance to the Moon and distance to the Earth. Over.
03 00 12 52	CDR	That's affirmative. Distance from the Earth, distance to the Moon, and our present velocity.
03 00 13 01	CC	Roger, 10. Tom, you're five-by now. You are breaking up; a couple of your transmissions have been barely readable. This last one was five-by.
03 00 13 11	CDR	Okay.
03 00 14 11	CC	Hello, 10. Houston. Your present distance from the Earth is 208 950 miles. Distance from the Moon, 9813, with a velocity relative to the Earth of 3013 feet per second. Over.
03 00 14 37	CDR	Roger, Houston. I have that copied down. Thanks a lot.
03 00 14 42	CC	Roger.
03 00 14 51	CC	Hello, 10. Houston. We're standing by for your decision on the TV. Over.
03 00 15 47	CDR	Okay. We'll give you an external shot at 00 20 minutes.

03 00 16 04	CC	Roger. Standing by for the TV.
03 00 18 29	LMP	Hello, Houston. The tube is on right now.
03 00 18 32	CC	Roger, 10. Stand by. We don't have a picture yet. Over.
03 00 19 23	CC	We're in the process of handing over to Goldstone. Goldstone as yet has not received your signal, and we'll let you know. Over.
03 00 19 30	CDR	Okay. We've got a beautiful picture on our monitor this morning.
03 00 19 34	CC	Good show, 10. Over.
03 00 20 56	LMP	Give us a hack when you're getting a picture, would you please?
03 00 21 00	CC	Roger, 10. We'll do that. Stand by. I'll give you some word on the Goldstone acquisition.
03 00 21 13	CDR	Okay. If they don't have it before too long, we'll go ahead and terminate it.
03 00 21 19	CC	Roger, 10. If you'll stand by for 2 seconds, we'll give you an estimate of acquisition time. We're supposed to have it at 72 14. So far, they haven't got a signal through the 85.
03 00 22 19	CDR	Houston, while you're waiting for Goldstone, we'll just keep locked-on here. We'd still like to have you check with GUIDO while we have a 290 - a 290.6 perilune, there, on our VERB 82.
03 00 22 34	CC	Roger. Stand by, 10.
03 00 23 11	CC	Hello, 10. Houston. The big pericynthion number is due to the conic integration in the VERB 82. At these distances, the GUIDO's are not disturbed. They say that's a normal reaction to that integration. There is a way you can get a better number. If you'd like us to pass it up to you, we'll give it to you. Over.
03 00 23 37	LMP	We can take P21 to about the middle of the LOI burn. That ought to tell us.
03 00 23 45	CC	That's the way we were going to suggest, 10. Over.
03 00 23 52	LMP	Okay.
03 00 23 54	CDR	Okay. We figured it was strictly due to the conic, but we just wanted to give it a recheck.

03 00 23 56	CC	Roger.
03 00 24 06	CC	Hello, 10. Houston. We suggest your GET for the P21, if you're going to run it, is 76 00 14. Over.
03 00 24 23	LMP	Roger.
03 00 24 37	CDR	Houston, Apollo 10. Do we have anything through Madrid at this time? The Goldstone isn't locked-on. Over.
03 00 24 48	CC	10, Houston. We have a Madrid acquisition and they are getting a picture recorded on tape. Goldstone lockup is estimated in another 10 minutes. So, it's dealer's choice on whether to terminate or not.
03 00 25 13	CDR	Okay. We will knock it off now. Let us know when you have acquisition. We will give it to them for just a short bit in about 10 minutes. Tell us when. We don't want to just keep holding the camera here. We have a few other things to do. We will give it to them in 10 minutes for a short while. Over.
03 00 25 29	CC	Roger, 10. We suggest you hold off until we get acquisition, and we will give you the word on acquisition at Goldstone. Over.
03 00 25 36	CDR	All right.
03 00 26 03	CDR	Houston, Apollo 10. If you can read our DSKY, we now show 61.8-mile perilune. It looks pretty good.
03 00 26 06	CC	Roger. We copy.
03 00 26 08	SC	Just like you guys said.
03 00 35 08	CC	Hello, Apollo 10. Houston. Goldstone has a good acquisition. We're GO for TV. Over.
03 00 35 21	CDR	Okay, Charlie. We'll get you going right now.
03 00 35 24	CC	Roger.
03 00 36 28	CDR	Hello, Houston. Apollo 10. Our monitor shows a good picture of the Earth. How are you doing?
03 00 36 33	CC	10, we haven't got our signal yet. Stand by.
03 00 37 35	CC	Okay. Apollo 10, Houston. We're getting it in black and white now. Stand by for the color.
03 00 37 53	CC	We've got the color now, Apollo 10. We have the Earth, and the center of the section. It seems to have a bluish tinge to the background. We see a

very bright blue - a pale blue I should say, in the center of the Earth right near the terminator. Could you describe that for us? Over.

03 00 38 15	CDR	Right. You can see the South Atlantic Ocean there and the orange spot to the right is the North African continent. You can see basically the Sahara Desert and, above that, the Mediterranean Sea. The rest of the world is pretty much encased in clouds. The solid cloudcover that's covered the North Pole, and most of Europe, is still with us today. At this time as we look at the Earth we are 210 000 miles away. We've only got about 9000 miles to go to the Moon and we're traveling approximately 2500 miles an hour relative to the Earth. Also, in about 15 minutes we will enter the shadow of the Moon and make our major burn to enter lunar orbit in approximately 3 hours. Now, at this distance, the Earth looks slightly smaller than a tennis ball to us and a little bit larger than a golf ball. And I hope it shows up the same way on your screen.
03 00 39 18	CC	10, it's a - -
03 00 39 19	CDR	- - And again, South Africa - Go ahead, Charlie.
03 00 39 27	CC	Roger. I was just going to add that we can see the northern part of Africa. We had a bluish tint to it at first but now it's coming in to a sort of orangish brown and we can see the South Atlantic and the cloudcovers very well. The colors are very good. Over.
03 00 39 47	CDR	Roger. Again, the Sahara Desert, the Atlas Mountains, Morocco, Libya we can see from here. It is an orange brownish orange. The night time - the terminator has cut across the Suez Canal and most of Egypt and is now covering most of South Africa. I can see Spain. It is a greenish brown and is completely contrasted with respect to North Africa. However, you may have difficulty seeing it on your set due to resolution at this distance. Again, you can see Brazil, but it is covered mostly with clouds at this time.
03 00 40 30	CC	Roger, 10. We haven't - We can see - -
03 00 40 35	CDR	- - At this time, Apollo 10 - -
03 00 40 37	CC	- - Go ahead. Go ahead, 10.
03 00 40 38	CDR	Roger. This - Roger. At this time Apollo 10 is going through the preparation for the lunar orbit insertion burn, and the next - After we lose contact with the Earth, the next time that we come around, we will - To

have contact with the Earth, we'll be at approximately a 60- by 170-mile orbit around the Moon. Right now, we cannot see the Moon, even though it is rapidly accelerating us towards itself by it's mass. Over.

03 00 41 09 CC Roger, Tom. We copied. A very good description. We have difficulty seeing any landmass in our picture except for North Africa, and we can see the terminator cutting across Africa. Europe - The landmasses of Europe, are - just sort of fade into a bluish color. It looks like an ocean to us. Over.

03 00 41 28 CDR Right. Really, the only major landmass we can see is exactly what you can see on your set there. And that is the North African continent. Most of Europe is covered either by high clouds or some scattered low clouds and it's very difficult for us to see it, too. We'll give you a quick shot on the interior now, and then we'll terminate this pass. We'll go inside now.

03 00 41 57 CC Roger. Very good. Thank you very much for the view. We'll be standing by for the inside.

03 00 42 37 CC Hello, Apollo 10. Houston. You are coming in on the black and white monitor now.

03 00 43 12 CC 10, we have the color now. The resolution on the 85 is, I think, better than most expected here. The Sun is pretty bright in the background, coming in through the - I guess that's the hatch window. No; side window, I guess it is. The patch is visible but it's pretty dark, due to the background being so bright.

03 00 44 22 CC 10, do you read? Over.

03 00 44 30 CDR Go ahead, Charlie.

03 00 44 32 CC Roger. Thought we had lost voice there for a moment. You're coming in five-by, now. We've got your arm patch now. That's very dim at this setting. We had Gene's smiling face there for a minute, along with your patch. The flag is coming in a little bit better now. However, it's still pretty dark due, to the bright background. That's a lot better, there, 10. Over.

03 00 45 12 CC There. We have a good view now. Now we can see Gene again.

03 00 45 35 CC We see you waving, Gene. Barbara is in the viewing room. She says "Hi."

03 00 45 53	CMP	A little difficult to get the proper lighting up here, Charlie. Spots flood it out, and we've got to deflect the light.
03 00 46 05	CC	Roger. We see you trying hard on the thing. It looks like the ALC is averaging out, and the background looks real good - the spacecraft, back along the hatch. Tom's hand covering his window is real clear; his face is dark, though. Over.
03 00 46 27	CMP	That's those whiskers, there, Charlie.
03 00 46 30	CC	I see. Thank you very much, John. That wasn't quite -
03 00 46 41	CDR	That's known as a 72-hour shadow, Charlie.
03 00 46 45	CC	Yes, sir.
03 00 46 59	CC	Apollo 10, Houston. We now have the 210 at Goldstone. The granularity and the resolution is a heck of a lot better here. You're coming in real great. Over.
03 00 47 14	CDR	Okay.
03 00 47 18	LMP	There's our overhead hatch window there.
03 00 47 28	CC	10, Houston. We see some specks on your hatch window. Could you comment on those?
03 00 47 40	CDR	Yes. They come from the dumps that we're making overboard as we progress along. I don't think any of it is due to the thruster firing, Charlie.
03 00 47 50	CC	Roger.
03 00 47 53	LMP	Houston, the hatch window is phenomenally clear. There is what appear to be a few dump particles on the outside, maybe a couple of smear prints on the inside. The right-hand window has got a little bit of a smear on the outside; not necessarily particles, but just a general smear. The left-side window has got some definite particles lashed across it.
03 00 48 27	CMP	We're not very good at this camera work, but we will probably improve with practice.
03 00 48 35	CDR	We will show you the navigator down in the LEB.
03 00 48 40	CC	Roger, 10. We have no complaints at all. That's a pretty good show.
03 00 48 52	CDR	He's the star of the east because he gets all the good light down there.

03 00 48 58	CC	Roger. There's old John's friendly face.
03 00 49 00	CC	(Laughter).
03 00 49 12	LMP	John's pointing right now at the sextant and the telescope, which are our navigation means to get home. And, hopefully, to do part of the rendezvous.
03 00 49 30	LMP	Yes. This is the best-working part of the whole machine. It's really working beautifully, now.
03 00 49 34	CC	Get a good operator.
03 00 49 44	CC	10, Houston. Show us the piece of tape that you have around the eyepiece.
03 00 50 01	LMP	One on the bottom of the sextant and on the right-hand side of the telescope.
03 00 50 06	CC	Roger. Thank you much, 10. We see it.
03 00 50 19	LMP	You know, once you lose that thing in here and you have to look for it for about 20 minutes, you find a way not to lose it again.
03 00 50 22	CMP	Well, it wasn't quite 20 minutes, but it sure was a scramble going for it, I'll tell you that.
03 00 50 28	CC	Roger. We copy. We have you entering the lunar penumbra at this time. Do you notice the Sun setting at all? Over.
03 00 50 38	CMP	Can't see the Sun right now, Charlie.
03 00 50 41	CC	Roger.
03 00 50 45	CMP	We're not in the right attitude to see it.
03 00 50 54	CDR	In this attitude, to look at the Earth and everything, we can't get a picture of the Sun that we can see. If there is any solar corona, we will give it a quick shot.
03 00 51 03	CC	Roger. Jack is estimating you will have about 30 seconds only. Over.
03 00 51 14	LMP	Okay, Charlie. It appears that the Sun's reflection on Snoopy, here, is getting a little bit dimmer. So we very well could be where you say we are. I hope we are.
03 00 51 28	CC	Your friendly FIDO's will bet on it.
03 00 51 30	CDR	... some navigating here.

03 00 51 39	CMP	Yes. I guess we are too, aren't we?
03 00 51 42	CC	Roger.
03 00 51 50	LMP	I never doubted them, anyway. I just - Like I said yesterday, I'll wait until I see that 60 nautical miles.
03 00 52 01	CC	10, Houston. Does it look any different upside-down there?
03 00 52 08	CMP	The stars are 180 out of the position they were before.
03 00 52 10	LMP	That's one thing about this environment. If you don't like it, just turn it upsidedown.
03 00 52 20	CC	Roger, 10.
03 00 52 21	CDR	Okay, Charlie. We will terminate this pass with one quick look outside to see how the 210-foot dish looks at the Earth from outside. Okay?
03 00 52 30	CC	Roger, 10. We are standing by. Over.
03 00 53 17	LMP	Charlie? It's definitely getting a little darker outside.
03 00 53 22	CC	Roger, 10. That's good news. Over.
03 00 53 32	CDR	Looks like we're right on trajectory, then. Okay. Here's another look at the Earth through the 210-foot dish at Goldstone, and I hope the colors are coming through a little better. Again, the west coast of North Africa is still a bright orange, and the central part of North Africa is starting to turn purple as nighttime approaches over the western part of Libya and the eastern part of Tunisia. Again, it's awful hard to see Spain because Spain is a greenish-brown this morning. You have the Mediterranean and the Atlantic covered with some clouds, so it's awful hard to see any part of Spain. But again, the Earth to us this morning looks a little bit smaller than a tennis ball as we're 210 000 miles from the Earth and now less than 9000 miles to go to the Moon. This is Apollo 10, signing off. We'll see you later today.
03 00 54 25	CC	Thank you much for a good show, 10. Appreciate it. The 210-foot dish is giving us a very good resolution and the colors are a lot sharper. Over.
03 00 54 45	LMP	Okay, Charlie. We are definitely in darkness, right at this moment. It just went pitch dark outside.

03 00 54 52	CC	Roger - -
03 00 54 53	LMP	- - Lost all the Sun.
03 00 54 54	CC	Roger. We copy, 10.
03 00 54 56	LMP	Boy, that - That's really something, after having the Sun out of one window all the time. We are in total darkness.
03 00 55 23	LMP	That total darkness occurred about 72 55 00.
03 00 55 35	CC	Roger, 10. We were predicting about 72 53. Over. That's pretty close, we think. Over.
03 00 55 45	SC	Charlie, I can just see a little bit of reflected sunlight now out on the left thrusters. I believe it's probably from the Earth over on the left side.
03 00 55 55	CC	Roger, 10. We think it might be earthshine. We have an update to your LOI-1 burn card. Over.
03 00 56 06	SC	Stand by a second.
03 00 56 08	CC	Roger. No hurry on this.
03 01 00 37	LMP	Hello, Houston. Houston, this is 10. How do you read?
03 01 00 40	CC	Reading you five-by, 10. Go ahead. Over.
03 01 00 58	CC	Hello, 10. Houston. We just had a handover to Goldstone. Do you read now? Over.
03 01 01 04	LMP	Oh, yes. I thought that was us. We're BACKUP HIGH GAIN and NARROW BEAM, Charlie.
03 01 01 13	CC	Roger, 10. Network has just advised that we won't hand over until 73 05. Over.
03 01 01 23	LMP	You will not hand over until 73 05. Okay. And what is that update you have for us?
03 01 01 34	CC	Roger. It's two of them. One for your LOI burn card. We have some updates to your angles. And we have a map update REV number 21. Over.
03 01 01 57	LMP	Okay. Give me the REV 21 first, Charlie.
03 01 02 00	CC	Roger. IGN is 075 58 25, 075 52 52, 076 22 58. Over.
03 01 02 25	LMP	Okay. I've got map update REV 21: 075 58 25, 075 52 52, and 076 22 58.

03 01 02 35	CC	Roger. That was a good readback. Over.
03 01 02 42	LMP	Okay. And go ahead with your update on the preliminary LOI.
03 01 02 49	CC	Roger. It's on your burn card that you have. It's an update to the roll, pitch, and yaw angles. Roll is now 179 degrees, pitch 68 - that's 068, yaw is 011. Over.
03 01 03 11	CDR	Okay, Charlie. That must be for the abort card, right?
03 01 03 12	CC	That's affirmative, 10. Over.
03 01 03 25	CDR	Roger. Roger.
03 01 03 46	LMP	Okay, Charlie. I got roll 179, pitch is 068, and yaw is 011 on the LOI 15-minute abort card.
03 01 03 56	CC	That's affirmative, 10. Over.
03 01 04 01	LMP	Okay.
03 01 16 54	LMP	The IM is bright as day, courtesy earthshine.
03 01 16 56	CC	Roger. Understand you are getting a lot of earthshine up there, 10. Over.
03 01 17 01	LMP	Roger.
03 01 20 06	CC	Apollo 10, this is Houston. It looks like you're drifting into the limit on the high-gain antenna. You will be handling the OMNI's on board. Looks like you are coming up on OMNI Delta for MAX signal strength. Over.
03 01 20 24	LMP	Okay, Bruce. Thank you.
03 01 20 32	CC	Roger. Out.
03 01 20 40	CDR	Houston, Apollo 10. As you can see, we've made just a couple of pulses, and we're slowly drifting over to our LOI-1 attitude.
03 01 20 52	CC	This is Houston. Roger. Out.

END OF TAPE

03 01 25 14	LMP	Hello, Houston. This is 10.
03 01 25 17	CC	Go ahead - Go ahead, 10. Over.
03 01 25 22	LMP	Okay. Reservicing has started, and I'm at the part where I've got the waterflow on. I'll keep it on for 2 minutes.
03 01 25 32	CC	Roger. We copy.
03 01 27 12	CT	Goddard Voice, Houston, COMM TECH on NET 1.
03 01 27 16	CT	Goddard Voice.
03 01 27 17	CT	Roger. How do you read?
03 01 27 18	CT	Loud and clear. How me?
03 01 27 19	CT	Roger. Reading you loud and clear.
03 01 27 20	CT	Right. Do you have any echo right now?
03 01 27 22	CT	Negative. No echo.
03 01 27 23	CT	Okay. How about right now?
03 01 27 26	CT	1, 2, 3, 4, 5. Yes, there's echo.
03 01 27 29	CT	Okay. Meet me on ..., please.
03 01 27 30	CT	Roger.
03 01 27 58	CC	Hello, 10. Houston. We show 2 minutes on the water. It looks like you got some water into the evaporator. We suggest you turn it off. Over.
03 01 28 14	LMP	... Understand you don't want me to activate it at this time? I just went to AUTO on the steam pressure and the waterflow.
03 01 28 20	CC	Roger. That's the correct procedure. Over.
03 01 28 25	LMP	Okay. That's where we are right now, and I'm reading about 0.23 on my steam pressure.
03 01 28 33	CC	Roger. We copy. Over - -
03 01 28 34	LMP	- - down below, about 44 degrees. About 44 degrees on the GLYCOL EVAP out TEMP.
03 01 28 43	CC	Roger.
03 01 29 34	CT	Goldstone, Houston COMM TECH, NET 1.

03 01 29 36	CT	Goldstone.
03 01 29 38	CT	Roger. I am receiving an echo.
03 01 29 42	CT	Negative. I'm not receiving an echo.
03 01 29 44	CT	I am. When I transmit, I'm getting an echo. Meet me on NET 2.
03 01 29 50	CT	Roger.
03 01 30 37	CC	Hello, Houston - correction - Hello, Apollo 10. Houston. We have your final LOI 1 pad ready to go and your P27 update. If you're ready to go with this, we are too. Over.
03 01 30 54	CDR	Roger. I'll - For the P27 update, I'll go into CMP ACCEPT now.
03 01 31 03	CC	Roger.
03 01 31 05	CDR	You're in ACCEPT. Over.
03 01 31 09	CC	Roger, 10. Out.
03 01 31 17	LMP	Okay, Charlie. I'm ready for the final LOI 1, and make it a good one.
03 01 31 24	CC	Roger, 10. This is LOI 1. SPS/G&N: 62554, plus 095, minus 017, 075 55 53 31, NOUN 81 is minus 29138, minus 05612, minus 0229 - correction - 02997, 355 230 342, apogee is 01692, plus 00595 29824 554 29752, sextant star is 16 2146 394. The rest of the pad is NA. Okay, your set stars are the same; your roll align is 241 240 and 013, no ullage. The LM weight is the same. Over.
03 01 33 27	LMP	Stand by one.
03 01 34 44	LMP	Houston, this is 10 with the readback.
03 01 34 47	CC	Go ahead.
03 01 34 51	LMP	LOI 1 is SPS/G&N: 62554, plus 095, minus 017 075 55 53 31, minus 29138, minus 05612, minus 02997, 355 230 342, 01692, plus 00595 29824 554 29752, 16 2146 394, rest of pad is NA. We've got Vega, 36 Deneb 43, roll is 241, pitch is 240, yaw is 013, no ullage, and the LM weight is 30727.

03 01 36 10	CC	That was a good readback, 10. Gene, how was my readup? Was it too slow, too fast, or - comments. Over.
03 01 36 21	LMP	No. Very good, Charlie. Just right.
03 01 36 23	CC	Roger. Out.
03 01 36 33	CDR	Houston, Apollo 10. The uplink is coming through in good shape, and I wish you'd pass on to Jack Schmidt this message. The message is "Would you believe the minimum stop on the 250-mm lens is 5.6. We do not have an f:4 on the 250 mm." Over.
03 01 36 53	CC	Roger, 10. We'll pass that on to him. And if no LOI 1 burn, you can expect AOS at 076 12 21.
03 01 37 19	LMP	Okay. Without an LOI burn, AOS will be 076 12 21.
03 01 37 24	CC	Affirmative. Out.
03 01 38 04	CC	Hello, Apollo 10. Houston. We have your target load and state vector in. The computer is yours. Over.
03 01 38 15	LMP	Okay. Thank you.
03 01 43 19	CC	Hello, Apollo 10. Houston. Do you have any questions about the standard setting for the 250-millimeter lens in lunar orbit. Over.
03 01 43 31	CDR	No. It looks like we're going to have to use an f:56 and 1/25 since the 250-mm lens doesn't have an f:4 on it.
03 01 43 39	CC	Roger, Tom. I was just talking to Jack here, and he says we would like to use an f:5.6 at 1/250, except near the terminator, and then stop - then go down to 1/125. Over.
03 01 44 00	CDR	Okay. We'll do that.
03 01 44 10	CC	Roger.
03 01 57 52	CT	Goddard Voice. Houston COMM TECH. GOSS Conference.
03 01 57 54	CT	Goddard Voice.
03 01 57 55	CT	Roger. Read you loud and clear. How me?

03 01 57 57	CT	Right. You're five also.
03 01 57 58	CT	Roger. Thank you.
03 01 58 00	CT	You're welcome.
03 02 13 35	CC	Hello, Apollo 10. Houston. We'd like to give you a hack on your mission timer. Over.
03 02 13 43	CDR	Go ahead, Houston.
03 02 13 45	CC	Roger, 10. On my Mark it will be 74 hours 14 minutes even. Stand by.
03 02 13 59	CC	MARK.
03 02 14 00	CC	74 14.
03 02 14 05	CDR	Roger. Houston, Apollo 10. We're SYNCED right on with you.
03 02 14 09	CC	Roger.
03 02 21 01	CDR	Houston, Apollo 10.
03 02 21 02	CC	Go ahead, 10.
03 02 21 06	CDR	Roger. Been reading our DSKY?
03 02 21 09	CC	Roger. Sure have. That shows the star angle difference and the P52 and also the torquing angles. Over.
03 02 21 20	CDR	Roger. Looks real good. We've also done our sextant star check, and we're right on. And, we've pulsed around here to the maneuver attitude, and we're just standing by.
03 02 21 32	CC	Roger, 10. We show you in ATTITUDE. And, 10, Houston. We have an hour and 26 minutes to LOS. Over.
03 02 21 49	CDR	Roger. 1 plus 26 to LOS.
03 02 22 07	CDR	Houston, Apollo 10. Do you have any updates as to when we'll have a sunrise on this pass?
03 02 22 16	CC	Stand by.
03 02 22 36	CC	Hello, 10. Houston. We show sunrise at 74 hours and 50 minutes and 11 seconds. Over.
03 02 22 46	CDR	Roger. 74 50 11.

03 02 41 48	LMP	Hello, Houston. Apollo 10.
03 02 41 52	CC	Go ahead, 10. Over.
03 02 42 01	LMP	I cycled the CRYO fans at about 71 hours. Should we go ahead and cycle them again before this burn?
03 02 42 08	CC	Stand by.
03 02 42 57	CC	Hello, Apollo 10. Houston. We'd like you to stir up the CRYO's again when you normally do it in the preburn checklist. Over.
03 02 43 06	LMP	Okay. Fine. And, Houston, in looking at the Earth right now, looking at the south Atlantic off the coast of South America, in about the center of the globe, is a brilliant, bright, very, very bright reflective light. You can see it with the naked eye, and then again see it with the monocular; it's a very brilliant spot, just a spot, intense light from the Earth.
03 02 43 41	CC	Roger. In the South Atlantic, 10? Over.
03 02 43 50	LMP	Yes. I think it looks to me like it's right smack in the middle of the subsolar point. Just a continuous white, bright, brilliant light - just a pinpoint.
03 02 44 17	CC	10, Houston. We'll check it out with the guys in the back, and see if they think that's the subsolar point or just a reflection - angle of incidence type thing. Over.
03 02 44 36	LMP	I'm sure it's just a reflection, but it's the first time I've ever seen anything like that.
03 02 44 42	CC	Roger. We'll see if we can come up with some ideas - -
03 02 44 44	LMP	As a matter of fact, it's - Okay. The brilliance of the light is just now fading, and it definitely is in the middle of the subsolar point and it's - the reflect - the reflection is totally gone at this time.
03 02 44 59	CC	Roger. Copy.
03 02 45 04	LMP	But what it was there was bright and brilliant.
03 02 45 08	CC	Copy. Over.

03 02 45 49	CC	Hello, Apollo 10. Houston. We have two COMM switches for you that will put you in lunar orbit COMM configuration. These are S-BAND AUXILIARY to DOWNVOICE BACKUP and TAPE RECORDER FORWARD to FORWARD. Over.
03 02 46 10	LMP	Roger, Charlie. Do you want those now?
03 02 46 14	CC	That's affirmative, 10. Over.
03 02 46 23	LMP	Okay. TAPE RECORDER to FORWARD; and I'll go DOWNVOICE BACKUP. Does that also mean you want the VOICE switch to OFF?
03 02 46 35	CC	That's negative, 10. Over.
03 02 46 42	LMP	Okey doke. We are now in DOWNVOICE BACKUP; TAPE RECORDER is FORWARD and that was the only two changes.
03 02 46 49	CC	That's affirmative, 10. And we've polled the room and you are GO for LOI. Over.
03 02 47 01	LMP	Thank you.
03 02 50 32	CMP	Hello, sunshine - Here comes the sunshine.
03 02 50 39	CC	Well, we copy, 10. At 74 50 thereabouts.
03 02 50 48	CMP	That's right. It's nice to have a little pad of darkness in there to go out there and do a good alignment where you can nicely recognize the constellations.
03 02 51 03	CC	Roger. We copy, 10.
03 02 51 09	CC	How do they compare with the CMS?
03 02 51 17	CMP	These stars are better.
03 02 51 32	CC	Would you like another reset point?
03 02 51 39	CMP	We'll take one next time around, Gordo. I'll bet it looks like Vulture's Row down there today, doesn't it?
03 02 51 47	CC	Yes. You can't stir them with a stick down here.
03 02 51 56	CDR	We just turned a page in the flight plan, and we certainly appreciate the insert that you put in there.
03 02 52 03	CC	Roger.

03 02 52 34	CDR	Houston, Apollo 10. Now, ve still have a beautiful view of the Earth right out through the center hatch window. It was just a little bit smaller than a tennis ball this morning; it's right now about the size of a hand ball.
03 02 52 49	CC	Roger. We copy, 10. That's a pretty good eye.
03 02 52 55	LMP	Don't let them kid you, Charlie; it looks like a dime to me.
03 02 53 05	CC	Chris says when it gets to look the size of a squash ball, let him know.
03 02 53 15	CDR	Roger.

END OF TAPE

03 03 06 24	CC	Hello, Apollo 10. Houston. We'd like you to select OMNI Charlie so we can get a couple of minutes of high bit rate. Over.
03 03 06 59	LMP	Houston, this is 10. You ought to have OMNI Charlie now.
03 03 07 02	CC	Roger, 10. We're reading you five-by. Out.
03 03 09 15	CDR	Houston, Apollo 10. We'll start through the P30-P40 series at approximately 75 30. Over.
03 03 09 24	CC	Roger, 10. We copy. We'll be watching.
03 03 09 27	LMP	Okay, Charlie.
03 03 29 27	CDR	Houston, Apollo 10. We'll start through the P30-P40 series now. Over.
03 03 29 30	CC	Roger, 10. Standing by. Over.
03 03 30 10	CDR	Okay. And we know what that is. That is due to the conic integration.
03 03 30 16	CC	Roger.
03 03 35 33	CDR	Houston, Apollo 10. ... we can read our DSKY. We've trimmed and we're in a trim attitude and, as far as our checklist, we're minus 6 minutes and waiting.
03 03 35 44	CC	Roger. We copy, 10. We have you holding at minus 6 minutes.
03 03 35 58	CC	10, Houston. One reminder. We really - on the high bit rate, it's 30 seconds. Over. Before for the burn.
03 03 36 10	CDR	Roger. Understand. Go to high bit rate. We've got that on our checklist, but we'll make sure we go there 30 seconds prior to the burn.
03 03 36 17	CC	Roger.
03 03 37 22	CMP	Houston, we've got a bunch of clocks running in here; but just in case, give us a SYNC hack in 10 minutes, will you?
03 03 37 29	CC	Roger. We'll give you a hack at 10 minutes. Over.
03 03 41 24	CDR	Houston, Apollo 10. Just tried looking out as far as I can out the top hatch window, and still can't see the Moon; but we'll take your word that it's there. Over.

03 03 41 33	CC	Roger, 10. That's guaranteed; it's there. Over.
03 03 41 40	CMP	Okay.
03 03 41 50	LMP	We know it's there. I hope it's there plus 60 miles.
03 03 41 54	CMP	No guarantee on that.
03 03 42 00	CC	Our Trench guys guarantee 60 by 170 on your - if you can burn on the P40 number.
03 03 42 09	LMP	Man, the beer's on me, if it's 60 by 170.
03 03 42 16	CC	We'll take that.
03 03 42 21	LMP	And if it ain't, we don't have to worry about it.
03 03 45 26	CC	Apollo 10, Houston. On my Mark, it'll be 10 minutes to ignition. Over.
03 03 45 34	CMP	10. Roger.
03 03 45 45	CC	Apollo 10, stand by for a Mark, 10 minutes.
03 03 45 52	CC	MARK.
03 03 45 53	CC	Ten minutes to ignition.
03 03 45 57	CMP	We're SYNCED.
03 03 45 58	CC	Roger.
03 03 46 22	CC	Apollo 10, Houston. Two minutes to LOS; everybody here says God speed.
03 03 46 30	CDR	Okay, and we'll see them right on the other side in orbit.
03 03 46 33	CC	Roger. 76 22 55.
03 03 46 39	CDR	We'll be calling you.
03 03 50 —		BEGIN LUNAR REV 1
03 04 24 29	CC	Hello, Apollo 10. Houston. Over.
03 04 24 34	CDR	Roger, Houston. Apollo 10. You can tell the world that we have arrived.
03 04 24 39	CC	Roger, 10. It's good to hear from you.

03 04 24 41	CMP	Boy, you wouldn't believe this thing.
03 04 24 44	CDR	Yes, the guidance was absolutely fantastic, and we'll give you the - the burns right now.
03 04 24 51	CMP	This engine is just beautiful.
03 04 24 54	LMP	Charlie, my hat's off to the guys in the Trench. I love them.
03 04 24 56	CMP	Yes, kiss that man that runs MSFN.
03 04 25 02	CC	I don't know whether I can do that, though, but I'll say thank you.
03 04 25 05	LMP	Okay, Charlie. You ready to copy our burns?
03 04 25 06	CC	Go ahead.
03 04 25 08	LMP	Yes. Say thank you big. You ready to copy the postburn report?
03 04 25 13	CC	Roger. GO.
03 04 25 18	LMP	Okay. The burn was on time. The burn time was 5 plus 56. Our roll, pitch, and yaw, and angles guidance was all good. Our residuals were 0, minus 0.2, and 0. DELTA-V_c read 7.0 - That's minus 7.0. The fuel remaining is 37.7 percent, oxidizer is 39.5 percent. The unbalance - I'd like to talk about - The present unbalance is 500 increase. We're in a 169.1 by a 59.6. The chamber pressure increased smoothly throughout the burn from 98 to 103 with no apparent discernible jump at second ball-valve initiation. I take that back, Charlie. It bounced up to 98 and then smoothly from 98 on to 103 with all four ball valves on. The unbalance - Are you still with me?
03 04 25 32	CC	Roger. Go ahead. Standing by. Over.
03 04 25 37	LMP	Okay. I watched the unbalance go from where we left it at 200 decrease from the short burns. I didn't touch it until after everything settled down after we were into the burn for 30 minutes. At that time, the unbalance was 300 to 350 decrease. I put the oxidizer flow valve in a DECREASE position. I brought it up to zero. I closed it and then it started on up. After it hit about 150 increase, I put it to INCREASE and it held it, barely held it, and it creeped up from like about 250 to the present point at

500. I actually neutralized the flow valve at about 20 seconds before the burn ended and when I put it to NORMAL, then the increase went from about 400 to 500.

03 04 25 39	CC	Roger. We copied, 10. It looks like you really have arrived. That was a great burn.
03 04 25 42	LMP	And the oxidizer, the oxidizer and fuel remaining agree very accurately with the onboard graph I have of the helium pressure, which is about 1750 right now.
03 04 25 53	CC	Roger. We copy, 10.
03 04 25 58	LMP	And the first view I had of the Moon was reflected in the overhead window of the LM. How does that grab you?
03 04 28 05	CC	Hey, that's great.
03 04 28 35	CMP	Hello, Houston. You'd have to see this planet to believe it.
03 04 28 41	CC	Roger, 10. We've got FIDO looking at your - the radar residuals are very small. Give us a chance to track awhile, and we'll confirm. Over.
03 04 29 00	CMP	Okay, Charlie. You mean - you don't think it's - I think it's confirmed, as far as I'm concerned.
03 04 29 10	CC	Roger. We're committed, 10. It looks that good.
03 04 29 21	CC	How's the view, 10?
03 04 29 28	CMP	We have our student geologists here overlooking the surface, and they'll report in a minute.
03 04 29 35	CC	Roger. Standing by. Over.
03 04 29 36	CDR	Okay. We're just passing from the highlands over into the Mare area, and you can pass on to Jack: we caught a couple of real pretty little volcanos, there's no doubt about them; and we got a couple of good high-resolution photos, and it still looks kind of brownish-gray to us here. Over.
03 04 29 56	CC	Roger. We copy.
03 04 29 57	CMP	Yes. There were some places back there where ...

There was one volcano, whatever it was, that - It was all white on the outside but definitely black around the top of it.

03 04 30 11	CC	Roger.
03 04 30 14	LMP	Charlie, it might sound corny, but the view is really out of this world.
03 04 30 19	CC	Roger. (Laughter) We had a couple of comments (laughter) from the back row that I won't repeat.
03 04 31 18	CC	Hello, Apollo 10. Houston. We have a map update for REV 2 if you're ready to copy. Over.
03 04 31 29	CDR	Stand by.
03 04 31 31	LMP	Okay, Charlie. Go ahead.
03 04 31 34	CC	Roger. For LOS 77 47 59, 77 58 27, 78 31 19. We've got a sunrise time of 77 51 40 and a sunset of 79 13 33. Ready for your readback. Over.
03 04 32 14	LMP	Okay. REV 2 is 77 47 59, 77 58 27, and 78 31 19. Sunrise is 77 51 40, sunset is 79 13 33.
03 04 32 27	CC	Roger.

END OF TAPE

03 04 33 05	CC	10, Houston. According to our maps, we have you coming up on the Sea of Waves and to your left Langrenus.
03 04 34 58	CMP	Man, we could see the Sea of Crises up here. That's the first real thing that I'm positive of that I've seen that I recognize and boy, it really stands out.
03 04 34 09	CC	Roger. We copy.
03 04 34 26	CDR	Houston, Apollo 10. One thing about the orbital rate up here in the track, it's considerably slower than around the Earth.
03 04 34 34	CC	Roger. We copied, 10. Over.
03 04 34 40	CDR	And, also, looking out at the horizon, some of the mountains we can see down here - That's going to be a real kick tomorrow down at 50 000 feet. Over.
03 04 34 49	CC	We copy that.
03 04 36 04	CC	10, we're expecting an appropriate comment tomorrow.
03 04 36 14	CDR	We'll use the right words. This will be our VOX, Charlie.
03 04 36 18	CC	Roger.
03 04 37 33	LMP	We've got Langrenus, now, out here off the - It depends on which way you roll, but off to the one side here. Very beautiful sharp peak right in the center.
03 04 37 49	CC	Copy, 10.
03 04 37 55	LMP	Yes. And it appears our water boiler is working, too.
03 04 37 59	CC	Roger. We confirm that. We picked it up a moment ago.
03 04 38 17	CDR	Houston.
03 04 38 33	CC	Hello, Apollo 10. Houston. We are working on a time for you to cross to Site 1, and did you attempt to call a second egg? Over.
03 04 38 47	CDR	Negative. I don't think so, Charlie. Over.

03 04 38 50	CC	Roger.
03 04 41 00	CC	Hello, Apollo 10. Houston. We have a time crossing latitude for - correction, longitude for Site 1: 76 49 00. Over.
03 04 41 10	CDR	Go.
03 04 41 15	CMP	Roger.
03 04 41 22	CDR	Roger, Charlie. And I think we are coming over the Taruntius Twins now. Looks like we've got them real clear.
03 04 41 31	CC	Roger. We copy, 10. What is your early estimate of landmark tracking ability? Did Jack do a good job for you? You got a lot of good landmarks?
03 04 41 45	CDR	Starting to look just like NASA Road 1 out there now.
03 04 41 50	CC	Sounds really great. Over.
03 04 41 55	CDR	Roger. Just wait until this afternoon. At the speed we are traveling, that TV camera with the zoom should really give you a fantastic picture.
03 04 42 04	CC	We're standing by.
03 04 43 48	LMP	Hey, Charlie. You will be glad to know we are walking right up our LM chart, right up our track in the Apollo Ridge, right now. We've just seen the four Taruntius: Papa, Kilo, Bravo, and George. We've seen big Taruntius; we're looking at Messier and Messier A; and Secchi 1 ought to be coming up, and then Secchi.
03 04 44 10	CC	Roger. We copy, 10. We are following along with you.
03 04 44 36	LMP	We're B1 right now, come to think of it.
03 04 44 45	CC	Roger. We copy
03 04 45 14	LMP	And, Houston. Secchi is very well defined as we come into the Apollo Ridge. The rille perpendicular to the ridge and parallel to the ridge is very well defined in this area. The chicken-track area is very easy to see from this altitude.
03 04 45 33	CC	We copy, 10.

03 04 47 03	CC	10, Houston. As you near Site 1, if you get a chance, could you comment on the volcanic cones and the highlands south of track? Over.
03 04 48 28	CDR	Houston, Apollo 10. We're right over Censorinus at this time, at least through my hatch window. Over.
03 04 48 35	CC	Roger, Tom. We copy. We're plotting you right along. Over.
03 04 48 46	LMP	And I've got the terminator out my window, coming up. It sure makes the landscape look a little different.
03 04 48 55	CC	Roger, 10. Could you comment on the shadows as you come up to the terminator and the - your ability to detect landmarks in that area? Over.
03 04 49 13	CMP	I think it's going to be real good. Just like the "8" guys said, you can see down into these shadows.
03 04 49 18	CC	Roger. Good show, John.
03 04 49 21	CMP	Like, I'm looking at - down at one crater and there's a crater that's underneath the shadow, but I'm not having any trouble at all seeing it from here.
03 04 49 32	CC	Roger.
03 04 49 48	CDR	Okay. We've reached 208 inertial, and we'll just hold this attitude around since it's the same attitude as per flight plan.
03 04 49 56	CC	Roger. We concur.
03 04 49 58	CDR	And, there is no doubt about it. This mare area out here is darker than the other. It looks like it's turning nearly black, where before looking out there, it looks like a light shade of gray-tan-brown. And I bet that TV camera will show it to you pretty good. Over.
03 04 50 12	CC	Roger. We're standing by for the TV, and stopped in CMC at 208 inertial. Over.
03 04 50 23	LMP	Charlie, I got Theophilus right on the terminator here, and you can see well down into it. It's got a very pronounced central peak which is nearly as high as the rim, and it's got a little rim crater just on the inside which is

very easily distinguishable. And then just preceeding it at 30 east and about 11 south, the small crater preceeding it in contrast has no central peak that's visible.

03 04 50 56	CC	Roger, 10. We've located you on a map.
03 04 51 00	CDR	Okay. I've got - -
03 04 51 01	CC	Go ahead, Tom.
03 04 51 04	CDR	Yes. Well, I'm right over Maskelyne and Maskelyne B now to be leading right into Landing Site 2.
03 04 51 11	CC	Roger. We've - keeping a check on all your systems. Everything looks great to us. You've got a great spacecraft.
03 04 51 26	CDR	And Sidewinder Rille and Diamondback Rille stand out just tremendous here. We're just about to cross the terminator.
03 04 51 35	CC	Roger.
03 04 51 36	CMP	Boy, that's really something there. I don't see why fish aren't dumped down that creek.
03 04 51 52	LMP	And Torricelli is off to the right on my forward window, very easily distinguishable at this Sun angle. Those rilles are something else again.
03 04 52 20	CC	10, Houston. We'll have you coming up to Site 2 at 76 53. You might be in there too dark at that point, but that's the time. Over.
03 04 52 32	CDR	Okay, Charlie. At 200, here, inertial attitude we're going just about straight down. And most of the terrain right down below my window is starting to disappear and nighttime - it's getting black here, but the one thing that really stands out was those features that we picked out. And I guess all the homework has paid off because, like I said, it's just like NASA Road 1 leading up to it. Over.
03 04 52 54	CC	Sounds really great. We've got our friendly geologist back here grinning, and looks like we're going to be GO for all the landmark tracking and everything, then.

03 04 53 08	CDR	Okay. And I've just picked up Moltke down below. I can just see a little bit of a white rim and the rest is black. Landing Site 1 - pardon me, Site 2 is completely in the black, but I can see half of the rim of Moltke, and that's about it. We're now passing into darkness.
03 04 53 25	CC	We copy. Over.
03 04 53 34	LMP	Jack, although - This is, Charlie. Although we're going into this backward, it's still amazingly easy to pick up these landmarks as we're going into the landing site. Especially the ones that we've worked on a lot - a lot more heavily.
03 04 53 48	CC	Roger. Understand, 10. Do you have your - are you monitoring - -
03 04 53 50	LMP	We should be looking down, of course, this isn't - We're looking down right now as Tom said, right over Site 2. It's in darkness, and we've got a lot of reflected Sun off the LM, but right over in the Surveyor V area, also, but it's in darkness at the present time.
03 04 54 09	CDR	Also, you can - The feature we called "U.S. 1" stands out real well. It disappears in the darkness right by Moltke, and the area over to the right. There's no doubt there's been some volcanism in there and that's what we term the Oklahoma Hills. Over.
03 04 54 24	CC	We copy, 10. We thought you had your descent strip chart out. We're breaking ours out here now.
03 04 54 34	CMP	I knew he'd name something, "Oklahoma Hills."
03 04 54 40	CC	You notice he got that out on the first REV, too.
03 04 54 41	LMP	Charlie, Theophilus is still visible out my side window. It's still visible. Theophilus is still visible out my side window, and it's right on the terminator, and it's beautiful the way the shadows are falling in it. If you would believe this, the only thing that is lit in Theophilus is the back rim and the central peak in the center of it. The central peak looks like it's going to last just about as long in sunlight as the far rim.
03 04 55 15	CC	Roger. We copy.

03 04 55 50	CC	10, Houston. We'd like you to elaborate a little bit on your - the rilles that you commented on about 5 minutes ago: Diamondback and Sidewinder. Over.
03 04 56 04	CDR	Okay. I'll tell you, from my experience around the earth, you can tell Jack it looks like Canyon Diablo out there in New Mexico. They're definitely dropped down with sharp walls. It doesn't look like there is any build-up along the sides. It's just straight down like a graben at least from this angle up here - At least for 60 miles, it looks like they're straight down and it kind of looks something like Canyon Diablo. And we'll give you a better description tomorrow at 50 000. Over.
03 04 56 36	CC	Roger. We copy - -
03 04 56 37	CDR	Oh, also, "U.S. 1" looked - "U.S. 1" looks like it's got pretty vertical edges, but again, this is from 60 miles. We'll give you a better description tomorrow. Over.
03 04 56 50	CC	Roger, 10. We copy. In the rilles, can you see - Do you think you can see the bottom of those things? Do you see any boulders or anything down there? It's probably pretty difficult from that altitude, but can you comment on that?
03 04 57 04	CDR	Charlie, no. Sixty miles is too far up. It's mostly dark down there at this sun angle. Later on, when we see some around on the other side and tomorrow, we'll give you a better description.
03 04 57 14	CC	Roger.
03 04 57 15	CMP	To tell you the truth, I didn't look that close. But it's - the shadow - the shadow that goes down in there - it - all you can tell was the rille. You couldn't see the bottom of it.
03 04 57 27	CC	Roger.
03 04 57 33	CMP	Gene-o says that the ones he looked at were rounded off in the bottom.
03 04 57 40	CC	Roger.
03 04 59 36	LMP	Houston, 10. You might tell Jack that he forgot to tell us to practice studying these landmarks standing on our head.

03 04 59 45	CC	Roger. We - He heard the comment, and we'll take care of that for the next flight. We got a - We'll have no update for you on your BLOCK data for the TEI's, and we confirm your abort. Your orbit is 60.6 by 170.1 on 8 minutes of tracking. Over.
03 05 00 12	LMP	Roger. 60.6 by 170.1. That agrees pretty close.
03 05 00 17	CMP	I guess we owe you, don't we?
03 05 00 21	CC	Not me; the FIDO.
03 05 00 55	LMP	Houston, 10. You want me to leave my high bit rate switch in HIGH?
03 05 01 00	CC	Stand by.
03 05 01 09	CC	10, Houston. We'd like your bit rate switch to go to LOW. Over.
03 05 01 17	LMP	Okay. Sorry, I didn't catch that earlier.
03 05 01 21	CC	That's okay.
03 05 02 02	LMP	Houston, 10.
03 05 02 04	CC	Go ahead, 10. Over.
03 05 02 08	LMP	Okay. I guess I'm looking for some words on - on the PUG switch as to whether or not you want me to go ahead and put this on in INCREASE at the start of the next burn or possibly use SECONDARY, considering the unbalance we've got.
03 05 02 28	CC	Stand by. We'll get you some words on that.
03 05 02 30	LMP	The oxidizer flow valve is what I'm referring to.
03 05 02 33	CC	Roger. We'll get you some words in a minute. Over.
03 05 02 38	LMP	Okay, Charlie. The thing I didn't understand about it was I waited - waited until it got to 150 down. It was over 300 decrease. I brought it back up very smoothly just before zero, and I tried to lead it, and I closed it. And then it started going up, and I started it to the INCREASE position at 150, and then I could barely keep my own. And in fact, I was losing ground the whole time. I did see it go through the cross-feed point through the 57-percent regime down to

about 51 or so, and she did fluctuate all over the place, and then settled down again afterwards. And I left the oxidizer flow valve in the INCREASE position throughout that whole part of that burn.

03 05 03 26	CC	Roger. We copy, 10. It'll take our G&C guys a while to analyze the tapes. We'll give you some word after - on our next REV. Over.
03 05 03 41	LMP	Okay, Charlie. Thank you.
03 05 03 45	CMP	Boy, Charlie. I never saw nothing like that. We - when we came - When we came around on the back side, seems like the colors are different on the back side - more light than they are on the front side. Primarily because of the maria. I wouldn't say it's - I wouldn't say it's - It's shades of black and white and browns in there, and near as I can tell, there's some brown in that thing.
03 05 04 16	CC	Roger, 10. I copy that - -
03 04 04 18	CMP	There are all kinds of shades of gray, of course.
03 05 04 19	CC	Roger. Copy, on the back side that the colors are different, that it appears to be more browns and blacks. Is that correct, in the maria? Over.
03 05 04 38	CMP	Well, yes. I think it's different from the maria. One thing that really stands out that wasn't impressed on me before we got here is that - is a very great observable difference between - between the - far as elevation is concerned, between the mare and the surrounding terrain - the surrounding highlands. Boy, this is really a rugged planet. And I saw a big basin on the back side, and we'll have to get around there and look at it again.
03 05 05 21	CC	It ought to be coming up in a minute.
03 05 05 31	CDR	Hello, Houston. Apollo 10. We've got a beautiful view of the Earth here, and pardon, the Moon in earthshine. Sorry about that slip, but it's absolutely fantastic here at night with earthshine. Our TV camera might have enough to pick that up, too.
03 05 05 49	LMP	Charlie, the craters - The center of some of the lighter craters glow as if they're lit by radioactive - They just glow in this very low sun light.

03 05 06 02	CC	Roger. Stand by one.
03 05 06 20	CC	Hello, Apollo 10. Houston. In about 10 minutes as you cross 45 west, look directly north and see if you can see the crater Aristarchus. It's near the horizon - the northern horizon. There have been some reports last night and the night before of some transient events in that crater - some glowing, and they were hoping that you might be able to give them some word on that. Over.
03 05 06 56	LMP	Okay, Charlie. We've got it located. And that's in the Ocean of Storms about 40 - maybe 47 west and about 23 north?
03 05 07 05	CC	That's affirmative. It's going to be pretty close to the northern horizon, but you might be able to see it. Over.
03 05 07 14	LMP	Okay. Fine.
03 05 10 55	CDR	Hello, Houston. Apollo 10.
03 05 11 00	CDR	Houston, Apollo 10. I've got Copernicus by Moon - by Earth light. It's quite a sight, here. Over.
03 05 11 04	CC	Roger. We copy, 10.
03 05 20 39	LMP	Houston, this is 10. Over.
03 05 20 41	CC	Go ahead.
03 05 20 46	LMP	Roger. Okay. We're set up in this sleep configuration right now, as far as the roll, pitch, and yaw goes, and we've got it in wide deadband.
03 05 20 56	CC	Roger. We copy that. Over.
03 05 21 00	CMP	In 10-degree deadband, plus or minus 10 degrees. That's all we are allowed in this sleep configuration, isn't it?
03 05 21 10	CC	That's affirmative, 10. This is what we want. You've got the proper entry in. Over.
03 05 21 18	CDR	Roger. Also ...
03 05 21 58	LMP	Hello, Houston. 10.
03 05 22 00	CC	Roger. Go ahead.
03 05 22 05	LMP	We were not able to see any particular activity in the area of Aristarchus. It's amazing how well you can, once you find the landmark,

navigate in earthshine across the surface of the Moon. It seems to be very well lit from our altitude here.

03 05 22 26	CC	Roger, 10. We are hoping that we can get some TV past the terminator. The TV experts are looking at it, and we think that we might be able to get some. We will let you know next time around. Over.
03 05 22 43	CMP	Well, we can't. The Moon past the terminator is totally dark as long as we are in sunlight, but the minute we go out of sunlight, in the darkness ourselves, the Moon then glows right at us.
03 05 22 57	CC	10, we copy.
03 05 23 22	CMP	Houston, this is 10.
03 05 23 25	CC	Go ahead, 10. Over.
03 05 23 27	CMP	I can - The LM thrusters stick out like a sore thumb in earthshine, too, but they don't keep us from seeing any of the stars up here at night. It is real well lit up.
03 05 23 42	CC	Roger. Understand. In your P52 you can recognize everything, and no problem. That was not blocked by the LM.
03 05 23 54	CMP	That's right, and, thus far, believe it or not, we haven't run anything where the LM blocked us from a star. There was one case, but so far we have been lucky.
03 05 24 05	CC	Roger.
03 05 24 10	CDR	Houston, Apollo 10. In earthshine, you can see way down in the craters. You can see the shadows in the craters from the earthshine, but the more you become adapted to it, it's phenomenal the amount of details you can see. Over.
03 04 24 27	CC	Roger, 10.
03 05 24 36	CDR	It's nearly what you call Field Grade Nighttime Flight, Charlie.
03 05 24 41	CC	Roger. CAVU, hun? We got you.
03 05 24 45	CMP	Good thing this is all Field Grade.
03 05 24 51	CDR	Roger.

03 05 24 52	LMP	It's what John and I call Commander's Moon in the Navy.
03 05 24 59	CC	We've got a lot of smart guys here in the CAP COMM console.
03 05 25 12	LMP	Hey, Charlie. The best I can figure out, we're passing now out of the Ocean of Storms into some more rugged country, here, which is very evident on the surface.
03 05 25 26	CC	Roger, Gene. We are plotting you right along. That's a good call.
03 05 26 04	CMP	Boy, that engine worked like a champ, Charlie.
03 05 26 08	CC	Roger.
03 05 26 10	CMP	What did you think of those residuals?
03 05 26 11	CC	Man, that's really great. We couldn't believe it when you called them down to us. I know you guys are as happy as clams up there with that performance. We are, too, down here. One other thing, we noticed your sleep attitude here yawed out about 20 degrees. We called for a yaw of zero, and were wondering what we have. Over.
03 05 26 39	CMP	Well, you got a yaw of 20 degrees because something keeps torquing us over that way. But is that going to bother you, or do you want it back to zero?
03 05 26 56	CC	Stand by. Over.
03 05 26 58	CMP	We'll take it back there.
03 05 27 00	CMP	Roger, Houston. Apollo 10. It looks like this water boiler keeps torquing us off, because we haven't noticed that any Apollo's holding inertial anywhere before. And particularly on this orbital path, you wouldn't expect the yaw to get to you, but it looks like the water boiler is torquing us. Over.
03 05 27 16	CC	Copy, 10. - -
03 05 27 17	CMP	Either that, or there is a big MASSCON up north or something.
03 05 27 23	CC	It might be that giant escargot up there. We'd like you to take it back to zero yaw, and let's start over again. Over.

03 05 27 33	CMP	Roger.
03 05 27 54	CMP	Boy, this Moon is lit up like a Christmas tree on the dark side. I don't see any lights, but I mean it is well illuminated from the Earth.
03 05 28 08	CC	That's very descriptive, John.
03 05 28 10	CMP	I'm a little behind these other guys; they make - -
03 05 28 26	CC	Apollo 10, Houston. John, say again all about the Christmas tree. Over.
03 05 28 37	CMP	I said I don't mean lit with lights, but it sure is brightly illuminated compared with Earth. I am a little behind these other two guys. They make me mind the DSKY.
03 05 28 55	CC	Roger. We recommend you get your share of viewing time, also.
03 05 29 36	LMP	Houston, just to tell you something interesting, it looks like we are coming into the termination of earthshine here, and we are starting to get long shadows on the hills as we go into the Earth terminator.
03 05 29 51	CC	Our friendly geologist says that is right, coming up on earthset here.
03 05 29 59	CMP	Would you believe you can even see down in the craters in the earthshine shadows? Or is that going a little too far?
03 05 30 09	CC	That's going pretty far, there.
03 05 30 30	LMP	Hello, Houston. This is 10.
03 05 30 38	CC	Go ahead.
03 05 30 39	LMP	Okay. It appears - I can recognize, at about 30 south and about 80 west, that big, wide gorge, very rounded at the bottom, that's bordered on one side by the Rook Mountains and on the other side by the Corded Mountains.
03 05 31 01	CC	Roger, 10. We copy.
03 05 31 03	LMP	And I can see - I can see Schluter with a central peak very, very easily.
03 05 31 15	CC	Roger. Understand. You got Schluter.

03 05 31 23	LMP	Okay.
03 05 31 56	CC	Hello, Apollo 10. Houston. We got 86 percent on the waste water. We need a waste-water dump whenever you get to it, and as soon as you can get to it. Over.
03 05 32 11	CDR	We can do it right now. And I'm coming into the sleep attitude at this time.
03 05 32 17	LMP	What do you want to dump it to, Charlie?
03 05 32 19	CC	Roger. Down to 25 percent. Over.
03 05 32 24	LMP	Okay.
03 05 33 04	LMP	Houston, 10. We got indications that - on the gage here that we're dumping slowly.
03 05 33 10	CC	10, Roger. Stand by.
03 05 38 57	CC	Hello, 10. Houston. We're coming up on 9 minutes to LOS. We'll be standing by for your report on the high-gain antenna on LOS and AOS pitch and yaw positions at AOS of 78 31 21. Over.
03 05 39 17	LMP	Roger.
03 05 39 37	CMP	Boy, this planet is really something, Charlie.
03 05 39 43	CC	Roger, 10. Elaborate, John. We've heard that twice now.
03 05 39 53	CMP	That's about the only way I know how to put it. It's got a lot more character than it looks like from sitting down there on the ground. When you get up close to it, it stands out. It's got its own features that are certainly clearly recognizable and much different than you see around the Earth. That's for sure.
03 05 40 16	CC	Roger, John. Wish we were there to look at it with you.
03 05 40 20	LMP	Charlie, there's - -
03 05 40 21	CC	Go ahead.
03 05 40 25	LMP	Charlie, there's - There's three lighting conditions very evident. One is sunlight, earthshine, and now we're in pitch darkness, although you can still see the lunar horizon against the black sky. It's the black Moon that you can't

really see anything on, but there is a definite distinguishable horizon against the black sky where the stars are coming up.

03 05 40 54 LMP — And - And both terminators are very interesting. Terminator produced by sunlight and terminator produced by earthshine are very similar, although the earthshine terminator, being of a lower light level, has a very ghost-like, shadowy appearance whereas the sunlight terminators are very definite - definite sharp image - sharp shadow image.

03 05 41 19 CC — Roger, 10. On this - your comment about the - In darkness you can see the Moon horizon; is that just a star troping or can you actually see features on the horizon? Over.

03 05 41 39 LMP — Charlie, if I had - if I had a pencil I could draw you a - Right across my window, I could draw you a horizon. There seems to be a - Ever since we went into total darkness on the surface out of earthshine, there seems to be a continued glow from behind the horizon which lights it up continually, and - You can't distinguish sharp features, but the general terrain you can see.

03 05 42 04 CC — Roger. Is that like airglow, or the airglow layer?

03 05 42 16 LMP — Say again, Gordo.

03 05 42 18 CC — Is that glow similar to the airglow layer here on Earth - in Earth orbit?

03 05 42 27 LMP — No, not at all.

03 05 42 29 CC — Oh, that's good.

03 05 42 44 CDR — Hey, I've been - going off and flying the spacecraft, I've just turned around and looked out, and it - stars - You can see it's a bright horizon, but it looks like it might be the Milky Way, but the sky is definitly light, and it goes down and clips off. You cannot make some of the rough terrain features out about it. It might be that we could be right close to the Milky Way out there, but it looks like about the same intensity of the Milky Way as you see it at night around the Earth. It does get lighter over in one section, and we'll give you a comment on that later.

03 05 43 35 CC — Okay. Very good.

03 05 43 31	LMP	What's going on out there is no airglow at all; it's just a sharp definition between the Moon surface and this parabolic glow that's out there.
03 05 43 39	CC	There's a good sharp horizon there, huh?
03 05 43 42	CMP	Gordo knows there ain't no ...
03 05 43 47	LMP	Yes. I think you could make a cat shot off a horizon like that.
03 05 43 53	CMP	You can tell it has to be well lighted.
03 05 43 58	CC	You might make a cat shot, but I'm not.
03 05 44 07	CMP	I didn't even think you knew what that meant.
03 05 44 10	CC	Oh, I know all the words.
03 05 44 17	CC	You know, that LM launch might be just like a cat shot.
03 05 45 07	CC	10, Houston. Coming up on three. You can terminate your water dump, and you're looking good as you go over the hill.
03 05 45 20	LMP	Roger, Houston.

END OF TAPE

03 05 50 -- BEGIN LUNAR REV 2

03 06 31 46	CC	Hello, Apollo 10. Houston standing by.
03 06 31 52	LMP	Looked like the REACQ mode worked pretty well there. Everything acquired, and read you loud and clear.
03 06 32 00	CC	Roger, 10. We had you. Go through that again about the REACQ. Over.
03 06 32 08	LMP	I said I went through those pitch and yaw angles in the REACQ. Narrow deadband in this attitude picks you up loud and strong, here.
03 06 32 18	CC	Roger. Where did the antenna go to in pitch and yaw at LOS? Over.
03 06 32 35	LMP	Charlie, I'm not sure I can answer that one specific question.
03 06 32 54	CC	10, Houston. Do you think the antenna went to the angles that you had dialed in, or fairly close to it? Over.
03 06 33 06	LMP	That's affirmative. It went to those angles at LOS. I went to REACQ and fired LOS, and it did go to those angles, and that's where it stayed and picked you up on the way back.
03 06 33 18	CC	Roger. Stand by.
03 06 35 59	LMP	10, Houston. We are having trouble getting our high bit rate command in. We'd like you to select high bit rate. Over.
03 06 36 24	CC	Hello, 10. Houston. Over.
03 06 36 30	LMP	Go ahead. I gave it to you, Charlie.
03 06 36 32	CC	Okay. We've got it. We've got a load for you, and if you'll give us the computer and ACCEPT we'll send you up a maneuver pad - correction - a target load and a state vector. Over.
03 06 37 01	LMP	Okay. You're in P00 and ACCEPT.
03 06 37 04	CC	Roger. And we have a LOI-2 pad, a TEI-5 pad, and a map update for you, if you're ready to copy.
03 06 37 14	LMP	Stand by 1 second, Charlie.
03 06 37 46	LMP	Charlie, give me the map update first, would you, please?

03 06 37 49	CC	Roger. It's REV 3, and we got LOS time of 79 56 22 80 06 41, AOS 80 40 45. Got a sunrise of 80 00 13, and a sunset of 81 14 30. Over.
03 06 38 30	LMP	Okay. Map update, REV 3: 79 56 22 80 06 41 80 40 45. Sun rises at 80 00 13 and sets at 81 14 30.
03 06 38 44	CC	That's affirmative.
03 06 39 00	CC	10, we're having trouble - -
03 06 39 01	LMP	Charlie, I'm ready for the -
03 06 39 20	CC	10, Houston. We'd like you to go UPTELEMETRY, COMMAND RESET to COMMAND RESET and back to NORMAL. We're having trouble getting our commands in. Over.
03 06 39 37	LMP	Okay. COMMAND RESET back to NORMAL.
03 06 39 43	CC	Roger. And if you're ready to copy, I have your LOI-2 pad. Over.
03 06 39 50	LMP	Just 1 second, Charlie.
03 06 40 23	CC	Apollo 10, Houston. Now we'd like to UP the TELEMETRY COMMAND RESET to OFF and then back to NORMAL. Over.
03 06 40 34	LMP	Okay. OFF and then NORMAL, and I'm ready to copy.
03 06 40 38	CC	Roger, 10. Here comes the LOI-2 pad. SPS/G&N: 38650, plus 183, minus 074 080 25 0738, NOUN 81 is minus 01390, plus all balls, minus all balls, 000 209, 000; and NOUN 44 is 00601, plus 00601 01390 014 01325; sextant star 16 2205 232. Rest of the pad is NA. Your set stars are Vega and Deneb, 241 240 013. Two jets at 17 seconds on the ullage. Over.
03 06 42 32	LMP	Roger. LOI-2, SPS/G&N: 38650, plus 183, minus 074 080 25 0738, minus 01390, plus all balls, minus all balls; roll 000, pitch is 209, yaw is 000; 00601, plus 00601 01390 014 1325; sextant star is 16 2205 232, Vega and Deneb, 241 240 013, two-jet ullage, 17 seconds.
03 06 43 21	CC	Roger. That DELTA-V_C was 01325. Over.
03 06 43 29	LMP	Roger. My have read it back wrong. That's what I've got written down, 01325.
03 06 43 36	CC	Roger, 10. And stand by for the TEI pad. Over.
03 06 43 42	LMP	Okay.

03 06 43 52	CC	Hello, 10. Houston. We have your primary EVAP dried out. We'd like you to close the backpressure valve. Over.
03 06 44 02	LMP	Okay. Closing it.
03 06 44 34	CC	10, Houston. It appears we are having a little problem with our ground uplinking capability. We'll keep you posted. I have a TEI-5 pad, if you're ready to copy. Over.
03 06 44 49	LMP	Okay, Charlie. Wait a minute. My finger is still on a button here; I'll be right with you.
03 06 45 13	LMP	Go ahead, Charlie, with the TEI pad.
03 06 45 18	CC	10, Houston. Stand by for about a minute. We are going to bring down our uplink, and you won't hear us for about a minute. We're going to try to reconfigure ground site. We've got problems with our uplink. Over.
03 06 45 32	LMP	Okay.
03 06 47 37	CC	Hello, Apollo 10. Houston with the TEI-5 pad, if you're ready to copy. Over.
03 06 47 46	LMP	Okay, Charlie. Go ahead.
03 06 47 48	CC	Roger. TEI-5, SPS/G&N: minus 061, plus 0 - correction - the NOUN 47 is NA. Starting off with NOUN 48: minus 061, plus 047 086 19 1000, plus 36430, minus 01493, plus 00546; pitch angle is 025. Rest of the pad is NA.
03 06 48 45	LMP	Okay. TEI-5, SPS/G&N: starting with NOUN 48 is minus 061, plus 047 086 19 1000, plus 36430, minus 01493, plus 00546; and pitch angle is 025.
03 06 49 05	CC	That's affirmative. And we've had a problem with our uplink at Goldstone. They are configuring now, and we'll be with you in a load momentarily. Over.
03 06 49 16	LMP	Okay. Fine.
03 06 50 57	CC	10, while we got a moment here, before we get our load into you, we've got a couple of comments. For LOI 2, we recommend you just place the oxidizer flow increase valve to NORMAL and go PRIMARY. Over.
03 06 51 19	LMP	You want me to stay NORMAL in PRIMARY through that whole burn. Is that correct?

03 06 51 24	CC	That's affirmative. We feel that it's so short that that's the best position, and then for TEI we'll have a story for you on how we want you to operate the PUGS. Also for TV, if we try the dark side TV, recommend a ALC to INSIDE and an f-stop of 2.2. Over.
03 06 51 48	LMP	Okay. We got that, Charlie, and I want you to understand now that I did go back to NORMAL about 20 seconds before the LOI-1 burn ended, so that's where I am, and after I did that I went - my increase unbalance moved up probably about 100 pounds.
03 06 52 06	CC	Roger.
03 06 52 58	LMP	Charlie, just for reference as to exactly where we are, we're looking right down on the top of Messier and Messier A, and we'll be - We've got Taruntius to one side, and we're just right in the middle of the Sea of Fertility coming right up the track into the landing site.
03 06 53 15	CC	Roger. Thank you.
03 06 53 50	CDR	You can really see some boulders in the bottom of Messier A, now. Yes. You can see some tremendous boulders down there.
03 06 54 02	CC	We copy, 10. We finally got Goldstone configured. We're coming up with the load now. Over.
03 06 54 10	CDR	Okay. We're in the CMC and ACCEPT and POO. We can see the load coming.
03 06 54 14	CC	Roger.
03 06 54 21	CC	You guys been taking some good pictures for us?
03 06 54 27	CDR	Right. And, for correlation, I've been on the same sites. I've been shooting one black and white of the special part of it. Shooting one black and white and one of the special color on the same reference.
03 06 54 40	CC	Roger. That's very good, 10. Out.
03 06 54 46	CDR	Roger. We think we've got a few colors here for you. At least you're certain of the ones that are real black, going into whites, and then some browns.
03 06 54 5[illegible]	CC	Roger. We heard your tape on the back side during the LOI-1, and seemed like there was a disagreement between brownish and bluish, there.
03 06 [illegible]	CDR	[illegible] just a little remark.

03 06 56 08	CC	10, Houston. If you've got a moment to comment, on your tape playback from LOI-1 after the burn was completed, we heard a comment about "Hey, look at that bubble." Could you elaborate on that? Over.
03 06 56 25	LMP	Charlie, I guess it was a bubble of water or something, right - hanging right with us after the burn. Right. I tried to take a picture of it. I don't know if we got it or not, but it was a bluish, crystalline-type bubble about - well, about 5 feet out where the LM thrusters are. It probably came either from water or from the resultant residual of the SPS burn.
03 06 56 48	CC	Roger, 10. How large was it? Could you estimate that?
03 06 56 54	LMP	Oh, maybe a half an inch in diameter.
03 06 56 59	CC	Roger. We copy.
03 06 57 46	CMP	Okay, Houston. This time we are looking down, right down on B-1 out of the hatch window.
03 06 57 52	CC	We copy, 10.
03 06 58 00	CC	How's the terrain look around there?
03 06 58 01	CMP	Looks just like the map.
03 06 58 02	CC	Roger. How does the terrain look around that area?
03 06 58 09	CMP	With the naked eye, I'd say it's full of holes.
03 06 58 15	CC	Roger. It looks pretty smooth on our map. Of course, we got one of the world here, but it's real smooth.
03 06 58 24	LMP	Charlie, through the monocular, you can see little shiny fresh craters that you can't see with the naked eye. They're pretty well scattered, but there's quite a few of them down there that you can't seem to pick out with the naked eye.
03 06 58 37	CC	Roger. We copy.
03 06 58 46	CC	10, Houston. We got the loads in. You can go back to BLOCK. Over.
03 06 58 55	CDR	Okay. We're black in - back in BLOCK. We're passing right over Maskelyne, now, and John is shooting back at Site 1.
03 06 59 03	CC	Roger.

03 06 59 04	CDR	At this rate, we're going to run out of all our film in a couple of REVS.
03 06 59 11	CC	A slight shudder emanated from the geologist back there.
03 06 59 26	LMP	Charlie, I'm personally amazed how accurate the maps are at picking out these landmarks and craters.
03 07 00 18	CC	10, Houston. You can put your PCM switch back to LOW BIT RATE. Over.
03 07 00 27	LMP	Okay.
03 07 03 42	CDR	Houston, Apollo 10. We can now see quite a bit more of Moltke as the Moon revolves, and Landing Site 2 is rough. It's just barely starting to come in. It's still too early to tell much about it. Over.
03 07 03 56	CC	Roger. We copy, 10.
03 07 04 07	CC	10, can you - can you see the - on the CSM lunar orbit map - the spot marked 112 near Site 2? It looks like a bright, whitish crater. Over. Oh, that's Moltke. Excuse me. Sorry about that, 10.
03 07 04 29	LMP	Moltke is very, very easy to see. We've seen it both times around. Not only are the rilles, but the low ridges are very distinguishable approaching the landing sites.
03 07 04 40	CC	Roger.
03 07 04 44	LMP	The Sun angle is such that we cannot see into the bottom of the - of Diamondback and Sidewinder rilles.
03 07 04 55	CC	Very good.
03 07 14 03	CDR	Houston, Apollo 10. We see the solar corona, and it's really beautiful.
03 07 14 17	CC	Roger, 10. We copy.
03 07 14 22	CDR	At what - Okay. What time and how long we can see it now. We can still see it. The Sun went down exactly at about 45, and we can still see edges of it. It's mostly a long shaft of light - and we can still see it. It's still there.
03 07 14 40	CC	Roger, 10.
03 07 15 04	CDR	Houston, Apollo 10. It's - The corona is still out there. You can see it quite bigger.
03 07 15 33	CC	Very good, 10.

03 07 15 14	CDR	And you can see stars within about - I can see some at - about 20 degrees of the corona. It's still there, Charlie. It's amazing.
03 07 15 25	CC	Roger. On the TV pass, do you think we could pick that up?
03 07 15 32	CDR	Shouldn't be any problem in this attit-de, if we're in this attitude upsidedown going away. And we'll go from interior to the out, there. You should see it; it's a long streak, and right now it's finally started to fade out, Charlie. It was in a period of nearly 2 minutes that we could see it.
03 07 15 52	CC	10, how long does the shafting look as it comes across? Does it get shorter as you go away, or just sort of fade out? Over.
03 07 16 03	CDR	It just fades out, and the shafting's getting shorter and shorter. There's just a little bit left there, and it'll be gone in a few seconds.
03 07 16 10	CC	Roger.
03 07 16 15	LMP	Charlie, and it spread over an area - a very small area of the horizon - just right in the vicinity where Sun sets. It doesn't go any further either left or right.
03 07 16 26	CC	Roger.
03 06 16 27	CDR	Still - still see traces of it. It's greatly diminished, now, but you can still see a few traces of it. Okay, we'll get on with our P52.
03 07 16 37	CC	Be good, 10.
03 07 29 25	CC	Hello, Apollo 10. Houston. We'd like to leave your backpressure valve closed for another REV or so, look at it. We'll probably go to SLEEP tonight with it closed. Over.
03 07 35 21	CC	Hello, Apollo 10. Houston. If you read, we'd like you to select OMNI Charlie. Over.
03 07 35 52	CC	Hello, Apollo 10. Houston. Over.
03 07 36 19	CC	Hello, Apollo 10. Houston. If you aren't already on OMNI Charlie, we'd like you to select OMNI Charlie. Over.
03 07 36 35	LMP	Hello, Houston. Houston, this is 10. Do you read?

03 07 36 38	CC	Roger, Gene. Reading you about three-by. Over.
03 07 37 53	LMP	Hello, Houston. Houston, this is 10. How do you read?
03 07 37 56	CC	10, we're reading you about three-by. How me? Over.
03 07 38 22	CC	Hello, 10. Houston. Over.
03 07 38 49	CC	Hello, 10. Houston. Over.
03 07 38 54	CMP	Roger, Houston. How I'm reading you loud and clear. We lost you on high gain. I've been waiting to pick you up on OMNI. We're maneuvering out of the burn attitude.
03 07 39 02	CC	Roger. We're getting low bit rate, 10. I don't know whether you copied my last transmission before we broke lock. We're going to leave the backpressure valve closed and watch it for another REV; and probably for the sleep configuration, we'll have it off. Over.
03 07 39 19	CMP	Yes. We got that, Charlie. Thank you.
03 07 39 43	LMP	Houston, this is 10. Can you recommend an OMNI for the burn?
03 07 37 49	CC	Stand by.
03 07 37 56	LMP	For the burn attitude before LOS.
03 07 37 58	CC	Roger, 10. We copy. Your best OMNI is Charlie. Over.
03 07 40 06	LMP	Okay. That's where I am now, so I'll stay there.
03 07 40 11	CC	Roger.

END OF TAPE

03 07 41 28	CMP	Houston, this is 10. On the last pass on the back side, we're pretty sure we identified through the optics going backwards, CP1 and CP2.
03 07 41 39	CC	Roger, 10. It really sounds great. Over. 10, did you call it up or did you just manually track? Over.
03 07 41 54	CMP	Just manually tracked; if we'd have called it up, that would have shot our wide deadband out of the sky.
03 07 42 01	CC	Roger.
03 07 42 40	CMP	Hey, Houston, maybe it wouldn't hurt the wide deadband. Would you check on that for us?
03 07 42 47	CC	Roger. Stand by, 10.
03 07 43 47	CC	10, Houston. If you call up any program, it'll collapse the deadband back down. Over.
03 07 43 58	CMP	That's what I was afraid of.
03 07 44 15	CDR	Hello, Houston. Apollo 10.
03 07 44 17	CC	Go ahead, 10. Over.
03 07 44 21	CDR	Okay. I'm looking ahead in the flight plan to 81 hours when we really start getting busy, there. One thing we're going to want to do is we want to delay the canister change and also that fuel cell O_2 purge until afterwards. The CO_2 content's real low and delaying it an hour or two isn't going to hurt a thing. And we want to get through that busy time without any interruptions so we're recommending delaying there at 81 20 the canister change and the fuel cell O_2 at 81 40 until after we get through most of this activity. Over.
03 07 44 57	CC	We concur with all that, 10.
03 07 45 04	CDR	Roger.
03 07 47 50	CDR	Houston, Apollo 10. We've already completed the Program 30. Do you want us to go into 40 before we lose you at LOS? Over.
03 07 48 01	CC	Roger. We'd like to see a P40, 10. Over.
03 07 48 08	CDR	Coming up.

03 07 49 57	LMP	Are you all getting high bit rate now?
03 07 50 01	CC	That's negative. We got you low bit rate. We're seeing the Program 40.
03 07 50 12	LMP	Roger. In other words, you can read all that stuff; you just need high bit rate to uplink it, huh?
03 07 50 20	CC	10, we can command the low bit rate even, but it takes a little bit longer. We got some parameters set on our low bit rate, but all your DSKY stuff we can see low bit rate. Over.
03 07 51 24	CC	Apollo 10, Houston. Coming up on 5 minutes to LOS. You're looking good going on over the hill. We'll see you AOS, 80 40 47. Over.
03 07 51 44	CMP	Roger. 80 40 47.
03 07 52 04	CC	And 10, one more update for you: after your maneuver - after LOI-2 as we come around the horn, the high gain antenna for the COMM will be a pitch of a minus 55. Over.
03 07 52 23	LMP	... pitch of 55. What about the yaw?
03 07 52 26	CC	It's still good.
03 07 52 30	LMP	Okay.
03 08 05 --		BEGIN LUNAR REV 3
03 08 41 06	CC	Apollo 10, Houston. Standing by.
03 08 41 32	CC	Apollo 10, Houston. Standing by.
03 08 41 41	LMP	Roger. Read you loud and clear.
03 08 41 42	CC	Hey, good show, Gene-o. How about a burn report there?
03 07 41 59	LMP	Okay, Joe, we got a good burn. The burn was on time. It was 14 seconds; roll, pitch, and yaw were nominal. Our residuals were plus 0.9, minus 0.3, minus 0.4; DELTA-V_C was minus 5.6; fuel remaining, 34.9: oxidizer, 37.1. We now are reading a 600 unbalance to the increase. Chamber pressure was steady at 103, and we show us to be in a 60.2- by 60 nautical-mile orbit.
03 08 42 40	CC	Roger. Very good, Gene-o. Thank you. Copy all that and we're standing by for your TV whenever you want to go.

03 08 42 49	LMP	Okay. We're about ready on it now.
03 08 42 51	CC	Roger.
03 08 43 07	CC	Houston - Apollo 10, this is Houston. We'd like for you to do your VERB 66 now.
03 08 43 23	LMP	Okay.
03 08 43 36	LMP	Charlie, we've got some TV coming down to you now. We'll try and tell you exactly where you are in a minute, but Tom's looking out the hatch window. We're upsidedown and going backwards at the moment, so we'll have to give us a chance to locate you.
03 08 43 53	CC	Okay, Gene-o. Fine. We're getting the picture now and it looks real good.
03 08 45 04	LMP	Tom's going to try and have you looking right at a very bright young ray crater, very distinguishable and very bright.
03 08 45 35	CC	Okay, 10. This is Houston. That's a real good picture, and we see the crater you're talking about. That's an awfully good TV picture.
03 08 45 44	LMP	Okay. We'll be coming up on the left side of your picture on Neper here if Tom can scan over to get it.
03 08 45 53	CC	Okay. We verify.
03 08 46 10	LMP	We should be coming right over the Smyth's Sea right at the present time.
03 08 46 14	CC	Roger. That's affirmative and that was F-1 you were showing us there just a minute ago, Gene-o.
03 08 46 23	CDR	Roger. Okay. I've got this at full zoom. Do you like it at full zoom, or do you want it backed down a little bit? On our monitor it looks like we've got some pretty good resolution here.
03 08 46 37	CC	You got fantastic resolution, Tom. You might back off the zoom just a little bit to give us a little bigger picture - get a little better orient.
03 08 46 59	CC	That's good right there, Tom.
03 08 47 28	CC	Apollo 10, this is Houston. We'd like for you to cycle that ALC just so we can get a comparison of the picture. Stay there for about 5 seconds, and then go back to your present position.

03 08 47 41	LMP	Okay. We're on INSIDE right now, and we'll give you a Mark when we go to OUTSIDE.
03 08 47 47	CC	Roger.
03 08 47 50	LMP	Okay. Mark it. We're on outside now.
03 08 48 25	CDR	Joe, can you see we just passed over a rille down there? The rille should be in the upper left-hand corner of your screen.
03 08 48 38	CC	Yes, we've got a hint of it, Tom. And the OUTSIDE position on that ALC seems to give us better resolution down here than the INSIDE. How does that compare with your monitor?
03 08 48 49	CDR	Same way, Joe. The OUTSIDE gives us lots better. And at this time we are passing over a big crater, now. You can see it with the rim there.
03 08 49 00	CC	Roger. Got it.
03 08 49 01	CDR	And it's got a couple of small ones on the inside. Okay. Those little small peaks in there are of pure white. The rest of the crater is a brownish gray with several little spirals of white. How does it show up down there, babe?
03 08 49 17	CC	It shows up exactly the same, Tom. That's perfect.
03 08 49 22	CDR	Okay. I've got a real bright ray crater. I'm going to zoom it in on the top of it. It's pure white and you can even see - It looks like there may be pieces of boulder around on it. I am going to zoom on it.
03 08 49 38	CC	Okay. We think that may be Shubert, Tom.
03 08 49 59	CC	That's great. That detail is just great, Tom.
03 08 50 26	CDR	Again, for your edification, we are upsidedown going forward to keep the Sun off the windows, and also to kind of conserve fuel. But the rate you see there on the monitor, at least what I can see, is exactly our orbital rate here. John is maintaining that 315 ORB rate upside down.
03 08 50 46	CC	Okay. We copy that. Thank you. And, Tom, could you see all the little - -
03 08 50 49	CDR	...

03 08 51 01	LMP	Go ahead, Joe.
03 08 51 02	CC	Okay, Gene-o. We would like to confirm that you are in INFINITY on your focus.
03 08 51 16	LMP	That's affirmative. We are on INFINITY.
03 08 51 25	CDR	As you can see in this area, the whole area is marked by these small new craters. They are pure white where they stand out and then they fade into a grayish - light gray-brown into a darker brownish gray, as you get to the older areas.
03 08 51 42	CC	Roger. That is just the way it looks - -
03 08 51 43	CDR	Now we are starting to get into some mare area a little bit. Yes, let me say you are getting into some mare area, as you can notice from the bottom of this one depression here. It's more brownish - more of a deep brown, now.
03 08 52 02	CC	Roger. It's looking here exactly as you are describing it, Tom. That's just tremendous.
03 08 52 18	LMP	Joe, we should be looking down right now on the Foaming Sea, and to the left of us is the Crisium Basin, and we will be coming over the Sea of Fertility and the landing site area very shortly.
03 08 52 32	CC	Roger that.
03 08 52 46	CDR	It is amazing the number of new small craters are all out right on your screen as a brilliant white with a ray pattern usually going through each one.
03 08 52 58	CC	Roger. They are showing up real good, just like that down here on the screen, Tom.
03 08 53 21	CC	10, This is Houston. We'd like - When you are coming along some of this area here, we'd like for you to go all the way from one end to the other on the zoom. Give us a Mark when you back it all the way off, and hold it there for about 5 seconds, 5 to 10 seconds, and all the way back to zoom again.
03 08 53 42	LMP	Okay. Going full off on the zoom at this time.
03 08 54 02	LMP	Coming back on the zoom.
03 08 54 32	CDR	Okay. We'll take you on the right side, and Gene will show you the crater Langrenus.

03 08 54 39	CC	Tom, you're reading our minds. We were just going to tell you to take a shot of that, if you could.
03 08 54 51	CDR	We're starting to get it in there.
03 08 55 11	CC	Okay, Tom. We are getting that picture very good and that is tremendous color you got.
03 08 55 31	LMP	Joe, I don't know if you can actually see Langrenus with its central peaks, but it is an enormous crater.
03 08 55 40	CC	Roger. It looks pretty impressive from the picture we're getting, Gene-o.
03 08 56 07	CC	Okay, 10, this is Houston. Whatever you did there, if you were playing around with your lighting, that gave us a real good picture then.
03 08 56 29	LMP	You're looking right at the central peak of Langrenus right now.
03 08 56 35	CC	We're getting tremendous detail, Gene. Are you cycling the aperture at all during this time?
03 08 56 47	LMP	Yes, that is what I was doing and when I opened it up and then stop it down, my monitor just goes very clear for you.
03 08 56 54	CC	Yes, same here. When you stop it down a little bit, we get an awful lot of detail. That's just great. We are getting a real good picture of that central peak now.
03 08 57 09	CC	Okay, Gene. I wonder if you could zoom in on that central peak with that aperture shut down a little bit. Oh, you got it. I'm sorry.
03 08 57 21	LMP	Yes, I did, Joe. I gave you that. Let me pass you on over here. I'm losing out of my window.
03 08 57 27	CC	Roger. And just for your information, your onboard vector looks great. We're satisfied with it.
03 08 57 39	CDR	John is going to show you Mare Crisium over there on his side.
03 08 57 42	CC	Okay. We're standing by.
03 08 57 52	CDR	And you can see the horizon in the distance, there.
03 08 58 08	CC	That is just absolutely beautiful.

03 08 58 14	LMP	On the left on John's side you are looking at the Sea of Crises. On the right we've got the Sea of Fertility, and we're coming very shortly up upon Apollo Ridge out our hatch window.
03 08 58 31	CDR	We're right over - We're starting to look straight down over the mare first, and then, here we'll show you the Taruntius twins and Secchi A and B and say, right down Nana 1 for us.
03 08 58 41	CC	Tom, the resolution, the detail that we're getting is just unbelievable. This is just great.
03 08 58 53	CMP	We ain't getting bad detail light up here.
03 08 58 59	CC	Roger that.
03 08 59 04	LMP	The low flat ridges really do stand out here in the mare area.
03 08 59 28	LMP	We're coming right up on Taruntius Papa, Kilo, Hotel, and Golf here, leading into a landing site area.
03 08 59 36	CC	Roger. We're picking them up, now.
03 09 00 13	LMP	And it appears, looking with the monocular down into a crater like Taruntius Golf, that their shadows which appear, rather than to be peaks, they appear to be slight and small boulders of some sort.
03 09 00 31	CC	Okay. Are they down in the center of the crater, Gene?
03 09 00 36	LMP	Yes, they all seem to be down in the flat portion of the crater.
03 09 00 40	CDR	Hey, tell Jack to look at these little old ridges we have here. They all look like - oh, they could be 4 to 500 feet elevated and run in various patterns. Ther're standing up pretty good in our monitor now.
03 09 00 51	CC	Roger. We see them real good, Tom.
03 09 01 05	CC	Okay. It appears you're showing us Furnace Gulf, now, Tom.
03 09 01 16	LMP	And, Houston, on Messier A it appears - I would have to say there's boulders on the slope leading toward the same direction we're moving.
03 09 01 35	CC	Roger.

03 09 01 49	LMP	These are thrown out on the rim and Secchi Kilo is another one which appears to have boulders, and you can contrast them very easily from the little pinpoint craters around the edge. They just stand out differently and they appear to be boulders that are out on the rim, out on the edges of the rim.
03 09 02 10	CC	Roger. Which window are you looking out of now, Gene?
03 09 02 17	LMP	Tom has got it out the hatch window.
03 09 02 20	CC	Okay. Just for your info, we're seeing the RTV on the side of the window, and it's pretty much in focus as is the lunar surface.
03 09 02 42	CDR	I should have Gutenberg coming up the other way. Gene's got it out the right window. He'll be looking to the south.
03 09 03 07	LMP	Joe, I think, if I'm not mistaken, that might be Gutenberg right there, and I'm showing you the central peak which is very clear on my monitor here.
03 09 03 15	CC	Roger. That's where all the pencils are pointing down here, Gene-o.
03 09 03 27	CDR	Okay. Tell Jack that we're passing over the Apollo Ridge right now looking down.
03 09 03 41	CC	Well, listen you guys, that color is really spectacular. That really brings it home.
03 09 03 48	CDR	Okay. It's about kind of a - it's still half between gray and brown right now, Joe.
03 09 04 10	LMP	Jack. You're looking at some of those depressions that go right through some of the craters now, and they're very flat, and where they're shallow, we can see right to the bottom of them.
04 23	CC	Roger.
03 09 05 18	LMP	Tom's going to point you out the center window and you'll be looking right at the area of Landing Site 1.
03 09 05 22	CC	Roger.
03 09 05 54	LMP	You ought to be looking just about right in the area B-1 right now.

03 09 05 59	CC	Roger. We're picking it up, Gene. We've got it in the upper left-hand portion of our screen now.
03 09 06 04	LMP	And I don't know what - Okay. I don't know whether Tom can scan on Censorinus, but Censorinus should be just to the right of that in the hills.
03 09 06 16	CC	Roger. We copy, and you had a real interesting little dome with about five or six small craters in it that was awfully interesting to look at.
03 09 06 25	CDR	Yes, around this area you can tell there's strictly lots of volcanic activity and cones in there.
03 09 06 35	CDR	And that is Censorinus from the oblique view.
03 09 06 41	CDR	And down here - Will I come up on - -
03 09 06 43	LMP	Here we come; here's ...
03 09 06 44	CDR	Here we come. Here's the crater Maskelyne.
03 09 06 48	CC	Roger. We copied.
03 09 06 50	CDR	You can see the shadow in it.
03 09 06 52	CC	Roger. It stands out real good, Tom - -
03 09 06 53	CDR	You can see some shadows in there like there might be boulders. There is Maskelyne.
03 09 06 58	LMP	Okay. We're going to try to show you some of these rilles. Diamondback Rilles and Sidewinder Rilles that are going across here are very distinctive. They appear to be very shallow in areas and the bottom seems smooth. However, some of the areas that go perpendicular to the sunline is deep enough to be in shadow.
03 09 07 19	CC	Okay. We copied all that, 10 - -
03 09 07 20	CDR	The small crater coming up is Maskelyne B.
03 09 07 29	CDR	And here's our little nicknames, the rilles Diamondback and Sidewinder.
03 09 07 44	CC	Boy, - 10. This is Houston. Those rilles and all those details are really coming out great, and that color doesn't hurt a thing.

03 09 08 02	CMP	Okay. We're coming into the terminator, Houston.
03 09 08 06	LMP	Okay. Tom's going to try and get you Moltke and then, of course, right adjacent is Site number 2, and we're coming into the terminator. We're not sure how much of it you can see, but you should be looking right at the area right now.
03 09 08 18	CDR	Okay. At the bottom of your screen is Moltke, and right about there is Landing Site 2. It's still awful dim and the Sun is starting to shaft the window, but the Landing Site 2 is right to the left the crater you see. That's where we'll be going down tomorrow to photograph.
03 09 08 33	CC	Roger that, Tom. And, we're still getting a real good picture on that. There's a lot of good detail, although the color is starting to fade out a little.
03 09 08 42	CDR	Yes. You can even get some as we start across the terminator. If I can just keep the sunlight off the window, you can see it.
03 09 08 50	CC	Okay, Tom. And could you go to the INSIDE on ALT and to 2.2 on your camera, now?
03 09 09 13	LMP	Jack, the area, now that it's being uncovered by light in the Landing Site 2 area looks a little bit rugged.
03 09 09 22	CC	Copy that; rugged.
03 09 09 32	CDR	Okay. The rille you see beside Moltke is what we have termed as "Highway U.S. 1."
03 09 09 38	CC	Roger. We're getting that loud and clear, Tom. That shows up real good.
03 09 09 52	CDR	The Sun is coming right on the window. We're hitting the terminator, so it's kind of rough. I'm going to have to knock it off here, because I don't want to hurt the tube, and when the Sun goes down, we'll shoot back there, and maybe we can give you a little picture of the corona.
03 09 10 05	CC	Okay. Mighty fine, Tom. That was just fantastic.
03 09 10 11	CDR	Okay. Gene-o will try to shoot it outside for a minute there.
03 09 10 14	CC	Righto.
03 09 10 49	CC	10, this is Houston. Before you terminate the TV, before you secure it, we'd like to have a color chart shot so we can calibrate things.

03 09 11 01	CDR	Okay. Stand by.
03 09 11 03	CC	You - No hurry on that at all. Just before you secure - -
03 09 11 06	LMP	Okay. Okay, Joe. Looks like that's going to be all we can show. I wanted to show you Theophilis looking across the terminator. It's got two very distinct central peaks. It's a huge crater; the peaks are still lit the back side rim is still in, but I don't think I've been able to show it to you from what I can see on my monitor.
03 09 11 30	CC	Okay. We picked it up down here, 10.
03 09 11 36	LMP	Well, it didn't come in too good on my monitor. I was hoping to get it to you before we got too far away from it, but we'll show you a color chart here in a minute.
03 09 11 44	CC	Okay. Mighty fine.
03 09 12 23	LMP	Stand by one second, Joe. We've got to cover up a window slightly, here.
03 09 13 05	CDR	Houston, we'll knock it off right after this because we've got to repress the LM and get on with the LM activities.
03 09 13 11	CC	Roger that, Tom. Okay, we're picking up the color chart now. Give us about 5 or 10 seconds of that.
03 09 13 31	LMP	Say when, Joe; I'll just hold this.
03 09 13 33	CC	Okay. That's good enough right there, Gene-o. Thank you very much.
03 09 13 39	LMP	Okay. I guess we'll go off the air for today.
03 09 13 42	CC	That should have been enough and a good enough show for today, there.
03 09 13 46	CC	That's enough. Standing show.
03 09 13 51	LMP	I'm glad you could see the resolution that we saw, or almost, anyway.
03 09 13 57	CC	Yes. It's pretty tough to describe that resolution. It was just really great and the colors were great, too. Okay. We're not recommending this, 10, but your TEI-5 pad is GO in case you do need to use it.
03 09 14 14	CDR	Yes. We'd like to stick around for a while, here.
03 09 14 18	CC	(Laughter) Roger that.

END OF TAPE

03 09 14 32	CC	Okay, Apollo 10, this is Houston.
03 09 14 40	LMP	Go ahead, Joe.
03 09 14 41	CC	Roger, Gene-o. Before you start activating, we'd like to get a LM/CM DELTA-P readout from you, and while you're up there, would you look for - see if you can find any Mylar hanging around in the cabin dump valve there?
03 09 14 55	LMP	Okay. We fully expect to find it in the LM cabin dump valve.
03 09 14 59	CC	Roger.
03 09 16 10	CC	Apollo 10, Houston.
03 09 16 16	CDR	Go ahead, Houston. Apollo 10.
03 09 16 18	CC	Okay. Hey listen, while you're activating there, if you've got somebody that can copy down some updates, I've got a map update and a couple of landmark tracking update pads. And let me know when you're ready to copy.
03 09 16 45	LMP	Go ahead, Joe.
03 09 16 48	CC	Okay, Gene-o. I'll give you your map update pad first. It's for REV 4. LOS will be 81 53 01, 82 04 48, 82 39 11. Sunrise will be at 82 00 41, sunset 83 13 08.
03 09 17 41	CC	And 10, this is Houston. I'll go ahead with these landmark updates, and you can read back the whole thing at once, if you want to.
03 09 17 53	LMP	Go ahead.
03 09 17 54	CC	Okay. This is your landmark tracking update. F-1: 82 38 45, 82 43 47, 000 326 000, north 07 12 20. That concludes F-1. Coming up now with Bravo-1: 82 55 47, 83 00 50, 000 274 000, north 30 48 25. That concludes. And standing by for the readback.
03 09 19 10	LMP	Stand by 1 second.
03 09 19 12	CC	Roger that.
03 09 20 35	LMP	Okay, Joe. Here they come, real quick. REV 4 is 81 53 01, 82 04 48, 82 39 11, 82 00 41, 83 13 08. You with me?

03 09 20 49	CC	Roger, that's correct.
03 09 20 53	LMP	F-1 is 82 38 45, 82 43 47, three balls, 326, and three balls, north 07 12 20.
03 09 21 05	CC	Roger that. Go ahead.
03 09 21 10	LMP	82 55 47, 83 00 50, three balls, 274, three balls, north 30 48 25.
03 09 21 18	CC	Readback's correct, Gene-o. Thank you.
03 09 34 03	CC	Apollo 10, Houston.
03 09 34 08	LMP	Go ahead, Houston.
03 09 34 10	CC	Roger, Gene-o. We're kind of monitoring your gimbal angles here. It looks like you might be drifting close to lock, and I'm going to keep an eye on it.
03 09 34 20	LMP	Okay. Thank you, Joe. And for your information, we've got the hatch out, and we're working on the probe right now. The pressures are equal.
03 09 34 28	CDR	What we did, Joe, was to make an AUTO maneuver to come around here for the 326-degree pitch for landmark tracking, and we're all working with the tunnel and just occasionally monitor it. I think we'll be okay.
03 09 34 41	CC	Okay. Thank you, Tom. And let's see, there's just one other item. We want to make sure that you are noticing - Take a hack when you transfer to LM power so you can pass that on to us. And we'll also want the roll calibration angle, but that's already in the checklist, there.
03 09 34 58	CDR	Yes.
03 09 34 59	LMP	Okay.
03 09 42 58	LMP	Hello, Houston. This is the LMP going off the air, Joe. I'll be talking to you from inside Snoopy later.
03 09 43 05	CC	Okay, Gene-o.
03 09 44 47	CMP	Okay, Houston. What Gene-o's doing now is, he's up in the tunnel cleaning the Mylar out of the valve up there - or insulation, it is. It looks like cotton, is what it looks like. It tastes like fiber glass.

03 09 45 07	CC	Roger, John.
03 09 45 13	CMP	The probe came out pretty easy. It didn't seem to fold as much as it normally does, but it's a lot easier in zero g than it is in one g. I guarantee you that.
03 09 45 26	CC	Okay. We copy that. It's working all right, isn't it, John?
03 09 45 32	CMP	Yes. It is right this minute.
03 09 49 37	CMP	Hey, Houston, this is Apollo 10.
03 09 49 41	CC	Roger. Go ahead, John.
03 09 49 45	CMP	Roll CAL is plus 0.1. It's not quite zero, but it's close.
03 09 49 58	CC	Roger, copy. Plus 0.1.
03 09 49 59	CMP	Change that. Gene-o says it's minus - Okay. Gene-o says change it to minus 0.1.
03 09 50 06	CC	Okay. Minus 0.1.
03 09 50 07	CMP	You can tell how close it is, he can't make up his mind whether it's plus or minus.
03 09 50 15	CC	Yes, It must be pretty close.
03 09 50 17	CMP	That's thanks to you - That's thanks to you, Joe. You really got an eyeball, there, for calibrating that thing.
03 09 50 25	CC	Roger that.
03 09 51 09	CC	Okay, 10. This is Houston. We're showing about a minute 50 from LOS, and just to verify we're calibrating - or we're figuring on AOS at 82 38 52, John.
03 09 51 26	CMP	Roger. And Gene-o is just now moseying into the LM followed by showers of insulation.
03 09 51 33	CC	Roger.
03 09 51 35	CDR	Hey, we're going to have a heck of a cleaning job here. They had insulation all in the seal, all in the valve, and it is really a heck of a mess up here.
03 09 51 44	CC	Okay. We copy, Tom.

03 09 51 46	CDR	It'll be just about impossible to get that LM - -
03 09 52 23	CC	10, this is Houston.
03 09 52 28	CDR	Go ahead.
03 09 52 29	CC	Roger, Tom. I want to - Have you got the umbilicals hooked up to your suits, now?
03 09 52 38	CDR	I'm still on my umbilical here. I'm up in the tunnel trying to help Gene get this crap cleaned up ...
03 09 52 43	CC	Yes. Okay, Tom. You might want to watch real close, when - If you do unhook the umbilicals, to try and keep from letting that Mylar get in the intake or the inlet side of those things and get in the suit - the suit loop.
03 10 05 --		BEGIN LUNAR REV 4
03 10 40 51	CC	Snoopy, this is Houston. We're standing by. How do you read?
03 10 41 09	CC	Hello, Snoopy. Houston. We're standing by.
03 10 42 45	CC	Snoopy, Houston. Standing by.
03 10 43 05	CC	Hello, Snoopy. This is Houston. How do you read?
03 10 43 27	CC	Apollo 10, Houston. How do you read?
03 10 44 30	CC	Apollo 10, this is Houston. How do you read?
03 10 46 20	CC	Hello, Snoopy. This is Apollo - This is Houston.
03 10 46 23	CDR (Charlie Brown)	... Apollo 10.
03 10 46 26	CC	Hello, Apollo 10. This is Houston. Reading you real weak, Tom.
03 10 46 32	CDR (Charlie Brown)	... Charlie Brown. Okay. Look, we're right in the middle of our landmark tracking, and Gene-o is reading you loud and clear. Over.
03 10 46 39	CC	Okay, Tom. Understand you're reading us loud and clear, and is Gene-o in Snoopy yet?
03 10 46 54	LMP (Snoopy)	Yes. He's in Snoopy. ... S-band ... loud and clear.
03 10 47 00	CC	Okay, Snoopy. This is Houston. We're picking you up now, Gene-o, and we can go ahead with this

voice check now. If you'll give me a long count in each of your three modes, we'll see how it works out. And, if you would, identify which mode you're in.

03 10 47 57	CC	Charlie Brown, this is Houston.
03 10 48 13	CC	Charlie Brown, Houston.
03 10 48 20	CMP (Charlie Brown)	... We're reading you loud and clear.
03 10 48 23	CC	Okay, Charlie Brown. I understand you're reading us loud and clear. You're breaking up pretty badly, and just about unreadable. I wonder if you could give us an idea, is Snoopy ready to try the checks from his end yet?
03 10 48 37	CMP (Charlie Brown)	...
03 10 48 43	LMP (Snoopy)	...
03 10 49 53	LMP (Snoopy)	Houston, Houston, LMP in Snoopy. How do you read me?
03 10 49 57	CC	Okay, Snoopy. We caught that one, Gene-o. And how do read Houston?

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Page missing: APOLLO 10 TECHNICAL AIR-TO-GROUND VOICE TRANSCRIPTION (~~GROSS~~ GOSS NET 1)

between	p. 348.	03:10:48:57
and	p. 356.	03:11:11:01

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03 11 11 01	CT	Roger. We're there.
03 11 11 02	CC	Roger that.
03 11 11 04	LMP (SNOOPY)	You finished it? Are you in an attitude that I can get? Is that where we're supposed to be? Okay.
03 11 11 14	CC	Okay, Snoopy. This is Houston. We're reading you now, Gene-o - -
03 11 11 18	LMP (SNOOPY)	... Okay, Joe. Do you read me now?
03 11 11 22	CC	Roger. Reading you now, Gene-o. And - -
03 11 11 26	LMP (SNOOPY)	... You were because I suppose I'm in hot mike in this configuration.
03 11 11 30	CC	Roger. That's affirmative.
03 11 11 35	CC	And, Charlie Brown, if you can - -
03 11 11 36	LMP (SNOOPY)	Okay. Let's press on. I'm ready to go on.
03 11 11 37	CC	Okay. We're going to stand by until we verify Charlie Brown here: that he's in his landmark tracking or sleep attitude.
03 11 11 46	LMP (SNOOPY)	He is. I just got word from him.
03 11 11 48	CC	Very good. Okay. Let's press on with steerable-voice PM.
03 11 11 54	LMP (SNOOPY)	Hear that? Get - Okay. Steerable-voice PM.
03 11 11 57	CMP (CHARLIE BROWN)	...
03 11 11 58	LMP (SNOOPY)	Here goes that antenna, so stand by.
03 11 12 01	CC	Okay.
03 11 12 04	CC	Goldstone, CAP COMM. Goldstone, CAP COMM. Come up please.
03 11 12 17	CT	Goldstone.
03 11 12 18	CC	Roger. Configure LM mode 6.02.00. Give a Roger.

03 11 12 23	CT	That's affirmative. We are configured.
03 11 12 24	CC	Okay. Thanks.
03 11 12 39	CC	And, Goldstone, I'm standing by for - for a lockon announcement.
03 11 13 13	CC	Charlie Brown, this is Houston. While we're waiting here we'd like for you to turn H_2 tank 1 heaters to AUTO and H_2 tank 2 heaters to OFF, please.
03 11 17 30	CC	Snoopy, this is Houston. Standing by.
03 11 17 36	LMP (SNOOPY)	Roger. Houston, do you read?
03 11 17 38	CC	Hey! Got you loud and clear, Gene-o. We should be ready to press on now, and give me a long count in each of your three modes again.
03 11 17 44	CMP (CHARLIE BROWN)	Houston, Charlie Brown, with a high gain S-band. How do you read?
03 11 17 48	LMP (SNOOPY)	Okay. Not yet, Joe. Wait until I get this thing locked up on AUTO. I'm only on SLEW. John, on my mistake. He's got about another 10 seconds to maneuver.
03 11 17 57	CC	Okay. Houston. We copy.
03 11 18 05	LMP (SNOOPY)	What's AOS - I mean, LOS time, Joe?
03 11 18 09	CC	We've got about 33 more minutes, Snoopy.
03 11 18 14	LMP (SNOOPY)	Okay. We'll make it.
03 11 18 16	CC	Roger that. And Charlie Brown, we'd like to have your H_2 tank 1 heaters to AUTO, H_2 tank 2 heaters OFF. Do you copy?
03 11 18 28	CMP (CHARLIE BROWN)	Roger. That's what we did. Over.
03 11 18 30	CC	Okay. Thank you much.
03 11 18 39	LMP (SNOOPY)	How soon?
03 11 18 53	LMP (SNOOPY)	Okay, Houston. I've got you locked up in AUTO. How are you reading?

03 11 18 57	CC	Snoopy, this is Houston. I'm reading you loud and clear, Gene-o. A long count in each mode and identify which mode you're in, please.
03 11 19 05	LMP (SNOOPY)	Okay. I'm in PTT, and instead of a long count, I'll tell you I'm reading a signal strength of 4.2 locked up in S-BAND AUTO. And I guess, I'm not sure but it might lock up anywhere from about 3.2 to 3.6. This time I was at 3.8 and ended up locking up solid here at 4.2, and I'm going ICS at PTT.
03 11 19 26	CC	Roger that. You're loud and clear.
03 11 19 31	LMP (SNOOPY)	Okay. How do you read me now? I'll give you a long count, and I'm going to unkey it to see whether I've got a hot mike, and then I'll pick it up again. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 1, 2 - 9, 8, 7, 6, 5, 4, 3, 2, 1. How do you read me?
03 11 19 48	CC	Okay, you're loud and clear, Gene-o, on push-to-talk. Go ahead with VOX.
03 11 19 55	LMP (SNOOPY)	Okay. I'm in VOX, and what I really want to know was I - I unkeyed about halfway through the ICS PTT mode to see whether I had a hot mike. I assume I did not. Is that correct?
03 11 20 07	CC	That's a verify.
03 11 20 10	LMP (SNOOPY)	Okay. And I'm in VOX, and you're reading me loud and clear, I guess.
03 11 20 16	CC	That's affirmative, Snoopy. We're reading you loud and clear, and stand by this one. We'll see if we're ready to go on here with the data.
03 11 20 26	LMP (SNOOPY)	Okay. I'm standing by, and I tell you, when that S-band antenna moves around, you'd think that the whole house was coming down on you.
03 11 20 33	CC	(Laughing) Roger. We copy. Charlie Brown, we'd like to update your state vector, if you'd give us ACCEPT, please.
03 11 20 46	CMP (CHARLIE BROWN)	You got it. Over.
03 11 20 48	CC	Roger. Thank you.
03 11 20 53	CMP (CHARLIE BROWN)	What happened? Did that last thing get transferred from the landmark tracking? Over.
03 11 20 56	LMP (SNOOPY)	... Joe. So far, so good.

03 11 20 59	CC	Roger. That's affirmative. And Snoopy, we can proceed on to the FM mode now.
03 11 21 06	LMP (SNOOPY)	Okay. I'm going FM and I'll give you a call. If I don't hear back from you in 30 seconds, I'll switch back to PM.
03 11 21 14	CC	Negative. Stand by in the FM mode, Gene-o. Let me give you a call. You should be able to read me, and if we don't catch you - If we can't read you, I'll give you another mode to go to.
03 11 21 24	LMP (SNOOPY)	Okay. Fine, Joe, I'm in FM right now.
03 11 21 28	CC	Okay. We'll be with you in just a minute.
03 11 21 30	CC	Goldstone, this is CAP COMM.
03 11 21 34	CT	Goldstone.
03 11 21 36	CC	Roger. Goldstone, let's configure LM for 6.00.09, high bit rate.
03 11 21 48	CT	CAP COMM, we are configured.
03 11 21 50	CC	Thank you much.
03 11 21 54	CC	Okay, Snoopy, this is Houston. I'm ready to listen to you now. How about some good numbers?
03 11 22 50	LMP (SNOOPY)	... at all. Hello, Houston, do you read me FM?
03 11 22 53	CC	Okay, Snoopy. This is Houston. Roger. I'm reading you on FM now.
03 11 22 59	LMP (SNOOPY)	Okay. You're coming through loud and clear.
03 11 23 03	CC	Okay. Let's double check, Gene-o. You're not in the DOWNVOICE BACKUP, are you?
03 11 23 15	LMP (SNOOPY)	That's affirmative. I am in DOWNVOICE BACKUP. Let me go to VOICE.
03 11 23 19	CC	Roger that.
03 11 24 29	CC	Okay, Snoopy. This is Houston. We're standing by for a call in FM mode. Would you try one more time, please?
03 11 25 45	CDR (CHARLIE BROWN)	Hello, Houston. This is Charlie Brown. Do you read Snoopy?

03 11 25 50	CC	Charlie Brown, negative. We're not reading him, although we're still trying to acquire some data in this mode, Tom. In the meantime, you can have your computer back.
03 11 26 04	CDR (CHARLIE BROWN)	Okay, we're in ... Joe.
03 11 26 06	CC	Roger that, Tom.
03 11 27 14	CMP (CHARLIE BROWN)	Houston, Charlie Brown is set up for the LM relay test.
03 11 27 19	CC	Roger. Charlie Brown, this is Houston. We're not quite ready for that yet. We'll be with you in just a minute on that. We've got to try this FM mode yet, John.
03 11 27 54	CC	Snoopy, this is Houston. Still on FM mode. How do you read?
03 11 28 02	LMP (SNOOPY)	I'm reading you loud and clear. Do you read me?
03 11 28 03	CC	Roger. I sure am. You're not in DOWNVOICE BACKUP, are you?
03 11 28 11	LMP (SNOOPY)	Negative. I'm in voice in FM.
03 11 28 14	CC	Oh, you're clear as a bell. How about a little short count there to confirm all the disbelievers here, Gene-o?
03 11 28 22	LMP (SNOOPY)	I'll give you a short count: 1, 2, 3, 4, 5, 5, 4, 3, 2, 1. You're coming in loud and clear, Joe; as clear as any other way I've heard you.
03 11 28 32	CC	Roger. This is the clearest we've had. Are you in push-to-talk mode?
03 11 28 38	LMP (SNOOPY)	That's affirm. Push-to-talk. I'll give you a short count in ICS PTT. This ICS PTT: 1, 2, 3, 4, 5, 5, 4, 3, 2, 1. How do you read now?
03 11 28 48	CC	Boy, you're loud and clear. How about one quick one on VOX, and we'll press on.
03 11 28 55	LMP (SNOOPY)	Okay. I got you on VOX: 1, 2, 3, 4, 5, 5, 4, 3, 2, 1. How do you read?
03 11 29 00	CC	Very good. Stand by one. I think we'll press on here. Okay, Snoopy. This is Houston. That's loud

		and clear. Let's press on with the PM mode and then to backup voice test, step 1.
03 11 29 26	LMP (SNOOPY)	Okay. I'm in PM mode, and I can hear Chris back there talking in the background, so it must be pretty good.
03 11 29 34	CC	(Laughing) Roger. We copy, Gene-o. Stand by.
03 11 29 39	CC	Okay, Goldstone, this is CAP COMM.
03 11 29 40	LMP (SNOOPY)	... Baby, he's got the strongest S-band I've ever heard.
03 11 29 43	CT	Goldstone.
03 11 29 44	LMP (SNOOPY)	That's pretty good.
03 11 29 45	CC	Okay. Let's configure for LM mode 8.04.00.
03 11 29 49	CT	We're configured.
03 11 29 50	CC	Roger.
03 11 32 22	LMP (SNOOPY)	How we coming down there, Joseph?
03 11 32 24	CC	Well, we're trying to lock up, Snoopy. We'll give you a call here when we get it.
03 11 32 41	CC	Okay, Snoopy. This is Houston. We're not able to lock up down here. I wonder if you'd confirm that you've gone through that step 1 backup voice test.
03 11 32 57	LMP (SNOOPY)	...
03 11 33 15	LMP (SNOOPY)	Hello, Houston, Houston. This is Snoopy. Are you reading?
03 11 33 16	CC	Roger. Reading you Snoopy. Go ahead.
03 11 33 25	LMP (SNOOPY)	Tom, give me a ... try and take some ... in this.
03 11 34 05	CDR (CHARLIE BROWN)	Hello, Houston. Charlie Brown.
03 11 34 06	CC	Go ahead, Charlie Brown. Houston.
03 11 34 11	CDR (CHARLIE BROWN)	Look, I don't know how it sounds to you down there, Joe, but it sounds like things are kind of loose on this total COMM situation. Over.

03 11 34 18	CC	Roger. Tom, we're unable to get a lockup right now. We'd like to verify that step 1 on that backup voice - correction - step 1 on the - yes - backup voice test has been accomplished.
03 11 34 38	LMP (SNOOPY)	Say again.
03 11 34 39	CC	Roger. We'd like to confirm that step 1 on the backup voice test has been done.
03 11 34 43	LMP (SNOOPY)	Is that where they are?
03 11 34 45	CC	That's affirmative.
03 11 35 29	LMP (SNOOPY)	Hello, Houston, Houston. Are you reading Snoopy on the backup voice test? Over.
03 11 35 33	CC	Snoopy, this is Houston. Roger, Gene-o. We got you now, and stand by and we'll get -
03 11 36 13	CC	Charlie Brown, this is Houston.
03 11 36 19	CDR (CHARLIE BROWN)	Go ahead, Houston. Charlie Brown.
03 11 36 21	CC	Roger, Charlie. I think we've got you in the relay mode. I wonder if we could have you come out of that relay mode for now?
03 11 36 35	CDR (CHARLIE BROWN)	Okay. I'll go ahead and turn off the VHF.
03 11 36 47	CMP (CHARLIE BROWN)	Okay. You think we're still in it now?
03 11 36 52	CC	Stand by and I'll see.
03 11 37 11	CC	Okay, Snoopy. This is Houston. Let's try it again now.
03 11 37 19	LMP (SNOOPY)	Okay, Houston. This is Snoopy. How are you reading me now? 1, 2, 3, 4, 5, 5, 4, 3, 2, 1?
03 11 37 24	CC	Okay. I'm reading you loud and clear, Snoopy, but I think we're still in the relay mode.
03 11 37 38	LMP (SNOOPY)	Well, I'm down to about 27 volts, 27.2, now, so let's keep going if we can. Let's get Charlie Brown out of the relay mode, then.
03 11 37 52	CC	Charlie Brown, this is Houston. Could you verify that you're not in relay mode, please?

03 11 38 01	CMP (CHARLIE BROWN)	We're not in relay mode, please.
03 11 38 04	CC	(Laughing) Okay. Thanks.
03 11 38 49	CC	Okay, Snoopy. This is Houston. Let's proceed on with step 3.
03 11 38 59	LMP (SNOOPY)	Roger. Step 3.
03 11 39 01	CC	Okay. Goldstone, this is CAP COMM.
03 11 39 11	CC	Goldstone, CAP COMM. Come up please.
03 11 39 13	CT	CAP COMM, Goldstone. Go ahead.
03 11 39 14	CC	Go LM mode 6.02.00 and verify it.
03 11 39 18	CT	Wilco.
03 11 39 25	CT	CAP COMM, Goldstone. We confirm uplink mode 6.
03 11 39 27	CC	Roger. Thanks.
03 11 39 29	CC	Okay, Snoopy and Charlie Brown. This is Houston. Let's press on to the LM relay test, and verify when you're ready to go.
03 11 39 38	LMP (SNOOPY)	This is Snoopy. I'm ready to go, if you're reading me.
03 11 39 41	CC	Roger. Reading you, Snoopy. How about you, Charlie Brown?
03 11 39 56	CC	Charlie Brown, this is Houston. How do you read?
03 11 40 08	CC	Hello, Charlie Brown. This is Houston. How do you read?
03 11 40 14	CC	Snoopy, this is Houston. You still reading me okay, Gene-o?
03 11 40 18	LMP (SNOOPY)	Yes. I'm reading you, Joe.
03 11 40 23	CC	(Laughing) Okay, Gene-o.
03 11 40 29	CDR (CHARLIE BROWN)	Houston, this is Charlie Brown. We're reading you about four-by-four. Over.
03 11 40 33	CC	Okay, Charlie Brown. Fine. How about giving me a short count, Tom?

03 11 40 40	CDR (CHARLIE BROWN)	Roger. 1, 2, 3, 4, 5.
03 11 40 51	CC	Okay, Tom. I'm reading you loud and clear. Stand by one, please.
03 11 40 58	CDR (CHARLIE BROWN)	Hey, hang on. That doesn't count.
03 11 41 12	CC	Okay. Snoopy and Charlie Brown. That ought to terminate these things. Let's go back to basic COMM mode now and verify it, please.
03 11 41 23	LMP (SNOOPY)	Hey, Houston, I never - I never got to the LM relay test. I've just been waiting for your GO.
03 11 41 30	CC	Roger that. We're going to terminate that, Gene-o, and we'll pick that up later. We want to go back to basic COMM now.
03 11 41 38	LMP (SNOOPY)	You were cut out by Charlie Brown. Say again.
03 11 41 41	CC	Okay. We verify we're not going to check that right now, Gene-o. We want to go back to the basic COMM mode.
03 11 42 00	LMP (SNOOPY)	Okay. Stand by a minute.
03 11 42 02	CC	Roger that.
03 11 42 42	CC	Goldstone, this is CAP COMM.
03 11 42 45	CT	CAP COMM, Goldstone. Go ahead.
03 11 42 47	CC	Okay. Let's go back to basic COMM. That will be LM 6.02.00 and command module 6.02.00.
03 11 42 56	CT	Roger. I copy. LM 6.02.00.
03 11 43 00	CC	Roger. And command module - -
03 11 43 01	LMP (SNOOPY)	Okay, Joe. How are you reading me?
03 11 43 04	CC	Okay, Snoopy. This is Houston. Reading you five-by.
03 11 43 09	CT	CAP COMM, Goldstone. We confirm.
03 11 43 10	LMP (SNOOPY)	Okay. I'm reading you loud and clear.

03 11 43 11	CC	Roger that.
03 11 43 15	CC	We've got about 8 minutes until LOS, Gene-o. We'll have some stuff to send up to you here in just a minute.
03 11 43 23	LMP (SNOOPY)	Okay. I'll give you all the LM data when I get back home - up in the command module up there, or down there, wherever the case may be - on voltages and all that other jazz.
03 11 43 37	CC	Okay. That'll be fine. How does the glycol TEMP look?
03 11 43 45	LMP (SNOOPY)	The glycol TEMP has been sitting on zero since I got in here. I haven't been able to get it to read at all.
03 11 43 50	CC	Okay. We copy.
03 11 44 03	LMP (SNOOPY)	I don't know who makes the bearings for that S-band antenna, but I'm sure glad they're not in my car.
03 11 44 08	CC	(Laughing) We copy.
03 11 44 31	CC	Hello, Snoopy. Houston.
03 11 44 39	LMP (SNOOPY)	Go ahead, Houston. This is Snoop.
03 11 41 41	CC	Roger. A couple of things we need to check, Gene. We're showing your AGS deadband switch in the MAX position. Would you verify MIN and cycle it to the MIN position?
03 11 44 53	LMP (SNOOPY)	Okay, Ed. It is in MIN, and I'll cycle it from MAX to - back to MIN.
03 11 45 00	CC	Roger.
03 11 45 02	LMP (SNOOPY)	It's in MAX now, and I'll bring it back to MIN again.
03 11 45 04	LMP (SNOOPY)	Okay. It's back in MIN.
03 11 45 07	CC	Okay. The ascent oxidizer is reading 17 psi high on the ground. We'd like for you to read - read that out for us, and in order to do so, on panel 16 row 1 display engine override circuit breaker IN and your PROP TEMP monitor to ASCENT and give us a reading, please.

03 11 45 40	LMP (SNOOPY)	Which ascent pressure was that? Helium pressure or REG pressure?
03 11 45 45	CC	Oxidizer pressure, please.
03 11 45 51	LMP (SNOOPY)	Okay. Oxidizer pressure looks like it's about 180 psi.
03 11 46 04	CC	Okay, Snoopy. If you will pull that circuit breaker again, please.
03 11 46 12	LMP (SNOOPY)	Okay, Ed. It's out. By the way, everything in the LM was just as we launched with it, after I thoroughly checked the configuration.
03 11 46 21	CC	Roger. Roger, Snoopy. Stand by one, please.
03 11 47 34	CC	Snoopy, this is Houston. We're through with you for today. The COMM we're going - COMM relay tests will go by the board for the moment. You can proceed with the rest of your housekeeping and close out.
03 11 47 51	LMP (SNOOPY)	Okay, Ed. Fine. Everything is looking good in here. I didn't mean to be so impatient. I just wanted to get this thing over before we lost you, and I also didn't want to use too much power on this bird. COMM tests I guess are always that way, but they sounded pretty good from this end, if you're all satisfied on the primary mode.
03 11 48 10	CC	Roger. What we heard was good; what we didn't hear was obviously - obvious that we didn't hear it.
03 11 48 23	LMP (SNOOPY)	Okay. Fine. I'll be closing out the LM and finishing housekeeping, and see you next door.
03 11 48 36	CC	Charlie Brown, Houston.
03 11 48 43	CC	Charlie Brown, Houston.
03 11 48 52	CC	Hello. Charlie Brown, Houston.
03 11 48 58	CC	Charlie Brown, Houston.
03 11 49 09	CC	Snoopy, Houston.
03 11 49 28	CC	Charlie Brown, Houston.
03 11 40 41	CC	Charlie Brown, Houston.
03 11 40 52	CC	Charlie Brown, Houston transmitting in the blind. We show an O_2 FLOW RICH light. We'd like you to

select your ED ROLL in the DAP. And on the - the hatch, we could - we tested out the flight tape, and we'd like you to use the flight tape to tape over the Mylar. The tape will stick to the Mylar and the hatch rim, but will not stick to the RTV or the fiber glass, so you'll have to bridge the gap, and just tape it over to - over the Mylar. For a cleanup, we suggest you use a - the first choice - that you use a wet terrycloth and go out to the RTV and fiber glass with that. The other suggestions, that - If that doesn't work next time around, we'll suggest for cleaning up. Over.

03 11 51 02 CC Snoopy, Houston.

END OF TAPE

03 12 05 -- BEGIN LUNAR REV 5

03 12 38 37	CC	Apollo 10, this is Houston. We're standing by.
03 12 38 59	CC	Apollo 10, Houston.
03 12 39 31	CT	Honeysuckle COMM TECH, Houston COMM TECH, GOSS Conference.
03 12 39 33	CT	Roger. Go ahead.
03 12 39 34	CT	Houston COMM TECH, Honeysuckle. Read you very weak, very weak.
03 12 39 36	CT	Roger. Stand by. Voice Control, Houston COMM TECH. Voice Control, Houston COMM TECH Conference.
03 12 39 48	CT	Gooddard Voice.
03 12 39 51	CT	Roger. Honeysuckle reports they're reading you very weak. How do you read me?
03 12 39 52	CT	...
03 12 39 53	CT	I hear you loud and clear on the backup, but you're not coming on the normal GOSS 1.
03 12 40 00	CT	Roger.
03 12 40 01	CT	Transfer to overhead GOSS.
03 12 40 05	CT	Houston, how do you read?
03 12 40 10	LMP	Hello, Houston. Houston, this is Apollo 10, calling from the Moon. Do you read?
03 12 40 31	CT	Honeysuckle, Houston COMM TECH Conference. How do you read?
03 12 40 35	LMP	Hello, Houston. Houston, this is Apollo 10. How do you read?
03 12 40 43	CC	Roger, 10. This is Houston. Reading you loud and clear now, John. How me?
03 12 41 03	CC	Apollo 10, Houston. Apollo 10, Houston. How do you read now?
03 12 41 09	LMP	Hey, down there, Houston. Do you read Apollo 10 from the Moon?
03 12 41 14	CC	Apollo 10, Apollo 10, from the Moon. This is Houston. Roger. We're reading you loud and clear, John. How are you doing now?

03 12 41 22	LMP	This ain't John. This is the fellow that came back from Snoopy, back in Charlie Brown.
03 12 41 29	CC	Hey! Okay there, fellow. How about the snow situation? Have you got any in the command module, Gene?
03 12 41 38	LMP	Would you believe we've been living in what you might call snow for 3 days? And, we found out where the rest of it is. It's in our good friend Snoopy. But, however, I think if we look at the cabin dump valves and hatch real good, which we've done once, and we look at them again tomorrow, when we close it we will be all right. Okay?
03 12 42 03	CC	Okay. That sounds pretty good. Evidently it isn't bothering you too much, as far as inhaling it, or getting it in your nostrils or your mouth. Is that affirmative?
03 12 42 14	LMP	Yes. I didn't have to worry about inhaling it. I ate my way through.
03 12 42 17	CC	Okay.
03 12 42 19	CDR	Your throat feels a little lousy, and your nose wheezes a little bit.
03 12 42 22	LMP	That should be a space first: snow on the Moon. Hey, I've got lots of things for you to copy if you've got a pencil.
03 12 42 30	CC	I've got a pencil. You go ahead, Gene-o. Before you start going, I wonder if we could have POO and ACCEPT.
03 12 42 36	LMP	The IM went off at 82 29 20, CSM power to IM came back on at 84 32 00. CSM onboard readout: BATT C, 37 volts; PYRO BATT A, 37; PYRO BATT B, 37; RCS A 81, Bravo 87, Charlie 84, and Delta 84. We have cycled the H_2O_2 fans and we still have H_2 fan number 1 in AUTO. I have initiated battery B charge at the present time, and now I have some very interesting news from Snoopy, If you'll stand by one.
03 12 42 23	CC	Okay. We'll stand by. We would like for you to go to POO and ACCEPT. We've got an update state vector for you.
03 12 43 31	LMP	Okay. I'll go to POO and ACCEPT. Stand by. Okay, Houston. You, POO and ACCEPT.
03 12 44 02	CC	Roger that.

03 12 44 09	LMP	And I have some news from Snoopy. He's a pretty good fellow, by the way.
02 12 44 13	CC	Good to hear that.
03 12 44 19	LMP	Okay. I think you've got the roll CAL angle of minus 0.1; that's pretty close to zero. That's just off of zero, and that's as close as I can read it.
03 12 44 28	CC	Okay. That's minus 1 or minus 0.1.
03 12 44 33	LMP	Minus 0.1.
03 12 44 38	CC	Roger that.
03 12 44 41	LMP	My docking pilot has a good eyeball. The normal RAD level in the - in Snoopy is 0.001 RAD per hour.
03 12 45 00	CC	Okay. We copy.
03 12 45 04	LMP	Snoopy was found to be sleeping during the whole 3 days of our translunar journey and was exactly the way we put him to sleep when we left the pad. There were no switches, or breakers, or anything misplaced.
03 12 45 19	CC	Okay. We copy that.
03 12 45 23	LMP	Okay. When I looked at the EPS system, I found out that battery 1 had 35 volts; batteries 2, 3, and 4 also have 35 volts. Battery 5 and battery 6 had 37 volts. Commander's bus had 29.2 volts when I powered up, and systems engineers was reading 29.0, and those were all on low tap.
03 12 45 55	CC	Okay. We copy.
03 12 45 58	LMP	Okay. My AC bus voltage was on the high side of the GREEN for inverter number 2.
03 12 46 08	CC	Okay.
03 12 46 14	LMP	Okay. When I deactivated the COMM and shut down APS, battery 1, 2, 3, and 4 had 37.8 volts. I don't know how that's possible, unless I misread it. And the commander's bus and the LM's bus are at 72.2.
03 12 46 39	CC	Okay. We understand.
03 12 46 42	LMP	That's not possible, is it?
03 12 46 44	CC	Roger. Everybody's shaking their heads yes, Ed.

03 12 46 51	LMP	The name's Gene, Joe.
03 12 46 54	CC	Okay, Bill.
03 12 46 56	LMP	Okay. The OPS - The OPS's both had 5800 pounds on them and checked out okay. The LM housekeeping is done. I think it's in good shape. If you want to know the truth, after my initial faux pas on that downvoice backup switch, I think the COMM came out pretty good. In spite of the fact that the S-band antenna shakes the LM around when it moves, it really held lock at about 4.2 on the meter. I'm not sure exactly whether it will lock out automatically below 3.6, but it'll probably be worth the try tomorrow.
03 12 47 47	CC	Okay. We verify on that, Gene. We've got some good words for you on the COMM, too. It - particularly on the OMNI. We're a lot more satisfied than anybody expected. We got a lot - real good voice COMM with you on OMNI. In fact, you're coming down on normal voice, loud and clear. We're not going to have to go on backup on that mode.
03 12 48 08	LMP	Oh, that's very good. That means that - Oh, that's very good. Hey, there's one other thing, Joe. I noticed that before you asked me, then I went ahead and proceeded. I never did get an indication on the glycol temperature. It was down at OFF-SCALE LOW the whole time.
03 12 48 30	CC	Okay. We copy that.
03 12 48 33	LMP	And I think the same guy who supplied the bearings for the S-band antenna supplied them for the glycol pump.
03 12 48 38	CC	Okay. I'll check into that.
03 12 48 44	LMP	But other than that, I'm real happy. There's no disorientation when you go down there. As a matter of fact, it's a lot more comfortable down there - or up there, I don't know which - but it's a lot more comfortable over there than it is in here, as far as being able to know what's up and what's down.
03 12 49 01	CC	Okay. Understand. Let's see --
03 12 49 07	LMP	You get some reports from Snoopy today, I hope we - Go ahead, Joe.
03 12 49 17	CC	Okay. I was just going to tell you, go ahead and go too BLOCK on - You can have that computer back now.

03 12 49 25	LMP	Okay. We're in BLOCK. And that's our report from Snoopy today. I'm personally very happy with the fellow, and I hope we can give you as good a report tomorrow.
03 12 49 35	CC	You bet your life. Let's see, we've got a couple other items here on the command module. We'd like for you to zero the optics. And, let me see. We'd like to have the LM - the command module DELTA-P readout if you could. Yes this is before II prior to ingress, there.
03 12 49 56	LMP	Okay. I'll get the - -
03 12 50 00	CMP	... Prior to ingress, it was 1.9.
03 12 50 03	CC	1.9. Thank you.
03 12 50 09	CMP	1.9, prior to ingress. But prior to pressurization - When we pressurized it, it was zero.
03 12 50 18	CC	Roger. Understand, John. Thanks.
03 12 50 24	CMP	Okay. Now, we're on the vent right now. We're going to keep that thing pumped up so tomorrow it won't be agonizingly slow.
03 12 50 31	CC	(Laughter) Okay.
03 12 50 51	CMP	You got anything else for us right at the moment, Joe? If not, we're going to hustle around here and get prepared for tomorrow and eat something and do those other things. But while those other two guys are down there, I'll really be willing to do anything I can, I guess.
03 12 51 04	CC	Okay, Charlie Brown - Apollo 10. Stand by for a minute. We've got a couple or three items we're discussing now.
03 12 51 14	LMP	Okay, Ed.
03 12 53 57	CC	Okay. Apollo 10, Houston.
03 12 54 05	CDR	Go ahead, Houston.
03 12 54 08	CC	Roger, Tom. We've got a few items we'd like for you to check here. First off, we'd like to verify the positions of the H_2 tank heaters. We want number 1 to AUTO and number 2 to OFF. We'd like to verify that with you.

03 12 54 24	LMP	Okay. We've got number 1 H_2 tank heater AUTO, and number 2 is now OFF.
03 12 54 30	CC	Okay. And we'd like DIRECT -
03 12 54 32	LMP	And we're reversed.
03 12 54 35	CC	Okay. Thank you. And DIRECT POWER OFF for number 2 hand controller, please.
03 12 54 47	LMP	Okay. That's done.
03 12 54 50	CC	And, just prior to LOS this last pass, we were showing an O_2 FLOW HIGH indication. Did you have that in the cockpit? And if so, do you have any good words on that?
03 12 55 12	CMP	Yes. O_2 FLOW HIGH is caused because the inflow valve gets all clogged with insulation. Also, the intake to the hoses.
03 12 55 37	LMP	You know, we've been cleaning all these exhaust hoses and the intake to the inflow valve off a couple or three times a day.
03 12 55 46	CC	Okay. I understand.
03 12 55 47	CMP	But during LM ingress - During LM ingress, the flow of Mylar overcame the flow of cleaning off the hoses.
03 12 55 57	CC	Okay. I understand.
03 12 58 12	CC	Apollo 10, Houston. I've got a maneuver pad I'll send up to you whenever you're ready to copy.
03 12 58 20	CMP	Okay, Joe. One more second.
03 12 58 51	LMP	Okay, Houston. I'm ready.
03 12 58 53	CC	Okey doke, 10. This is for TEI-10, SPS/G&N: your time is 096 02 4054, plus 29966, minus 01794, plus 01605; roll is NA; pitch 054; all else is NA. I'll stand by for your readback.
03 12 59 51	LMP	Okay, Joe. TEI-10, SPS/G&N: starting with NOUN 33 096 02 4054, plus 29966, minus 01794, plus 01605; roll is NA, and pitch 054; and the rest is NA.
03 13 00 15	CC	Okay. On your NOUN 33, your seconds is 40.54.
03 13 00 21	LMP	I'm sorry. That's what I've got written down. 096 02 4054.

03 13 00 25	CC	Roger that.
03 13 00 28	CC	Okay, Gene-o. Now we've got some words for you on this PUGS. It looks like you've got an engine that burns fuel rich, and what we're recommending is on the next burn, for you just to go to FULL INCREASE, and leave it in FULL INCREASE for the entire burn. You've got no fuel depletion problem, so just leave it in FULL INCREASE.
03 13 00 49	CMP	Okay. Fine. I'm hoping that next burn with the SPS is a big one.
03 13 00 55	CC	Yes. (Laughter) And, 10, this is Houston. We've got some discussion words for you on this stuff that's floating around in the cockpit. It looks like the first thing, when you get that hatch open next time, will be to try and take some of that tape and tape over any holes that you can see. Does it look like - What looks like damage to the Mylar there, does it look like it was torn, or somebody punched a hole in it, or just what?
03 13 01 37	LMP	It looked like high-velocity oxygen ripped it apart. It's the insulation from underneath the - I guess aluminum covering - is what's come out in crumbs and snowflakes, and that's what's around. We've taped it up best we can, so that no more comes out and it's there, Babe, and I just think we can live with it, that's all, as long as we watch the dump valve and the hatch.
03 13 02 08	CC	Roger. Okay. Well, listen, if it's floating around a good bit, Gene, there are several ideas that you've probably already thought of to clean it up. We've found that the stuff adheres pretty well to anything that's saturated with water. Take either a Kleenex or those towels that you've got. Soak them up with water on the food board - the water gun would be better even - and you can - you can kind of mop the stuff up with that, if you can catch it and then trap it. And one other thing that you might think about doing, is placing one of your towels - one of your terrycloth towels over the cabin inlet fan, or the inlet to the cabin fan, and turning the cabin fans on, and this will act as a filter and should trap most of it.
03 13 02 56	LMP	Okay, Joe. Thank you. I think our major problem in the command module is solved. We've got most all of that over the last 3 days. It's the LM where most of it is right now. I understand you're still saying the same thing on the cabin fans and the LM, huh?

03 13 03 15	CC	It'll be a little harder to get to the inlet, or intake on that fan in the LM, Gene. You can try it if you think it's worth it.
03 13 03 31	LMP	No. I don't really, Joe. I think the big problem is solve it for the next flight. I think we can handle it as long as we keep that hatch clean.
03 13 03 43	CC	Okay.
03 13 03 46	LMP	It can't hurt us - It can't hurt us no more to breathe it anymore.
03 13 03 52	CC	Roger.
03 13 04 00	LMP	One other little item. I forgot about Snoopy.
03 13 04 06	CC	Okay. Go.
03 13 04 10	LMP	I didn't - I didn't get a chance to drink much of the water, but I took about eight or 10 big, good gulps, and I got about four good gulps of air.
03 13 04 23	CC	Okay. We copy.
03 13 04 40	CC	Okay, 10. Houston again. In order to - to reduce primary loop temperature during your sleep period, we'd like to power down - Oh, we got three attitudes we'd like for you to power down. On panel 7, we'd like the SPS electronics power switch to ECA. And on panel 100, we'd like G&N power optics OFF. And, up there on panel 2, we'd like the old - -
03 13 05 05	LMP	Wait - Wait a minute.
03 13 05 07	CC	Okay. Okay.
03 13 05 17	LMP	Okay. Now, that was on panel 7 you wanted what, Joe?
03 13 05 21	CC	Roger. SCS electronics power switch to ECA.
03 13 05 54	LMP	Okay. SCS electronics power to ECA?
03 13 06 00	CC	Roger. That's affirmative.
03 13 06 25	LMP	Joe, come back with that one in about 5 minutes. We'll talk to you about it. There's some discussion about it up here.
03 13 06 32	CC	Okay. How about the portable water heater of OFF? That's on panel 2.

03 13 06 40	LMP	We'll do that for you. Okay. Portable water heater, that's OFF.
03 13 06 45	CC	Okay. G&N power optics OFF on panel 100.
03 13 07 08	LMP	Okay. That's OFF on panel 100, G&N power optics.
03 13 07 57	CC	Okay. 10, Houston, here. One more thing. We'd like to have the H_2 fans 1 and 2 both OFF, please.
03 13 08 11	LMP	Okay. They're OFF, Joe, and I did cycle them just a little while ago, by the way.
03 13 08 15	CC	Okay. Thank you.
03 13 08 47	LMP	How's the COMM setup, Joe? We acquired you on REACQ, and looks like we're doing real fine right now. REACQ is MEDIUM BEAMWIDTH. Is that okay?
03 13 08 57	CC	Roger. You're coming in real good, Gene.
03 13 09 04	LMP	Is that okay for sleep, then?
03 13 09 08	CC	Stand by. We'll get a good readout on it.
03 13 09 51	CC	Apollo 10, Houston, here. We've got two more items right now. First of all, we'd like to verify you're going to make a canister change here before you go to bed. And, we'd like to have an O_2 purge.
03 13 10 04	LMP	Okay. I'll verify. We will make the change and will give you the O_2 purge right now - -
03 13 10 08	CC	- - Roger.
03 13 10 10	LMP	- - starting with 3.
03 13 10 28	LMP	You know, speaking of COMM, Joe, I'm amazed. This is a quarter million miles away. Maybe half a million miles coming and going, and it's really outstanding.
03 13 10 40	CC	Yes. We sure agree with that, Gene. We were really amazed at how clear you were coming in on voice on those OMNI's.
03 13 10 48	LMP	I'll tell you one thing. It's a lot better than the simulator.
03 13 10 52	CC	Okay.
03 13 11 06	LMP	Maybe we ought to have a relay station on the Moon so that the CMS can work with the LMS.
03 13 11 08	CC	Yes. (Laughter) Agree, there.

03 13 12 29	CC	Okay, 10. This is Houston. Gene, we'd like for you to get up your antenna here in narrow beam and REACQ which will be your sleep configuration. We can watch it until LOS, and make sure it's going to work out.
03 13 12 48	LMP	Okay. We acquired you in REACQ medium beam here this last time, and I just switched to narrow, so I assume it's going to work because we picked you up this last time on it.
03 13 12 59	CC	Roger that.
03 13 13 16	LMP	Now you watch Snoopy well tonight, and make him sleep good, and we'll take him out for a walk and let him stretch his legs in the morning.
03 13 13 31	CC	(Laughter) Okay.
03 13 15 50	LMP	Houston, this is Charlie Brown.
03 13 15 52	CC	Roger, Charlie. Go ahead.
03 13 15 56	LMP	Okay. We're going to let battery recharge all night, is that correct?
03 13 16 01	CC	That's affirmative.
03 13 16 04	LMP	Okey doke.
03 13 16 07	CC	And Charlie Brown, we'd like for you to disable B and C, and use B and D rolls in DAP, please.
03 13 16 12	LMP	You want us to use - Say again, once more?
03 13 16 21	CC	Okay. Disable Bravo and Charlie, and use Bravo and Delta roll in DAP.
03 13 16 29	LMP	Disable - Disable Bravo and Charlie, and use Bravo and Delta roll in the DAP.
03 13 16 37	CC	That's affirmative.
03 13 16 38	LMP	Okay.
03 13 20 13	CC	Apollo 10, Houston.
03 13 20 19	CDR	Go ahead. Houston, 10.
03 13 20 21	CC	Hey! Okay, Tom. We'd like - First of all, I'd like for you to terminate purge on fuel cell 2 and start fuel cell 1 purge, if you would.
03 13 20 32	LMP	I'm sorry, Joe.

03 13 20 35	CC	No sweat.
03 13 20 37	CDR	We're still trying to scramble around up here.
03 13 20 41	CC	Okay. Listen, when you get time, I guess we'll get crew status. We'd like to get from you PRD readings and medication and all that sort of thing, and the chlorinations and all that. Whenever you get a chance, or whenever you want to call that down, press on. And that'll be about it for tonight, then.
03 13 28 29	LMP	Hello, Houston. This is Charlie Brown.
03 13 28 34	CC	Hi, Charlie Brown. Houston. Go ahead.
03 13 28 37	LMP	Okay. The PDR readings: The CDR, 26036, the CMP is 05036, and the LMP is 15038.
03 13 28 54	CC	Okay. We copied all that.
03 13 29 00	LMP	The CDR ain't had nothing, and the CMP ain't had nothing, and the LMP had two aspirins about 30 minutes ago.
03 13 29 29	LMP	Joe, I took those two because my athlete's feet were bothering me.
03 13 29 35	CC	Okay. We copy that.
03 13 29 51	LMP	And, I'm sure much to your joy, I might go off the air for a while and turn it over to my partners in crime.
03 13 30 00	CC	Okay. The man on the left says that sounds like the proper medication on that: one for each foot.
03 13 30 08	LMP	Oh? Only one foot was bothering me. I didn't know I'd only have to take one. I'll see you later.
03 13 30 13	CC	Okay. Let's see. I guess - Are you still purging fuel cell 1 there, Gene? We can't monitor that down here.
03 13 30 53	CC	Apollo 10, Houston.
03 13 30 58	CDR	Go, Houston.
03 13 31 00	CC	Roger, Tom. Is John still up?
03 13 31 06	CDR	Oh, yes. We're still scrambling around here trying

03 13 31 10	CC	Okay. You might check and see if he wants to talk over landmark tracking tonight, or if he wants to wait until morning to go over some of that.
03 13 31 53	CMP	Apollo, Houston. Say again about landmark tracking?
03 13 32 00	CC	Roger, John. The guys in the back room have come up with some critiques on the marking, if you're interested in discussing it.
03 13 32 13	CMP	Sure. Go ahead.
03 13 32 15	CC	Okay. Talk about F-1 first. The marking on that was just great; the timing between Marks was just what they were looking for. One comment: they observed your pitch rate about two-tenths of a degree per second, and they don't know how it appeared to you, but that it's their opinion that it increased it just a little better to give you maximum marking time. But the Marks on F-1 were really great. On B-1, you probably - you obviously noted the problem. It appeared that you started marking about a minute and a half early. Your spacing was good, and I guess you noticed then - if you weren't sure, didn't have it below you - then you took quite a while between the fourth and fifth Marks, and your pitch rate on that one was about 0.15 degrees per second, and it was a little bit too low to get the maximum marking time. The last Mark was pretty near the trunnion limit, as you probably observed. Have you got any comments on the B-1? The Marks were still good except for there, but they're not quite as good as on F-1. It was pretty good OJT for the first crack at it.
03 13 33 33	CMP	That F-1 is a great big crater. So what I did was I tracked the little crater on the edge of it. I couldn't even - the whole - the F-1 that I was tracking was - My whole optics was clean down inside of it.
03 13 33 52	CC	Schmidt, back here, says that's great. The way to do it.
03 13 34 03	CMP	And that B-1 is no small crater, either.
03 13 34 15	CC	Comment on the 1-1/2-minute-early Mark, John. Did we pass you up the time that was wrong? Or did you start a little early, or what?
03 13 34 35	CMP	No. I just started marking whenever I saw it. I can't see - It seems like that's what you ought to do. You see the thing comes out from behind the lunar module and it's acquisition is - You really got to hurry on it. So I wasn't really paying

attention to the clock. When I'm flying it by myself, I want to get the first Mark, at least, as soon as I can. I get a feel for this thing and I think it will work out all right.

03 13 34 58	CC	Okey doke. No problem. That was what we were wondering. If you had really started on the TP time, or if you started early, or perhaps we passed you up a piece of time that was a little early? And I guess that's about all the comments we got here, John.
03 13 35 18	CMP	I think it went okay.
03 13 35 21	CC	Roger. We concur. It was good Marks.
03 13 35 44	CC	You did a good job, today, and got a big day tomorrow, so Deke says let's go to sleep. Get ready for it.
03 13 36 02	CDR	Yes. We concur that. We're getting a little bushed up here, and we're just about to turn in and fix breakfast.
03 13 36 10	CC	Deke wants you to hurry up and eat. He says he's getting hungry.
03 13 36 16	CDR	Okay.
03 13 36 40	LMP	Hey, Deke. Don't forget to skip lunch today. You didn't have time for it.
03 13 36 43	CC	Okay. He's one up on you. He only gets one meal tomorrow then, I guess.
03 13 36 49	LMP	That's right. Keep him honest.
03 13 47 45	CC	Okay, Apollo 10. Houston.
03 13 47 53	CDR	Go ahead, Joe.
03 13 47 55	CC	Roger, Tom. We've got about a minute and a half - a minute 45 until LOS. There's a couple of things we'd like to confirm. First of all, we'd like to make sure you're in AUTO RCS, that you disabled Bravo and Charlie quads, and that you set up Bravo and Delta roll in the DAP. And, also, we'd like to confirm with Gene-o that he did close out the cabin after transferring power. We want to make sure that he got the circuit breakers status as for the checklist. We just - We just want a confirm on that.
03 13 48 34	CDR	Everything is squared away there. We're still trying to eat, get the little things squared here. That's why we haven't got to the DAP, yet. We'll get it.

03 13 48 42	CC	Okay. Alright then, Tom. We're just about a minute from LOS. We just want to confirm those things.
03 13 48 52	CDR	Okay.
03 13 48 57	CC	And I guess we'll be losing COMM with you pretty shortly. You about ready to turn it in for the night?
03 13 49 06	CDR	Yes. I think we may make one quick contact with you before we sack out. We want to make sure we get called on time because it's going to be a busy day.
03 13 49 16	CC	Roger. Sure is. You say you may contact us again, coming around the other side?
03 13 49 26	CDR	Right. We may do that.
03 13 49 30	CC	Okay. We'll be waiting.
03 13 40 31	CDR	We'll call you.
03 13 40 32	CC	Roger that.

END OF TAPE

03 13 55 --		BEGIN LUNAR REV 6
03 14 36 37	CC	Apollo 10, Houston.
03 14 36 38	CMP	Houston, Apollo 10. Over.
03 14 36 40	CC	Roger, 10. This is Houston. Go ahead.
03 14 36 46	CMP	Roger. Could you take a look at the DAP and see if that's what you want?
03 14 36 51	CC	Okay. We sure will.
03 14 36 53	CMP	It sounds like it's really using a lot of fuel - sounds like it's using a lot of fuel out there. I don't know, maybe we haven't got the right thing set up here.
03 14 37 06	CC	Okay, John. We'll take a look at it here.
03 14 42 59	CC	Apollo 10, Houston.
03 14 43 06	CMP	Go ahead. Over.
03 14 43 08	CC	Okay. On these RCS jets, we'd like to confirm. I think maybe the problem may be in which ones we've got on and off, and what we'd like to do is to turn off or disable C2, which is minus roll, and B2, which is minus roll. That's Charlie 2 and Bravo 2 and Bravo 4, which is minus yaw.
03 14 43 51	CMP	Okay. But now wait a minute. We had to turn off the 4 and B3 because John undid the high gain - because Gene undid the high-gain antenna.
03 14 44 25	CC	Okay. Apollo 10, this is Houston. Roger. This configuration will take care of that, although I gave you one wrong thruster, here. Let me - let me go over the ones we'd like disabled or turned off, again. That'll be Charlie 3 instead of Charlie 2. So it's Charlie 3, which is plus pitch; Bravo 4, which is minus yaw; and Bravo 2, which is minus roll. Those three we want disabled, and I have two of them to turn on as soon as you get those.
03 14 44 57	CMP	Okay. I got those turned off.
03 14 44 59	CC	Okay. And then I'd like for you to turn on Alfa 1 and Alfa 2. Alfa 1, plus roll and Alfa 2, minus roll.

03 14 45 14	CMP	Okay.
03 14 45 17	CC	Okay. That configuration ought to do it, John. How's the sleep status going? Are you the only one awake, or have you got everybody awake and running around in there?
03 14 45 27	CMP	No, everybody's asleep. But, now wait a minute. C4 and B3 are also off. You know that?
03 14 45 42	CC	Okay. Roger. That's right. We're turning off the entire B and C, Bravo and Charlie.
03 14 46 00	CMP	Okay. So this configuration that we've got on the AUTO RCS switch - switches is now compatible with the DAP - is that correct?
03 14 46 08	CC	Okay. That's confirmed. It is compatible.
03 14 46 11	CMP	Okay.
03 14 46 52	CC	Apollo 10, Houston.
03 14 46 58	CMP	Go ahead.
03 14 46 59	CC	Yes, John. We realize this configuration is different than the one you've been used to seeing in the PTC, but this is the normal orbital lunar configuration. And G&C has - has checked it, over, and they're sure that this is the way we want to be set up.
03 14 47 18	CMP	Okay. We just heard a lot of thruster noise out there, and I figured I'd better wait up and check with you guys to make sure we're doing the right thing.
03 14 47 34	CC	Okay. We sure appreciate it. Why don't you go ahead and get to sleep now? You've had a big day.
03 14 48 04	CC	10, this is Houston. G&C says you can probably expect more jet firings now that we're in lunar orbit, because we're holding an attitude to keep the antenna positioned right. You can expect a lot more firings than we had when we were PTC.
03 14 48 21	CMP	Roger. I understand that.

END OF TAPE

REST PERIOD - NO COMMUNICATIONS

03 16 05 -- BEGIN LUNAR REV 7

REST PERIOD - NO COMMUNICATIONS

03 17 55 — BEGIN LUNAR REV 8

REST PERIOD - NO COMMUNICATIONS

03 19 50 --		BEGIN LUNAR REV 9
03 20 51 44	CC	("The Best Is Yet to Come" played here.)
03 20 52 34	CC	Apollo 10, Houston. Reveille! Reveille!
03 20 52 43	CDR	Roger. Understand reveille. I didn't think that sounded like the Marine Corps Hymn there, the music that was coming up. But it did sound pretty good.
03 20 52 56	CC	Roger, 10. We copy. Go ahead and have your breakfast, and we're ready to go when you are.
03 20 55 08	CDR	We're a bit ahead of schedule. We've already had breakfast and gone through the redundant component check.
03 20 55 14	CC	Roger. We have a consumables update and flight plan update when you are ready.
03 20 55 23	CDR	Go ahead.
03 20 55 26	CC	Roger. Your consumables update valid at 93 hours; your RCS total was 77 percent; quad A 75 percent, quad B 81 percent, quad C 77 percent, D 81 percent; - -
03 20 55 46	LMP	Go ahead, Houston, with the consumable and flight plan update, Jack.
03 20 55 55	CC	Apollo 10, Houston. How do you read?
03 20 56 01	CC	Apollo 10, Apollo 10. Houston. Over.
03 20 56 07	CMP	We read you loud - We read you loud and clear, Jack.
03 20 56 13	CC	Apollo 10, Apollo 10, Houston. Your consumables - -
03 20 56 15	CDR	We read you loud and clear.
03 20 56 16	CC	- - update follows. Valid at 93 hours; RCS total 77 percent, quad A 70 - 75 percent, quad B 81 percent; quad Charlie 77 percent; quad Delta 81 percent. That's 8 percent ahead of your flight plan. Your H_2 totals 34.5 pounds, O_2 totals 435 pounds. Over.
03 20 56 57	CMP	Roger. We got it.
03 20 57 02	CC	Roger, 10. I have a flight plan update when you are ready.
03 20 57 13	CMP	Okay. Go ahead with it. Over.

03 20 57 16	CC	Okay. At the end of your postsleep checklist, add these items. At 93 plus 45, terminate battery B charge. At 93 50, dump waste water to 36 percent. I repeat, to 36 percent. All lunar orbit activities are about 12 minutes later than the flight plan. I have your nominal burn times, if you want them.
03 20 58 03	CMP	No. We'll get that later, Jack, thank you.
03 20 58 07	CC	Houston. Roger.
03 20 58 13	CMP	Okay. That was terminate battery B charge on waking up and dump the waste water to 36 percent.
03 20 58 23	CC	Roger, 10. That's affirmative.
03 20 58 34	CMP	Is that all the update? Over.
03 20 58 38	CC	Roger, 10. That's the end of the update.
03 20 58 45	CMP	Okay. Thank you.
03 20 58 56	LMP	Good morning, Smiling Jack.
03 20 58 58	CC	Good morning. You boys have been up a while, I see.
03 20 59 06	LMP	Yes. We tried to sneak up on it just by - just about a half hour or so. Or more.
03 20 59 12	CC	Roger, 10. I know you're busy. If you have some time to listen sometime when you are interested, I have the local newspaper, again.
03 20 59 25	LMP	Go ahead. We would like to listen to it.
03 20 59 32	CC	Okay. One kind of interesting thing was John's horoscope this morning; says "everybody you know has something helpful to offer. Listen carefully while you make the rounds quickly. Put in a busy day and assemble your results in the evening." Now here goes the news. Springfield, Massachusetts: students at Springfield Technical College told President Edmund T. Garvey they were taking over the Administration Building. Garvey was nonplussed. The students, about 40 in number, marched into the building Wednesday night armed with mops, brooms, scrub brushes, and staged a "clean-in." They said they would clean all night. A student spokesman said the clean-in at the 1200-member campus was to support the administrative policies of the 2-year-old school. Safi, Morocco: on Friday, Thor Heyerdahl

will get out from here to cross the Atlantic in a papyrus boat. The man who must keep his papyrus boat together with rope and string bought his third wife this year, and is now complaining about the price. She cost about 60 dollars in Egypt, much more than the going rate in Chad, where Abu Debrine learned how to make papyrus boats and hitched onto Heyerdahl's expedition. If he succeeds in reaching Mexico in his boat, modeled after a 4700-year-old Egyptian craft, Heyerdahl will consider he has strengthened the argument that the great early civilization of the Americas learned from the Pharaohs. Debrine is packing pictures of wives A and B, smiling side by side, into his kit for the reed boat trip. A photo of wife C, who has less seniority but is more expensive, gets a less prominent place. Good grief, Charlie Brown! Paris: Allied negotiators headed into the Vietnam talks today with what sources close to the meeting said were optimism that discussions of proposals by President Nixon and the Viet Cong could bring progress. U.S. delegation sources said Henry Cabot Lodge, Chief U.S. negotiator, would comment on the Viet Cong's 10-point peace plan Washington said included some points meriting further study. The chief North Vietnamese negotiator indicated he and his Viet Cong counterpart were still studying the Nixon eight-point proposal. Washington: Warren E. Burger, an Appeals Court judge with a reputation for being strong on law and order, was picked Wednesday by President Nixon to be Chief Justice of the United States. Burger, 61, a member of the U.S. Circuit Court of Appeals in Washington since he was appointed by President Dwight D. Eisenhower in 1956, is known as a strict constructionist, the type of judge Nixon promised to elevate to the court during his campaign last fall. Plymouth, England: solo around the world sailor, Nigel Tetley, was pulled from the Atlantic by a tanker crew today when his boat sank 1[illegible] days from home. Tetley's wife, on hearing the news, said, "It is our home that is gone. All my pots and pans have gone to the bottom of the sea." Tetley was competing in a global race sponsored by a London newspaper. Moscow: Moscow TV showed the Apollo 10 astronauts in a 1-minute broadcast. It said it was live from the American space capsule. And do you remember that unemployed local philosopher? He now says that while he believes in the future of color television, he thinks that because of your flight, it will go round and round in people's minds for a while yet. Here is a sports story: Houston 3, Montreal 2, and Houston has just climbed

		out of the cellar. New York 5, Atlanta 0; Chicago at Los Angeles, a night game; just heard from the back room that Los Angeles beat Chicago. Over.
03 21 03 46	LMP	Boo!
03 21 06 10	CC	Apollo 10, Houston. We've got a couple of items here we'd like your help on. We have a temperature rise in the helium tank in quad Alfa, so what we'd like you to do after LOS, we'd like you to roll 180 degrees and then come back to the normal attitude at AOS for S-band acquisition. In addition, we'd like your crew status report, and we'd like you to include some information on the cabin environment during the night to see if there is any change in it since the evaporators were not on the line. Over.
03 21 06 57	LMP	Yes. It was fine. Its normally chilly self. We didn't need to turn off all that stuff.
03 21 07 09	CC	10, Roger.
03 21 07 31	CMP	Okay. Could we have an update on when you expect LOS? Over.
03 21 07 38	CC	Okay, 10. LOS is going to be at 93 42, and AOS will be at 94 29. Over.
03 21 08 04	CMP	Roger. 93 42 and 94 29.
03 21 08 20	CMP	Okay, Jack. On that roll, do you want a roll to 180 degrees, or roll a Delta angle of 180 degrees?
03 21 08 29	CC	10, we want you to roll a Delta angle of 180 degrees.
03 21 08 38	CMP	Okay. That's what I figured; just trying to clarify it, though.
03 21 08 41	CC	Roger, 10.
03 21 10 26	LMP	Jack, the ECS redundant component check is complete, and it looks good from here.
03 21 10 32	CC	Roger, 10. We copy.
03 21 10 55	LMP	Jack, crew status report: We all had about six pretty good hours of sleep. We've eaten breakfast this morning, and the readings on the dosimeters are, in order, 26037, 05307, 15039.
03 21 11 19	CC	Okay, Gene. Copy 6 hours sleep and 26037, 05307, 15039. Thank you.

03 21 10 30	LMP	The CRYO fans have been cycled, redundant component check is complete. I'm about ready to purge the H_2 here in about 5 minutes, and then we'll get the battery and the water dump here before too long. I might take the batteries off the line, that charge off the line, maybe 10 - 15 minutes early, if it's compatible with our suiting up and everything.
03 21 11 56	CC	Roger. We copy. And the battery action is all right by us.
03 21 12 04	SC	Okay.
03 21 15 48	CC	Apollo 10, Houston. We'd like you to cycle the heaters on the hydrogen CRYO tanks, number 1 OFF, number 2 AUTO. Over.
03 21 16 00	LMP	1, OFF and 2, AUTO, Jack.
03 21 16 03	CC	Roger. Thank you.
03 21 16 05	LMP	And I'm ready to purge the fuel cells. I'll start with fuel cell 3, oxygen then hydrogen.
03 21 16 14	CC	Roger. We copy. We're standing by.
03 21 23 07	CC	Apollo 10, Houston. I have a map update for REV 10 if you want it.
03 21 23 16	LMP	Hold it just a minute, Jack.
03 21 27 48	LMP	Hello, Houston. This is 10. Are you reading us?
03 21 27 50	CC	That's affirm. Loud and clear.
03 21 27 55	LMP	Okay, fine.
03 21 28 45	LMP	Houston, the fuel cell purge is complete, the H_2 purge line heater if OFF, and I'd like to go ahead and terminate battery B charging at this time.
03 21 28 55	CC	Roger. We copy. Stand by one on the BATT. Apollo 10, Houston. You are clear to terminate battery charge.
03 21 29 07	LMP	Okay. Thank you, Jack.
03 21 32 46	CC	Apollo 10, Houston. We'd like you to verify that all the fans are off in the CRYO tanks. Over.

03 21 33 07	LMP	Negative, Jack. I had them cycling. Thank you. I'll turn them off at this time.
03 21 33 12	CC	Houston. Roger.
03 21 33 18	LMP	I got too many meters running, I guess, right now.
03 21 33 26	CC	Take your time, but hurry.
03 21 33 46	LMP	Jack, give me another Hack on when LOS is, would you, and AOS?
03 21 33 51	CC	All right. LOS is at 93 42. AOS is at 94 29. And I have your map updates for 10 and 11 when you're ready.
03 21 34 46	LMP	Okay, Jack. Go ahead.
03 21 34 48	CC	Okay. Map update, REV 10: 093 42 40, 093 54 35, 094 28 50; sunrise 093 52 22, sunset 095 04 46. REV 11: 095 41 06 095 52 52 096 27 16, sunrise 095 50 58, sunset 097 03 22. Over.
03 21 35 58	LMP	Okay, Jack. I got all those and good, I don't - I don't need to read them back.
03 21 36 04	CC	Houston. Roger.
03 21 36 13	LMP	I think we're in pretty good shape except for the waste-water dump which we've got yet to go right now.
03 21 36 18	CC	Roger. We copy. And you're dumping to 36 percent.
03 21 36 26	LMP	Okay. We'll dump to 36.
03 21 36 53	LMP	Houston, we're starting the waste-water dump now.
03 21 36 56	CC	Roger, 10. We copy.
03 21 37 52	CC	Apollo 10. Houston. We wanted to remind you to actuate your GDC optics power and potable water. Over.
03 21 38 10	LMP	Okay. Optics power coming on right now and potable water GDC ON.

03 21 42 17	CC	Apollo 10, Houston. We're going to lose you around the corner. We'll pick you up in about 46 minutes.
03 21 42 25	LMP	Okay. To give you a status, we've got two guys - one suited - John's getting suited. I'm on my way to the LM here as soon as we complete the waste-water dump.
03 21 42 33	CC	Roger.

END OF TAPE

03 21 50 --		BEGIN LUNAR REV 10
03 22 29 15	CMP (CHARLIE BROWN)	Houston, Apollo 10. Over.
03 22 29 27	CC	Go ahead, Apollo 10. Houston.
03 22 29 33	CMP (CHARLIE BROWN)	Roger. Tom and Gene are in the LM, checking things out.
03 22 29 39	CC	Roger. We copy.
03 22 29 40	CMP (CHARLIE BROWN)	We've gotten through the steps. We changed the canisters. We've got the LM power on. LM cables are disconnected and stowed. I and Tom are in our PGA's, and you got the roll CAL from last night.
03 22 30 00	CC	That's affirmative. We have that.
03 22 30 27	CC	Apollo 10, this is Houston. We'd like to have the CMC for an uplink.
03 22 30 35	CMP (CHARLIE BROWN)	Roger. Wait a second.
03 22 30 45	CMP (CHARLIE BROWN)	I read you guys loud and clear.
03 22 30 57	CMP (CHARLIE BROWN)	You have POO and ACCEPT, Houston.
03 22 30 58	CC	Houston. Roger.
03 22 31 10	CMP (CHARLIE BROWN)	We just got a VHF B check and it's so much better than the simulator, Tom says you can't believe it, and I agree.
03 22 31 16	CC	Roger, 10. Thank you.
03 22 32 00	CMP (CHARLIE BROWN)	Houston, Snoopy is giving you a call on S-band. This is Charlie Brown. Over.
03 22 32 04	CC	Okay, Charlie. We're not reading Snoopy yet.
03 22 32 23	CMP (CHARLIE BROWN)	Are you reading them, Gene? They are reading you, there, Houston.
03 22 32 30	CC	Snoopy, this is Houston. We are not reading you.
03 22 33 59	CC	Hello, Snoopy. This is Hous[illegible]

03 22 34 00	CMP (CHARLIE BROWN)	Houston, Snoopy is calling you and he reads you apparently.
03 22 34 04	CC	Okay, Snoopy. Understand you are reading us. We are not reading you yet. You might try downvoice backup.
03 22 34 29	CMP (CHARLIE BROWN)	Oh, it's touchy COMM!
03 22 34 37	CMP (CHARLIE BROWN)	He is using downvoice backup.
03 22 34 42	CC	Hello, Snoopy. This is Houston. How do you read? Over.
03 22 34 57	CMP (CHARLIE BROWN)	He wants to know how you read, Gene-o. You hear him?
03 22 35 00	CC	Charlie, this is Houston. We are not reading Snoopy.
03 22 35 03	CMP (CHARLIE BROWN)	Roger. Roger. He's changing antennas now.
03 22 35 26	LMP (SNOOPY)	Hello, Houston. Houston, this is Snoopy. How do you read? Over.
03 22 35 31	CC	Hello there, Snoopy. This is Houston. Reading you now, but quite a bit of noise in the background. Over.
03 22 35 40	LMP (SNOOPY)	Okay. How do you read me now, Jack?
03 22 35 42	CC	Okay, Snoop. I don't hear the noise now, but you're way down in the mud.
03 22 35 50	LMP (SNOOPY)	Okay. I'll try and talk louder. The noise was because I was on ICS PTT downvoice backup and you had a high FREQ in here. I'll bring you up to date. You might get your activation and checkout list out and wait 1 second - I'll tell you where we are.
03 22 36 12	CC	Okay, Snoopy. We've got the - we've got - -
03 22 36 13	LMP (SNOOPY)	Turn to page 20 - -
03 22 36 18	CC	Snoopy, this is Houston. We've got the checklist out. Go ahead. And, be advised you are still down in the mud.

03 22 36 28	LMP (SNOOPY)	Okay. I'm yelling as loud as I can. We are on page 29. On page 29. I just finished the LGC self-test. The spacecraft is all GO; I found nothing wrong with it. Tom is in here suited. He's up through page 29. I'm ready to do the S-band TR power amplifier check, and then I will do the steerable check, and I will go out and get suited while Tom continues. Are you with me?
03 22 37 01	CC	That's affirmative, Snoopy. We are reading you.
03 22 37 08	LMP (SNOOPY)	Okay. I'm presently on high voltage taps, and I'm ready to go S-band transmitter/receiver secondary and power amplifier secondary. Are you ready?
03 22 37 18	CC	Stand by one. Snoopy, this is Houston. Go ahead.
03 22 37 23	CDR (SNOOPY)	... I think I've got your helmet here.
03 22 37 28	LMP (SNOOPY)	Okay. Go ahead and I'll wait 60 seconds.
03 22 37 30	CDR (SNOOPY)	John, do I have your helmet? ...
03 22 38 18	LMP (SNOOPY)	Hello, Houston. Houston, this is Snoopy. How do you read on SECONDARY? Over.
03 22 38 25	CC	Snoopy, this is Houston. We have a lot of noise in the background; hearing you very weakly.
03 22 38 36	LMP (SNOOPY)	Okay. I read you loud and clear, I'll go back to PRIMARY at this time.
03 22 38 40	CC	Roger; Hear you're going back to PRIMARY.
03 22 39 42	CMP (CHARLIE BROWN)	Houston, this is Charlie Brown. Snoopy is ready to do the steerable S-band antenna check. Over.
03 22 39 55	CC	Snoopy, this is Houston.
03 22 39 57	CMP (CHARLIE BROWN)	Houston, Charlie Brown. Over.
03 22 39 59	CC	Snoopy, this is Houston. Request you try turning your ranging switch OFF. Over.
03 22 40 08	CMP (CHARLIE BROWN)	They want you to try turning your ranging switch OFF, Gene-o.

03 22 40 12	LMP (SNOOPY)	Okay, Houston. This is Snoopy with the ranging switch OFF. How do you read?
03 22 40 16	CC	Okay. Gene, we're still hearing you very weakly, and a lot of background noise, over.
03 22 40 26	LMP (SNOOPY)	I don't ...
03 22 40 54	CC	Hello, Snoopy. This is Houston. Go ahead with the steerable check. Over.
03 22 41 04	LMP (SNOOPY)	Okay, Gene. Does ...?
03 22 41 08	CMP (CHARLIE BROWN)	Yes. Just about.
03 22 41 10	LMP (SNOOPY)	Okay.
03 22 41 14	CC	Charlie, this is Houston. We're still reading Snoopy very weakly with a lot of background noise. You may have to relay some.
03 22 41 25	CMP (CHARLIE BROWN)	Roger.
03 22 42 08	CMP (CHARLIE BROWN)	Okay, Snoopy. We're at the attitude.
03 22 42 11	LMP (SNOOPY)	Okay. And I should have good high gain lock. Hello, Houston, this is Snoopy. How do you read on high gain?
03 22 42 31	CC	Oh, that's much better now, Snoop.
03 22 42 38	LMP (SNOOPY)	Okay. I don't know if that's any sign. That was a piece of cake. I hope it works that way.
03 22 42 45	CC	You're coming in loud and clear now, Snoopy.
03 22 42 52	LMP (SNOOPY)	Okay, Jack. Things are going, so far, real well up in here. I'm about ready to go off the loop here, go back and get suited up, and we'd like to stay ahead of the game if we can. All my voltages look real good. Just to bring you up to date: I'm reading 30.2 on the commander's bus and 30.2 on the systems engineer's bus. Inverter number 2 is in the high side of the GREEN. Battery number 6 is reading 37 and battery number 5 is reading 37.

03 22 43 26	CC	Roger. We copy, Gene.
03 22 43 31	LMP (SNOOPY)	And our glycol temperature started out at about 70 or 75 and it's come down very slowly, and is now within the green band. I guess it's about 50 - 48 degrees right now. Our SH_e pressure looks good, within the nominal limits; and our ambient pressure looks good; and our ascent helium pressures look good, also.
03 22 43 55	CC	Roger, Snoopy. We copy.
03 22 44 00	LMP (SNOOPY)	Okay. Jack, the next time I see you, I'll be dressed for the occasion.
03 22 44 04	CC	Roger. We'll be looking forward to it, and we'd also like to keep ahead a little bit.
03 22 44 08	CC	And, Charlie - -
03 22 44 11	LMP (SNOOPY)	That's okay, babe. I'm going back to suit up.
03 22 44 15	CC	Roger, Gene. And, Charlie Brown, we have a Landing Site 2 track pad when you're ready.
03 22 44 28	CMP (CHARLIE BROWN)	Roger. Landing Site 2 track pad, GO.
03 22 44 32	CC	Roger. 096 47 24, 096 52 24, 000 270 000, north 11 19 21 - what's this? - and your site is 130.
03 22 45 05	CMP	Roger. 096 47 24, 096 52 24, roll 0, pitch 270, yaw 0, north 11 miles.
03 22 45 22	CC	Roger, Snoopy. And we've got a 1921 and a 130.
03 22 45 33	CMP (CHARLIE BROWN)	Yes. Bet you.
03 22 46 11	CDR (SNOOPY)	Hello, Charlie Brown. Snoop would like to do a VHF A Simplex check now.
03 22 46 15	CMP (CHARLIE BROWN)	Roger. Going VHF A Simplex.
03 22 46 18	CDR (SNOOPY)	Roger, John.
03 22 46 26	CMP (CHARLIE BROWN)	Snoopy, Charlie Brown. How do you read?

03 22 46 33	CDR (SNOOPY)	Roger, Charlie Brown. This is Snoopy. I'm reading you loud and clear. How me?
03 22 46 43	CDR (SNOOPY)	Okay.
03 22 46 44	CMP (CHARLIE BROWN)	Snoopy, Charlie Brown. How do you read? Over.
03 22 46 45	CDR (SNOOPY)	Roger. John, you're really blasting me out. I'm reading you loud and clear.
03 22 46 55	CDR (SNOOPY)	How do you read me, John?
03 22 47 06	CMP (CHARLIE BROWN)	Snoopy, Charlie Brown. Do you read?
03 22 47 08	CDR (SNOOPY)	Roger. I'm reading you loud and clear, John.
03 22 47 16	CC	Charlie, this is Houston. Snoopy is reading you. Over.
03 22 47 24	CMP (CHARLIE BROWN)	Roger. I know it. I read him loud and clear on Bravo.
03 22 47 55	CDR (SNOOPY)	Hello, Charlie Brown. Snoopy. How do you read on Simplex A?
03 22 48 04	CMP (CHARLIE BROWN)	Tom, I can hear you, but just barely. I've got the squelch turned all the way off.
03 22 48 13	CDR (SNOOPY)	Okay. You're coming through loud and clear. I'll tell you what, I'll increase the squelch here a little bit.
03 22 48 22	CDR (SNOOPY)	How do you read now, John?
03 22 48 30	CMP (CHARLIE BROWN)	I can hear you talking in the background, but I don't understand anything you're saying. Let me switch antennas.
03 22 48 37	CDR (SNOOPY)	Okay.
03 22 48 45	CMP (CHARLIE BROWN)	Snoopy, Charlie Brown. Over.
03 22 48 47	CDR (SNOOPY)	Roger, John. You're coming through and loud and clear.

03 22 48 54	CMP (CHARLIE BROWN)	I don't hear you, Tom.
03 22 48 56	CDR (SNOOPY)	Okay.
03 22 48 57	CMP (CHARLIE BROWN)	Hey, can we go back to VHF B?
03 22 49 00	CDR (SNOOPY)	Let's go back to B Simplex.
03 22 49 22	CDR (SNOOPY)	Hello - -
03 22 49 23	CMP (CHARLIE BROWN)	Houston, this is Charlie Brown. Do you have any suggestions?
03 22 49 29	CC	Stand by one, Charlie.
03 22 49 30	CDR (SNOOPY)	Charlie Brown, Snoop. How do you read on VHF B? Can you read me on VHF B?
03 22 49 39	CMP (CHARLIE BROWN)	I read you loud and clear, Tom.
03 22 49 41	CDR (SNOOPY)	Let's stay here.
03 22 49 43	CMP (CHARLIE BROWN)	Okay.
03 22 49 50	CMP (CHARLIE BROWN)	Can we try Duplex B? Over.
03 22 49 57	CDR (SNOOPY)	Stand by.
03 22 50 06	CDR (SNOOPY)	Go ahead on Duplex B.
03 22 50 20	CMP (CHARLIE BROWN)	Snoopy, Charlie Brown. How do you read? Over.
03 22 50 21	CDR (SNOOPY)	Roger. Loud and clear, John, really loud and clear.
03 22 50 33	CMP (CHARLIE BROWN)	I can't hear you on Duplex B, Tom.
03 22 50 37	CDR (SNOOPY)	Okay. Let's go to B Simplex and stay there awhile, John.

03 22 50 48	CC	Charlie, this is Houston. Snoopy wants to go to B Simplex. He's reading you; you're not reading him.
03 22 50 57	CMP (CHARLIE BROWN)	Roger. I read you loud and clear on B Simplex, Tom.
03 22 51 01	CDR (SNOOPY)	Roger. I'm reading you loud and clear on B Simplex, too, John. Let's just stay here.
03 22 51 35	CMP (CHARLIE BROWN)	Houston, Charlie Brown. Can you work this problem, please?
03 22 51 37	CC	We're working on it, Charlie.
03 22 52 44	CC	Charlie, this is Houston. We're finished with your computer. You can go to BLOCK.
03 22 52 53	CMP (CHARLIE BROWN)	Roger.
03 22 52 55	CDR (SNOOPY)	Okay, Charlie Brown. Snoopy. You want to give me a time hack on VERB 16 NOUN 65? Or your mission time. It doesn't matter.
03 22 53 14	CMP (CHARLIE BROWN)	Okay, Snoopy. Time hack follows: 94 53 17 18 19 20.
03 22 53 26	CDR (SNOOPY)	Okay. We're in good shape, here, until we get an update. It looks good. Let's go, and give me VERB 05 NOUN 01 1706, ENTER. See if that's changed and give me the numbers, babe.
03 22 53 54	CMP (CHARLIE BROWN)	Roger. VERB 05 NOUN 01: three balls 12, 13256, 332, 66.
03 22 53 58	CDR (SNOOPY)	Okay. Got it. Thank you.
03 22 55 05	CDR (SNOOPY)	Hello, Houston. This is Snoopy. Over.
03 22 55 08	CC	Go ahead, Snoop. Houston standing by.
03 22 55 14	CDR (SNOOPY)	Okay. If you have high gain lock, I'm ready for my E-memory dump on page 33.
03 22 55 31	CC	Snoopy, this is Houston. Put your updata link to DATA, and we are ready for the E-memory dump. Over.
03 22 55 39	CDR (SNOOPY)	Okay.

03 22 55 53	CDR (SNOOPY)	Updata link to DATA and E-memory dump coming at you.
03 22 55 56	CDR (SNOOPY)	MARK.
03 22 55 58	CC	Roger, Snoop. We copy.
03 22 56 01	CDR (SNOOPY)	Hello, Charlie Brown. Snoopy here.
03 22 56 10	CMP (CHARLIE BROWN)	Go ahead, Gene. This is John.
03 22 56 11	CDR (SNOOPY)	Okay, Jose. How are you doing? I'm ready to do that docked alignment - the docked alignment if you are. How are you doing there?
03 22 56 25	CMP (CHARLIE BROWN)	Okay. I'm about ready.
03 22 56 31	CDR (SNOOPY)	Okay, John. When you get all squared away, we go in the minimum deadband attitude hold, hold the rascal tight; and then on your mark, if you can give me VERB 06 NOUN 20, and then just hold it until I get my alignment squared away.
03 22 56 52	CMP (CHARLIE BROWN)	Okay. I'm going to SCS and then deadband.
03 22 57 04	CMP (CHARLIE BROWN)	Okay. We're in MIN deadband.
03 22 57 07	CDR (SNOOPY)	Okay. If you're in MIN deadband attitude hold and when it all settles down there, give me VERB 06 NOUN 20, and we'll have at it. Over.
03 22 57 16	CMP (CHARLIE BROWN)	Roger. VERB 06 NOUN 20: it's 13807 20094 00055.
03 22 57 34	CDR (SNOOPY)	Okay. Reading them back: number 1,13807; number 2,20094; number 3,00055. Over.
03 22 57 44	CMP (CHARLIE BROWN)	That is correct.
03 22 57 45	CDR (SNOOPY)	Okay. Hold it there and we will be at it.
03 22 59 51	CC	Charlie Brown, this is Houston. We have your DAP update pad when you're ready.

03 23 00 01 CMP (CHARLIE BROWN) Roger. Go ahead.

03 23 00 03 CDR (SNOOPY) Okay. John - John, you can go ahead and release it, the minimum deadband. We're all out on the coarse align and we're squared away.

03 23 00 11 CMP (CHARLIE BROWN) Okay. Go back to CMC in AUTO.

03 23 00 14 CDR (SNOOPY) Okay. And real fast here: if you can give me a VERB 06 NOUN 20, we'll mark it forward and call the ground on a fine align.

03 23 00 26 CDR (SNOOPY) Let me know and I'll give the ENTER on VERB 06 NOUN 20. Are you ready?

03 23 00 29 CMP (CHARLIE BROWN) Okay. Go ahead.

03 23 00 30 CDR (SNOOPY) Okay. 3, 2, 1.

03 23 00 34 CDR (SNOOPY) Mark it.

03 23 00 35 CMP (CHARLIE BROWN) You got it.

03 23 00 36 CDR (SNOOPY) Okay. Read it to me, babe.

03 23 00 37 CMP (CHARLIE BROWN) Let's do another one, Tom. I was a little late on that one.

03 23 00 43 CDR (SNOOPY) Okay. Just a couple of seconds. Okay. Counting you down: 4, 3, 2, 1.

03 23 00 53 CDR (SNOOPY) Mark it.

03 23 00 55 CMP (CHARLIE BROWN) Okay. Plus 13801, plus 20067, plus 00048.

03 23 01 12 CDR (SNOOPY) Okay. Was the first one 138?

03 23 01 16 CMP (CHARLIE BROWN) Right. Plus 138.

03 23 01 17 CDR (SNOOPY) 13801, plus 20067, plus 00048.

03 23 01 25	CMP (CHARLIE BROWN)	Right.
03 23 01 26	CDR (SNOOPY)	Okay.
03 23 01 56	CDR (SNOOPY)	Hello, Houston. This is Snoopy.
03 23 01 58	CC	Go ahead, Snoopy.
03 23 02 02	CDR (SNOOPY)	Roger. Did you read out that John's VERB 06 NOUN 20?
03 23 02 08	CC	That's affirmative. We copied: 13801, plus 20067, plus 00048.
03 23 02 18	CDR (SNOOPY)	Okay. And here are my gimbal angles: plus 16070, plus 02023, plus 35973. Over.
03 23 02 31	CC	Okay, Snoop. We got you: plus 16070, plus 02023, plus 30 - correction - plus 35973.
03 23 02 44	CDR (SNOOPY)	That is correct and we're still running about 35 to 45 minutes ahead of time. Over.
03 23 02 53	CC	Snoopy, this is Houston. We would like you to check your T-ephemeris. We think it's incorrect.
03 23 03 01	CDR (SNOOPY)	Okay. I'l recheck it. Thank you.
03 23 03 19	CMP (CHARLIE BROWN)	Okay. I got three balls 12, 13256, and 33266 - here, Tom.
03 23 03 28	CDR (SNOOPY)	And that's exactly what I've monitored. If you read my DSKY, I've got it three balls 12, 13256, 33266. Over.
03 23 04 51	CMP (CHARLIE BROWN)	Instant sunset.
03 23 04 56	CC	Roger, Charlie.
03 23 05 09	CDR (SNOOPY)	Hello, Houston. This is Snoopy. I'm going to jump way ahead and get my rate GYRO check out of the way.
03 23 05 14	CC	Roger, Snoop. We copy.
03 23 06 20	CC	Charlie Brown, this is Houston. We're going to have to do a P52 and then repeat step 7 on your activation 35.

03 23 06 38	CMP (CHARLIE BROWN)	Okay. You've got to have a P52 first, huh?
03 23 06 41	CC	That's affirmative.
03 23 06 53	CDR (SNOOPY)	Hey, C.B.?
03 23 07 15	CDR (SNOOPY)	Hello, Houston. This is Snoopy. I'm standing up here in the hatch. Do you want us to do a P52 right now or do you want us to start working on the hatch to get that out of the way? Over.
03 23 07 28	CC	Snoopy, we want you to get the P52 in before we go LOS, which is going to be in 33 minutes.
03 23 07 55	LMP (SNOOPY)	Hello Houston, Houston. This is the LMP back in Snoopy.
03 23 07 58	CC	Roger. We read you loud and clear, Gene-o.
03 23 08 05	LMP (SNOOPY)	Okay, Jack. I'm getting on my hoses here and I'll be with you in a second.
03 23 09 55	CC	Charlie, this is Houston. Let's take an option 1 on that.
03 23 11 18	CMP (CHARLIE BROWN)	Aha! Today it picks up the LM.
03 23 11 40	CMP (SNOOPY)	Hello, Houston. This is Snoopy. I'm going to go ahead with the ascent battery activation and checkout at this time. Over.
03 23 11 49	CC	Roger. We copy, Snoop.
03 23 12 50	LMP (SNOOPY)	Houston, bus voltage on ascent battery alone looks like it's about 30 volts apiece.
03 23 12 57	CC	Roger. We copy, Snoop.
03 23 14 21	CMP (CHARLIE BROWN)	Houston, you got those GYRO torquing angles? Over.
03 23 14 26	CC	We're copying them down. Stand by.
03 23 14 40	CC	Okay, Charlie. We've got them.
03 23 15 02	CC	Okay, Charlie and Snoopy. We've got some switches for you to check on the VHF-A COMM situation.

03 23 15 15	CMP (CHARLIE BROWN)	Roger. Go ahead.
03 23 15 17	CC	Okay. For Charlie Brown: this is VHF/AM A Simplex basic check. Your VHF/AM A switch in Simplex, VHF/AM B in OFF. VHF/AM receive only in OFF, VHF ranging OFF. And for Snoopy: VHF transmitter A to VOICE, VHF receiver A to ON, and on the commander's audio center your VHF A transmit/receive to TR.
03 23 16 00	LMP (SNOOPY)	Okay. For Snoopy, that was VHF A transmit voice receiver ON, and what was the last one?
03 23 16 04	CC	VHF receiver A to ON, and on the commander's audio side, the VHF A TR to TR, and check all circuit breakers IN.

END OF TAPE

03 23 16 29	CMP (CHARLIE BROWN)	Roger. That was the setup I had there, Jack.
03 23 16 35	CC	Roger. Thank you, John.
03 23 16 38	CDR (SNOOPY)	Hello, Charlie Brown. Snoopy. How do you read on VHF A Simplex?
03 23 16 48	CMP (CHARLIE BROWN)	I read you same as before, Tom, which is unreadable.
03 23 16 53	CMP (SNOOPY)	John, do you read me any better?
03 23 16 57	CMP (CHARLIE BROWN)	Negative. I can hear you through the tunnel.
03 23 17 03	LMP (SNOOPY)	Okay. But you don't hear me any better, huh? Okay.
03 23 17 15	CC	Snoopy and Charlie Brown, this is Houston. We're ready for you to do step 7 on your coarse align procedure.
03 23 17 27	CDR (SNOOPY)	Okay, John. How do you read now?
03 23 17 37	CMP (CHARLIE BROWN)	Okay. We're going to have to go back to - Okay, go ahead, Tom.
03 23 17 46	CDR (SNOOPY)	Okay, John.
03 23 17 47	CMP (CHARLIE BROWN)	Are you on Duplex B, Tom?
03 23 17 49	CDR (SNOOPY)	... VERB 06, NOUN ...
03 23 17 50	CMP (CHARLIE BROWN)	- - Simplex A?
03 23 17 51	CDR (SNOOPY)	- - and I'll count you down. Okay?
03 23 17 58	CMP (CHARLIE BROWN)	Hey, Tom, are you on Simplex A or B?
03 23 18 04	CDR (SNOOPY)	John, let's don't screw with them. Let's go on to B, and we'll get this stuff out of the way.
03 23 18 11	CC	Charlie, this is Houston. He wants to go to Simplex B.

03 23 18 25	CMP (CHARLIE BROWN)	Okay. How do you read now?
03 23 18 27	CDR (SNOOPY)	John, I'm reading you loud and clear. How do you read me? Over.
03 23 18 33	CMP (CHARLIE BROWN)	I don't read you.
03 23 18 36	LMP (SNOOPY)	John, do you read me on Simplex B?
03 23 18 38	CMP (CHARLIE BROWN)	Yes. Loud and clear.
03 23 18 42	CDR (SNOOPY)	Okay, John. We got it now. Let's go ahead with VERB 06, NOUN 20, and tell me when you're ready, and I'll count you down. Over.
03 23 18 54	CMP (CHARLIE BROWN)	Okay. Go.
03 23 18 56	CDR (SNOOPY)	Okay. 3, 2, 1.
03 23 19 00	CDR (SNOOPY)	MARK.
03 23 19 02	CMP (CHARLIE BROWN)	Okay. Plus 13552, plus 19371, plus 00132.
03 23 19 16	CDR (SNOOPY)	Okay. I've got all those. Plus 13552, plus 19371, plus 00132. Over.
03 23 19 24	CMP (CHARLIE BROWN)	Check.
03 23 19 42	CDR (SNOOPY)	Okay, Houston. This is Snoopy. Ready to copy my angles? Over.
03 23 19 45	CC	Go ahead, Snoop.
03 23 19 50	CDR (SNOOPY)	Okay. My angles at 06 20: plus 012. Pardon me, my first ... plus 16354, plus 01299, plus 35901, and I assume that you copy, John. Oh, pardon, that's 35906 on the last register.
03 23 20 17	CC	Okay, Snoopy. We copy, John. Then on yours we got plus 16354, plus 01299, plus 35906.
03 23 20 29	CDR (SNOOPY)	That's correct. Thank you.

03 23 20 33	LMP (SNOOPY)	And, Houston, this is Snoopy. The ascent batteries look good. The backup and normal feed is good. And my ED voltage is 37 on A and 37 on B.
03 23 20 45	CC	Roger. We copy. 37 on ED's.
03 23 21 10	CDR (SNOOPY)	Charlie Brown, Snoopy. Our next step here - We got to have the hatch closed, so I'll stand by to help you with the probe and drogue when you're ready, babe.
03 23 21 19	CMP (CHARLIE BROWN)	Roger.
03 23 24 46	LMP (SNOOPY)	Houston, this is Snoopy. How about giving me the next LOS and the next AOS time, please?
03 23 24 52	CC	Okay, Snoopy. Your next LOS will be at 95 40, and your next AOS will be at 96 27. And I have some LM GYRO torque angles for you.
03 23 25 14	LMP (SNOOPY)	Stand by half a second.
03 23 25 43	LMP (SNOOPY)	Okay. Go ahead with your LM GYRO torque angles.
03 23 25 48	CC	Okay. LM GYRO torque: X, minus 00730; Y minus 00700; Z, plus 00570.
03 23 26 08	LMP (SNOOPY)	Okay. I got X, minus 00730; Y, minus 00700; and Z is plus 00570. Is that correct?
03 23 26 18	CC	That's affirmative. You've got them right. There's one more thing we can try on our VHF situation. We may have the corona built up on our VHF A transmitter, so VHF A transmitter switch OFF for several seconds and then back to VOICE. Over.
03 23 26 38	LMP (SNOOPY)	I don't think that will work, Jack. When we just tried it again, it had been in the OFF position. I put it to VOICE. We'll give it a try here in a minute, though.
03 23 26 45	CC	Roger.
03 23 26 521	LMP (SNOOPY)	I was suiting up while this COMM problem started. Is it a VHF A Simplex mode?
03 23 26 58	CC	That's affirmative. Unable to transmit Snoopy to Charlie Brown on VHF A.
03 23 27 08	LMP (SNOOPY)	Okay. That sort of blows the ranging capability, doesn't it?

03 23 27 18	CC	That's affirmative.
03 23 28 15	LMP (SNOOPY)	Houston, this is Snoopy. While they're closing off the probe and drogue and hatch, I'll copy some of those updates, burn update times, if you got them.
03 23 28 29	CC	Roger. Stand by one, please.
03 23 28 47	CC	Okay, Snoopy. We have these burn times. They're nominal burn times; they'll change a little bit either way. Separation is 98 47 16. DOI, 099 46 02. Phasing, 100 58 - -
03 23 29 00	LMP (SNOOPY)	Wait a minute, Jack. Wait a minute. Wait a minute. Wait a minute. I can only copy them down one at a time. I want to copy them right in the book. Now go on with DOI.
03 23 29 19	CC	Roger. 099 46 02. Over.
03 23 29 30	LMP (SNOOPY)	Okay. Go on with phasing.
03 23 29 32	CC	Okay. Phasing is at 100 58 25.
03 23 29 47	LMP (SNOOPY)	Okay. Insertion.
03 23 29 49	CC	Insertion is at 102 54 37.
03 23 30 00	CC	And, Charlie Brown, this is Houston - -
03 23 30 01	LMP (SNOOPY)	... that's all we need right now, huh?
03 23 30 04	CC	Charlie Brown, this is Houston. Your roll jets to DISABLE, please.
03 23 30 13	CMP (CHARLIE BROWN)	All roll jets - wait - wait a minute. We'll - Okay, we'll disable the roll jets. Did we maneuver to the landmark tracking attitude with just the probe holding?
03 23 30 23	CC	Stand by.
03 23 30 24	CMP (CHARLIE BROWN)	We haven't released the capture latches yet, Jack.
03 23 30 28	CC	Roger. Stand by.
03 23 32 10	CMP (CHARLIE BROWN)	Houston, this is Charlie Brown. Over.

03 23 32 15	CC	Go ahead, Charlie.
03 23 32 20	CMP (CHARLIE BROWN)	Roger. What's the answer to that one?
03 23 32 22	CC	Okay. The answer to it is that, as soon as the tunnel is vented, you can use your roll jets. Over.
03 23 32 33	CMP (CHARLIE BROWN)	Roger. Why don't we just maneuver to the attitude first then, and then preload the probe, then release the latches.
03 23 32 57	CC	Charlie, this is Houston. Stand by one on rolling to the landmark track attitude. We'd like to update the LGC clock. Over. And we'll give you a GO when you can maneuver to the attitude.
03 23 33 10	CMP (CHARLIE BROWN)	Roger. Roger. I'll go in there - I'll go in there and release the latches then.
03 23 33 39	CC	Snoopy, Houston. We'd like you to put your updata link switch to DATA, please.
03 23 33 50	LMP (SNOOPY)	Okay. It is in DATA.
03 23 33 54	CMP (CHARLIE BROWN)	Hey, Gene, you guys want to put your helmets and gloves on and release these latches?
03 23 33 57	LMP (SNOOPY)	Yes. I'll give you a call when we get them on, John, before you release them.
03 23 36 17	LMP (SNOOPY)	Okay, Charlie Brown. We've got helmets and gloves on. You can open the latches.
03 23 36 37	LMP (SNOOPY)	Charlie Brown, this is Snoop. Do you read?
03 23 36 40	CMP (CHARLIE BROWN)	Roger. Just a second.
03 23 36 42	LMP (SNOOPY)	Okay. And we're closing our hatch at this time.
03 23 37 06	CMP (CHARLIE BROWN)	Okay. And I'll disable the roll jets here.
03 23 37 38	CC	Snoopy/Charlie Brown. This is Houston. Our uplink is complete, and you have a GO for a maneuver to the landmark tracking attitude, and we have to have the OPS source pressure. Over.

03 23 37 57	LMP (SNOOPY)	Stand by one.
03 23 38 48	LMP (SNOOPY)	Okay, Houston. This is Snoop. I read 5800 on both OPS's this morning when I came in.
03 23 38 55	CC	Roger, Snoop. We copy. 5800.
03 23 40 04	CC	Snoopy, this is Houston. We are 1 minute from LOS. I recommend you lock your high gain antenna. Over.
03 23 40 16	LMP (SNOOPY)	Roger. Thank you.
03 23 41 08	CC	Charlie Brown, this is Houston. We notice an increase in your O_2 flow. Recommend two return valves CLOSED with your helmets and gloves off. Over.
03 23 55 --		BEGIN LUNAR REV 11
04 00 27 39	CC	Hello, Charlie Brown. Houston. We're standing by. Over.
04 00 27 53	CMP (CHARLIE BROWN)	Houston, Charlie Brown. Over.
04 00 27 57	CC	Roger, Charlie Brown. Read you - -
04 00 27 58	CMP (CHARLIE BROWN)	I checked the vent valve and -
04 00 28 07	CMP (CHARLIE BROWN)	Roger. I say again, we cannot get the tunnel to vent. Over.
04 00 28 12	CC	Roger. Understand. Tunnel will not vent.
04 00 28 17	CMP (CHARLIE BROWN)	That's correct. We've checked the inflow valve; I've checked the inflow valve; I've checked the vent valve. And Tom and Gene have checked their AUTO valve and their hatch seal around the hatch, and they feel some pressure inside their vehicle. And it doesn't appear to be leading into the tunnel, so I don't know what their problem is. Possibly some of that insulation has gotten lodged in the vent line, maybe.
04 00 28 52	CC	Roger. We copy. Stand by.
04 00 29 07	CMP (CHARLIE BROWN)	This is Charlie Brown. Do you read? Over?

04 00 29 10	CC	Roger. We read you five-by - about three-by, Charlie Brown. We copied that the tunnel will not vent, so we're working the problem now. Stand by. Over.
04 00 29 19	CMP (CHARLIE BROWN)	We can barely read you now.
04 00 29 25	CDR (SNOOPY)	Houston, this is Snoopy. How do you read?
04 00 29 29	CC	Snoopy, this is Houston. We read you about two-by.
04 00 29 36	CDR (SNOOPY)	Okay. The whole thing ... and ... up here ... Mylar insulation ... tunnel. We can ... repressurize ...
04 00 30 10	CC	Snoopy, Houston. You're unreadable. We copied a few words about the Mylar insulation and that the tunnel will not vent. Otherwise, that's all we can copy. Over.
04 00 30 24	LMP (SNOOPY)	Hello, Houston. How do you read Snoopy now?
04 00 30 28	CC	You're about two-by, still, Gene.
04 00 30 34	LMP (SNOOPY)	Okay. If we have to, we would like to go ahead and try and vent the tunnel through the LM. We will depressurize the LM on our way ...
04 00 30 48	CC	Roger. Stand by.
04 00 31 03	CDR (SNOOPY)	...
04 00 31 49	CC	Hello, Snoopy and Charlie Brown. We recommend you skip the landmark tracking and jump to a high gain antenna attitude. Over. We'll have you some angles momentarily.
04 00 32 31	CC	Hello, Charlie Brown. Houston. If you maneuver to a 000 roll, 014 pitch, and yaw 000, and get into high gain, your angles are good in the flight plan. Snoop, your angles are good as listed in the flight plan at 97 hours. Over.
04 00 32 52	LMP (SNOOPY)	Snoopy. Roger. Understand.
04 00 32 55	CMP (CHARLIE BROWN)	...

04 00 32 57	LMP (SNOOPY)	He said if you maneuver to those angles ...
04 00 33 07	CC	Roger, Snoop. Your angles are 193 and yaw 64 degrees on the high gain antenna when Snoopy gets - correction, when Charlie Brown gets the attitude.
04 00 33 15	LMP (SNOOPY)	Houston, repeat up to me where you want Charlie Brown to maneuver to? He can't read you.
04 00 33 28	CDR (SNOOPY)	In the angles.
04 00 33 29	CC	Roger, Snoop. We want Charlie Brown to maneuver to 000 roll, pitch 014, yaw 000. It's listed in the flight plan at 96 hours and 40 minutes. Over. Skip the landmark tracking.
04 00 33 50	LMP (SNOOPY)	... skip ... landmark tracking.
04 00 34 07	CDR (SNOOPY)	Say, I asked you what angles ...
04 00 34 35	CC	Charlie Brown/Snoop, let us know when you get there.
04 00 34 45	LMP (SNOOPY)	Okey doke. This way we get high gain so we can get our state vector update and continue on. We can't do much without that state vector.
04 00 34 55	CC	Roger, Snoop. We copied about - We see Charlie Brown maneuvering to high gain attitude. Stand by on the tunnel vent. Over. We're coming up with a procedure for you.
04 00 35 10	LMP (SNOOPY)	Okay. Great. Thank you.
04 00 35 59	CMP (CHARLIE BROWN)	Okay, Tom. LM time is going to be about 360, right? 606 36 360 and roughly 40 above 400. Right?
04 00 36 15	CDR (SNOOPY)	Yes. Hey, how come you're feeding on the VOX through feed loop? Are you VOX?
04 00 36 21	CMP (CHARLIE BROWN)	No. We got a hot S-band mike when we're in ... PPT and downvoice backup.
04 00 36 25	CDR (SNOOPY)	Okay.

04 00 36 27 CMP (CHARLIE BROWN) I just left it there right now.

04 00 36 29 CDR (SNOOPY) All right. We'll just leave ...

04 00 36 33 CMP (CHARLIE BROWN) Right. ... go there. Yes.

04 00 36 35 CDR (SNOOPY) Okay.

04 00 36 49 CMP (CHARLIE BROWN) Okay, babe.

04 00 37 00 CMP (CHARLIE BROWN) ...

04 00 37 24 CC Snoopy, Houston.

04 00 37 28 CDR (SNOOPY) Go ahead, Houston. This is Snoopy.

04 00 37 31 CC Roger. Houston. You're coming about three-by now, Tom. When we get high gain lockup, we'd like voice with the ranging off. Over.

04 00 37 45 CDR (SNOOPY) ... backup ranging off.

04 00 37 51 CC Roger. And in downvoice backup master, if you turn the ranging off, we'll probably improve the voice quality some. Over.

04 00 38 03 LMP (SNOOPY) Okay, Charlie. I've got the ranging off.

04 00 38 06 CC Roger. You're a little bit better, Gene-o. Charlie Brown, I understand you're calling. Go ahead. Over.

04 00 38 52 CDR (SNOOPY) Hello, Houston. This is Snoopy. How do you read? Over.

04 00 38 56 CC Go ahead, Snoop. Over.

04 00 38 58 CMP (CHARLIE BROWN) I'll have my high gain in a minute.

04 00 39 01 CDR (SNOOPY) Okay, Charlie. Look, as far as we can see, it still appears to us like all this Mylar floating around in the spacecraft has probably got into that vent line. The only solution we see about it is we vent the tunnel and take it out through the LM and take us down. With Charlie Brown good it will

		stuff that Mylar right back into his valve - tunnel valve, which is no good. We'll have a rough riding command module, but if we did do something, we could live with the LM for a while. But that's about all we can see. And as far as we understand about the probe, it's probably not a good idea to release that probe until we're pressurized. Over.
04 00 40 41	CC	Roger, 10. Correction. Roger, Snoop. We're aware of that. We will probably come up with that solution. The only thing about releasing the probe without doing us a hatch integrity check, we're a little concerned about that. If you'll stand by a couple of minutes, we'll come up with a procedure for you for venting the tunnel. Over.
04 00 41 04	CDR (SNOOPY)	Okay.
04 00 41 07	CMP (CHARLIE BROWN)	Houston, Charlie Brown. High gain. How do you read?
04 00 41 12	CC	Hey, you're coming about three-by, John.
04 00 41 17	CMP (CHARLIE BROWN)	Roger. I'm reading you loud and clear now.
04 00 41 19	CC	Okay. You're coming about four-by. You're picking up all the time.
04 00 41 22	LMP (SNOOPY)	Houston, how is Snoopy on high gain?
04 00 41 24	CC	Hey, Snoopy, you're five-by. Stand by.
04 00 41 26	LMP (SNOOPY)	How is Snoopy on high gain?
04 00 41 28	CC	You're five-by, Snoop. Stand by.
04 00 41 33	LMP (SNOOPY)	Standing by, babe.
04 00 43 55	CMP (CHARLIE BROWN)	Okay, Snoopy. You want to do another LM drift check now?
04 00 44 01	CDR (SNOOPY)	Yes. Let's get ahead of them while they're still figuring what their recommendations are. John, on my Mark, let's do a VERB 06, NOUN 20. We'll try to keep ahead of it while we can.
04 00 44 12	CMP (CHARLIE BROWN)	Roger. Go ahead.
04 00 44 16	CDR (SNOOPY)	Okay. Counting down on VERB 06, NOUN 20: 3, 2, 1.

04 00 44 21	CDR (SNOOPY)	MARK.
04 00 44 23	CMP (CHARLIE BROWN)	Roger. Plus two balls 167, plus 01380, plus three balls 94.
04 00 44 38	CDR (SNOOPY)	Roger. 00167, 01380, 00094. Over.
04 00 44 45	CMP (CHARLIE BROWN)	Got them.
04 00 44 47	CDR (SNOOPY)	Roger.
04 00 45 08	CDR (SNOOPY)	Okay, Houston. My reading 0620, plus 30186, plus 19360, plus 35913. Over.
04 00 45 22	CC	Roger. We copy. Snoop, Cap - Snoop, Houston. We'd like to uplink a - got a load for you, if you'll give us POO and DATA. And we'll have some word on the tunnel procedure momentarily. Over.
04 00 45 51	CDR (SNOOPY)	Roger. We're in POO and DATA. You got it.
04 00 45 54	CC	Roger.
04 00 47 09	CMP (CHARLIE BROWN)	Houston, this is Charlie Brown. I never did get that DAP load. You got one for me? Over.
04 00 47 14	CC	Roger. We got it here for you, Charlie Brown, if you're ready to copy. CSM weight is 36688; gimbal trim: pitch minus 0.73, yaw plus 0.82; LM weight 31117. Over.
04 00 47 46	CMP (CHARLIE BROWN)	Roger. CSM weight 36688; minus 73, plus 82; LM weight 31117.
04 00 47 54	CC	Roger.
04 00 47 58	CMP (CHARLIE BROWN)	How do you want DAP set up today to balance these quads?
04 00 48 03	CC	Stand by. Use a BD roll, Charlie Brown.
04 00 48 13	CMP (CHARLIE BROWN)	Say again. Over.
04 00 48 15	CC	Roger. Use BD roll.
04 00 48 21	CMP (CHARLIE BROWN)	Roger. Use BD.

04 00 48 26	LMP (SNOOPY)	Houston, Snoop. Are you done?
04 00 48 29	CC	That's negative, Snoop.
04 00 48 31	LMP (SNOOPY)	Never mind, I can see you're not. Have you got our DAP load on page 45?
04 00 48 38	CC	That's affirmative. Coming up to you now. CSM weight 36688; LM weight 31117. Over.
04 00 48 55	LMP (SNOOPY)	Roger. LM is 31117; CSM is 36688. And understand the 501 and the 547 are still good.
04 00 49 05	CC	Affirmative. Stand by. We'll be right with you, Snoop, on the ...
04 00 49 11	LMP (SNOOPY)	Okay. As soon as we ... Okay. We're going to proceed as soon as we get the computer back to updating the AGS, and going through the gimbal check until we hear from you.
04 00 49 23	CC	Roger. We concur.
04 00 49 32	CC	Snoop, Houston. We got just one more load to go and then we'll have it for you. Over.
04 00 49 40	LMP (SNOOPY)	Okey doke.

END OF TAPE

04 00 50 16	LMP (SNOOPY)	Hello, Charlie Brown. Snoop.
04 00 50 18	CMP (CHARLIE BROWN)	Go ahead. Over.
04 00 50 19	LMP (SNOOPY)	On that VHF A, was your squelch all the way off?
04 00 50 23	CMP (CHARLIE BROWN)	That's affirmative.
04 00 50 25	LMP (SNOOPY)	Okay.
04 00 50 29	CMP (CHARLIE BROWN)	I had the squelch up and down when you guys were transmitting. I couldn't do any good either way.
04 00 50 33	LMP (SNOOPY)	Okay
04 00 52 38	CC	Hello, Snoop. Houston. We are through with the load. The computer is yours. Charlie Brown and Snoop, if you're ready to copy, we have a procedure for you for your tunnel vent. Over.
04 00 52 53	LMP (SNOOPY)	Roger. Go ahead.
04 00 52 57	CDR (SNOOPY)	Go ahead.
04 00 52 59	CC	Roger, Snoop. On activation 38, we want you to do - to vent the tunnel using the normal - the regulator check with the following exceptions. Are you ready to copy? Over.
04 00 53 22	CDR (SNOOPY)	Go ahead.
04 00 53 23	CC	Okay. We assume you've gone through the regulator check, so we're going to shorten this procedure. In step 2 - step 2 on activation 38, line 2, verify overhead cabin dump valve. We want that OPEN. Cabin REPRESS to CLOSE. Activation, page 39, step 3, the forward cabin dump valve OPEN then AUTO at 3-1/2 psi. Now, that will give us a 1-1/2 DELTA-P in the tunnel, and at this time the CMP should be monitoring the LM/CM DELTA-P. Now, all we're concerned about is the hatch integrity check for the command module using this procedure. We don't have to take the tunnel all the way down. Now, we will have to eliminate any

		RCS hot fire, the yaw thruster firing, and we'll get that out of the way after undocking. Over.
04 00 54 32	CDR (SNOOPY)	Okay. I think we got it, Charlie. On page 38, step 2, verify overhead cabin dump valve to OPEN instead of AUTO; cabin REPRESS to CLOSE on step 3; opened at AUTO at 3.5; and we'll restrict the yaw firing thruster as you're concerned about the command module hatch integrity check, and for us to assume that when he releases the probe, that the 3-1/2 psi will not hurt the probe. Over.
04 00 55 02	CC	That's affirmative. We've run that through the experts, Tom, and it will not hurt the probe or the drogue. In repressurizing, don't forget to put the overhead dump valve - overhead dump valve - back to AUTO when you REPRESS. Over.
04 00 55 20	CDR (SNOOPY)	Oh, yes. We know all about that, Charlie.
04 00 55 22	CC	Okay. You just pressurize the tunnel back up again - -
04 00 55 25	CDR (SNOOPY)	Okay. We're ready to go through it - We're ready to go. Right. We're ready to go ahead through it right now, when John's ready.
04 00 55 33	CC	Roger. Now, we'd like you to stay - -
04 00 55 35	CMP (CHARLIE BROWN)	Okay. Let me get up here in the tunnel there, Tom.
04 00 55 38	CC	Okay, troops. Now we'd like you to stay at about three and a half for a couple of minutes so we can get a hatch integrity check in the command module. Over.
04 00 55 51	CDR (SNOOPY)	Roger.
04 00 55 55	CMP (CHARLIE BROWN)	Okay. Go ahead, Tom. What position you want me to be on tunnel? Do you want me on CM DELTA-V?
04 00 56 00	CC	That's affirmative.
04 00 56 07	CMP (CHARLIE BROWN)	Okay. Go ahead, Tom.
04 00 56 21	CMP (CHARLIE BROWN)	Are you all doing the checks, you guys?

04 00 56 24	CDR (SNOOPY)	Stand by. Keep in touch.
04 00 56 25	LMP (SNOOPY)	We're starting it off right now, John. I'll give you a hack when we're going down.
04 00 56 27	CMP (CHARLIE BROWN)	Thank you.
04 00 56 29	CC	Snoop, Houston. You'd give us a warm feeling if you could talk us through this.
04 00 56 37	LMP (SNOOPY)	Okay. Cabin gas return, EGRESS. How do you read my VOX, Houston?
04 00 56 45	CC	Reading you five-by, Snoop.
04 00 56 48	LMP (SNOOPY)	Check. Cabin gas - cabin gas return - Wait a minute. Wait a minute. Start here, babe, or back here? Okay, Houston. I'm starting at 96 05, step number 2. Is that correct?
04 00 57 06	CC	That's affirmative. Before you get started, we want both PRESS REG's A and B to EGRESS. Over.
04 00 57 17	LMP (SNOOPY)	Both PRESS REG's A and B to EGRESS.
04 00 57 19	CMP (SNOOPY)	I've got them EGRESS. Let's go.
04 00 57 21	LMP (SNOOPY)	Roger. They're EGRESS. Cabin gas return, EGRESS. Verify overhead cabin dump valve OPEN.
04 00 57 37	LMP (SNOOPY)	OPEN?
04 00 57 38	CC	Yes. That's affirmative.
04 00 57 39	LMP (SNOOPY)	Okay. Cabin REPRESS, CLOSED.
04 00 57 42	CC	Go.
04 00 57 47	LMP (SNOOPY)	Got it closed?
04 00 57 48	CC	Affirmative.
04 00 57 49	LMP (SNOOPY)	PRESS REG B, EGRESS. B Bravo. Okay? Okay. Forward ... cabin dump valve OPEN and in AUTO at 3.5. Why don't you get that, Tom, and I'll tell you when.

04 00 58 13 CMP (CHARLIE BROWN) Okay. I'm reading a minus a half psi on my CM/LM pressure gage right now.

04 00 58 22 LMP (SNOOPY) Houston, where is the suit gas diverter valve on this?

04 00 58 26 CC Suit gas diverter valve should be in EGRESS.

04 00 58 30 LMP (SNOOPY) ... should be right. That's what we figured. Okay. And just to verify, we got PRESS REG A in EGRESS and PRESS REB B in EGRESS. Is that correct?

04 00 58 42 CC Affirmative.

04 00 58 46 LMP (SNOOPY) Okay. We're going to start dumping the cabin down to 35.

04 00 58 50 CC Roger.

04 00 58 53 CMP (CHARLIE BROWN) Do it slowly, babe.

04 00 58 56 LMP (SNOOPY) Okay. There's 5.

04 00 58 58 CMP (CHARLIE BROWN) Okay. I have a half a psi.

04 00 59 00 LMP (SNOOPY) 45. 42.

04 00 59 06 CMP (CHARLIE BROWN) Okay. I have 1 psi.

04 00 59 07 LMP (SNOOPY) 40. 38. ... Hold it. 35. Stop it, Tom. Okay. We're down to 3.5. 4.2.

04 00 59 17 CMP (CHARLIE BROWN) We have 1-1/2 psi.

04 00 59 20 CC Roger. Snoop, we copy. 3-1/2 psi. And we copy Charlie Brown, 1-1/2 psi. Now hold - Let's hold for a couple of minutes to get a hatch integrity check. Charlie Brown, watch your cabin pressure. Over.

04 00 59 35 CMP (CHARLIE BROWN) I'm watching her.

04 00 59 44 LMP (SNOOPY) It's just like spring in Chicago in here. There's snow all over the place.

04 00 59 48 CC Roger.

04 01 00 07	LMP (SNOOPY)	Hey, Tom. I'm going ahead with the AGS bit while I can.
04 01 00 35	CMP (CHARLIE BROWN)	Okay. What's you guy's pressure, there?
04 01 00 45	CC	Snoopy, you holding your 3-1/2?
04 01 00 46	CDR (SNOOPY)	Okay. I think it's starting to build up. We ... let the tunnel pressure ... Yes. It ... go up before.
04 01 00 52	CMP (CHARLIE BROWN)	Okay. Mine's down to 1, now.
04 01 00 57	LMP (SNOOPY)	Houston, did you read Snoopy? Our pressure went from 3-1/2 up to 4, and then Tom just closed the overhead dump valve.
04 01 01 06	CC	Roger.
04 01 01 07	CMP (CHARLIE BROWN)	Okay. Mine's holding at 1 right now. That's because they built their's up, I guess.
04 01 01 16	CC	Charlie Brown and Snoop, we are satisfied with the hatch integrity check and the CSM. Now, before - Snoopy, Snoopy, before you repressurize, go to cabin gas return to CABIN. Over.
04 01 01 31	LMP (SNOOPY)	Roger. Cabin gas return to CABIN.
04 01 01 34	CC	Okay. You can start repressurizing now, and we'd like to get you a - When you get back in configuration, we'd like a hatch integrity check for you, too. Over.
04 01 01 47	CDR (SNOOPY)	Okay.
04 01 01 49	LMP (SNOOPY)	You want cabin gas return to AUTO, is what you want, isn't it?
04 01 01 54	CC	That's affirmative.
04 01 02 01	LMP (SNOOPY)	Okay. And we are ready to REPRESS, I guess, at this point.
04 01 02 04	CC	Roger. Go.
04 01 02 41	LMP (SNOOPY)	Okay, Houston. We are up to 5.
04 01 02 44	CC	Roger.

04 01 02 58	CC	Data procedure ...
04 01 03 00	LMP (SNOOPY)	Okay. Do you have a procedure for us on the integrity check?
04 01 03 05	CC	Say again, Snoop?
04 01 03 10	LMP (SNOOPY)	Say you were going to pass us up a procedure for a hatch integrity check?
04 01 03 13	CC	Negative. Just get in configuration, and if you hold pressure, that's good enough for us.
04 01 03 21	CDR (SNOOPY)	Well, we're okay.
04 01 03 23	CC	Okay. Fine. You can press on. Over.
04 01 03 59	CC	Snoopy/Charlie Brown, only thing is reminder PRESS REG's A and B back to CABIN. Over.
04 01 04 12	CDR (SNOOPY)	Roger. We'll get them, Charlie.
04 01 04 14	CC	Roger.
04 01 04 16	CMP (CHARLIE BROWN)	Okay. We're maneuvered back to the attitude this time, Tom. We're going to be a little more rigorous now.
04 01 04 47	CC	Charlie Brown, Houston. Two things for you: we'd like another readout on the LM/CM DELTA-P, and also disable all roll jets. Over. Until we can get undocked.
04 01 05 03	CMP (CHARLIE BROWN)	Roger. All roll jets coming OFF and LM/CSM DELTA-P is 0.9.
04 01 05 09	CC	Roger.
04 01 05 13	LMP (SNOOPY)	Houston, this is Snoop. I gave the AGS an update and an alignment, and then when I checked VERB 83, my local vertical angle goes off by about 20 degrees, so I'm going through the procedure again.
04 01 05 26	CC	Roger. And we have a K-vector update for you. Over.
04 01 05 35	LMP (SNOOPY)	Okay. Fire it.
04 01 05 37	CC	Roger. 090 00 03 00.

04 01 05 48	LMP (SNOOPY)	090 00 03 00?
04 01 05 52	CC	Affirmative.
04 01 06 15	CC	Snoopy/Charlie, this is Houston. We'd like to - We got a little problem with your GYRO platform as it appears, and X GYRO torquing angle is a little large. We'd like you to repeat the drift check. Over.
04 01 06 36	LMP (SNOOPY)	Okay. You want to repeat the drift check. Roger. Give us a second, here.
04 01 06 40	CC	Roger. That's on page 43.
04 01 06 49	LMP (SNOOPY)	Tom, when I load in the K-vector, I just load it in verb - in 90, don't I. Huh?
04 01 07 15	CC	Charlie Brown, Houston. We'd like one more readout of the LM/CM DELTA-P. Over.
04 01 07 24	CMP (CHARLIE BROWN)	Roger.
04 01 07 37	CMP (CHARLIE BROWN)	And it's 0.8.
04 01 07 39	CC	Roger.
04 01 08 04	CC	Snoop, Houston. We copy you entered the K-factor wrong. We need 90 hours and 3 seconds, not 30 seconds. Over.
04 01 08 17	LMP (SNOOPY)	Okay. 90 hours and 3 seconds. My mistake.
04 01 08 39	CC	Charlie Brown and Snoop, we have 30 minutes to LOS. If we don't get the RCS hot fire in, we're still GO for undocking. You can do that on the backside. Over.
04 01 08 58	CDR (SNOOPY)	Roger. What's the latest time for undocking now, Charlie?
04 01 09 02	CC	Stand by.
04 01 09 29	CMP (CHARLIE BROWN)	Tom, you go ahead and get that drift.
04 01 09 36	CC	Snoop, Houston. Undocking time is 98 22. You got an hour and 4 minutes. Over.
04 01 09 49	CDR (SNOOPY)	Roger. 98 22 00.

04 01 10 07	CDR (SNOOPY)	Charlie Brown, Snoop. We're ready to do another one of those ... checks. Let me know when you have VERB 06, NOUN 20, and I'll give you a Mark when they ENTER. Over.
04 01 10 16	CMP (CHARLIE BROWN)	Over.
04 01 10 18	CDR (SNOOPY)	Roger. 3, 2, 1.
04 01 10 21	CDR (SNOOPY)	MARK.
04 01 10 23	CMP (CHARLIE BROWN)	Okay. Plus 00393, plus 01300, plus 0428.
04 01 10 36	CDR (SNOOPY)	Roger. Copy. That's 00393, 01300, and 0428. We need one more number.
04 01 10 47	CMP (CHARLIE BROWN)	00428.
04 01 10 50	CDR (SNOOPY)	Okay. Got it.
04 01 11 06	CC	Snoop, Houston. Let me read you the angles that we got - -
04 01 11 10	CDR (SNOOPY)	What say?
04 01 11 11	CC	- - and see if they confirm. You ready to copy?
04 01 11 16	CDR (SNOOPY)	Go.
04 01 11 17	CC	Roger. For the CSM, it's plus 00393, plus 01300, plus 00428. For the LM, plus 29959, plus 19285, plus 35578. Over.
04 01 12 03	CC	Snoop, Houston. Somebody cut in on us here on the loop. Did you copy those angles?
04 01 12 11	CDR (SNOOPY)	Roger. I copied them and they look correct. We're going to go ahead and go through the DAP throttle ... here.
04 01 12 17	CC	Roger.
04 01 12 20	LMP (SNOOPY)	Say, Tom, circuit breaker STAB control DECA POWER closed? ... AUTO.

04 01 12 27	CMP (CHARLIE BROWN)	Okay; Houston. Charlie Brown here.
04 01 12 29	CC	Go ahead.
04 01 12 34	LMP (SNOOPY)	Looks like ... control PGNCS.
04 01 12 36	CMP (CHARLIE BROWN)	Roger. What about not rolling to this 180 degree roll, here, until we get undocked. Would that be all right?
04 01 12 43	CC	Stand by.
04 01 13 02	CMP (CHARLIE BROWN)	I don't know how I'm going to roll with the roll jets disabled.
04 01 13 05	CC	Roger. We copy, John. Stand by. We're running this one around the room, and I've got a SEP pad if you're not busy.
04 01 13 21	CMP (CHARLIE BROWN)	Go to it. Over.
04 01 13 22	CC	Roger. SEP. It's RCS/G&N and it's NA down to NOUN 33, and we've got 098 47 1600, NA down to the pitch angle, 014 degrees. Over.
04 01 13 50	CMP (CHARLIE BROWN)	Roger. 098 47 1600. 14 degrees pitch
04 01 13 57	CC	Good readback, Charlie Brown.
04 01 14 27	CDR (SNOOPY)	Okay, Houston. This is Snoopy. PCTA coming up to 40 percent.
04 01 14 35	CC	Roger.
04 01 14 36	CDR (SNOOPY)	Now full stop. Now MAX throttle. Now MIN.
04 01 14 43	CC	Roger. We copy.
04 01 14 44	CDR (SNOOPY)	Good.
04 01 14 45	CC	Roger. We copy. And Charlie Brown, we noticed when you went through your DAP load, you did not update your gimbal trims, and they're quite a bit off. Over.
04 01 15 03	CMP (CHARLIE BROWN)	Okay. I'll fix them.

04 01 15 06	LMP (SNOOPY)	... Snoopy. How's that for a K-factor time?
04 01 15 13	CC	Stand by.
04 01 15 19	LMP (SNOOPY)	Okay. If it's a good K-factor time, it's going in.
04 01 15 27	CC	Okay. The K-factor's good.
04 01 15 36	LMP (SNOOPY)	Okay. Tom, you got ENGINE ARM OFF? ... STAB CONTROL DECA POWER OPEN? AUTO CONTROL, AUTO. The VHF -
04 01 15 14	CC	Charlie Brown, Houston. If you can give us a POO and ACCEPT, we've got the load for you.
04 01 15 52	LMP (SNOOPY)	I'm down to page 47. I did everything up here, Tom.
04 01 15 57	CMP (CHARLIE BROWN)	You have it.
04 01 15 58	CC	Roger.
04 01 16 05	LMP (SNOOPY)	Yes, I got all the RCS pressure ...
04 01 16 28	LMP (SNOOPY)	... ARM's on, helium pressure RCS, FIRE. And I'll ... Goodbye, baby. Oh, wowie! Okay. There's helium pressure kickdown slightly. Where did it go? Hey, we're going at pressure ... Okay. Recycle. Let me recycle these valves. Half of those damn things go ... when you ...
04 01 17 13	CMP (CHARLIE BROWN)	Hey, Snoop. You know you're transmitting.
04 01 17 15	LMP (SNOOPY)	Yes, I know it. Okay. Verify MASTER ALARM OFF and RCS REG's A and B warning lights are OFF.
04 01 17 38	LMP (SNOOPY)	Okay. I verify the pressures and temperatures in the RCS, and they're all GO. And, Houston, this is Snoopy. Our helium pressure on both RCS rings is 3900 psi.
04 01 17 52	CC	Roger.
04 01 17 58	LMP (SNOOPY)	ATP - let me ...
04 01 18 09	LMP (SNOOPY)	STAB control attitude, direct control, closed, on your side.

04 01 18 17	LMP (SNOOPY)	Guidance control PGNS, that's GO. Deadband, MAX translation, four jets. Control PGNS, attitude hold. Attitude control, three pulse. Okay, four jet commander, disable. ... PA is enabled.
04 01 18 51	LMP (SNOOPY)	Okay, Charlie Brown. This is Snoopy. ... for you to be in a MIN deadband attitude hold.
04 01 19 05	CMP (CHARLIE BROWN)	Roger. Give me a second.
04 01 19 29	CMP (CHARLIE BROWN)	Okay. In and hold. You got it.
04 01 19 34	LMP (SNOOPY)	Okay. We are going to start your RCS checks, and we'll give you a hack when we go hot fire.
04 01 19 37	CMP (CHARLIE BROWN)	Okay. Remember I don't have any roll jets.
04 01 19 40	CDR (SNOOPY)	Roger. And we will not yaw.
04 01 19 43	CC	And, Charlie Brown, you can have your computer back. We're through with your load, and we're with you, Snoop, on the hot fire.
04 01 19 51	CDR (SNOOPY)	Okay. Charlie.
04 01 20 02	LMP (SNOOPY)	Okay. These are all cold fire. ... roll right ...
04 01 20 19	LMP (SNOOPY)	Okay. Try rolling right again. ... left ...
04 01 20 36	LMP (SNOOPY)	Houston, are you reading these numbers?
04 01 20 37	CC	Roger. We're reading them.
04 01 20 42	LMP (SNOOPY)	Okay. ... up ... Okay. Pitch down. Okay. Yaw right ...
04 01 21 04	LMP (SNOOPY)	Okay. Yaw left.
04 01 21 13	LMP (SNOOPY)	Okay. John, you can go to wide deadband attitude hold. Houston, what do you make out of that?
04 01 21 20	CMP (CHARLIE BROWN)	Roger.

04 01 21 21	CC	Stand by. I think we're okay. Stand by.
04 01 22 15	LMP (SNOOPY)	Houston, we'll stand by for your GO until we proceed further.
04 01 22 19	CC	Roger. Stand by. And, Charlie Brown, we show you in the DAP MIN deadband, over.
04 01 22 30	CMP (CHARLIE BROWN)	That's right.
04 01 22 37	LMP (SNOOPY)	Charlie Brown, you can go to wide deadband for us now, attitude hold.
04 01 23 02	CMP (CHARLIE BROWN)	... undocking ...
04 01 23 04	LMP (SNOOPY)	... We haven't begun the day yet.
04 01 23 49	CC	Snoopy, we're GO with those numbers in the cold fire. Go ahead with the MIN ... impulse, step 5.
04 01 23 58	CDR (SNOOPY)	Okay. Real good. We'll go ahead. That's the first time we've seen numbers that haven't gone to the full range. I just wanted to check with them, the whole analysis ... Okay. We'll go ahead.
04 01 24 07	LMP (SNOOPY)	Guidance control, AGS. AGS, attitude hold. Okay. Attitude control, three, MODE CONTROL. Okay. Your commander's four jet, ENABLE.
04 01 24 26	CC	Charlie Brown, Houston. We'd like you in wide deadband. Over.
04 01 24 27	LMP (SNOOPY)	... hot fire.
04 01 24 47	LMP (SNOOPY)	Charlie Brown, let us know when you get in wide, because some ... hot fire.
04 01 24 59	CMP (CHARLIE BROWN)	Okay. We're in wide.
04 01 25 02	LMP (SNOOPY)	Okay. We're going to proceed, and we'll let you know when we hot fire here. Hey, Tom, we don't want ... Is that right?
04 01 25 10	CDR (SNOOPY)	Okay.
04 01 25 11	LMP (SNOOPY)	Roll right and, John, you'll get a pulse of hot fire.

04 01 25 21	CMP (CHARLIE BROWN)	... roll, pitch up, roll, pitch down.
04 01 25 30	CDR (SNOOPY)	Okay, thrusters seemed nice and crisp. Seemed real good.
04 01 25 33	CMP (CHARLIE BROWN)	Okay. You want to yaw right and left without going to the hard stuff?
04 01 25 40	CDR (SNOOPY)	No.
04 01 25 41	LMP (SNOOPY)	Left ... that's good. Okay. Attitude control three pulse. Okay, get your four GTA breakers in and I'll get mine in. All in?
04 01 26 06	LMP (SNOOPY)	Okay. CWEA open and closed. Okay. All the lights are off. All the flags are off. This is the hot fire in the AGS. ... Okay.
04 01 26 30	LMP (SNOOPY)	Up, down, right, left, and then fore and aft. John, are you ready for a hot fire?
04 01 26 37	CMP (CHARLIE BROWN)	Go ahead.
04 01 26 38	LMP (SNOOPY)	Okay. Up, out, right, left, forward, aft. I guess they all fired, babe.
04 01 26 54	CDR (SNOOPY)	They all fired, Houston, but we couldn't get it on the DSKY, because I made a real short pulse.
04 01 26 58	LMP (SNOOPY)	You wouldn't get them anyway. This is AGS, babe. We weren't - -
04 01 26 59	CDR (SNOOPY)	Yes. Right.
04 01 27 01	CC	Roger, Snoop. We copy. Charlie Brown, we'd like to go BMAG's ATT 1 rate 2, so we can get some attitude hold. Over.
04 01 27 29	LMP (SNOOPY)	John, we're going to hot fire again. You ready?
04 01 27 34	CMP (CHARLIE BROWN)	Go ahead.
04 01 28 31	CDR (SNOOPY)	Okay, Houston. You probably read the DSKY ... I made just short pulses. I didn't want to waste any fuel here. ... with the condition we have in the tunnel. So, they fired and they fired real crisp, so I think we're in good shape.

04 01 28 45	CC	Roger. We copy, Snoop. Stand by for our GO.
04 01 29 06	CDR (SNOOPY)	Okay, Charlie Brown/Snoop. Verify that RCS thruster B3 OFF, and your radar transponder OFF.
04 01 29 13	CMP (CHARLIE BROWN)	Roger. The radar transponder's on HEATER and B3's off.
04 01 29 18	CDR (SNOOPY)	Roger.
04 01 29 20	CC	And, Snoop/Charlie Brown. You're GO for undocking. We had one indication that the - On your hot fire that jet B3 down, we had a TCF stuck on, but if you don't hear anything, we're GO.
04 01 29 40	CDR (SNOOPY)	Sounds good here.
04 01 29 41	CC	Okay.
04 01 29 46	LMP (SNOOPY)	We're proceeding with the rendezvous radar self-test. Ready?
04 01 30 28	CC	Snoopy, Houston. Got some word for you on your torquing angles, your platform. Over. If you can listen.
04 01 30 42	LMP (SNOOPY)	Go ahead. We're listening.
04 01 30 44	CC	Roger, Gene-O. It looks like we got a constant bias in the, in yaw in your platform. On our two drift checks, we get a bias of - a torquing angle of minus 03.540, and it appears to be a constant bias because it's been the same between the two different drift checks. We're GO with that constant bias. We'd like Charlie Brown to look through the - his rendezvous window and see if we have a constant slippage, maybe, in the - in our docking attitude, and you can tell that by looking at the docking target. Over.
04 01 31 26	CMP (CHARLIE BROWN)	Roger. Wait.
04 01 31 30	LMP (SNOOPY)	And, Charlie, give me a hack when we get close to LOS so that I can get off the high gain, will you?
04 01 31 34	CC	Okay. We got 8 minutes.
04 01 31 43	CMP (CHARLIE BROWN)	Okay. I'll stay with you, if you pick me up at about 2 or 3 minutes. I'll go off.

04 01 31 52 CMP (CHARLIE BROWN) Yes. It is rolled off. Vehicle is yawed to the - rolled to my left about - I'd say 2 degrees or so.

04 01 32 05 CC Okay. Fine. We get a 3-degree bias, so that's it. Be advised that you're drifting off in yaw, Charlie Brown. You might want to watch your attitude.

04 01 32 16 CMP (CHARLIE BROWN) Roger.

04 01 34 58 CMP (CHARLIE BROWN) Snoopy, Charlie Brown.

04 01 35 00 CDR (SNOOPY) Go ahead, John.

04 01 35 01 CMP (CHARLIE BROWN) Roger. The EVA preparation is complete.

04 01 35 04 CDR (SNOOPY) Okay. Good show.

04 01 35 06 CC Charlie Brown, Houston. We're concerned about this yaw bias in the LM and apparent slippage of the docking ring. We'd like you to disable and keep disabled all roll jets until after undocking. Over. And undocking attitude - We will not maneuver to the undocking attitude. Just hold what we've got. Over.

04 31 35 31 CMP (CHARLIE BROWN) Roger. Okay. Fine.

04 01 35 38 CC And, Snoop, we got 3 minutes 50 seconds to LOS. Over.

04 01 35 47 CDR (SNOOPY) Roger. 3 50 to LOS.

04 01 35 49 CC And we'll see both Snoop and Charlie Brown at 98 25.

04 01 35 57 CDR (SNOOPY) Roger.

04 01 36 18 CC Okay. Charlie Brown and Snoop, 3 minutes going over the hill. You're GO for undocking, and we'll see you around the other side.

04 01 36 28 CDR (SNOOPY) Roger.

04 01 36 29 CMP (CHARLIE BROWN) Roger.

04 01 37 11	CC	Snoop - correction - Charlie Brown, Houston. Try it on docking if it is apparent that the LM has - interface has slipped around to about 6 degrees; do not undock, and let's come around again and look at it. Over.
04 01 37 29	CMP (CHARLIE BROWN)	Roger.
04 01 37 35	F	Charlie, let them know it's 3-1/2 now.
04 01 37 39	CC	Roger. Your yaw bias right not - The slippage is 3-1/2 degrees right now, so about double what you've got, and if it does that far, do not undock. Over.
04 01 37 52	CMP (CHARLIE BROWN)	Roger.
04 01 39 04	CMP (CHARLIE BROWN)	That's Roger. Stop maneuvering. Roger.

END OF TAPE

04 01 55 --		BEGIN LUNAR REV 12
04 02 27 07	LMP (SNOOPY)	Hey, we got him right away, Tom.
04 02 27 10	CC	Hello, Snoop. How you doing?
04 02 27 17	LMP (SNOOPY)	This is Snoop on high gain. How are you reading, now?
04 02 27 19	CC	Five-by. How me?
04 02 27 23	LMP (SNOOPY)	Reading you loud and clear. We're about 30 or 40 feet away from him, been stationkeeping for about 5 or 10 minutes here.
04 02 27 29	CC	Roger. Could you give us POO in DATA? We've got a load for you, and are you ready to copy some pads?
04 02 27 39	LMP (SNOOPY)	I sure am. I'm going to give you POO in DATA.
04 02 27 51	LMP (SNOOPY)	And I'm ready to copy.
04 02 27 52	CC	Roger, Gene-o. It's DOI's first pad, and we've got three pads for you starting with DOI. I'll read them all - through all of them and then you can read me back. Okay? Okay. It's DOI 09 - -
04 02 28 04	LMP (SNOOPY)	... Go ahead. - -
04 02 28 05	CC	9460089, minus 00699, plus all balls, minus 00138; DELTA-V_R 00713 027 3 balls 275, minus 00698, plus all balls, minus 00144; COAS star is Scorpi Delta, minus 023, minus 146; CSI time 103 45 34; TPI time 105 21 01, with an N equal to 1. Phasing pad is next, if you're ready to copy. Over.
04 02 29 40	LMP (SNOOPY)	Roger. I'm ready to copy. Go ahead with phasing.
04 02 29 43	CC	Roger. 100 58 2520, plus 0 - -
04 02 29 55	LMP (SNOOPY)	Charlie?
04 02 29 56	CC	Go ahead.
04 02 30 00	LMP (SNOOPY)	Okay. John said he's not reading you. While I'm copying this, he said he's got a picture of the LM

04 02 30 06	CC	We have it, Gene-o. We're ready to continue with NOUN 81 if you're ready.
04 02 30 14	LMP (SNOOPY)	I'm ready to copy. Go ahead.
04 02 30 17	CC	Plus 01666, plus all balls, minus 00594 01769 040 3 balls 255. NOUN 86 is plus 01675, plus all balls, minus 00568. COAS star is Libra Alpha, that's Libra Alpha, plus 004, minus 119. Okay. Your 100 degree east time - -
04 02 31 20	LMP (SNOOPY)	AOT breaker in, Tom?
04 02 31 23	CC	Your 100 degree east time is 33 31. Your phasing DELTA is minus 5 seconds, 05 seconds. Site 2 time is 10 30. Over.
04 02 31 49	LMP (SNOOPY)	Okay, Charlie. I got everything except DELTA-V_X on NOUN 81.
04 02 31 55	CC	Roger. DELTA-V_X on NOUN 81 is plus 01666. And I've got a PDI abort pad if you'll just stand by. Over.
04 02 32 08	LMP (SNOOPY)	I'm waiting for you.
04 02 32 09	CC	Roger. Let me try to raise Charlie Brown.
04 02 32 12	CC	Charlie Brown, Houston. Over.
04 02 32 26	CC	Charlie Brown, Houston. Over.
04 02 32 31	CDR (SNOOPY)	Houston, this is Snoop. He's reading you loud and clear.
04 02 32 34	CC	Roger. He's copying the pad then; we're not reading him at all, Snoop, and I'm ready with a PDI abort pad if you're ready to copy. Over.
04 02 32 45	LMP (SNOOPY)	Okay. PDI abort. Go ahead.
04 02 32 48	CC	100 43 455C, plus 00931, plus all balls, plus 3 balls 1.1 00931. Burn time is 022 3 balls 283, plus 00931, plus 00000, plus 3 balls 22. NA on the rest of the pad. Thrust profile is 15 seconds at 10 percent and is manually throttled to full thrust until completion. CSI time 101 44 25. TPI time 103 22 25 with an N equal

		to 1, and I'm standing by for your readback. And, Snoopy, you've got the computer back. We're through with the load.
04 02 34 19	LMP (SNOOPY)	Okay, Charlie. Here they - Roger. Thank you. Here they come at you: DOI is 099460089, minus 00699, plus all balls, minus 00138 00713027, 3 balls 275. NOUN 86 is minus 00698, plus all balls, minus 00144. VERB 5 DELTA, minus 023, and minus 146.
04 02 34 52	CC	Go.
04 02 34 53	LMP (SNOOPY)	Phasing is 100 58 2520. Are you with me?
04 02 34 57	CC	Go.
04 02 35 04	LMP (SNOOPY)	Okay. I'll back up and give you CSI time and TPI time for DOI. CSI is 103 45 34; TPI is 105 21 01 with an N equal 1. Phasing - Phasing is 100 58 2520, plus 01666, plus all balls, minus 00594, 01769, 040, 000255, plus 01675, plus all balls, minus 00568. Libra Alpha is the star. It's plus 004 and minus 119; and 100 degrees east is 33 plus 31; phasing DELTA is minus 5 seconds; Site 2 is 10 plus 30. Are you with me?
04 02 36 57	CC	Go.
04 02 36 02	LMP (SNOOPY)	Okay. PDI abort is 100 43 4550, plus 00931, plus all balls, plus 00011, 00931, 022, 000283, plus 00931, plus all balls, plus 00022. The star is HA; 15 seconds at 10 percent, then manual to full thrust. PSI is 101 44 25; TPI is 103 22 25 with an N equal 1.
04 02 36 36	CC	Good readback, Snoop. Over.
04 02 36 49	CDR (SNOOPY)	Houston, this is Snoop. Charlie Brown's trying to call you.
04 02 36 53	CC	Roger, Snoop. We don't read him. Charlie Brown, verify your S-band switch is in TR. Over.
04 02 37 03	LMP (SNOOPY)	John, is your S-band switch in TR, and I'll give you anything you need? Just ask. Go ahead.
04 02 37 12	LMP (SNOOPY)	Okay. The time of DOI, Charlie Brown, is 099 46 0089, minus 00699, plus all zeros, and minus 00138. That's NOUN 81 for DOI. Okay. Phasing is 100 58 2520. NOUN 81 is plus 01666, plus all balls, and minus 00594. And verify your TR switch is in S-band TR, John.

04 02 38 07	CC	Snoopy, Houston.
04 02 38 10	LMP (SNOOPY)	Okay.
04 02 38 11	CC	Snoopy, Houston. And I'm breaking in. It's a ground problem with the C - with the CSM. We're loosing his - We got the downlink to Goldstone, but we're not getting it here in the MCC.
04 02 38 26	LMP (SNOOPY)	Okay.
04 02 38 28	CDR (SNOOPY)	I'll tell you, this COMM has got to be fixed within the next couple of hours, Charlie, so tell them to get with it.
04 02 38 33	CC	Roger.
04 02 38 38	CDR (SNOOPY)	Everything else is going good here.
04 02 39 01	LMP (SNOOPY)	Houston, this is Snoopy. Is that 69.2 by 57.5 good?
04 02 39 09	CC	Stand by.
04 02 39 19	CC	Snoop, Houston. We aren't with you on the 69.2. Say again.
04 02 39 27	LMP (SNOOPY)	I'm reading VERB 82 out of the DSKY 69.9 by - or 62.9 by 57.5.
04 02 39 34	CC	Stand by. We'll have it for you.
04 02 39 42	CC	Snoop, Houston. FIDO's checking. Stand by. Snoop, Houston. That's a GO on the apogee and perigee.
04 02 39 50	LMP (SNOOPY)	The reason I asked is I saw - -
04 02 39 54	CMP (CHARLIE BROWN)	Okay.
04 02 40 27	CDR (SNOOPY)	Looks like we're pretty steady out here on the stationkeeping, John, once we got squared away on our attitude.
04 02 40 42	CDR (SNOOPY)	Okay.
04 02 40 50	CC	Snoop, Houston. We got a beautiful picture out there of the - -

04 02 40 53	CDR (SNOOPY)	Give me a Mark at 6.
04 02 41 00	CMP (CHARLIE BROWN)	Roger. I will - a Mark at 6 minutes.
04 02 41 03	CC	Charlie Brown - -
04 02 41 04	CDR (SNOOPY)	Okay. We're counting down.
04 02 41 05	CC	- - We finally got you. Over.
04 02 41 07	CMP (CHARLIE BROWN)	No, that wasn't 6 minutes.
04 02 41 11	CDR (SNOOPY)	What was it, Jose?
04 02 41 14	CMP (CHARLIE BROWN)	Okay. I've got 5 seconds to 6 minutes.
04 02 41 18	CDR (SNOOPY)	Okay.
04 02 41 20	CMP (CHARLIE BROWN)	Okay. Six minutes and counting down to SEP.
04 02 41 21	CDR (SNOOPY)	Got you, babe.
04 02 41 26	CC	Charlie Brown, Houston. We're reading you five-by now. Over.
04 02 41 32	CMP (CHARLIE BROWN)	Roger. I've got 5 minutes and 45 seconds to SEP: 44, 43, 42.
04 02 41 38	CC	We're right with you.
04 02 41 45	LMP (SNOOPY)	Houston, this is Snoopy. With that drift you saw, how do you expect our platform to be, how close to good alignment?
04 02 41 56	CC	Roger. We expect very small torquing angles in all axes. Over.
04 02 42 03	LMP (SNOOPY)	That's good to hear. Thank you.
04 02 42 07	CDR (SNOOPY)	Well, I hope we can get back on the nominal after that insulation kind of goofed us up, Charlie. But everything's looking good here.

04 02 42 15	CC	Roger, Tom. Could you - One question on the tracking light. Have you tried it?
04 02 42 22	CDR (SNOOPY)	Stand by. John, there's the tracking light for you.
04 02 42 28	CMP (CHARLIE BROWN)	Yes! Please turn it off.
04 02 42 30	CDR (SNOOPY)	It works.
04 02 42 32	CC	Great. Thank you. We saw it.
04 02 42 52	CDR (SNOOPY)	John, why don't you toss on your tracking light for a minute?
04 02 43 14	CMP (CHARLIE BROWN)	Roger. That's mine. It may be underneath the vehicle; I don't think you can see it.
04 02 43 21	CDR (SNOOPY)	Yes. I saw one reflection here. We're okay.
04 02 44 52	CDR (SNOOPY)	Okay, John. It looks like about 230 coming up set, babe.
04 02 44 55	CMP (CHARLIE BROWN)	Roger. I agree.
04 02 45 03	CDR (SNOOPY)	Houston, you can pass on to our Support Division this Hasselblad film pack has failed about three or four times on us.
04 02 45 10	CC	Roger, Snoop. We copy.
04 02 45 12	CDR (SNOOPY)	We're still getting some pictures, though. The magazine and the camera's good - It's just the packing of the film in the magazines.
04 02 45 17	CC	Roger.
04 02 46 08	CMP (CHARLIE BROWN)	Okay, Houston, coming up on 2 minutes to SEP. How about a SYNC Mark?
04 02 46 15	CC	Roger. We copied 1 minute.
04 02 46 20	CMP (CHARLIE BROWN)	Roger. You're right.
04 02 46 25	CC	Big Brother's watching.
04 02 46 30	CMP (CHARLIE BROWN)	Keep up the good work, boys. You will never know how big this thing gets when there ain't nobody in here but one guy.

04 02 46 40	LMP (SNOOPY)	You will never know how small it looks when you are as far as we are.
04 02 47 18	CMP (CHARLIE BROWN)	Okay. Separation.
04 02 47 25	CDR (SNOOPY)	Okay. Can see you thrusters firing there, John, and we're moving away.
04 02 47 31	CMP (CHARLIE BROWN)	Okay. Show 5.3 on the DSKY and 5.0 on the EMS and I - zero on the EMS. I'd be inclined to believe the EMS today.
04 02 47 44	CC	We copy, Charlie Brown.
04 02 47 52	CDR (SNOOPY)	Okay, Jose. Say adios and we'll see you back in about 6 hours.
04 02 48 00	CMP (CHARLIE BROWN)	Boy.
04 02 48 06	CC	Snoop and Charlie Brown, we see you separating on the big tube.
04 02 48 10	LMP (SNOOPY)	See you, John, ...
04 02 48 13	CMP (CHARLIE BROWN)	Roger.
04 02 48 14	LMP (SNOOPY)	Have a good time while we're gone, babe.
04 02 48 17	CDR (SNOOPY)	Yes. Don't get lonesome out there, John.
04 02 48 21	LMP (SNOOPY)	And don't accept any TEI updates.
04 02 48 27	CMP (CHARLIE BROWN)	Don't you worry. Until you get back, I ain't - I ain't copying any more pads.
04 02 48 46	CMP (CHARLIE BROWN)	Houston, this is Charlie Brown. Over.
04 02 48 48	CC	Go ahead, Charlie Brown.
04 02 48 54	CMP (CHARLIE BROWN)	Roger. While we were waiting to come over the hill, we checked out VHF and we're right now on VHF A - MA and receive only B data.
04 02 49 06	CC	Beautiful. Sounds good. Thanks a lot.
04 02 49 17	CMP (CHARLIE BROWN)	And don't ask me to tell you what the dickens the trouble was.

04 02 49 24	LMP (SNOOPY)	Houston, one other interesting little fact. I could never get my AGS local vertical angle and VERB 83 to agree until after we undocked.
04 02 49 34	CC	Roger. We copy that, Snoop, and so logged.
04 02 49 46	CMP (CHARLIE BROWN)	Charlie, how about giving me a 3- or 5-minute hack before LOS all the time today, will you, because this S-band's working so well I don't want to break it.
04 02 49 54	CC	Roger, Snoop. Will do. Over.
04 02 50 10	CMP (CHARLIE BROWN)	Okay, there, Snoopy babe. Let's check out this duplex ranging. Okay?
04 02 50 16	LMP (SNOOPY)	Okay. I'll go to duplex ranging on your Mark, and we will be quiet and wait for your call.
04 02 50 21	CMP (CHARLIE BROWN)	Roger. Going duplex ranging, on my Mark.
04 02 50 23	CMP (CHARLIE BROWN)	MARK.
04 02 50 38	CMP (CHARLIE BROWN)	You guys shut up, because I can hear you. You have to maintain silence about the ship on that VOX mode. I'll give you - I'm going to range a reset right now.
04 02 51 06	CMP (CHARLIE BROWN)	How about that? 800, 700, 420 feet, 540 feet -
04 02 51 18	LMP (SNOOPY)	Okay, babe -
04 02 51 24	LMP (SNOOPY)	Roger. I hear you.
04 02 51 32	LMP (SNOOPY)	I don't hear any background noise; just you.
04 02 51 48	CDR (SNOOPY)	Hey, John, if you get a chance, you can turn on the radar transponder and we'll correlate the VHF ranging with it.
04 02 51 54	CMP (CHARLIE BROWN)	Okay. My transponder is on. Transponder is on, and the test switch is in OPERATE.
04 02 52 04	CDR (SNOOPY)	I should be getting a radar signal here and I sure don't.
04 02 52 27	LMP (SNOOPY)	Hello, Houston. How soon will you have our new uplink on the CSM state vector up?

04 02 52 33	CC	Stand by. We will have it in a moment.
04 02 53 10	CC	Snoopy, Houston. We are ready with the load, POO and DATA. Over.
04 02 53 22	LMP (SNOOPY)	POO and DATA. You've got it.
04 02 53 44	CDR (SNOOPY)	John, can you get any signal strength on your transponder there? I've got you locked boresight on - I don't get any rendezvous radar signal strength.
04 02 53 52	CMP (CHARLIE BROWN)	Okay. Am I below you, or above you?
04 02 53 55	CDR (SNOOPY)	You're right at me. Okay. Pitch up maybe a little bit.
04 02 53 59	CMP (CHARLIE BROWN)	Roger.
04 02 54 15	CDR (SNOOPY)	Pitch up a little more now.
04 02 54 17	CMP (CHARLIE BROWN)	Say when.
04 02 54 18	CDR (SNOOPY)	Okay. I'm looking right at - I'm boresighted on your transponder; I don't get any AGC strength.
04 02 54 24	CMP (CHARLIE BROWN)	Okay, Tom. I checked it out this morning and AGC was good.
04 02 54 34	CMP (CHARLIE BROWN)	I got 3.6 volts on system 6 - systems test 1A - system test B, I got 2.1 volts on test, and then on C, I got four-tenths of a volt, and I guess that was unlocked.
04 02 54 59	CDR (SNOOPY)	Houston, do you have us on telemetry? I can't get the AGC signal here, and we're only about a 1000 feet away.
04 02 55 07	CC	Roger, Snoopy. We've been copying your problems. We are working it down here, and we've got your load in. The computer is yours again. Stand by on the radar.
04 02 56 09	CDR (SNOOPY)	Houston, we had a real good radar self-test; everything worked. I'm getting transmitting power - getting 3.2; we get the shaft error, the trunnion error, the AGC; I've got the needle boresighted and centered, but we got no AGC.

04 02 56 24	CC	Roger. We copy. Your PGNS needles are moving?
04 02 56 32	CDR (SNOOPY)	Yes. I can slew up and down, high rate and low rate; everything. I've got him boresighted there.
04 02 56 40	CC	Roger. Stand by.
04 02 56 47	CMP (CHARLIE BROWN)	Houston, I'll run through the self-test again, if you think that'll help any from this end.
04 02 56 53	CDR (SNOOPY)	Roger. Go down and look at it again. You might give it another try, John.
04 02 56 59	CMP (CHARLIE BROWN)	Okay.
04 02 57 00	CDR (SNOOPY)	So this is a NO-GO for DOI. I've got you boresighted right there; the needles are centered at nothing.
04 02 57 14	CDR (SNOOPY)	My AC rendezvous radar bus A breaker is in, and my PGNS rendezvous radar is in.
04 02 57 18	CC	Break, break, Snoop - this is - correction - Charlie Brown, this is Houston. We need you in a transponder position on the systems test before you get the proper readouts. Over. For the self-test of the rendezvous -
04 02 57 31	CMP (CHARLIE BROWN)	I'm in that transponder position.
04 02 57 32	CC	Okay.
04 02 57 38	CMP (CHARLIE BROWN)	Okay. I'm reading - Test A is reading zero right now.
04 02 57 51	CC	Roger. We - -
04 02 57 52	CMP (CHARLIE BROWN)	And B is reading zero. And it's also reading zero, but it was working a few minutes ago.
04 02 58 05	CC	Roger.
04 02 58 06	CMP (CHARLIE BROWN)	On the original test self-test.
04 02 58 12	CC	Roger. Stand by.
04 02 58 32	CMP (CHARLIE BROWN)	Yes. This thing is reading zero. Let me check the circuit breaker.
04 02 58 37	CC	Roger.

04 02 58 50 CMP (CHARLIE BROWN) Okay. The rendezvous transponder flight EMS circuit breaker is in.

04 02 58 59 CC Roger. How about trying to recycle the power switch, Charlie Brown?

04 02 59 11 CMP (CHARLIE BROWN) Hey, that did it you guys. It's on.

04 02 59 13 CDR (SNOOPY) Oh, and I got signal strength, ol' buddy.

04 02 59 18 CMP (CHARLIE BROWN) What do you know about that?

04 02 59 20 CDR (SNOOPY) And I've got 3.2 on my AG ...

04 02 59 24 CMP (CHARLIE BROWN) You got so much AGC, I don't know what to do with it.

04 02 59 32 LMP (SNOOPY) Joan, I could kiss you.

04 02 59 35 CMP (CHARLIE BROWN) It was Charlie's idea to cycle the switch; that would never occur to me.

04 02 59 40 CC It was - it was Ed's idea - -

04 02 59 43 CDR (SNOOPY) Okay. We're locked on pretty good -

04 02 59 49 CC Charlie Brown, Houston. We're ready to go with your load if you'll give us - -

04 02 59 51 CDR (SNOOPY) ... feet per second.

04 02 59 52 CC If you'll give us POO and ACCEPT, Charlie Brown.

04 02 59 59 CMP (CHARLIE BROWN) You have it.

04 03 00 50 CMP (CHARLIE BROWN) What you guys got for range?

04 03 00 53 CDR (SNOOPY) Roger. We've got 2500 feet. We're going to get you some new data here, John, and my optical boresight is absolutely fantastic. It's right with the needle.

04 03 01 03 CMP (CHARLIE BROWN) It's got 0.37 miles. This is going to be very interesting; it keeps jumping.

04 03 01 09 CDR [illegible]

04 03 01 31	CDR (SNOOPY)	Okay. That looks real good on my tape here.
04 03 01 44	CMP (CHARLIE BROWN)	Houston, Charlie Brown. The reason I believed the EMB over the CMC was I had three-tenths of a foot per second of PIPA bias before I ever started the maneuver. Over.
04 03 01 56	CDR (SNOOPY)	Instant sunset.
04 03 01 58	CC	Roger. We copy. Over.
04 03 01 59	CDR (SNOOPY)	Okay, John. We're out here in earthshine. How about turning on your flashing light, Jose? Beautiful. You've got a nice one. It looks like the old Gemini Agena, which is bigger.
04 03 02 15	CMP (CHARLIE BROWN)	Roger.
04 03 02 46	CMP (CHARLIE BROWN)	Roger. You can go start on P52. I saw your tracking light there briefly, but I haven't seen it since.
04 03 03 00	CC	Charlie Brown, Houston. CMC is yours.
04 03 03 08	CMP (CHARLIE BROWN)	Roger. Thank you.
04 03 03 10	CDR (SNOOPY)	John, you see the tracking light now? It's on?
04 03 03 13	CMP (CHARLIE BROWN)	Could you guys see it flashing?
04 03 03 16	CDR (SNOOPY)	No. No.
04 03 03 21	CMP (CHARLIE BROWN)	Roger. I see it.
04 03 03 27	CDR (SNOOPY)	Okay.
04 03 03 37	LMP (SNOOPY)	Okay, John. I'm ready when you are to go to VHF A Simplex and DATA.
04 03 03 45	CMP (CHARLIE BROWN)	Okay. On your Mark. Simplex and DATA.
04 03 03 52	CMP (CHARLIE BROWN)	Okay. Simplex DATA.

04 03 04 01	CMP (CHARLIE BROWN)	Snoopy, Charlie Brown. How do you read?
04 03 04 04	CDR (SNOOPY)	Roger. Loud and clear, John.
04 03 04 06	LMP (SNOOPY)	All right, John.
04 03 04 08	CMP (CHARLIE BROWN)	And ...
04 03 04 10	LMP (SNOOPY)	Okay. We're going to terminate our - our data check here to go on a P52.
04 03 05 50	CDR (SNOOPY)	Charlie Brown, Snoop. You can go ahead and kill the tube any time you want to and put the cover over it.
04 03 05 54	CMP (CHARLIE BROWN)	Say again. Over.
04 03 05 56	CDR (SNOOPY)	Roger. You can go ahead and kill the TV and put the cover over the tube.
04 03 06 01	CMP (CHARLIE BROWN)	I've done all of that already.
04 03 06 03	CDR (SNOOPY)	Roger, boy.
04 03 07 13	CMP (CHARLIE BROWN)	Tom, hold your tracking light down. Are you able to do a P52 with that light on?
04 03 07 17	LMP (SNOOPY)	I think so, John. I'm going to try it.
04 03 07 19	CMP (CHARLIE BROWN)	That's beautiful. Can you see mine?
04 03 07 21	CDR (SNOOPY)	Oh yes, John. You're absolutely sensational. Good maneuver. Yes. It's flashing about every second. Just beautiful. Okay. We're going to AUTO maneuver for our star.
04 03 07 53	LMP (SNOOPY)	I got you in the sextant, John. In my telescope. Right now, you're passing through it.
04 03 07 58	CMP (CHARLIE BROWN)	Roger.
04 03 08 05	LMP (SNOOPY)	Boy, I'll tell you. That's black out there, isn't it?

04 03 08 10	CMP (CHARLIE BROWN)	No other color to describe that.
04 03 08 30	CC	Snoop, Houston. We've reached the limits on the high gain. Go to OMNI's. Over.
04 03 08 42	CC	Charlie Brown, Houston. Pass to Snoop that he has reached the tracking limits on the high gain and please go to OMNI's. Over.
04 03 08 52	CMP (CHARLIE BROWN)	Okay. Hey - Hey, Gene-o, go to OMNI's. Your high gain has reached its limits.
04 03 09 13	CC	Charlie Brown, Houston. Pass to Snoop that we - -
04 03 09 15	CMP (CHARLIE BROWN)	I tell you I got a beautiful sight.
04 03 09 19	CC	Charlie Brown, Houston. Pass to Snoop that we'd like -
04 03 09 21	CMP (CHARLIE BROWN)	Go ahead there -
04 03 09 24	CC	Okay. I'm talking. (Laughter) Pass the - pass the - on to Snoop that we'd like the aft antenna. Over.
04 03 09 41	CMP (CHARLIE BROWN)	Roger. They want the aft antenna there, Snoop, babe.
04 03 10 05	CMP (CHARLIE BROWN)	Yes. I can see it myself. Hey, did you hear they want the aft antenna?
04 03 10 11	CDR (SNOOPY)	Roger.
04 03 17 44	CC	Hello, Charlie Brown. Houston. A couple of reminders. We'd like the DELTA-V_{CG} to go to CSM and the LMAG's to either rate 1 or rate 2; your choice.
04 03 18 00	CMP (CHARLIE BROWN)	Thank you kindly.
04 03 18 02	CC	Roger. Roger. Out.
04 03 20 52	CMP (CHARLIE BROWN)	Houston, this is Charlie Brown. What time is LOS? Over.

04 03 20 56	CC	Roger, Charlie Brown. Coming up LOS to you 16 minutes and 30 seconds.
04 03 21 00	CC	MARK.
04 03 21 03	CC	And we'll see you AOS at 100 24.
04 03 21 17	CC	Charlie Brown? - -
04 03 21 18	CMP (CHARLIE BROWN)	Could you give me the LOS in GET?
04 03 21 21	CC	Roger. LOS GET is 99 37 32. Over.
04 03 21 26	CMP (CHARLIE BROWN)	Roger. Thank you.
04 03 21 38	CC	And, Charlie Brown, Houston. We noticed the readout TEMP a little high, and if you get a little stuffy in there, we recommend you activate the secondary evaporator and the secondary pump. And then when you cool down, you can just turn off the EVAP and leave the pump running. Your choice. Over.
04 03 22 00	CMP (CHARLIE BROWN)	The cabin temperature is 74 and the suit temperature is 51. Can't beat that.
04 03 22 08	CC	Sounds like uptown. Over.
04 03 22 16	CMP (CHARLIE BROWN)	It's some place. I mean to tell you.
04 03 22 19	CC	And, Charlie Brown, if you have some good word from Snoop - We still don't have any data and if they pass on to you about the P52, we'd be interested. Over.
04 03 22 32	CMP (CHARLIE BROWN)	Roger.
04 03 22 37	CMP (CHARLIE BROWN)	Hey, Snoopy. How's your P52 going?
04 03 23 27	CC	Charlie Brown, Houston. You can go back to BLOCK on your UP TELEMETRY switch.
04 03 23 36	CMP (CHARLIE BROWN)	Okay. I wouldn't want anybody to zip me in any bad data on the back side.
04 03 23 41	CC	Roger.
04 03 23 47	CC	Did you talk to Snoop there, Charlie Brown? Over.

04 03 23 55	CMP (CHARLIE BROWN)	Yes. Hey, Snoopy. This is Charlie Brown. Over. Is Gene-o keying his mike all the time? Sometimes I hear him, and sometimes I don't. Maybe that feed-through problem isn't as bad as they thought.
04 03 25 46	CMP (CHARLIE BROWN)	Houston, Snoop's calling you.
04 03 25 49	CC	Charlie Brown, Houston. We don't read Snoop. We haven't locked up on his data yet. Over.
04 03 26 04	CMP (CHARLIE BROWN)	Roger. Did you hear that, Houston?
04 03 26 07	CC	That's negative, Charlie Brown. Over.
04 03 26 09	CMP (CHARLIE BROWN)	He said have you been monitoring his descent fuel? You been monitoring his descent stage fuel pressure. His gage went to zero during a P52 burn.
04 03 26 21	CC	Roger, Charlie Brown. We have no data at all. Over.
04 03 26 28	CMP (CHARLIE BROWN)	Okay, Snoopy. This is Charlie Brown. Houston doesn't have any data from you today, right now.
04 03 26 47	CC	Charlie Brown, Houston. Tell Snoop to do a VERB 64 to get us to high gain, and we got another transducer that we can verify that pressure. Over.
04 03 27 00	CMP (CHARLIE BROWN)	Houston, you're looking at high gain right now ...
04 03 27 23	LMP (SNOOPY)	Charlie Brown ...
04 03 27 29	LMP (SNOOPY)	Charlie?
04 03 27 30	CMP (CHARLIE BROWN)	Yes sir.
04 03 27 31	CC	Snoopy?
04 03 27 32	CDR (SNOOPY)	Yes sir. Charlie -
04 03 27 33	CC	Snoopy, Houston.
04 03 27 34	CMP (CHARLIE BROWN)	Snoopy is calling you, and he says that you have a high gain.
04 03 27 39	CC	Roger. We got the - -

04 03 27 40	CMP (CHARLIE BROWN)	... right now with it.
04 03 27 42	CC	Roger. We got the data, Snoopy.
04 03 27 43	CMP (CHARLIE BROWN)	Houston -
04 03 27 44	CC	We got the data, Snoopy, and the descent pressure looks fine. Over.
04 03 27 50	CDR (SNOOPY)	Okay, I see - -
04 03 27 51	CMP (CHARLIE BROWN)	He said the pressure looks fine, Tom.
04 03 27 52	CDR (SNOOPY)	Descent 1 and descent 2 both out.
04 03 27 54	CMP (CHARLIE BROWN)	Descent - -
04 03 27 55	CC	Roger. Understand. Descent pressure -
04 03 27 56	CMP (CHARLIE BROWN)	- - 1 and 2 are both out?
04 03 28 00	CC	Copy.
04 03 28 03	LMP (SNOOPY)	Okay. And you are giving me a GO on descent pressure. Is that correct?
04 03 28 06	CC	That's correct.
04 03 28 12	CMP (CHARLIE BROWN)	They said both descent pressures look good there, Snoop.
04 03 28 16	LMP (SNOOPY)	Okay. I can read them, John. That's what I wanted to hear from them.
04 03 28 22	CC	Snoop, Houston. Could you - -
04 03 28 24	CMP (CHARLIE BROWN)	I don't - I don't know exactly what kind of -
04 03 28 29	CC	Snoop, Houston. Could you give us your P52 results? Over.
04 03 28 38	LMP (SNOOPY)	Roger. Stand by.

04 03 28 40	CDR (SNOOPY)	Okay. The stars were 33 and 25. Star angle difference was 4 balls 9. GYRO torquing angles are minus 668, minus 195 minus 055. Over.
04 03 29 00	CC	Roger. We copy, Snoop. Out.
04 03 29 07	CDR (SNOOPY)	Roger. And initial acquisition of the star for the docked IMU align look pretty good.
04 03 29 21	LMP (SNOOPY)	Houston, this is Snoopy. When's AOS - or LOS, rather?
04 03 29 26	CC	Roger. We're coming up on LOS for you at 99 37 - correction 99 38. We'll see you AOS at 100 26. Over.
04 03 29 42	CMP (CHARLIE BROWN)	Hey, Tom. What was your biggest GYRO torquing angle? Over.
04 03 29 46	LMP (SNOOPY)	I got them, Charlie.
04 03 29 48	CDR (SNOOPY)	Roger. Biggest GYRO torquing angle was - registered 1 minus 668.
04 03 29 57	CMP (CHARLIE BROWN)	Is that 0.66?
04 03 29 59	CDR (SNOOPY)	It was 2 balls 668, 2 balls 195, and 3 balls 55. All minus.
04 03 30 08	CMP (CHARLIE BROWN)	Roger.
04 03 30 32	CC	Snoopy, Houston. We got us some word on your Hasselblad problem - on the magazine problem. We'd like you to reset the magazine flag so that the red just disappears and no further. If this doesn't work consistently, then change magazines. Over.
04 03 30 55	CMP (CHARLIE BROWN)	They already know that technique ...
04 03 30 56	CDR (SNOOPY)	Well, that's just ... That's why we changed magazines. Over.
04 03 31 00	CC	Roger. We copy. Out.
04 03 31 44	CC	Hello, Snoop and Charlie Brown. This is Houston - -
04 03 31 48	LMP (SNOOPY)	Houston, you are satisfied with the descent -

04 03 31 50	CC	Snoop, Houston. You are GO for a DOI. Recommend you check on CB 16 display engine override breaker. It might recover your descent monitoring capability. Over.
04 03 32 09	CDR (SNOOPY)	Roger.
04 03 32 28	LMP (SNOOPY)	No. There's no breakers out there that'd hurt that, Charlie. I'm going, as long as you're satisfied, I'm going CMI this time.
04 03 32 36	CC	Roger. We copy. Got 4 minutes.
04 03 32 40	LMP (SNOOPY)	Okay. I did - When I went in that P52 and when I slammed the S-band into the stops, I didn't pop my S-band antenna breaker under COMM on panel 16.
04 03 32 50	CC	Roger. Copy.
04 03 35 46	CC	Snoop, Houston. We show 2 minutes to LOS for you. Do you read me? Over.
04 03 35 59	CMP (CHARLIE BROWN)	Snoopy, Houston wonders if you're reading him. I guess you're not if -
04 03 36 06	CC	Charlie Brown, Houston. No sweat.
04 03 36 14	CMP (CHARLIE BROWN)	Okay, Snoopy. Charlie Brown. Do you read? Over.
04 03 36 23	CMP (CHARLIE BROWN)	Fine.
04 03 36 27	CMP (CHARLIE BROWN)	We need to keep at least one set of communications open at all the times.
04 03 36 40	CMP (CHARLIE BROWN)	Somehow.
04 03 36 47	CC	Charlie Brown, Houston. Forty-five seconds to LOS. You're still go for DOI.
04 03 36 56	CMP (CHARLIE BROWN)	Roger. What is my P20 doing? Can anybody tell me?
04 03 37 03	CC	Stand by.
04 03 37 09	CMP (CHARLIE BROWN)	Well, it's made up its mind.
04 03 37 11	LMP (SNOOPY)	What are we doing, running?

04 03 37 18	CC	Charlie Brown - -
04 03 37 20	CMP (CHARLIE BROWN)	... landing antenna ... - -
04 03 37 21	CC	Charlie Brown, Houston. Charlie Brown, Houston. It's integrating a state vector, P20.
04 03 37 28	CDR (SNOOPY)	You want to leave this one a minute?
04 03 37 30	LMP (SNOOPY)	What? Yes, yes. That's where it's supposed to ... supposed to - ... right through. I - I thought I got it ...
04 03 37 46	LMP (SNOOPY)	You're on VOX.
04 03 37 48	CMP (CHARLIE BROWN)	Huh? I'm not on VOX.
04 03 37 49	CDR (SNOOPY)	You ...?

END OF TAPE

04 03 55 -- BEGIN LUNAR REV 13

04 04 24 11 CMP (CHARLIE BROWN) Houston, Charlie Brown. Over.

04 04 24 13 CC Roger. Reading you five-by, Charlie Brown.

04 04 24 19 CMP (CHARLIE BROWN) Houston, Charlie Brown. Over.

04 04 24 21 CC Roger. Reading you five-by, Charlie Brown. Over.

04 04 24 28 CMP (CHARLIE BROWN) Houston, Charlie Brown.

04 04 24 31 CC Charlie Brown, Houston. I am reading you five-by.

04 04 24 43 CMP (CHARLIE BROWN) Houston, Houston, Charlie Brown. Over.

04 04 24 51 CMP (CHARLIE BROWN) Houston, Houston, Charlie Brown. How do you read high gain? Over.

04 04 24 59 CMP (CHARLIE BROWN) I'm all locked up on them, Tom, but I just don't read them.

04 04 25 07 CC Charlie Brown, Houston. Over.

04 04 25 11 CMP (CHARLIE BROWN) Roger. Read you loud and clear. Snoopy was GO for DOI.

04 04 25 17 CC Roger. Great. Sounds great. We copy.

04 04 25 26 CMP (CHARLIE BROWN) - - nominal burn. We'll fill you in when he gets to you. But at 6 miles, he was doing 65 feet a second on my - 6 miles from me, he was doing 65 feet per second. At 3.8 miles he was doing 73 feet a second. I think that confirms this burn. They are down there among the rocks mumbling about the boulders and things right now.

04 04 26 11 CC Roger. Charlie Brown.

04 04 26 14 CMP (CHARLIE BROWN) They just saw earthrise. They say they are looking up at the horizon now.

04 04 26 22 CC Roger.

04 04 26 51 LMP (SNOOPY) Hello, Houston. Houston, this is Snoopy.

04 04 26 52	CC	Roger, Snoop. Go ahead.
04 04 26 54	LMP (SNOOPY)	We is GO and we is down among them, Charlie.
04 04 26 57	CC	Roger. I hear you weaving your way up the freeway. Can you give me a postburn report? Over.
04 04 27 11	LMP (SNOOPY)	Yes. As soon as I get my breath. Okay. Our burn was on time. Our residuals were minus 0.1, minus 0.3, and minus 0.5. And that was the residuals for the DPS burn. We did not use the - We did not null anything out. We are at 61.2 by 9.2 and the AGS has us at an 8.6.
04 04 27 36	CC	Roger, Snoopy. We copy all the residuals, and it looks like we are all GO. Your DPS is looking good and it's GO. Over.
04 04 27 46	LMP (SNOOPY)	Oh, Charlie. We just saw earthrise and it's got to be magnificent.
04 04 27 51	CC	Roger. We copy.
04 04 27 54	CDR (SNOOPY)	... You can also tell Jack Schmidt that there are enough boulders around here to fill up Galveston Bay, too.
04 04 27 59	CC	He's copying, Tum.
04 04 28 09	LMP (SNOOPY)	The only trouble is - We're stripping lots of film for him. The spacecraft is looking good and there are no problems, Charlie, except it would be nice to be around here more often.
04 04 28 21	CC	Roger. We copy. All your systems are looking good to us. Did you get your DPS pressure back? Over.
04 04 28 26	LMP (SNOOPY)	That's a negative, but the DPS burn was smoothed out very well when we throttled up.
04 04 28 36	CC	Roger. We got a good - good pressures here and the DPS is GO for phasing.
04 04 28 46	CDR (SNOOPY)	Roger, Charlie.
04 04 28 49	CC	Snoop, Houston. There will be no update on the phasing pad. Everything is looking really good.

04 04 28 57	CDR (SNOOPY)	Okay. Good. We'll be picking up our landing radar test and taking pictures here and it is a fantastic sight. You do have different shades of browns and grays here. It's like - The volcanism there is also a pure white near the edge, and the bottom is black. And we see some large boulders that are black to blackish gray.
04 04 30 25	CC	Roger, Snoopy. We copy.
04 04 31 35	CC	Charlie Brown, Houston. Can you see them down there among the boulders? Over.
04 04 31 45	CMP (CHARLIE BROWN)	I saw them about 14 miles. But then I turned this thing over to CSC to let it do an AUTO maneuver and it lost them.
04 04 31 53	CC	Roger.
04 04 31 58	CMP (CHARLIE BROWN)	I was tracking them just manually. I don't see them anymore. I'm going to let it update it with a little radar - a little range, and see if that brings it in.
04 04 32 11	CC	Roger, Charlie Brown. We copy. Out.
04 04 32 40	CDR (SNOOPY)	Hello, Houston. This is Snoop. It looks like this landing radar is doing real good.
04 04 32 45	CC	Roger, Snoop. We ... that. Over.
04 04 32 52	CDR (SNOOPY)	It looks to me we want to have a lockon here, ... even early.
04 04 33 12	CDR (SNOOPY)	And straight up ahead, you can see the gulf from the highlands over to the maria area. It's a beautiful sight. Just like you're crossing over to a black and gray sea.
04 04 33 26	CDR (SNOOPY)	Landing radar looks like it's locked on solid.
04 04 33 33	CC	Roger, Snoop. Over.
04 04 34 59	LMP (SNOOPY)	Houston, I got the ascent batteries connected at this time.
04 04 35 04	CC	Roger. We see that. Thanks, Snoop. Over.
04 04 35 09	LMP (SNOOPY)	I didn't realize there were so many things to do in such a short time.
04 04 35 23	CC	Snoop, Houston. Your ascent batteries look good. Out.

04 04 35 28	CDR (SNOOPY)	Roger.
04 04 36 07	CDR (SNOOPY)	Also, Charlie, it looks like we're getting so close all you have to do is put your tail wheel down and we're there.
04 04 36 21	CC	Hey, Snoop. Air Force guys don't talk that way.
04 04 36 28	CDR (SNOOPY)	Well, I just ... Even though it's an Air Force... Okay. We're coming right over to the maria. It's really smooth out here compared to ...
04 04 36 45	CC	Roger, Snoop. We have you; you should be at Taruntius very soon.
04 04 36 51	CDR (SNOOPY)	Roger.
04 04 36 55	CMP (CHARLIE BROWN)	Okay, Houston. I've got them in the optics now. They're fantastic.
04 04 36 58	CC	Hey! Great show, Charlie Brown.
04 04 37 33	CDR (SNOOPY)	You can tell that this area is definitely lower than that highland area, just as the whole general area.
04 04 37 41	CC	Okay, Snoop. Could you come up on expected surface washout? Could you comment on that? Over.
04 04 38 31	CMP (CHARLIE BROWN)	Boy! Are they down there among them!
04 04 38 34	CC	Roger. But it looks like they're really hauling the mail.
04 04 38 39	LMP (SNOOPY)	Yes. We're doing it. Surprisingly enough, Charlie, it really doesn't look like we're moving too fast down here. It's a very nice pleasant pace.
04 04 38 50	CC	Roger.
04 04 38 52	CDR (SNOOPY)	These rocks look exactly like ... relative bearing about the same.
04 04 39 03	CC	Copy. Out.
04 04 39 09	LMP (SNOOPY)	Seems like we're coming up on my side on Taruntius G and I believe Tom's got his Taruntius E right there on his side. These come out of the horizon differently. They seem to come over the horizon and be much closer to you down here, then up there at 60 miles. And, again

		the craters in this area are craters that are dug out of the surface and not craters that are sloping back from the surface; in fact ...
04 04 39 44	CC	Snoop, you're dropping out. Your voice faded out. We're standing by.
04 04 39 56	LMP (SNOOPY)	Roger. It looks like we might be on the verge of ...
04 04 40 23	CC	Hello, Snoopy. If you read Houston, we think your aerial is not tracking us too closely. Could you pick us up on the signal strength? Over.
04 04 40 36	CDR (SNOOPY)	Houston ... as far overall ...
04 04 40 44	CMP (CHARLIE BROWN)	Snoopy, Houston said something about their signal strength or something.
04 04 40 48	LMP (SNOOPY)	Tell them again - tell me again what you want them to do there, Houston.
04 04 40 54	CC	Roger, Snoop. We're getting data dropout. It sounds like ...
04 04 41 00	LMP (SNOOPY)	Okay. We're coming into Apollo Ridge.
04 04 40 04	CC	Roger. We copy Apollo Ridge.
04 04 41 05	LMP (SNOOPY)	There's Secchi on my right! Okay, Houston. Houston, if you read, we have Secchi on my right. We're coming into Apollo Ridge. There's the first of the - Here's Apollo Hill, right out the window! Very, very ... It appears to be a couple of hundred feet deep.
04 04 41 44	CC	Hello, Snoop. Houston. Do you read? Can you try to tweak up the high-gain signal strength? Over.
04 04 42 26	CMP (CHARLIE BROWN)	Loud and clear there, Gene-o.
04 04 42 33	CC	Charlie Brown, Houston. If you read, have Snoopy tweak up the high gain. We're not reading him at all. Over.
04 04 42 42	CMP (CHARLIE BROWN)	Roger.
04 04 42 45	CMP (CHARLIE BROWN)	Snoopy, Houston wants you to tweak up the high gain. They are not reading you.

04 04 43 09 CMP (CHARLIE BROWN) Snoopy, Charlie Brown. Over.

04 04 43 20 CMP (CHARLIE BROWN) Houston, Snoopy said they can't hold you on the high gain.

04 04 43 24 CC Roger. Stand by.

04 04 43 54 LMP (SNOOPY) - - soon as we reach the ridge - Right there! We're right over it! Okay, T.P. We're coming up the Bear Mountain. It's right ahead of us. And you should have Maskelyne A. Do you have a big crater, Maskelyne A, right there, right on the edge of our - straight in front of you, down straight in front of you on the left? We have most of Messier right here.

04 04 44 19 CDR (SNOOPY) Sure that's Maskelyne A?

04 04 44 21 LMP (SNOOPY) And, I don't know whether you read or not, but that's the best we can do.

04 04 44 24 CC Snoop, we read you. Standing by.

04 04 44 26 CMP (CHARLIE BROWN) They are still transmitting to you, Houston, but - They're reading you, Snoopy, and they're standing by.

04 04 44 37 LMP (SNOOPY) Okay. We are leaving Site 1. Tom, give me that a minute. Let me see if I can take ...

04 04 44 47 CDR (SNOOPY) I've got Censorinus A right here. I've got Censorinus A, right here, bigger than shit.

04 04 44 57 LMP (SNOOPY) Hey, I tell you, we are low! We are close, babe! This is, like, it! And it really looks pretty smooth down there, surprisingly enough.

04 04 45 03 CDR (SNOOPY) Vitruvius A has huge boulders all around the rim of it, falling on the inside and outside.

04 04 45 05 LMP (SNOOPY) Okay. I've got Maskelyne out here off my right side. We are coming up on Boot Hill which is very easy to distinguish, and Maskelyne. And I see the craters that are going to lead us right into the landing site. We've got Duke Island on the left, just past Boot Hill and we are coming up - I've got Wash Basin just off my right arm - very easily distinguishable. Tom, I have Sidewinder Rille coming up on the left.

04 04 45 41 CDR (SNOOPY) Give me that. Gone. Here it comes. What time did we pitch over, 11 40?

04 04 46 08	LMP (SNOOPY)	Yes. Okay. I've got Diamondback. Diamondback Rille is very easy to see. These rilles look like they may be as much as a couple of hundred feet deep and very smooth. The surface actually looks very smooth, like a very wet clay, but smooth with the exception of the bigger craters. Oh, Tom, let me get a picture of these rilles! Diamondback is just ...
04 04 46 23	CDR (SNOOPY)	Sidewinder Rille is rough along the edges but flat and smooth along the bottom. The edges are definitely rounded, and it doesn't look like the sides are upturned. Okay. I've got Moltke up here on the left and we are coming into the site, Gene.
04 04 46 39	LMP (SNOOPY)	The best description I can give you of these rilles is of a dry - a dry riverbed out in New Mexico or Arizona.
04 04 46 49	CDR (SNOOPY)	Okay. Here we are coming up on the site ...
04 04 47 07	LMP (SNOOPY)	... Maskelyne C ...
04 04 47 13	CDR (SNOOPY)	...
04 04 47 31	LMP (SNOOPY)	Okay. We just went off ... Landing Site 2 just off on his left ...
04 04 47 55	CC	Snoop, Houston. Request downvoice backup. Over.
04 04 48 27	CMP (CHARLIE BROWN)	Snoopy, Houston wants you to go to DOWNVOICE BACKUP. Over. That's where he is. He's in DOWNVOICE BACKUP.
04 04 49 11	CC	Charlie Brown, Houston. Over.
04 04 49 16	CMP (CHARLIE BROWN)	Go ahead. Over.
04 04 49 18	CC	Roger. We had a complete data dropout with Snoopy - -
04 04 49 21	CMP (CHARLIE BROWN)	- - I read you loud and clear.
04 04 49 22	CC	Okay. Roger. Pass it on: we got 9 minutes till burn; get in the attitude; and they're GO for phasing. Over.
04 04 49 32	CMP (CHARLIE BROWN)	Roger. Snoopy, Houston says you're GO for phasing. Got about 8-1/2 minutes now. Want to get you in the attitude.

04 04 49 48	CMP (CHARLIE BROWN)	Snoop, Charlie Brown. Do you read?
04 04 49 57	LMP (SNOOPY)	- Oh, look at this! You know this god-damned film pack failed on me?
04 04 50 01	CDR (SNOOPY)	My Hasselblad just failed!
04 04 50 05	LMP (SNOOPY)	Oh, I tell you, babe, that's something.
04 04 50 07	CDR (SNOOPY)	Oh, yes. Oh! Look at that!
04 04 50 10	LMP (SNOOPY)	Except I don't have any more ...
04 04 50 13	CDR (SNOOPY)	What happened to my control system?
04 04 50 16	LMP (SNOOPY)	I don't know. Why?
04 04 50 19	CC	Snoop, Houston. We're reading you about three-by now - -
04 04 50 21	CMP (CHARLIE BROWN)	- - I just got a VHF ...
04 04 50 22	CC	We're counting 8 minutes to the burn. Over.
04 04 50 30	CDR (SNOOPY)	Roger. We're going to phasing attitude.
04 04 50 32	CC	Roger. And you're GO for the burn.
04 04 50 37	CDR (SNOOPY)	Yes. You can't imagine the position we can see these things in, pitched way down like this. It looks like we're not very far above them.
04 04 50 52	CMP (CHARLIE BROWN)	Okay, babe. You might try and get your helmets and gloves on. I went through P30, and we're all good there again.
04 04 51 21	LMP (SNOOPY)	What is your attitude, babe? Boy, it's getting dark.
04 04 51 26	CDR (SNOOPY)	Okay, I thought we were pointing up in the air. Let's hurry up and get this burn completed.
04 04 51 56	LMP (SNOOPY)	We have been down - - ~~long them, babe!~~

04 04 52 07	CDR (SNOOPY)	You ought to have started doing that earlier.
04 04 52 10	LMP (SNOOPY)	Tom, are you reading me?
04 04 52 11	CDR (SNOOPY)	I'm reading you. Do you read me?
04 04 52 12	LMP (SNOOPY)	Yes.
04 04 52 15	CMP (CHARLIE BROWN)	Okay, you guys. Give it to them.
04 04 52 21	LMP (SNOOPY)	Okay. You can go into 40.
04 04 52 34	CMP (CHARLIE BROWN)	Houston, Charlie Brown. They're going into a P40 now.
04 04 52 37	CC	Roger. We copy them, Charlie Brown. Thanks so much.
04 04 52 44	CMP (CHARLIE BROWN)	Roger.
04 04 52 45	CDR (SNOOPY)	... Minus 12710, ... plus 167.1. ...
04 04 52 53	LMP (SNOOPY)	Okay. ...
04 04 52 55	CDR (SNOOPY)	Yes. We'll do an AVTO maneuver.
04 04 53 01	LMP (SNOOPY)	VERB 70 - You should have called a VERB 78 in there, babe.
04 04 53 45	CDR (SNOOPY)	Okay. Four minutes.
04 04 53 49	LMP (SNOOPY)	And, Tom, the AGS is good for a takeover.
04 04 53 55	LMP (SNOOPY)	The AGS is good for a takeover. Okay. Let me open and close this breaker.
04 04 54 04	CDR (SNOOPY)	Okay.
04 04 54 10	LMP (SNOOPY)	Okay T.P. We've got to get to this burn. Engine gimbal ENABLE.

04 04 54 11	CDR (SNOOPY)	Gimbal ENABLE.
04 04 54 12	CDR (SNOOPY)	Throttle MIN.
04 04 54 13	CDR (SNOOPY)	Throttle is still in the MIN.
04 04 54 15	LMP (SNOOPY)	Throttle control AUTO.
04 04 54 20	CDR (SNOOPY)	Throttle control is AUTO.
04 04 54 22	LMP (SNOOPY)	Manual throttle COMMANDER.
04 04 54 23	CDR (SNOOPY)	Go.
04 04 54 24	LMP (SNOOPY)	Ballast couple ON.
04 04 54 25	CDR (SNOOPY)	Co.
04 04 54 28	LMP (SNOOPY)	Descent engine override command OFF.
04 04 54 30	CDR (SNOOPY)	Go.
04 04 54 31	LMP (SNOOPY)	Engine pushbuttons all RESET?
04 04 54 32	CDR (SNOOPY)	Yes.
04 04 54 37	LMP (SNOOPY)	Abort/Abort pushbuttons all RESET.
04 04 54 38	CDR (SNOOPY)	Go.
04 04 54 43	LMP (SNOOPY)	STAB control: DECA power CLOSED; and AELD CLOSED.
04 04 54 46	CDR (SNOOPY)	Okay. STAB control: DECA power CLOSED and AELD CLOSED.
04 04 54 49	LMP (SNOOPY)	Okay. EPS inverter number 2 CLOSED.

04 04 54 53	CDR (SNOOPY)	That's over there.
04 04 54 55	LMP (SNOOPY)	No, it isn't!
04 04 54 56	CDR (SNOOPY)	EPS inverter number - -
04 04 54 57	LMP (SNOOPY)	EPS inverter number 1 CLOSED; I'm sorry. You got it?
04 04 54 59	CDR (SNOOPY)	Yes.
04 04 55 00	LMP (SNOOPY)	Okay. Descent engine override coming CLOSED? AELD coming CLOSED. Abort stage coming CLOSED. Okay, Tom, if DELTA-V to GO is less than five, we'll RCS it to 03 MAN. If DELTA-V to go is less than 25 but greater than 5 we got to stage in RCS to zero.
04 04 55 24	CDR (SNOOPY)	Yes.
04 04 55 25	LMP (SNOOPY)	If DELTA-V to GO is greater than 25 we got to stage in APS to zero. Okay?
04 04 55 30	CDR (SNOOFY)	Right.
04 04 55 32	LMP (SNOOPY)	Now if we have to go to APS I've got the staging procedure and everything right here.
04 04 55 37	CDR (SNOOPY)	Yes.
04 04 55 38	LMP (SNOOPY)	If we have to burn. If we stage it we'll stage it and burn it in AGS and go. If we're burn in ASCENT we'll burn it in AGS.
04 04 55 47	CDR (SNOOPY)	...
04 04 55 50	LMP (SNOOPY)	Have you got your landing radar on?
04 04 55 51	CDR (SNOOPY)	Landing radar still on -
04 04 55 53	LMP (SNOOPY)	You ought to pull that breaker.

04 04 55 55	CDR (SNOOPY)	No. It stays on until after we do VERB 79 - After.
04 04 56 01	CMP (CHARLIE BROWN)	Roger.
04 04 56 14	CDR (SNOOPY)	Two minutes.
04 04 56 35	CDR (SNOOPY)	... light on the ...
04 04 56 42	CDR (SNOOPY)	Okay, 146 to go. We have phasing of 176 feet per second. Okay. 130.
04 04 57 26	CDR (SNOOPY)	John, we'll go on VOX, so you can read us.
04 04 57 30	LMP (SNOOPY)	John, how do you read?
04 04 57 31	CMP (CHARLIE BROWN)	Loud and clear.
04 04 57 33	LMP (SNOOPY)	We are being cut out, but I assume it's loud and clear.
04 04 57 38	LMP (SNOOPY)	Okay, Tom. Coming up on 35 seconds: ENGINE ARM DESCENT? Deadband MIN. You are in AGS. AGS. Okay. Go to AUTO on the AGS. There's your AGS needle. AGS attitude is looking good. Okay. Babe, the AGS is looking good, there is your AGS attitude, in good shape.
04 04 58 08	LMP (SNOOPY)	Okay, and I'll trim out the burn. The total burn time is 40 seconds. Okay. I'm ready. Back to 99; proceed. There's ullage.
04 04 58 36	LMP (SNOOPY)	Okay. We're burning, John; we're burning!
04 04 58 41	CC	Snoop, Houston. We copy.
04 04 58 43	LMP (SNOOPY)	It's the gimbal light. Forget about it, babe. We've got an ENGINE GIMBAL light, but everything is good. Still burning. 149 to go. Okay. Throttling up. 127 to go.
04 04 59 00	CC	How's the attitude? 107 to go. 86 to go. 40 to go, 40 to go.
04 04 59 09	LMP (SNOOPY)	Shut down!

04 04 59 14	LMP (SNOOPY)	Okay, Tom. 1.5 feet per second. Let me null it out. Let's go to AGS ATTITUDE HOLD. AGS ATTITUDE HOLD. Okay. MIN deadband. That's good. Let it go, right there. That's good. That's got it, babe. That's got it. Let me get the - plus 0.2, minus 0.5, and minus 0.9. The burn is good, John.
04 04 59 51	CMP (CHARLIE BROWN)	Roger. I understand. The burn is good.
04 04 59 54	CC	And Snoop, Houston. We copy your residuals. Over.
04 05 00 00	LMP (SNOOPY)	Roger.
04 05 00 01	CDR (SNOOPY)	Looked real good then. The burn was steady, we had the DESCENT QUANTITY light on twice, we had the ENGINE GIMBAL light on, the MASTER WARNING and all those good things, and we just pressed right on. Over.
04 05 00 12	CC	Roger. We copy.
04 05 00 13	LMP (SNOOPY)	VERB 82, ENTER.
04 05 00 21	LMP (SNOOPY)	Okay, Tommy. Okay. Houston, we are in a 19°.8 by 11.8.
04 05 00 28	CC	Roger. We copy.
04 05 00 33	LMP (SNOOPY)	Okay, Tom. Verify your engine arm OFF; PROP quantity OFF. Okay, babe. We can use - I want to take my helmet and gloves off.
04 05 00 48	CMP (CHARLIE BROWN)	I've got it.
04 05 00 49	CC	Snoop, Houston. We missed the VERB 79.
04 05 00 55	CDR (SNOOPY)	Roger. Just went in.
04 05 00 56	CC	Okay. We got it. Thanks, Tom.
04 05 01 02	CC	Hey, Snoop, Houston. The COMM is really great and we got all our data now. During the good part though, boy you were way down in the mud, but everything is copacetic now. Over.
04 05 01 16	LMP (SNOOPY)	Charlie, I fought with the S-band antenna to get it for you, but it's the best I could do and I got the strongest strength OMNI when we were down there,

and then after we passed I gave S-band another try and we came in good, because I thought you'd want to see the burn.

04 05 01 29 CC — We appreciate it. Thanks much, Snoop. It looked great.

04 05 01 35 CDR (SNOOPY) — And, Houston, this is Snoopy. You'd like to know that we have taken so many pictures that both cameras have failed on us. Over.

04 05 01 42 CC — Roger, we copy.

04 05 02 23 LMP (SNOOPY) — - the AGS needles - I'll give you a hack on where it is: on 180 and pitch down 90. And no ... Okay, Tom, clean up your breaker panel: PGNS landing radar open, air control DECA power open, AELD OPEN. Inverter number 1 open, and my descent engine override is coming open. My AELD is coming open, my abort stage is coming open, and I am going to disconnect the battery. Stand by. Okay. That one's above.

04 05 03 05 LMP (SNOOPY) — Pretty good bird, you know it? Okay, how about RCS? What have we got quantity-wise? 92 and 82. Fine, that's no problem, babe. Piece of cake. Waiting to get to that attitude and we'll pick up -

04 05 03 42 LMP (SNOOPY) — Yes. 120 upside down.

04 05 03 44 CC — Charlie Brown, Houston. We have a backup insertion pad if you are ready to copy. Over.

04 05 04 06 CMP (CHARLIE BROWN) — Roger. Go ahead.

04 05 04 08 CC — Roger, Charlie Brown.

04 05 04 11 CMP (CHARLIE BROWN) — Go ahead.

04 05 04 12 CC — Roger, Charlie Brown, backup insertions: SPS, G&N: NA down to NOUN 933, NOUN 933 is 102 58 01.00, plus 0170.0, plus all balls, minus 0071.0,180, 262, 002, NA down to DELTA-V_C, and the DELTA-V_C is 0171.8.

Rest of the pad is NA. Your ullage is four jets, 10 seconds. Got a CSI time: a 103 44 00, TPI time 105 33 00, with an N equal to 1. Over.

04 05 04 35 CMP (CHARLIE BROWN) — Roger. SPS, G&N: not applicable down to time of burn: 102 58 01.11, plus 0170.0, plus all balls,

minus 071.0, 180, 262, 002, DELTA-V_C 07- 0171.8, four jets, 10 seconds. CSI: 103 44 00, TPI 105 33 00, N equals 1.

04 05 06 17 CC — Good readback, Charlie Brown.

04 05 06 40 CC — Charlie Brown, Houston. Confirm DELTA-V_C and NOUN 981: minus 00710.

04 05 07 03 CMP (CHARLIE BROWN) — Minus two balls, 710.

04 05 07 05 CC — Okay. Fine. You have been breaking up a little bit, John, we missed one of those zeros.

04 05 07 12 CDR (SNOOPY) — Jose, are you pitched up?

04 05 07 19 CMP (CHARLIE BROWN) — That's affirmative. I'll get there. I'm not pitched up; I'm in tracking attitude right now.

04 05 07 47 CDR (SNOOPY) — Hey, John. Babe, you may have to go down and reset that rendezvous radar transponder. Over.

04 05 08 02 LMP (SNOOPY) — Hold it, John. We're getting it.

04 05 08 42 CDR (SNOOPY) — Hello, Houston. Snoopy.

04 05 08 44 CC — Go ahead, Snoopy. Over.

04 05 08 49 CDR (SNOOPY) — Did you take a look at 0649's, what we got there?

04 05 08 54 CC — Roger. We're looking at it. Stand by.

04 05 09 01 LMP (SNOOPY) — The first one was a small number: 0.4 and zero.

04 05 09 06 CC — Roger, copy. 0.4 and zero on the first. It looks like big numbers now.

04 05 09 15 CC — Snoop, Houston. While we're looking at this, would you - Are you ready to copy an insertion pad? Over.

04 05 09 24 LMP (SNOOPY) — That's affirmative. I am, and I'd also like to give - you give me an update on AOS and sunrise.

04 05 09 31 CC — Roger. Stand by. Your insertion pad: TIG- starting with TIG-102 55 01 40, minus 0183.2,

		plus all balls, minus 0123.5. DELTA-V_R is 0220.9, 015, minus - correction, roll is 180, 233, minus 0181.8, plus all balls, minus 0125.5, rest of the pad is NA. Standing by for your readback. Over.
04 05 10 41	LMP (SNOOPY)	Okay. You got any word on that NOUN 49? We're losing some tracking time we'd like to try out.
04 05 10 46	CC	Roger. Stand by. We want you to reject that Mark with the big numbers, and stand by on the others.
04 05 12 08	CC	Snoop, Houston. We have LOS time for you of 101 37. Sunrise time of 101 40. Over.
04 05 12 26	LMP (SNOOPY)	Okay. I got it.
04 05 12 30	CC	And, how's the P20 doing now? Is it taking good Marks?
04 05 12 38	LMP (SNOOPY)	Yes, it looks like it is. We just got our second Mark and, wait a minute. Yes, it looks good. It's 3-tenths of a foot per second. And I'll read the pad back if you'd like.
04 05 13 07	LMP (SNOOPY)	Houston, are you ready for the pad?
04 05 13 08	CC	Roger. Go.
04 05 13 14	LMP (SNOOPY)	Okay. Insertion is 102 55 01.40, minus 0183.2, plus all balls, minus 0123.5. 0220.9, 015, 180, 233, minus 0181.8, plus all balls, minus 0125.5 and that's it.
04 05 13 38	CC	Roger. That was a good readback.
04 05 14 03	CC	Snoop, Houston. We're satisfied with the way the rendezvous radar is updating the state vector in P20 now. Over.
04 05 14 13	LMP (SNOOPY)	Okay, Charlie. Thank you.
04 05 14 54	CDR (SNOOPY)	Houston, Apollo 10. The Z-axis tracked and now looks real good and real solid.
04 05 15 00	CC	Roger, Snoop. It looks good to us. Your range is coming right in there.
04 05 15 07	CDR (SNOOPY)	Roger.

04 05 15 40	CMP (CHARLIE BROWN)	Okay. I'm tracking you guys optically. It's really working good.
04 05 15 47	LMP (SNOOPY)	Have you got our flashing light, John?
04 05 15 49	CMP (CHARLIE BROWN)	Yes, it's beautiful.
04 05 15 55	LMP (SNOOPY)	Houston, just for information, everytime we lose track with the S-band antenna it happened - it happens to band in there and stops. It pops the S-band antenna circuit breaker on 16. It's done that about three times.
04 05 16 09	CC	Roger.
04 05 16 10	LMP (SNOOPY)	But it appears to recover all right.
04 05 16 12	CC	Roger. Snoop, Houston. That's a normal -
04 05 16 16	LMP (SNOOPY)	... I'm going OMNI antennas at this time.
04 05 16 20	CC	Roger. We copy on the OMNI's, and that's normal indication for the steerable: when it goes into the stops it will pop that breaker.
04 05 16 47	LMP (SNOOPY)	Okay, lets go to VERB 41, NOUN 72. ENTER. Go.
04 05 18 39	LMP (SNOOPY)	... beautiful, magnificent, Charlie, or Joe, or Tom, or - gosh dang that's unbelieveable, isn't it? Just like it's hanging out there on a string where you can touch it. Where the hell are we going?
04 05 18 55	CDR (SNOOPY)	Very pretty. ...
04 05 18 58	CDR (SNOOPY)	Let me check. When ... you're there, your're there.
04 05 19 00	LMP (SNOOPY)	Oh, man are we there. This alignment is so good, it's pathetic.
04 05 19 04	CDR (SNOOPY)	Okay. Ready?
04 05 19 06	LMP (SNOOPY)	Oh, yeah, that's good. Don't even trim it.

04 05 19 09	LMP (SNOOPY)	Where do we go? To PGNS, PULSE?
04 05 19 12	CMP (SNOOPY)	Yes.
04 05 19 15	LMP (SNOOPY)	That's good. PGNS and PULSE.
04 05 19 18	CMP (CHARLIE BROWN)	Did you guys tur[illegible] your tracking light?
04 05 19 19	LMP (SNOOPY)	No. No, we maneuvered.
04 05 19 24	CMP (CHARLIE BROWN)	Okay. I guess you maneuvered, because I don't see you.
04 05 19 26	CDR (SNOOPY)	We've just maneuvered to start tracking Acrux. Over.
04 05 19 29	CMP (CHARLIE BROWN)	Okay.
04 05 19 52	LMP (SNOOPY)	Your ... on this thing is really bad. It won't stand it.
04 05 20 00	CC	Snoop, Houston. We read you about three-by. Over.
04 05 20 06	CDR (SNOOPY)	Roger, Houston. This is Snoopy. We're starting a mark on Acrux now for our P52. Over.
04 05 20 13	CC	Roger, Tom. We copy in the P52. Over.
04 05 20 16	LMP (SNOOPY)	Stand by, Tom. Go.
04 05 20 20	CDR (SNOOPY)	Roger.
04 05 20 55	LMP (SNOOPY)	Okay.
04 05 21 20	CDR (SNOOPY)	Batteries went dead.
04 05 21 22	LMP (SNOOPY)	Batteries what?
04 05 21 23	CDR (SNOOPY)	... On the Hasselblad went dead.

04 05 21 25	LMP (SNOOPY)	I had a film pack that jammed.
04 05 21 26	CDR (SNOOPY)	Batteries went dead. Oh, well.
04 05 21 43	LMP (SNOOPY)	Three to mark. Y.
04 05 21 45	CDR (SNOOPY)	MARK Y.
04 05 22 04	LMP (SNOOPY)	MARK Y, again.
04 05 22 06	CDR (SNOOPY)	MARK Y.
04 05 22 40	LMP (SNOOPY)	MARK Y, again.
04 05 22 41	CDR (SNOOPY)	MARK Y.
04 05 22 45	LMP (SNOOPY)	Boy, no wonder John's going blind.
04 05 23 35	LMP (SNOOPY)	Either one.
04 05 23 36	CDR (SNOOPY)	Either one.
04 05 24 08	CC	Snoopy, Houston. To improve the COMM we'd like you to go to S-band to VOICE and S-band ranging OFF. Over.
04 05 24 20	CDR (SNOOPY)	Roger. S-band VOICE; S-band ranging OFF. Over.
04 05 24 25	CC	And Charlie Brown, Houston. When you lose the high gain, then go to OMNI Delta. Over.
04 05 24 35	CMP (CHARLIE BROWN)	Roger. OMNI Delta.
04 05 25 56	CMP (CHARLIE BROWN)	I read you, Snoop.
04 05 26 02	CDR (SNOOPY)	Hello, Houston. This is Snoopy. How are you reading now?
04 05 26 04	CC	Roger, Tom. You're about three-by now. A little bit better. Over.

04 05 26 11	CDR (SNOOPY)	Roger. Charlie, I'm reading you loud and clear now. Over.
04 05 26 14	CC	Roger. We - we have low bit rate, that's all, Snoop. When you get through your P52, we'd like your torquing angles.
04 05 26 25	CDR (SNOOPY)	Roger. And on the first AUTO maneuver so far Houston - to Acrux - it put the reticle right on the very center of the star there. So it looks like our first alignment was beautiful.
04 05 26 40	CC	Roger, Snoop. We copy. Over.
04 05 26 47	CDR (SNOOPY)	And we're now Marking on Antares.
04 05 26 50	CC	Roger, Snoop. Out.
04 05 28 25	CMP (CHARLIE BROWN)	Did you guys see that Mark I just bought?
04 05 28 34	CDR (SNOOPY)	Hello, Charlie Brown. Snoopy. Were you calling?
04 05 28 38	CMP (CHARLIE BROWN)	No. I was talking to Houston.
04 05 28 43	CC	Charlie Brown, Houston. Go ahead. Reading you about three-by. Over.
04 05 28 49	CMP (CHARLIE BROWN)	Roger. Did you see that Mark I just bought? With the big DELTA-V and everything? Did you all read the data?
04 05 28 57	CC	Charlie Brown, Houston. Say again. You're unreadable.
04 05 29 05	CMP (CHARLIE BROWN)	Roger. I say again. Do you all read what I'm doing?
04 05 29 09	CC	Roger. We see you're in P20. Over.
04 05 29 35	CMP (CHARLIE BROWN)	Roger. I just bought a rather large optics Mark and it brought it right back up there into the scope.
04 05 29 51	LMP (SNOOPY)	Houston, the star angle difference is 4 balls 2. Houston, are you reading?
04 05 30 04	CC	Roger. Go ahead. 4 balls 2 on the star angle difference. How about the torquing angles?
04 05 30 11	LMP (SNOOPY)	Okay. Minus 00169, plus 00050, plus 3 balls 66.

04 05 30 24	CC	Roger. We copy, Snoop. Out.
04 05 30 59	CMP (CHARLIE BROWN)	What kind of rate you got, Tom? About 200 miles?
04 05 31 10	CC	Charlie Brown, Houston - Charlie Brown, Houston. We are satisfied with your P20. Your PAV's looking good to us. Over.
04 05 31 22	CMP (CHARLIE BROWN)	Roger. Looks good to me too.
04 05 31 25	CC	And, John, you are barely readable, about two-by. Stand by. We might have an antenna problem.
04 05 31 34	CMP (CHARLIE BROWN)	Roger. ...
04 05 31 49	CC	Charlie Brown, Houston. We are looking right up your tailpipe there, and your COMM is pretty bad. Did you copy, Charlie Brown? We are looking up your tailpipes, the COMM is pretty bad.
04 05 32 07	CMP (CHARLIE BROWN)	Houston, Charlie Brown. COMM D. How do you read?
04 05 32 14	CC	Snoopy, go ahead.

END OF TAPE

04 05 32 43	CC	Charlie Brown, Houston. We'll have LOS in 101 36. We'll see you over the hill at 102 22. And, Snoop, LOS for you, 101 - correction, 101 37, AOS 102 25. Over.
04 05 33 27	LMP (SNOOPY)	This is Snoopy. Roger. We got that.
04 05 33 30	CC	Roger.
04 05 33 42	CC	Roger. And, Charlie Brown and Snoop, as you are going over the hill, all the systems are GO. We're all GO here on the ground. And it's looking great. Over.
04 05 33 54	LMP (SNOOPY)	Thank you, Charlie. Snoopy's GO here. Our P52's complete. We're going to pick up P20 again.
04 05 34 00	CC	Copy.
04 05 35 05	LMP (SNOOPY)	Hey, Charlie Brown. This is Snoop. I guess we are about 150 miles from you.
04 05 35 11	CMP (CHARLIE BROWN)	Roger.
04 05 35 13	LMP (SNOOPY)	And our P50 - our P52 is complete. We're coming over to start tracking on you.
04 05 35 20	CMP (CHARLIE BROWN)	Yes. I show you ... 79.22 ...
04 05 35 25	CC	Charlie Brown, this is Houston. Did you get your AOS-LOS times? Over.
04 05 45 --		BEGIN LUNAR REV 14
04 06 22 39	CC	Hello, Charlie Brown. Houston. Over.
04 06 22 45	CMP (CHARLIE BROWN)	Roger. I'm looking at 316.45 miles on the - on the radar right now.
04 06 22 53	CC	Roger. We copy. We'd like you to go to POO and ACCEPT. We have a state - -
04 06 22 56	CMP (CHARLIE BROWN)	This thing is working?
04 06 23 00	CC	Roger. We'd like you to go to POO and ACCEPT. We have a state vector for you and a change on you backup insertion pad, if you're ready to copy. Over.

04 06 23 13 CMP (CHARLIE BROWN) Go ahead. Over.

04 06 23 14 CC Okay. DELTA-V_X and NOUN 81 - -

04 06 23 17 CMP (CHARLIE BROWN) Go ahead. Over.

04 06 23 18 CC Roger. DELTA-V_X and NOUN 81 changes to plus 01720. Over.

04 06 23 30 CMP (CHARLIE BROWN) Roger. DELTA-V_X, plus 01270.

04 06 23 34 CC Roger. That's negative.

04 06 23 38 CMP (CHARLIE BROWN) Yes. I just barely read you there, Snoop.

04 06 23 42 CC Charlie Brown, that was a bad readback on the DELTA-V - -

04 06 23 43 CMP (CHARLIE BROWN) Say again. Over.

04 06 23 52 CDR (SNOOPY) Say it again there, Charlie.

04 06 23 54 CC Roger, John. It's plus 01720. Over.

04 06 24 03 CMP (CHARLIE BROWN) Roger. 01720.

04 06 24 08 CC That's affirmative.

04 06 24 18 CC Charlie Brown, Houston. I cut you out at the beginning of the pass. Say again what were you going to say. Over.

04 06 24 29 CMP (CHARLIE BROWN) Nothing important. I'm about to lose - I just lost range and went to 320.50 miles, and I'm no longer in voice contact with Snoopy. I think we're just flat out of range.

04 06 24 44 CC Roger. We copy.

04 06 24 45 CMP (CHARLIE BROWN) I can hear him very faintly in the background.

04 06 24 48 CC Roger. Charlie Brown, Houston. It's your computer. We're through with the load. Over.

04 06 25 01 CMP (CHARLIE BROWN) Roger. Thank you.

04 06 25 56	CDR (SNOOPY)	Hello, Charlie Brown. Snoopy.
04 06 26 00	CMP (CHARLIE BROWN)	I'm just about to lose you, there.
04 06 26 24	LMP (SNOOPY)	Hello, John. Do you read us?
04 06 26 27	CMP (CHARLIE BROWN)	Just barely, you guys. Did you stage?
04 06 26 46	LMP (SNOOPY)	Houston -
04 06 26 47	CDR (SNOOPY)	Houston, this is -
04 06 26 50	CMP (CHARLIE BROWN)	Go ahead. Go ahead there, babe.
04 06 27 08	CDR (SNOOPY)	Hello, Hello, Charlie Brown. Snoopy. Do you read?
04 06 27 13	CMP (CHARLIE BROWN)	Roger. Read you loud and clear now. Weak but clear.
04 06 27 20	CMP (CHARLIE BROWN)	I read you guys.
04 06 27 22	CDR (SNOOPY)	Hello, Houston. How do you read Snoopy?
04 06 27 24	CC	Roger, Snoopy. Reading you five-by. Over.
04 06 27 29	CDR (SNOOPY)	Roger. Will you ask Charlie Brown if he's still in track attitude. I can't get any lockon at this distance out here. Over.
04 06 27 36	CC	Roger. He had you - He broke lock at 320 miles on the VHF. Stand by. We'll ask him on his attitude. Charlie Brown, Houston. Are you still in tracking attitude?
04 06 27 47	CMP (CHARLIE BROWN)	Roger.
04 06 27 52	CC	Charlie Brown, Houston. Are you -
04 06 27 53	CMP (CHARLIE BROWN)	I'm in attitude 180 which is where I'm ...
04 06 27 56	CC	Roger.

04 06 27 58	CMP (CHARLIE BROWN)	- supposed to be right now.
04 06 28 01	CC	Roger, Charlie Brown. We copy. Snoop, Houston. He's in attitude as called for out in the flight plan. 180 pitch. We got your ascent looks good, the ascent battery looks good. Over.
04 06 28 19	CDR (SNOOPY)	Roger. We've just pressurized the ascent tanks, and they look good.
04 06 28 24	CC	Roger. If you'll give us your computer, we need POO and DATA. We have a state vector for you.
04 06 28 37	LMP (SNOOPY)	You've got it.
04 06 28 39	CC	Copy, Snoop. Out.
04 06 28 50	CC	Hello, Charlie Brown. This is Houston.
04 06 28 54	CMP (CHARLIE BROWN)	This is some attitude?
04 06 28 56	CC	Charlie Brown, this is Houston. We show you loaded TIG incorrectly. In P30. TIG is 102 55 0140. Over.
04 06 29 12	CC	Correction, correction -
04 06 29 14	CMP (CHARLIE BROWN)	It may be 102 -
04 06 29 19	CC	Charlie Brown, that was my fault. TIG time is 102 58 0100. Over.
04 06 29 34	CMP (CHARLIE BROWN)	Roger. 0100.
04 06 29 38	CC	Affirmative. Out.
04 06 30 00	CMP (CHARLIE BROWN)	Okay. How does that look to you?
04 06 30 04	CC	Looks real fine, Charlie Brown.
04 06 30 13	CC	Snoop, Houston. We got the load in. The computer's yours. Over.
04 06 30 19	CDR (SNOOPY)	Roger, Houston. Thank you very much.

04 06 30 27	CDR (SNOOPY)	And, Houston, this is Snoopy. We've got about 14 minutes to staging. I'm going to go ahead and maneuver to staging attitude.
04 06 30 36	CC	Roger, Snoop. We copy. Could you comment on your cameras? We might be able to help you out on those. Over.
04 06 30 45	CDR (SNOOPY)	Roger. On the Hasselblad it looks like both batteries have gone dead. Over.
04 06 30 51	CC	Copy. Both batteries dead on the Hasselblad. How about the sequence?
04 06 31 05	LMP (SNOOPY)	Okay. On the sequence, I've got two film packs that you have to practically jam, wire, and ... step on to get them to make electrical contact so the camera will run. I've got one of them to run, and I'll try to get the other one to run.
04 06 31 18	CC	We copy. Thanks a bunch. We'll work on it for you. Out.
04 06 31 25	LMP (SNOOPY)	It's just hard to do that when you're coming across a landing site and you expect it to work.
04 06 31 31	CC	Roger, Gene. We copy.
04 06 31 36	CDR (SNOOPY)	And Snoopy's going to maneuvering at this time.
04 06 31 41	CC	Roger.
04 06 34 09	CMP (CHARLIE BROWN)	Yes, I got all the - -
04 06 34 11	CMP (CHARLIE BROWN)	Hey, you guys must be about 250 miles out, would you?
04 06 34 17	LMP (SNOOPY)	- - on the line and all the descents off.
04 06 34 28	LMP (SNOOPY)	Okay.
04 06 34 29	CMP (CHARLIE BROWN)	Charlie Brown to Snoopy. Over.
04 06 34 30	LMP (SNOOPY)	Okay. You ready? Suit gas diverter valve, PULL/EGRESS. Cabin REPRESS valve, CLOSE. Okay I'm ready for - Collee! Okay, descent O_2, closed. Descent O_2 number 1, open. Okay, REG's A and B to EGRESS. Okay, water tank SELECT to ASCENT.

04 06 35 52	LMP (SNOOPY)	Okay, I'll check the ascent batteries. Oh, I'm in a deadface, Tom. We are deadfaced. Okay, on your side AC BUS A DECA GIMBAL, OPEN. FLIGHT DISPLAY THRUST, OPEN.
04 06 36 08	CDR (SNOOPY)	Go.
04 06 36 09	CMP (CHARLIE BROWN)	PROPULSION DESCENT HELIUM, REG/VENT, OPEN.
04 06 36 10	CDR (SNOOPY)	Go.
04 06 36 11	CMP (CHARLIE BROWN)	HEATER LANDING RADAR, OPEN. STAB/CONTROL, DECA POWER, OPEN. PGNS LANDING RADAR, OPEN. Okay, let's take another look at those APS temperatures and pressures. They look all right to me.
04 06 36 31	CC	Snoop, Houston. The APS looks good to us. Over.
04 06 36 34	LMP (SNOOPY)	Okay. Roger, Houston. We're about 4 minutes and 23 seconds from staging. Okay, Tom, and ... out of here. The clock's set - -
04 06 36 52	CC	Snoop, Houston. Over.
04 06 36 57	CDR (SNOOPY)	Go ahead, Houston.
04 06 36 58	CC	Roger. We copy. 8 minutes to staging. Over.
04 06 37 04	CDR (SNOOPY)	Roger. It's 8 minutes.
04 06 37 05	CDR (SNOOPY)	MARK.
04 06 37 06	CDR (SNOOPY)	Now 07 59 58.
04 06 37 07	LMP (SNOOPY)	That's affirmative. We're with you. That was my mistake. It's 4 minutes to our 14-minute check. We're 8 minutes to staging, 07 50.
04 06 37 15	CC	Copy. Out.
04 06 37 21	LMP (SNOOPY)	Just like to think ahead.
04 06 37 32	CDR (SNOOPY)	Okay, Tom. Staging attitude should be - -

04 06 37 36	CMP (CHARLIE BROWN)	This is Charlie Brown. You'll have to keep me posted on what Snoopy's doing. I can't read them anymore.
04 06 37 42	LMP (SNOOPY)	... reading it about ... upsidedown.
04 06 37 43	CC	Roger, Charlie Brown. Snoop's going through his staging checklist. He's got 7 minutes to go before staging.
04 06 37 54	CMP (CHARLIE BROWN)	Houston, I can't read you either.
04 06 38 11	LMP (SNOOPY)	That mother may give us a kick.
04 06 38 48	LMP (SNOOPY)	Okay, Tom. If you get a chance reset my ORB rate ball, will you, coming down. AGS agrees with the PGNS on that one. 30; I'm way off now. I'm about 290. ... 270, coming up on 240, a little more. That's good. Right there. Stop it.
04 06 39 31	LMP (SNOOPY)	15 34, Tom. At 14 minutes you get the MASTER ARM ON, and we'll leave it on, remember, right on through the insertion burn. And I'll set the DAP. Matter of fact, if you stay in AGS, I'll go ahead and set it now. Okay. ... I'll set the DAP.
04 06 40 15	CC	Snoop, Houston. We have you GO for staging. Over.
04 06 40 20	CDR (SNOOPY)	Roger.
04 06 40 21	LMP (SNOOPY)	Roger. Do you have an update on the LM weight?
04 06 40 30	CC	Roger, Snoop. Your LM weight is 8290. Over.
04 06 40 37	CMP (SNOOPY)	Roger. Got 8290. Thank you.
04 06 40 39	LMP (SNOOPY)	Hey, Tom, that's good enough for CSM weight. So, that's it, babe. Hey, - -
04 06 41 03	CC	Charlie Brown, Houston. We got it shown to high gain now. Snoop's 2 minutes from staging. Over.
04 06 41 12	CMP (CHARLIE BROWN)	Roger.

04 06 41 15	LMP (SNOOPY)	Okay, babe. Gone through it, right up to staging. We've gone through - You want to double check these? Cabin gas diverter valve, PULL/EGRESS. Cabin REPRESS, closed. Descent O_2, CLOSED. Ascent number 1 O_2, opened. Pressure REG's both EGRESS, water tank, ascent - ASCENT WATER, OPEN. I opened that, and descent water's closed. I closed that. I checked the voltages, we're deadfaced. We're on ascent batteries and the voltage looks good here. You got your breakers pulled on that side. At 14 minutes, put your MASTER ARM on. X-translation two jets, guidance control, AG. And you're in attitude hold deadband, MIN so far staging - actually be up there if you want. I think that would be better for staging; otherwise, you're going to bang those thrusters all over the place. Then I should be looking at 270 upsidedown and you looking at 295 upside down. That's coming right in. Okay. And at - the DAP is set - I'll call up P47 at 11 minutes.
04 06 43 04	LMP (SNOOPY)	Let's take another look at the DAP, Tom. 12002. That's GO. Okay. Call up 47 in 1 minute. Okay, Tom. I'll thrust aft 2 feet per second. I'll stop. I'll start thrusting forward and you stage-fire. Got your MASTER ARM on? Okay. Then you got to go up to - My attitude looks good. I'm coming up on 270 upsidedown. And yours is looking good.
04 06 44 05	LMP (SNOOPY)	Okay. I'm calling up - seven - here it is. That way and then that way. Right? Yes. Because we're going to be awful light. Okay. ... out of there, babe. See? That's that last attitude. Okay ... That's the time you want to go. ... the DAP is set for a light vehicle. We'll do it this way. Okay. You ready? Ready? Okay. Son of a bitch! Okay. Let's - Let's make this burn on the AGS babe. Make this burn on the AGS.
04 06 45 45	LMP (SNOOPY)	Got a good staging. Let's make it on the AGS. Get into gimbal lock? She didn't go, huh? Got stage. Yes, POO's up, babe. Okay. Our angles - - It didn't lock, huh? Something is wrong with that GYRO - - Okay. Roll is 180 and pitch is 233. 233. Better put my ball on INERTIAL just to check them out and verify them, too. I can't reach it. But if I could put mine, you could verify it on the AGS.
04 06 46 47	CC	Snoop, Houston. We show you close to gimbal lock.
04 06 46 54	CDR (SNOOPY)	[but] Yes. Something went wild during that staging. And we're all set. We didn't lock it. We are going ahead to the AUTO maneuver.

04 06 46 59	CC	Roger.
04 06 47 05	LMP (SNOOPY)	Babe, I don't know. Let's put my AGS in INERTIAL through to verify that we're at the right attitude, babe. Put - Okay. Just so it's in INERTIAL. Okay. Because in case we have to go to it, that's what we want. Let's get that AGS. . ... wait a minute. Got to - get this damn thing -
04 06 47 36	CMP (CHARLIE BROWN)	Charlie, how is the staging?
04 06 47 37	LMP (SNOOPY)	... is good? Wait until that thing blanks.
04 06 47 40	CC	Charlie Brown. Houston. They - staging - They had a wild gyration though, but they got it under control. Over.
04 06 47 51	CMP (CHARLIE BROWN)	Roger.
04 06 47 54	LMP (SNOOPY)	I'm in AGS in INERTIAL, Tom? Okay. That's good. Got a lot of time; 7 minutes. Boy, I tell you, I don't know what the hell that was, babe.
04 06 48 04	CC	Snoop, Houston. You're looking okay for the insertion burn.
04 06 48 06	LMP (SNOOPY)	- - wait a second, I just got -
04 06 48 09	CDR (SNOOPY)	Yes. Roger, Charlie. That was something we've never been before. It was real good. We went to AGS and - -
04 06 48 15	CDR (SNOOPY)	The computer is yours, Tom. No. I went through P30, going to P40.
04 06 48 36	CDR (SNOOPY)	And, let me tell you what happened there real quick as we come around to this insertion burn. Now, went to attitude deadband, started thrusting aft, and the thing just ... off on us.
04 06 48 47	CC	Roger. We copy.
04 06 48 48	CDR (SNOOPY)	And I could see ... coming up ... coming up to insertion, so I flipped - ... I got ahold of it and tried to avoid gimbal lock and guess I did. Looks like we got a good insertion out of it anyway. And - I mean, a good staging out of it and we are all set to go for insertion.

04 06 49 07	LMP (SNOOPY)	Okay, Tom. Call 06 86.
04 06 49 17	LMP (SNOOPY)	Okay. The computer's yours. We're going backward; that's the way we want to go. I'll tell you, there was a moment there, Tom - but let's worry about it after we make this burn. I want to make sure the AGS is up for it. Okay.
04 06 49 56	CC	Snoop, Houston. Stand by for a Mark; 5 minutes to the burn.
04 06 50 00	CC	MARK.
04 06 50 02	CC	Five minutes to the burn. Over.
04 06 50 04	LMP (SNOOPY)	Okay, Charlie. We're with you. I think we have got all our marbles.
04 06 50 17	LMP (SNOOPY)	He is sure coming down to that ground, I'll tell you. I don't know, but I hope we never find it again. Man, I'll tell you, that was wild, babe. And it wasn't the DAP because you were in AGS. That was AGS. Yes, why deadband? That's where we're going to stage. Okay, babe. I've got good AGS and everything is looking good. I've the attitude set so if we have to switch, we'll be all right. Okay. 04 07. I'll monitor it until the burn. We're 4 minutes. Okay. Four minutes. Boy, that is hard to do with helmet and gloves on. Give me a monitor .. ascent pressure 1 and 2. Let's take another look at it. That's looking good. ENGINE STOP PUSHBUTTONS, all RESET and ABORT/BORT stage RESET. Buttons reset? AGS translation, I mean X-TRANSLATION, four jets. Okay, Tom - -
04 06 51 20	CMP (CHARLIE BROWN)	Houston, I'm not reading them, so if they don't make it, you've got to tell me. Okay?
04 06 51 23	CC	Roger. They are counting down. Looking good, Charlie Brown.
04 06 51 31	LMP (SNOOPY)	- - DELTA-V to go. Okay, Tom, If - if we've got less than 170 feet - if we've got more than 170 feet per second to go, we are on RCS, RCS maximum of 55 seconds, but we will - -
04 06 51 40	CMP (CHARLIE BROWN)	... be advised ... - -
04 06 51 [illegible]	LMP (SNOOPY)	- - if DELTA-V is greater than 170, we're RCS back to computed DELTA-V. Okay? Which is going right to PGNS ... AGS is looking good. Okay. And computed DELTA-V is 220.9, so if we burn less

than 170 feet per second - If we don't get up to 170 feet per second to go, we'll want to burn it back to about 220. Okay? Let's get over 100 - Let's get in at 130 feet per second region. Okay. Push your inverter number 1, closed, circuit breaker and at 1 minute your STAB/CONTROL on AELD, closed. Boy, I'll tell you, we is down among them again going backwards, you know that? Look at that rille. That's got to be - that's got to be probably Diamondback right there. It's awful close to see that.

04 06 51 51	LMP (SNOOPY)	Okay, babe. Coming up about 2 minutes. I'm closed.
04 06 52 14	LMP (SNOOPY)	Okay. Two minutes, babe. Give it a final trim.
04 06 52 23	LMP (SNOOPY)	Okay. There it is. Okay. My AELD is coming closed, Tom.
04 06 52 28	LMP (SNOOPY)	Okay. And verify your inverter number 1 breakers, CLOSED. Okay. At 35 seconds, we want the ENGINE ARM to ARM. We're in PGNS, we're in AUTO.
04 06 53 47	LMP (SNOOPY)	... right into the attitude, babe. Got engine arm yet to go. Coming up on 01 12.
04 06 53 56	LMP (SNOOPY)	I'll hit 99, and I'll count you down.
04 06 54 02	LMP (SNOOPY)	Burn time is 15 seconds, so it's going to go in a hurry. 220 feet per second - 220.9. 50 seconds, 48. Baby, let's make this one.
04 06 54 32	LMP (SNOOPY)	There's 35 seconds. MASTER ARM is ON, ENGINE ARM, ASCENT, AGS CONTROL at AUTO, DEADBAND, MID; and we're set for this attitude on a burn and ... 500. Okay, baby.
04 06 54 55	LMP (SNOOPY)	9, 8, 7, 6, 5, 99 - - 3 2 1 -
04 06 55 02	LMP (SNOOPY)	BURN.
04 06 55 08	LMP (SNOOPY)	Burning. Okay. 160 to go.
04 06 55 11	CC	Roger, Snoop. You are burning.
04 06 55 12	LMP	OK to go -
04 06 55 13	CC	You're burning; you're burning.

04 06 55 14	LMP (SNOOPY)	100 to go. 78 to go. 50 to go. 20 to go. Stand by, Tom. Okay. I'll null them out. Oh, beautiful. Beautiful. Beautiful.
04 06 55 25	CC	Charlie Brown, Houston. He got the burn off. We're in good shape.
04 06 55 31	CMP (CHARLIE BROWN)	Outstanding. My congratulations to ...
04 06 55 36	LMP (SNOOPY)	B, l.l. Baby, that, made me feel better. Call up VERB 82 when you get a chance. AGS says we made a good burn.
04 06 56 01	CC	Snoop, Houston. We copy the residuals. It looks great.
04 06 56 04	CDR (SNOOPY)	We've got it. Oh, Roger. The burn looked real good.
04 06 56 09	LMP (SNOOPY)	I tell you we're down here where we can touch the top of some of the hills, though.
04 06 56 12	CMP (CHARLIE BROWN)	Houston, under cases like this, it sounds like to me you can relay through him because every-time you talk to me I hear him talking in the background.
04 06 56 22	CDR (SNOOPY)	Okay. Hello, Houston. This is Snoopy. It shows us in 46.7 by 11.0. Over.
04 06 56 29	CC	Roger. We copy. 46.7 by 11.0.
04 06 56 32	LMP (SNOOPY)	Okay, Tom. ENGINE ARM, OFF; AELD BREAKER, open; mine's open. MASTER ARM, OFF; and inverter number 2 - number 1 breaker, OPEN.
04 06 56 49	LMP (SNOOPY)	Okay. And the RCS just for the record on 80 and 78. Boy, I tell you I thought we were wobbling all over the skies. I'm surprised those residuals ended up where they did.
04 06 57 03	LMP (SNOOPY)	Okay. Yaw 180 and pitch down 90.
04 06 57 17	CC	Charlie Brown, Houston. Can you hear that - hear them talking when I keep keyed down here. Over.
04 06 57 25	CMP (CHARLIE BROWN)	Yes. A lot clearer, I thought, all of a sudden. That was great.
04 06 57 30	CC	Okay. When they start talking, I'll key down here and relay to you. Over. Until you get them again.
04 06 57 48	CC	Okay. That's [illegible]

04 06 57 40	CC	Roger.
04 06 58 07	CC	Charlie Brown, Houston. We recommend for your next maneuver that you load the DAP with a half a degree per second. We see 0.2 now. Over.
04 06 58 17	CMP (CHARLIE BROWN)	Okay. Roger. I'm going to do that.
04 06 58 19	CC	Okay.
04 06 59 38	CMP (CHARLIE BROWN)	Houston. Is he in a 283 by 15.3. Over.
04 06 59 44	CC	Negative. We've got him at 46.7 by 11.0. Over.
04 06 59 53	CMP (CHARLIE BROWN)	Roger. I must have loaded this number backwards. This P76 number backwards.
04 07 00 02	CC	Roger. We'll send you a TM vector in just a moment. Charlie Brown, we've got your LM vector coming. Stand by.
04 07 00 12	CMP (CHARLIE BROWN)	Alrighty.
04 07 00 44	CMP (CHARLIE BROWN)	We're in P00 and ACCEPT right now.
04 07 00 48	CC	Roger. Copy, Charlie Brown. Stand by. Be a while.
04 07 00 55	CMP (CHARLIE BROWN)	Okay. Well, I can do realign in the meantime then.
04 07 01 03	CC	Charlie Brown, Houston. Stand by 30 seconds. We'll have the load to you. Over.
04 07 01 11	CMP (CHARLIE BROWN)	Roger. I'll wait.
04 07 02 12	CMP (CHARLIE BROWN)	Boy, Houston. That's outstanding. Wish we had done that when we were fooling with the ...
04 07 02 18	CC	Roger.
04 07 02 40	CMP (CHARLIE BROWN)	Are you done with?
04 07 02 42	CC	Stand by.
04 07 02 45	CC	Roger. Charlie Brown, you can take the computer back. We're done with the load. Over.

04 07 03 18	CC	Charlie Brown, Houston. We're through with the computer. It's yours. Over.
04 07 03 25	CMP (CHARLIE BROWN)	Thank you much.
04 07 03 27	CC	You're welcome.
04 07 03 51	CMP (CHARLIE BROWN)	That's more like it.
04 07 04 07	LMP (SNOOPY)	Houston, we're going to OMNI's. ... P52 the rest of it.
04 07 04 10	CC	Roger. We copy. We want aft OMNI's. Aft OMNI's. Over.
04 07 04 23	CC	Snoop, Houston. Aft OMNI's, if you read. Over.
04 07 04 30	CMP (CHARLIE BROWN)	They want you on aft OMNI's, Snoopy.
04 07 04 38	CMP (CHARLIE BROWN)	Houston wants you on aft OMNI's. Okay. He's on OMNI's, Houston.
04 07 04 46	CC	Roger. We copy, Charlie Brown. Are you reading him now, Charlie Brown?
04 07 04 55	CMP (CHARLIE BROWN)	Yes, I am. Thank you.
04 07 04 57	CC	Snoop, Houston. Over.

END OF TAPE

04 07 09 12	CDR (SNOOPY)	Go ahead, Houston. This is Snoopy.
04 07 09 13	CC	Roger. We think we can help you psyche out your problem there at staging. It looked like the mode control switch was in AUTO instead of ATT HOLD. Over.
04 07 09 29	CDR (SNOOPY)	Okay. We'll try to recollect it. I thought we went right through our checklist as prescribed, but if you've got telemetry, that'll sure ... us.
04 07 09 46	CC	Roger.
04 07 09 47	LMP (SNOOPY)	Houston. Results of the AOT alignment. Do you read? Okay. Plus 4 balls 4; gyro torquing angles are 0, plus 00311, plus 00121, and plus 00081, and the ...
04 07 10 06	CC	Roger. We copy.
04 07 10 09	CMP (CHARLIE BROWN)	Snoopy, we're going to acquire - acquire you on VHF again.
04 07 10 14	LMP (SNOOPY)	Okay. We'll be ...
04 07 10 42	CC	Snoop, Houston. We noticed on your checklist that minus 14 minutes prior to - prior to insertion, we have an omission on the mode control switch. It doesn't call out its position there and we think that's where we ran astray. Over.
04 07 11 25	CC	Snoop, Houston. Over.
04 07 11 30	CDR (SNOOPY)	Go ahead, Houston.
04 07 11 31	CC	Roger, Tom. Would you like some further amplification on the staging problem? We think the error came at minus 14 minutes where we failed to call out the AGS mode control switch into ATT HOLD. Over.
04 07 11 51	CDR (SNOOPY)	Okay. Roger.
04 07 12 04	CMP (CHARLIE BROWN)	Okay. I'm coming around now, you guys. I'm probably not pointed at you right this second.
04 07 12 07	CDR (SNOOPY)	Yes, I wondered what happened. We were locked on solid, and the radar slowly faded out. Now it's trying to come in, John, as you pitch up.

04 07 12 13	CMP (CHARLIE BROWN)	Okay.
04 07 12 15	CDR (SNOOPY)	Keep going. The strength is building.
04 07 13 06	CMP (CHARLIE BROWN)	That's more like it.
04 07 13 10	CDR (SNOOPY)	Okay. We've got a solid lock on it now, John, in ... 20.
04 07 13 15	CMP (CHARLIE BROWN)	Would you believe this thing was giving you a range in half steps?
04 07 13 40	CDR (SNOOPY)	And again, on our first Mark, we see these ... updates. We'll reject it and pick up on our second one.
04 07 13 54	CC	Hello, Snoop. Houston. We have a CSI update for you. Over.
04 07 14 04	LMP (SNOOPY)	Go ahead with your update.
04 07 14 07	CC	Roger. It's P32 CSI: 103 45 5460, 105 21 0100, plus 0453, plus 000 106, plus 453, plus 000, plus 005. Standing by for your readback. Over.
04 07 14 51	LMP (SNOOPY)	Give me NOUN 81, again. I don't think I got enough numbers.
04 07 14 53	CC	Roger. NOUN 81 is plus 0453, plus 000. Over.
04 07 15 16	LMP (SNOOPY)	Stand by, Charlie. I'll give you a readback in a second. This is in CSI and ... time we'll use. Is that correct?
04 07 15 24	CC	That's affirmative.
04 07 15 54	LMP (SNOOPY)	Okay, John, I got CSI TIG is 103 45 54, 105 21 0100 -
04 07 16 55	CC	Snoopy, Houston. You broke out on your readback after the NOUN 11. Over.
04 07 17 06	LMP (SNOOPY)	Roger. Stand by, and I'll read it back. Let me get things going here, Charlie - -
04 07 17 10	CC	Roger.
04 07 17 11	LMP (SNOOPY)	I - - I'll read it back in a minute.
04 07 17 14	CC	Roger.

04 07 17 23	CC	Charlie Brown, Houston. Over.
04 07 18 27	CC	Charlie Brown, Houston. Over.
04 07 18 33	CMP (CHARLIE BROWN)	Go ahead, Houston.
04 07 18 35	CC	Roger, Charlie Brown. On - we think what happened on your P76 where you got those funny numbers, that you failed to do the final ENTER on the NOUN 84. Just a reminder to always do the final ENTER on the NOUN 84, and also when you get a chance, we'd like you to cycle the TUNNEL vent valve to IM PRESS for 10 seconds to try to blow out that RTV or whatever's clogging it. Over.
04 07 19 03	CMP (CHARLIE BROWN)	Roger. I tried that this morning.
04 07 19 05	CC	Roger.
04 07 19 07	CMP (CHARLIE BROWN)	It didn't pass.
04 07 19 08	CC	Roger. Did you try it after undocking? Over.
04 07 19 13	CMP (CHARLIE BROWN)	Negative. I'll try it. I ain't got a chance right this minute.
04 07 19 36	CDR (SNOOPY)	Hello, Houston. Hello, Houston. This is Snoopy. Our updates are looking real good now. With the respect of DELTA-R and DELTA-V, it looks like we're coming right up the ... with respect to range and range rate. Over.
04 07 19 46	CC	Roger. We copy, Snoop. Over.
04 07 19 54	CDR (SNOOPY)	Roger.
04 07 21 33	LMP (SNOOPY)	Hello, Houston. I guess you can read our DSKY on this first recycle after 5 Marks.
04 07 21 38	CC	Roger. We copy.
04 07 22 52	LMP (SNOOPY)	Hello, Houston. That last alignment was based upon 4 sets of Marks rather than 5 because of our time to get locked-on and get that 30-minutes lookup range rate. So, we only took 4 - 4 sets of Marks on each star instead of 5.
04 07 23 10	CC	Roger. Copy. That's okay, Snoop. Press on, and Charlie Brown -

04 07 23 21	CDR (SNOOPY)	Roger.
04 07 23 22	LMP (SNOOPY)	No turning back now.
04 07 23 23	CC	Roger. We copy. Charlie Brown, Snoop, did you copy the NOUN 11 NOUN 37 info? Over.
04 07 25 24	CC	Snoop, Houston. We'd like you to confirm your NOUN 81 NOUN 86 info on the CSI pad. NOUN 11 and NOUN 37 were entered correctly. We're satisfied with those. Over.
04 07 25 39	LMP (SNOOPY)	I'm sorry, Charlie. NOUN 81 - I still think I got a left-out digit, but I know what you're talking about. NOUN 81 is plus 045.3 and plus all balls. Is that correct?
04 07 25 52	CC	That's affirmative.
04 07 26 01	LMP (SNOOPY)	And the next number is 106 and then NOUN 86 is plus 453, plus all balls, and plus 0005.
04 07 26 11	CC	That's - Roger. It's 2 balls 5 on - on the DELTA-V_Z. Over.
04 07 26 24	CDR (SNOOPY)	What's wrong, John? What do you see? What's that? Okay, John. I kind of just don't believe that. I've been tracking the radar here. We're going right on the center line of the ball. Let's wait till after CSI and look at it.
04 07 27 55	CDR (SNOOPY)	Okay. Well, our ball was right in the center. We'll still have plenty of time, John, after CSI.
04 07 28 21	LMP (SNOOPY)	John, give me your CSM ... again.
04 07 28 31	LMP (SNOOPY)	Okay. Got plus 6.4.
04 07 28 51	CC	Snoopy, Houston. We'll have LOS at 103 36 and AOS at 104 25. Over.
04 07 29 04	CDR (SNOOPY)	Roger. 103 36 104 25. Thank you.
04 07 29 11	CC	Charlie Brown, Houston. Over.
04 07 30 19	CC	Snoop, Houston. If you get a chance, pass to Charlie Brown, we've lost his PM in voice, and we'll see him AOS at 104 24. Over.

04 07 30 32	CDR (SNOOPY)	This is Snoopy. Roger. Charlie Brown, this is Snoop. You'll have acquisition at 104 24. Over. Roger. You'll be picking up Houston at 104 24. And I ought to - and ... out-of-plane 4.1 and we're tracking in the other direction, and we're tracking right up the center line here. But we'll just ignore the first out of-plane correction. Over.
04 07 31 12	CC	Yes.
04 07 32 27	LMP (SNOOPY)	Houston, I'm putting you OMNI.
04 07 32 29	CC	Roger, Gene.
04 07 33 02	CC	Snoop, Houston. As you go over the hill, you're looking good. We're all GO here.
04 07 33 09	CDR (SNOOPY)	Roger, that. With everything looking good, we're going to ignore the out-of-plane correction at CSI. Over.
04 07 33 20	CDR (SNOOPY)	That's affirmative.
04 07 33 23	CC	Snoop, Houston. Say again. We didn't copy.
04 07 33 31	CDR (SNOOPY)	Roger. With everything looking good we're going to ignore the out-of-plane correction at CSI. Over.
04 07 33 39	CC	Roger. Understand you are not doing the CSI - the out-of-plane. Over.
04 07 34 17	LMP (SNOOPY)	Okay, John. I understand: 4649. Okay, that's all right. We know which way we're going to burn.
04 07 34 28	CDR (SNOOPY)	We'll reverse this to out-of-plane.
04 07 34 30	LMP (SNOOPY)	Yes. Okay, 15.4 miles. It's coming up right now. Plus 45.3. Okay, so we'll burn our 45.3. That's exactly what Houston gave us.
04 07 34 53	CDR (SNOOPY)	Proceed
04 07 35 04	CC	Hey Snoop, CAP COMM. We understand you're burning 45.3. Your PIDO's grinding.
04 07 35 17	CDR (SNOOPY)	It looks just great.

04 07 35 20	LMP (SNOOPY)	Okay, Tom. That clocked it up. 10 minutes on your range rate book. In range, both. We'll see how the backup's come up.
04 07 35 58	CDR (SNOOPY)	Okay. Mark it. It was 103 feet per second.
04 07 36 03	LMP (SNOOPY)	Okay. 103.
04 07 45 --		BEGIN LUNAR REV 15
04 08 22 29	CMP (CHARLIE BROWN)	You guys got 21 minutes and counting, about?
04 08 22 42	LMP (SNOOPY)	I was doing okay until the last hundred miles or so, and I had to put it in tight deadband; because when we start talking about things like plane changes, I want to be able to go back and look at the ball. I think we're in BAMT right now.
04 08 23 00	CC	Charlie Brown, Houston. We're standing by. Over.
04 08 23 06	CMP (CHARLIE BROWN)	Roger.
04 08 23 18	CC	Charlie Brown, Houston. How did the CSI go?
04 08 23 37	CMP (CHARLIE BROWN)	Boy, this tracking the IM against the background of the Moon or something down there is really fantastic.
04 08 23 46	CC	We copy, Charlie Brown.
04 08 23 52	CDR (SNOOPY)	This is Snoopy. How do you read me?
04 08 23 55	CC	Hey, Snoop. Houston. We're reading you four-by. Over.
04 08 24 02	CDR (SNOOPY)	Roger. We had a nominal burn, everything went good, and we had a beautiful earthrise as you came up from behind the horizon.
04 08 24 12	CC	Roger. Need your NOUN [illegible] Snoop, Houston. Need your NOUN 81 numbers and your residuals. Over.
04 08 24 22	CDR (SNOOPY)	Roger. Stand by.
04 08 24 28	LMP (SNOOPY)	Okay. For CSI the [illegible] were 45,43,00. Residuals were 0, minus 4, and 0.

04 08 24 41	CC	Roger, Snoop. We copy 45,43,00. Residuals: 0, minus 0.4, 0. Thank you much.
04 08 24 52	LMP (SNOOPY)	Now we're going to try and put you HIGH GAIN.
04 08 24 55	CC	Roger.
04 08 24 57	CMP (CHARLIE BROWN)	We copy that. Go.
04 08 25 14	CC	Charlie Brown, Houston. Did Snoop do a plane change? Over.
04 08 25 27	CC	Charlie Brown, Snoop. Correction, Charlie - -
04 08 25 29	CMP (CHARLIE BROWN)	We thought we could do it then. It's at the plane-change time; and at the plane-change time, which was 104 15, I had minus 1.1 and they had plus. They had one in the opposite direction, so we decided not to do it there.
04 08 25 45	CC	Roger. We copy.
04 08 26 34	LMP (SNOOPY)	Hello, Houston. This is Snoopy on high gain. How do you read?
04 08 26 36	CC	Roger. We got you on high gain, Snoop.
04 08 26 45	LMP (SNOOPY)	Okay. This high gain stuff is a piece of cake. I don't know what you were all so worried about.
04 08 26 51	CC	Wish we could say the same about the OMNI's.
04 08 26 57	LMP (SNOOPY)	Yes, all I did was look at you coming over the horizon, and I pointed high gain up and down my Z-axis like I hoped I could; and man, there you were, and she locked on.
04 08 27 07	CC	Roger. We got you, and we got you counting down, and we see you 16 45.
04 08 27 16	LMP (SNOOPY)	Okay. Seems like every time we initialize or call a P20 for the first time, the first Mark we have to reject because it's got horrendous 5-digit numbers in it.
04 08 27 29	CC	Roger. We copy.
04 08 27 52	LMP (SNOOPY)	It looks like PPI - My last recycle, PPI moved away from us 2 minutes and it recycled. I'm going to go and try calculating our plane change and compare it with yours, but it looks like we're in good shape. I got a DELTA-H of 14.9.

04 08 28 09	CC	Roger, Snoop. We copy. Houston.
04 08 28 42	CDR (SNOOPY)	Roger, Charlie Brown, Snoop. We're locked on with you all the way. Right together.
04 08 28 53	CDR (SNOOPY)	Roger. You're right in plane with us, Charlie Brown.
04 08 29 07	CDR (SNOOPY)	Hello, Houston. This is Snoopy. One thing that looks real good to us is the rendezvous radar temperature has kept fairly cool. In fact, where it is now, at 80, is about as hot as it's gotten all day. Over.
04 08 29 18	CC	Roger. We copy, Tom. Thank you much.
04 08 29 47	LMP (SNOOPY)	Charlie Brown, this is Snoop. Our plane change is NG, so we're not going to burn ours. We'll wait for yours. If it sounds good, we'll look at it.
04 08 30 45	LMP (SNOOPY)	CDH time is 104 43 52.71.
04 08 30 52	CC	Roger. We copy.
04 08 30 56	CMP (CHARLIE BROWN)	CDH: 104 43 52.71.
04 08 31 01	LMP (SNOOPY)	That's it, Charlie Brown.
04 08 32 03	CMP (CHARLIE BROWN)	Okay. I'm showing a minus 4.2.
04 08 32 11	LMP (SNOOPY)	John, ...
04 08 32 16	CDR (SNOOPY)	I don't either, John. We're going to ignore it here.
04 08 32 20	CMP (CHARLIE BROWN)	We can take it out ...
04 08 32 23	CDR (SNOOPY)	Yes.
04 08 32 26	LMP (SNOOPY)	Ours was in the opposite direction even with the sign changed, but let's not burn it. You're right down to belly band, babe.
04 08 34 50	CMP (CHARLIE BROWN)	Okay. Minus 581 and a minus 0.5, 0, and minus 2.9. P33.

04 08 35 06	CC	Snoop, Houston. We see your solution. It looks prima. Over.
04 08 35 33	CMP (CHARLIE BROWN)	Roger. They both look great. Yes.
04 08 37 35	CMP (CHARLIE BROWN)	This is the nicest CDR - This is the nicest CDR solution we ever got.
04 08 37 38	CDR (SNOOPY)	That's right, John. Looks like our CSI solution and the total targeting was just fantastic.
04 08 38 24	CMP (CHARLIE BROWN)	Going to do this in AGS, huh?
04 08 38 26	CDR (SNOOPY)	Yes. We're going to be over to AGS and TRACK. I just want to make sure where attitude holds. We do know ...
04 08 39 07	CC	Charlie Brown, Houston. Over.
04 08 39 25	CC	Hello, Charlie Brown. Houston. Over.
04 08 39 42	LMP (SNOOPY)	Houston, go ahead. Charlie Brown's reading you.
04 08 39 45	CC	Roger, Snoop. I'm not reading him at all. Notice - we noticed he bypassed his roll maneuver at about 104 33. We recommend he manually roll 180 before he does his P20 AUTO maneuver over, out to the burn.
04 08 40 03	LMP (SNOOPY)	He got that.
04 08 40 05	CC	Okay. We barely heard him. Thank you.
04 08 40 10	LMP (SNOOPY)	John, we're at 3 43, 3 42, counting down to the burn.

END OF TAPE

04 08 42 00	LMP (SNOOPY)	That's 2 minutes, John.
04 08 42 35	CDR (SNOOPY)	Jose, are you maneuvering now? Okay, we just lost lock. Understand.
04 08 43 20	CDR (SNOOPY)	...
04 08 43 25	LMP (SNOOPY)	John, we're within 35 seconds.
04 08 43 45	LMP (SNOOPY)	10 seconds. We're in AGS, MIN deadband attitude hold. 4, 3, 2, 1. Burning.
04 08 44 18	CDR (SNOOPY)	Burn was good.
04 08 44 22	CC	Roger, Snoop. We copy.
04 08 44 27	CDR (SNOOPY)	And did you copy the residuals?
04 08 44 29	CC	That's affirmative. We got it all. Over.
04 08 44 33	CDR (SNOOPY)	Alrighty. Okay, go back up, John, and we'll be all set to track.
04 08 45 39	CDR (SNOOPY)	10, we have a solid lockon, John.
04 08 46 23	CDR (SNOOPY)	Okay, Charlie Brown. This is Snoopy. I've had you in reflected sunlight out there - for about - for about 90 miles on. It was just very clean. It's just about the same as around the Earth when we used to see the Agena. But I've got you as a little yellow dot out there, and I've been tracking you since about 90 miles. Over.
04 08 46 53	CDR (SNOOPY)	And I've got only one eye power.
04 08 47 00	LMP (SNOOPY)	Hey, John, after aligning this platform with the ALT, I can see why your eyes are - why you're saying what you're saying. I'll tell you.
04 08 47 15	CDR (SNOOPY)	Hello, Houston. This is Snoopy. We're right over by Moltke and the landing site again. Getting a view of it now from 45 miles and again - just extrapolated from below. It looks like we got about 25 to 30 percent clear area in there. Over.
04 08 47 31	CC	Roger. We copy, Snoop. Over.

04 08 47 38	CDR (SNOOPY)	Roger. We're coming up to the craters Sophia and Ritter, and we can see U.S. 1 here, and the sides of U.S. 1 again are rounded and ... but the whole thing is dropped down just like reported before.
04 08 47 51	CC	Roger. We copy, Snoop.
04 08 47 53	LMP (SNOOPY)	Houston, do you have a good gouge on - -
04 08 47 55	CC	Go ahead.
04 08 47 56	LMP (SNOOPY)	Do you have a good gouge on the setting for internal film to use outside?
04 08 48 00	CC	Stand by.
04 08 48 10	CC	Roger. Use two f-stops higher, Snoop, on that film; and, Tom, if you've got a chance to talk a minute, could you describe Landing Site 2 from 8 miles? We didn't have you in communications at that time.
04 08 48 35	CDR (SNOOPY)	Okay, Houston. Go ahead. You were cut out. Say you want me to describe the Landing Site 2 again?
04 08 48 41	CC	Roger. We can get it later, Snoop. It's a little busy now. We'll get it later. We were out of communications with you at that time, but we will get it later. Over.
04 08 48 53	CDR (SNOOPY)	Yes. Okay. The approach end looks lots smoother than some of the Orbiter photos show. It's still estimate 25 to 30 percent, say, semi-clear area for - if the LM has enough hover time, at least from what we can see at 50 000 feet, it should not be a problem. However, if you come down in the wrong area and you don't have the hover time you are going to have to shove off.
04 08 49 17	CC	We copy.
04 08 49 20	CDR (SNOOPY)	Roger. Okay. We got solid lockon now, and we're working on P34.
04 08 49 50	CC	Snoop, Houston. We don't read Charlie Brown. Would you relay that, if he's done his 180 roll to try the high gain for us.
04 08 50 02	CDR (SNOOPY)	Roger. Charlie Brown, this is strictly as a relay. If you've done - completed your 180-degree roll, will you try your high gain for Houston? Over.

04 08 50 33	CMP (CHARLIE BROWN)	Houston, Charlie Brown. On the high gain.
04 08 50 36	CC	Roger, Charlie Brown. We read you. How you doing?
04 08 50 50	CMP (CHARLIE BROWN)	Houston, Charlie Brown. On high gain antenna.
04 08 50 54	CC	Roger. Charlie Brown, Houston. We're reading you five-by.
04 08 51 24	CC	Hello, Snoop. Houston. If you use any different f-stops on the film, we'd like for you to mark it so we can process it right. Over.
04 08 51 39	LMP (SNOOPY)	That ought to be a ball.
04 08 51 43	CC	Roger.
04 08 51 59	LMP (SNOOPY)	I'll try, Charlie; I'll do my best.
04 08 52 02	CC	Okay, Gene-o. I was just - had - Don't worry about it. Sorry.
04 08 52 12	LMP (SNOOPY)	No, don't be sorry. Hey, you guys are floating on the world out there sideways.
04 08 52 18	CC	Okay.
04 08 52 23	CDR (SNOOPY)	As the Earth came up, on this Earth day, I guess you would call it, the north pole was to the right and the south pole was to the left, and looks like - see a lot of clouds over the Pacific Ocean. We were kind of busy. Didn't take much time to notice, but it was a beautiful sight. Over.
04 08 52 43	CC	Roger. We're here and still spinning.
04 08 52 49	CDR (SNOOPY)	Okay.
04 08 52 55	LMP (SNOOPY)	Charlie, I don't know how the Big Man must see things, but if his view is any better than ours, it's got to be fantastic.
04 08 53 03	CC	Copy.
04 08 53 35	CMP (CHARLIE BROWN)	Houston, Charlie Brown. I'd like to get a sunset time. Over.

04 08 53 39	CC	Roger, Charlie Brown. Stand by.
04 08 53 44	CMP (CHARLIE BROWN)	Oh, never mind. It happens so fast around here, I ought to be instantaneously aware of it.
04 08 53 59	CC	Charlie Brown, Houston. We got a time for you for sunset: 104 and 58. Over.
04 08 54 10	CMP (CHARLIE BROWN)	104 58? Over.
04 08 54 13	CC	Affirmative.
04 08 54 17	CMP (CHARLIE BROWN)	Roger.
04 08 54 35	CMP (CHARLIE BROWN)	I show you at 64.89 miles. How do you agree with that, Snoop? 64.7.
04 08 54 43	CDR (SNOOPY)	Roger. You're right on the money. We show you about 64.6 now.
04 08 54 48	CMP (CHARLIE BROWN)	Roger.
04 08 54 50	CDR (SNOOPY)	We're correlated right down there. That VHF is working beautiful. Just like the radar.
04 08 54 59	CMP (CHARLIE BROWN)	That's mighty good gear.
04 08 55 00	CDR (SNOOPY)	Sure seems to be.
04 08 55 03	LMP (SNOOPY)	Hey, Houston, Snoopy.
04 08 55 04	CC	Go ahead, Snoop.
04 08 55 08	LMP (SNOOPY)	Okay. For the record, we have been operating with Charlie Brown the whole time while he's been on VHF ranging in ICS PTT, and our hot mike apparently does not bother John at all; and we've had such good luck S-band with you folks down there that we've had hot mike a very short period of time.
04 08 55 28	CC	We copy all that. Thanks a bunch.
04 08 55 44	LMP (SNOOPY)	That S-band antenna makes noise, but it sure does track.
04 08 55 49	CC	Okay.

04 08 57 42	CMP (CHARLIE BROWN)	Roger. I see you. Very good.
04 08 58 19	CDR (SNOOPY)	Okay. Houston, this is Snoopy. We're at 60 nautical miles closing and R dot looks real fine. I'm sure you're reading it down there. Everything looks real good from here, and I still don't have his flashing light from this distance of 60 miles. Over.
04 08 58 35	CC	Roger, Tom. We copy. We got you plotting right down the line on your charts. Over.
04 08 58 42	CDR (SNOOPY)	Roger. Thank you, Charlie. It's looking good here.
04 08 58 47	CMP (CHARLIE BROWN)	Okay. They're on. I'll turn on these running lights and EVA lights too, Tom. Maybe you can - can see them when you get closer.
04 08 58 56	CDR (SNOOPY)	Okay.
04 09 00 23	CMP (CHARLIE BROWN)	Snoopy, you got a later TPI time?
04 09 00 35	CMP (CHARLIE BROWN)	Roger.
04 09 01 51	LMP (SNOOPY)	Hello, Houston. This is Snoopy. AGS comes out with a TPI at an angle of 26.51, of 24.4 to initiate, 55.9 to total, and that time is just about the same time I'm looking at right now of 105 23 20.
04 09 02 17	CC	We copy, Snoop. Thank you much.
04 09 03 57	LMP (SNOOPY)	John, our new TPI time is 105 23 06 01; 105 23 06 01.
04 09 04 08	CMP (CHARLIE BROWN)	Roger. I got it.
04 09 04 14	LMP (SNOOPY)	That's only moved up towards us about 12 seconds.
04 09 05 04	CDR (SNOOPY)	Okay, John. Coming up on 52, say, 0.3 miles or so. I still don't have you in the sight. No problem. We're locked-on solid.
04 09 07 15	CMP (CHARLIE BROWN)	Did you get your final TPI time? Over.
04 09 07 19	CDR (SNOOPY)	Stand by.

04 09 07 26	CMP (CHARLIE BROWN)	Go ahead.
04 09 07 28	LMP (SNOOPY)	John. Ho. We're not going to push final COMP until 12 minutes, but the latest one we got is what I just gave you.
04 09 07 33	CMP (CHARLIE BROWN)	Okay. That will be fine.
04 09 07 35	LMP (SNOOPY)	Is that converging with you?
04 09 07 37	CMP (CHARLIE BROWN)	Well, that thing is still calculating. It really takes awhile.
04 09 07 46	CDR (SNOOPY)	Charlie Brown, Snoop. We've suddenly seen on this last recycle through 6 feet per second out of plane.
04 09 07 54	CMP (CHARLIE BROWN)	Roger. Wait a second. ...
04 09 08 10	CDR (SNOOPY)	Hello, Houston, Snoopy. Do you have somebody that can read our erasable - check what our radar angle bias is? Over.
04 09 08 18	CC	Roger. Stand by.
04 09 08 20	CMP (CHARLIE BROWN)	Hey! My TPI time - my TPI time - this later, is 105 23 16.79. How's that for a good correlation?
04 09 08 49	CC	Snoopy, Houston. Your radar bias is in the noise. Over.
04 09 08 55	CDR (SNOOPY)	Okay. Real fine, Charlie. Thank you very much.
04 09 08 59	CC	Roger. And Charlie Brown, Houston. Over.
04 09 09 05	CMP (CHARLIE BROWN)	Go ahead. Over.
04 09 09 06	CC	Roger. If you get a chance, we'd like to look at - -
04 09 09 10	CC	Okay, Charlie Brown. We'd like you to bring your LOGIC up so you can dock anytime. And so we can give you a GO for the arm and also, did you get a chance to cycle through the tunnel vent valve to IM PRESS? Over.

04 09 09 28 CMP (CHARLIE BROWN) No. Negative. Not yet.

04 09 09 32 CC Okay.

04 09 09 35 CMP (CHARLIE BROWN) Okay. The - you want the - SECS breakers are coming ON, and the PYRO A and B battery breakers are going IN.

04 09 10 03 CC Charlie Brown, Houston. You are GO for PYRO ARM at your convenience. Over.

04 09 10 10 CMP (CHARLIE BROWN) Roger. Thank you.

04 09 10 55 LMP (SNOOPY) Charlie Brown, Snoop. When you get your solution, we're interested in the out-of-plane part, so call it down to us, would you?

04 09 11 01 CMP (CHARLIE BROWN) Yes sir.

04 09 11 24 CMP (CHARLIE BROWN) Okay. My NOUN 81 is minus 21.8, plus 4-1/2, [illegible] and plus 1014.

04 09 11 34 CMP (CHARLIE BROWN) Plus 4-1/2.

04 09 11 52 CMP (CHARLIE BROWN) Yes. For a change.

04 09 12 34 CMP (CHARLIE BROWN) Roger.

04 09 13 00 LMP (SNOOPY) Houston, our new TPI time is 105 22 5619.

04 09 13 06 CC Roger. Copy.

04 09 13 14 LMP (SNOOPY) Why don't you give me an LOS time and an AOS while you've got it, while we got a chance.

04 09 13 19 CC Roger, Snoop. LOS is 105 32. AOS 106 19. Over.

04 09 13 31 LMP (SNOOPY) I got them. Thank you.

04 09 13 33 CC Roger. And Charlie Brown, your LOS about the same.

04 09 13 36 CMP (CHARLIE BROWN) How my - -

04 09 13 37	CC	Your LOS about the same, Charlie Brown, and AOS also. Over.
04 09 13 44	CMP (CHARLIE BROWN)	Roger. I missed those.
04 09 13 46	CC	Okay, LOS - -
04 09 13 47	LMP (SNOOPY)	105 32 and 106 19.
04 09 13 57	CMP (CHARLIE BROWN)	Okay. I'll get them ... for you later.
04 09 14 18	CDR (SNOOPY)	Okay. Charlie Brown, this is Snoop. I'm finally starting to see your flashing light, very faintly at 42 miles. Very faintly.
04 09 14 27	CMP (CHARLIE BROWN)	Roger. 41.7, isn't it?
04 09 14 29	CDR (SNOOPY)	Yes.
04 09 15 55	LMP (SNOOPY)	Charlie Brown, this is Snoopy. We're burning your out-of-plane. Here's my NOUN 81 for you that we're going to burn.
04 09 16 02	CMP (CHARLIE BROWN)	Go.
04 09 16 03	LMP (SNOOPY)	Plus 21.7, minus 4.5, and minus 9.6.
04 09 16 11	CMP (CHARLIE BROWN)	Roger.
04 09 18 09	CDR (SNOOPY)	Okay. Charlie Brown, this is Snoopy. We're pitching down to put our X-axis towards you for the AUTO maneuver from TPI.
04 09 18 17	CMP (CHARLIE BROWN)	Roger.
04 09 19 28	CDR (SNOOPY)	Okay. We're at burn attitude, Charlie Brown.
04 09 19 32	CMP (CHARLIE BROWN)	Roger. Almost me, too.
04 09 19 35	CDR (SNOOPY)	How about that?

04 09 20 55	CDR (SNOOPY)	2 minutes to the burn.
04 09 20 59	CMP (CHARLIE BROWN)	Roger.
04 09 21 02	LMP (SNOOPY)	And Charlie Brown, our charts agree very closely, so we're GO.
04 09 21 07	CMP (CHARLIE BROWN)	Roger. My numbers agree with your numbers.
04 09 21 10	LMP (SNOOPY)	Then, I guess we're all in agreement, then. Let's go.
04 09 21 39	LMP (SNOOPY)	1 19 to the burn.
04 09 21 42	CMP (CHARLIE BROWN)	Roger.
04 09 21 57	CDR (SNOOPY)	MARK.
04 09 21 58	CDR (SNOOPY)	1 minute to the burn.
04 09 22 00	CMP (CHARLIE BROWN)	Roger.
04 09 22 24	CDR (SNOOPY)	35 seconds. DSKY blank.
04 09 22 50	LMP (SNOOPY)	7 seconds, John.
04 09 22 52	CDR (SNOOPY)	5, 4, 3, 2, 1. Burning.
04 09 22 58	LMP (SNOOPY)	We're burning.
04 09 23 00	CMP (CHARLIE BROWN)	Go to it.
04 09 23 02	CC	We copy.
04 09 23 04	LMP (SNOOPY)	Got 15 to go.
04 09 23 05	CMP (CHARLIE BROWN)	Roger.

04 09 23 06	LMP (SNOOPY)	10 to go.
04 09 23 17	CDR (SNOOPY)	Burn's complete.
04 09 23 18	CMP (CHARLIE BROWN)	Roger. Good show.
04 09 23 25	CC	Snoop, Houston. We see you trimming. Good show.
04 09 23 44	CDR (SNOOPY)	Okay. 0 1-1/10.
04 09 23 49	CC	We copy, Snoop.
04 09 23 59	CDR (SNOOPY)	And Snoopy's pitching back up to acquire.
04 09 24 09	CDR (SNOOPY)	Houston, this is Snoop. You can't believe how noisy those thrusters are.
04 09 24 15	CC	Roger, 10. Can't even imagine.
04 09 24 18	CDR (SNOOPY)	It sounds like being inside a big rain tub with about 2-inch hail beating all over you.
04 09 24 25	LMP (SNOOPY)	Hey, babe. Here's where the ... AGS ...
04 09 24 36	CMP (CHARLIE BROWN)	Okay. I'm pitching up to give you radar target here.
04 09 24 39	LMP (SNOOPY)	He's waiting to - -
04 09 24 40	CDR (SNOOPY)	Yes.
04 09 24 41	CMP (CHARLIE BROWN)	Okay, Snoop.
04 09 27 18	CDR (SNOOPY)	Okay, Houston, This is Snoopy. We have solid lock, and first update appears real good.
04 09 27 26	CC	Roger, Snoop. We copy. We got 4 minutes 50.
04 09 27 29	CC	MARK.
04 09 27 30	CC	To LOS for you. Over.
04 09 27 35	CDR (SNOOPY)	Roger.

04 09 28 33 LMP (SNOOPY) Houston, Snoop. I'm taking you off of high gain.

04 09 28 36 CC Okay. Roger. You're reading my mind.

04 09 29 15 CDR (SNOOPY) ... 4 miles. Over.

04 09 29 24 CMP (CHARLIE BROWN) Roger. I concur. ...

04 09 29 40 LMP (SNOOPY) We're only 20 miles ... way.

04 09 29 49 CMP (CHARLIE BROWN) ... VHF, I think. ...

04 09 29 58 CMP (CHARLIE BROWN) ... 5 minutes now.

04 09 30 11 CMP (CHARLIE BROWN) God damn! That one felt like it was coming inside.

04 09 30 50 LMP (SNOOPY) I can barely see it.

04 09 30 51 CMP (CHARLIE BROWN) Can you?

04 09 30 52 LMP (SNOOPY) Just barely.

04 09 30 54 CMP (CHARLIE BROWN) I can't hear any flashing at all.

04 09 31 23 CDR (SNOOPY) There he is.

04 09 31 25 CMP (CHARLIE BROWN) ... with it.

04 09 31 28 CDR (SNOOPY) Okay.

04 09 31 57 CMP (CHARLIE BROWN) Okay, any time.

04 09 31 59 LMP (SNOOPY) Mark it.

04 09 32 00 CDR (SNOOPY) It's right on them.

04 09 32 01 LMP (SNOOPY) Right on them?

(GOSS NET 1)

04 09 32 02 CDR (SNOOPY) Yes.

END OF TAPE

04 09 45 —		BEGIN LUNAR REV 16
04 10 19 06	CDR (SNOOPY)	Okay. Do you want it to come back to you?
04 10 19 13	CC	Snoopy, this is Houston. How do you read me?
04 10 19 15	CDR (SNOOPY)	So far it looks good.
04 10 19 19	LMP (SNOOPY)	Hey, Joe. We're about ready to dock. Stand by.
04 10 19 21	CC	Very good.
04 10 19 22	CDR (SNOOPY)	Don't call us. We'll call you.
04 10 19 23	CC	Roger that.
04 10 20 14	CDR (SNOOPY)	Okay, John. You're in to about 5 feet, babe. Looking beautiful.
04 10 20 49	CMP (CHARLIE BROWN)	How far?
04 10 20 56	CMP (CHARLIE BROWN)	... feet.
04 10 21 11	LMP (SNOOPY)	Got a capture?
04 10 21 12	CMP (CHARLIE BROWN)	Yes. Thrusters are OFF.
04 10 21 14	LMP (SNOOPY)	We got a capture, John. Fire when you're ready.
04 10 21 20	CMP (CHARLIE BROWN)	Everything looks good in here, Tom.
04 10 21 25	CDR (SNOOPY)	Okay, babe? Ullage looks good.
04 10 21 38	LMP (SNOOPY)	Yell when there's a rock in the cabin, babe.
04 10 21 45	CDR (SNOOPY)	All right, babe. I can see you moving over. Trim it.
04 10 22 09	CDR (SNOOPY)	Oh, we got them. Right on the ball.
04 10 22 10	LMP (SNOOPY)	... We got them, John. We heard them in there.

04 10 22 12	CDR (SNOOPY)	Hello, Houston. Snoopy and Charlie Brown are hugging each other.
04 10 22 17	CC	Roger that. We heard them down here.
04 10 22 20	LMP (SNOOPY)	Okay. Let's stay - let's stay in our helmets, babe, until we get this thing squared away.
04 10 22 26	CDR (SNOOPY)	Okay, John. That was beautiful. Just beautiful, babe.
04 10 22 31	CDR (SNOOPY)	Okay. Now, John, let me ask you one thing. Do you want me to pressurize that LM tunnel through our hatch to save you from blowing that Mylar out again?
04 10 22 45	CDR (SNOOPY)	Okay. Do you want us to pressurize the tunnel? Okay.
04 10 23 06	LMP (SNOOPY)	Man, we is back home. Almost.
04 10 23 13	CDR (SNOOPY)	Okay.
04 10 23 20	CMP (CHARLIE BROWN)	Okay, I'll get started, and you can start helping him go through the hatch.
04 10 23 37	LMP (SNOOPY)	Houston, were you calling?
04 10 23 39	CC	Negative, Gene. We're standing by until you got some time.
04 10 23 45	LMP (SNOOPY)	Okay, Joe. It's nominal that the rendezvous was the best one we've ever had. Right up the pike all the way. We'll talk about it later. I'm going start going through the tail end of the activation checklist for the APS burn and depletion, and Tom and John will start on the tunnel.
04 10 24 01	CC	Roger that.
04 10 24 12	CC	Snoopy, this is Houston. One thing we would like for you to do is go to secondary on the CO_2 canister. We'd like to monitor that one while you're getting cleaned up there.
04 10 24 24	CDR (SNOOPY)	You're right, Jose. It's been a long day.
04 10 24 28	LMP (SNOOPY)	Say again, Joe.

04 10 24 30	CC	Roger, Gene-o. We'd like for you to go to secondary on CO_2 canister. We want to monitor that canister while you're getting cleaned up and back in the command module.
04 10 24 37	CDR (SNOOPY)	Yes.
04 10 24 45	LMP (SNOOPY)	Stand by, Joe. I can't - Wait a minute.
04 10 24 54	LMP (SNOOPY)	Okay. Now go ahead, Houston. Say again your last.
04 10 24 57	CC	Roger. Go secondary on CO_2 canister.
04 10 25 04	LMP (SNOOPY)	Okay. We're secondary on CO_2 canister now.
04 10 25 07	CC	Roger. Thank you.
04 10 25 16	CDR (SNOOPY)	Okay, John. How do you want to work the tunnel? Do you want to pressurize it or do you want me to? Okay. We got plenty of pressure. Okay. That's better. Okay. Go ahead. You pressurize it.
04 10 26 02	CDR (SNOOPY)	Hello, Houston, this is Snoopy. One thing, Charlie Brown is getting ready to pressurize the tunnel, and we want to make sure we're in the right attitude and everything for the next maneuver as far as the next thing that he needs to know are the angles. Over.
04 10 26 19	CC	Okay. We'll get them for you, Snoopy.
04 10 26 27	CC	Okay. Charlie Brown, Snoopy, this is Houston. Your CSM gimbal angles are roll 300, pitch 021, and yaw 000. We're standing by for your readback.
04 10 26 44	LMP (SNOOPY)	Okay. I got those for Charlie Brown. Roll 300, pitch 071, and yaw 000.
04 10 26 49	CC	Roger that.
04 10 26 57	LMP (SNOOPY)	Do you have an update on the LM weight?
04 10 27 07	CC	Charlie Brown, this is Houston - No. Snoopy, this is Houston.
04 10 27 14	LMP (SNOOPY)	Go ahead. Do you have an update on the LM weight?

04 10 27 16	CC	I've got that through, Gene-o, but we want you to load in your DAP 10010 for system A.
04 10 27 43	LMP (SNOOPY)	You want 10 - Say again what you want.
04 10 27 48	CC	Okay. I want 10011. That'll be system A. That's IN for your DAP; and, also, your LM weight for burn is 7 - 07544.
04 10 28 08	LMP (SNOOPY)	Roger. LM weight is 7544.
04 10 28 28	LMP (SNOOPY)	That's what I thought. I didn't enter that.
04 10 28 35	LMP (SNOOPY)	Hey, Joe, give me that once more and I'll get it straight.
04 10 28 38	CC	Okay, Gene-o. Your LM weight is 7544 and in your DAP we want 10011. This is instead of 11011.
04 10 29 02	CC	Very good. We copy, Gene-o.
04 10 30 10	LMP (SNOOPY)	Tom, is your stop button reset AUTO for this? I am going to wait on a couple of these things while I verify that that tunnel is clear.
04 10 30 22	CC	Snoopy, this is Houston.
04 10 30 23	CDR (SNOOPY)	Charlie Brown, Snoop. Let me know ... pad.
04 10 30 29	CC	Roger, Snoopy. Whenever you are ready, we can uplink your LM state vector to you.
04 10 30 38	LMP (SNOOPY)	Okay. We're ready right now. As soon as I get into POO again. Got everything.
04 10 30 46	CC	Okay. Thank you.
04 10 30 55	CDR (SNOOPY)	Hello, Charlie Brown, this is Snoopy. Let me know how the tunnel is coming.
04 10 31 03	CDR (SNOOPY)	Yes. We're holding it.
04 10 31 42	LMP (SNOOPY)	Let me get my gloves off, babe.
04 10 32 02	CDR (SNOOPY)	Good show. Tunnel all - Tunnel all pressurized and everything looks good. Okay.

04 10 33 02	CDR (SNOOPY)	Okay.
04 10 33 15	LMP (SNOOPY)	... put our bags? Do you remember? Bags asked for these?
04 10 34 02	CDR (SNOOPY)	Roger, John. We haven't moved at all. Okay. And Gene got the angles for that AUTO maneuver.
04 10 34 25	CMP (CHARLIE BROWN)	Yes. Most all of it is.
04 10 34 33	LMP (SNOOPY)	Ours is the bag that I brought my helmet over in.
04 10 35 39	CC	Snoopy, this is Houston. The computer is yours when you want it. Now we've got the load in.
04 10 35 51	LMP (SNOOPY)	Okay. Roger. Thank you.
04 10 35 53	CC	And are you fellows in the transfer mode right now?
04 10 36 05	LMP (SNOOPY)	Just about.
04 10 36 07	CC	Okay. I've got some pads for you ... - -
04 10 36 08	LMP (SNOOPY)	- - have not opened the hatch yet.
04 10 36 10	CC	Okay. I've got some pads for you, Gene, whenever you're ready to copy and give me a call when you're ready. Okay?
04 10 36 18	LMP (SNOOPY)	Okay, Joe. I'll call you when I'm ready.
04 10 36 20	CC	Roger that. And you're aware of where your tool kit is. Is that affirmative?
04 10 36 30	LMP (SNOOPY)	Yes. Affirmative.
04 10 36 40	CDR (SNOOPY)	Okay. Do you have a LM DELTA-P there?
04 10 37 53	CDR (SNOOPY)	Okay, Joe. We're going to open the hatch.
04 10 37 56	CC	Roger, Tom.

04 10 41 35	CC	Snoopy, this is Houston. We have three additional items that we want brought back. We want both the cameras brought back and would you believe, we also want the primary canister brought back, the lithium hydroxide canister brought back from the LM. Over.
04 10 41 53	CDR (SNOOPY)	Where do you plan for us to stow that, Houston?
04 10 41 59	CC	Roger. We kind of anticipated that, and we're thinking about that right now. Make that the last item you transfer back, Tom.
04 10 42 11	CDR (SNOOPY)	All right.
04 10 47 22	CC	Snoopy, this is Houston. We'd like to go to a forward OMNI on the high gain antenna. We're just about against the stop now.
04 10 47 41	LMP (SNOOPY)	Roger. We are forward OMNI.
04 10 47 43	CC	Okay. Thank you a lot, Gene-o.
04 10 49 45	LMP (SNOOPY)	Hello, Houston. Go ahead and give me the update, would you please?
04 10 49 48	CC	Roger that, Gene-o. Coming to you with APS depletion burn. Okay for NOUN 33: 108 50 3100, plus 45576, plus five balls, minus 06231 46000 407 three balls 251, plus 45981, minus five balls, plus 01339, and all else is NA. I'm standing by for your readback.
04 10 51 01	LMP (SNOOPY)	Okay, Joe. APS burn depletion is 108 50 3100, plus 45576, plus all balls, minus 06231 46000 407. By the way, who's going to be in here to watch the burn time? Roll is all zero. Pitch is 251 986. Who is going load? Okay. 986, plus 45981, and minus all balls, and plus 01339. And the COAS are NA.
04 10 51 34	CC	Roger that. I've got one more change for you, Gene, in your checklist under activation 69, just prior to step 5, we want you to load in 404 plus all zeros.
04 10 51 52	LMP (SNOOPY)	I will do.

04 10 52 43	LMP (SNOOPY)	Charlie, does the DAP and everything look good to you right now? I won't go through that again.
04 10 52 51	CC	Snoopy, this is Houston. Were you calling?
04 10 52 56	LMP (SNOOPY)	Yes. Does the DAP look good to you right now? I won't go through that again right at the moment. I'm starting over and running through this real quick.
04 10 53 02	CC	Roger. That's good.
04 10 53 09	CC	And Snoopy, this is Houston. On the LIOH canister, looks like under the left-hand couch in the sleeping bag is going to be the best place to stow that. And we really would like to have it come back. We got a rise in CO_2 in the LM, and we'd like to take a look at that can.
04 10 53 28	LMP (SNOOPY)	Okay. I'll try and get it out. You don't want a new one in, do you?
04 10 53 31	CC	Negative that.
04 10 57 54	CMP (CHARLIE BROWN)	Snoopy, this is Charlie Brown. Over.
04 10 58 20	LMP (SNOOPY)	What do you want, John. I'm up to my earballs, here.
04 10 59 01	CMP (CHARLIE BROWN)	Hey, Gene-o, are you on the horn? Gene-o?
04 10 59 07	LMP (SNOOPY)	What, John?
04 10 59 08	CMP (CHARLIE BROWN)	Are you on the horn with ... ?
04 10 59 10	LMP (SNOOPY)	I don't know, babe. I - Wait a minute.
04 11 01 17	LMP (SNOOPY)	Now who's calling? Houston, are you calling me?
04 11 01 20	CC	Negative, Snoopy. We're just standing by.
04 11 01 25	CMP (CHARLIE BROWN)	Hey, boy! This is old Charlie Brown! Glad to be aboard! Where have you been? On leave?
04 01 01 34	LMP (SNOOPY)	Hey, John, are you in burn attitude?

04 11 01 37	CMP (CHARLIE BROWN)	... burn attitude. ... deadband? What do you think? Should we go to tight deadband?
04 11 01 49	CMP (CHARLIE BROWN)	Houston, Charlie Brown. Over
04 11 01 52	CC	Charlie Brown, this is Houston. Go ahead.
04 11 01 57	CMP (CHARLIE BROWN)	Roger. Should we be in tight deadband when we are in burn attitude? Over.
04 11 02 01	CC	Stand by. I'll find out.
04 11 02 09	CMP (CHARLIE BROWN)	... both my congratulations.
04 11 02 12	CC	Charlie Brown, this is Houston. That's affirmative on tight deadband.
04 11 02 24	CMP (CHARLIE BROWN)	Say again, Joe?
04 11 02 26	CC	That's affirmative for Charlie Brown. Tight deadband on your burn.
04 11 02 37	CMP (CHARLIE BROWN)	... tight deadband ... do you have a requirement to lock on this thing or don't you?
04 11 02 47	CC	Charlie Brown, this is Houston. I'm sorry, John, you're cutting out pretty bad. If you could understand we will want you in tight deadband and if there's anything else, would you relay it through Snoopy?
04 11 03 04	CMP (CHARLIE BROWN)	Roger.
04 11 03 18	CMP (CHARLIE BROWN)	Hey, Joe, I'm down to the point where I've configured the S-band, so if I've missed anything - you got high bit rate - let me know. The only thing I haven't done is turn the voice off to you.
04 11 03 25	CC	Okay, Snoopy. One thing that we'll want now is the settings on your control knob there for your high gain for pitch and yaw.
04 11 03 37	LMP (SNOOPY)	Okay. I'm looking at about 180 and about minus - oh ...
04 11 03 54	CMP (CHARLIE BROWN)	Houston, Charlie Brown, how how do you read?

04 11 03 57	CC	Charlie Brown, this is Houston. Go ahead.
04 11 04 04	CMP (CHARLIE BROWN)	Roger. While we're waiting for this thing to separate from us, should we be in tight deadband or is 5 degrees okay?
04 11 04 20	CC	Negative, Charlie Brown. We want narrow deadband and we want you to configure your DAP as per your checklist. Over.
04 11 04 24	CMP (CHARLIE BROWN)	Roger.
04 11 04 36	CC	And, Snoopy, this is Houston. We copied 182, what was the yaw setting on that control knob?
04 11 05 45	LMP (SNOOPY)	Yaw setting is minus 5 and I'm going through the DSKY slow, so if you see something, tell me.
04 11 04 51	CC	Okay. We'll monitor. Thank you.
04 11 04 57	LMP (SNOOPY)	You mean the checklist in the flight plan there, Joe?
04 11 05 02	CC	That's affirmative.
04 11 05 37	LMP (SNOOPY)	Man, with those numbers in there, I'm not so - I'm glad I'm getting out.
04 11 05 43	CC	(Laughter) Roger.
04 11 05 48	LMP (SNOOPY)	And just for the record, Joe, you're a fink.
04 11 05 52	CC	Copy, fink.
04 11 05 56	CMP (CHARLIE BROWN)	Okay, Joe. The checklist I got shows for the active docking, you have 61112.
04 11 06 10	CC	That's affirmative, John.
04 11 06 11	CMP (CHARLIE BROWN)	Wide deadband?
04 11 06 15	CC	Okay. Stand by. I'll check that out, John.
04 11 06 25	CMP (CHARLIE BROWN)	And this morning they told me that AC roll - they want to use it, and this afternoon. Okay.
04 11 06 41	LMP (SNOOPY)	This thing calls me to set your timer, John, but we're well over an hour away, so forget about it.

04 11 06 56	LMP (SNOOPY)	Houston, on step 4 on activation 69 where I proceed, do I have to do anything with that four balls 2?
04 11 07 07	CC	That's a negative, Snoopy.
04 11 07 17	CMP (CHARLIE BROWN)	Okay. Now what'd you want me to put there for the LM weight, there, Joe?
04 11 07 25	CC	Okay. I'm getting that, Charlie Brown.
04 11 08 00	CC	Okay, Charlie Brown. This is Houston.
04 11 08 01	CMP (CHARLIE BROWN)	I just want to express a heartfelt thanks.
04 11 08 05	CC	Charlie Brown, this is Houston. For your LM weight we want to set in 07544; and, John, we're satisfied with your 61112 setup.
04 11 08 27	CMP (CHARLIE BROWN)	Okay. LM will stay the same because we're going to get rid of that thing.
04 11 08 32	CC	That's affirmative.
04 11 08 41	LMP (SNOOPY)	Joe, 267 out of the AGS reads 4600.
04 11 08 48	CC	Roger. Copy 4600. That looks good, and Snoopy, it looks like you're going to have to slew from MAX signal again, and we'll need those knobs - control knobs settings after you do it.
04 11 09 03	LMP (SNOOPY)	All right.
04 11 09 05	CMP (CHARLIE BROWN)	Houston, this is Charlie Brown.
04 11 09 07	CC	Go ahead, Charlie Brown. Houston.
04 11 09 11	CMP (CHARLIE BROWN)	Roger. I just wanted to say I sure do thank everybody that worked on that probe and made it work the way it did.
04 11 09 19	CC	Roger. We copy that, John.
04 11 09 20	CMP (CHARLIE BROWN)	Sure is a - sure worked good.
04 11 09 23	CC	That's what we like to hear.
04 11 09 25	CMP (CHARLIE BROWN)	Can't tell you how pleased I am.

04 11 09 30	CC	Now will you atuograph a picture for me?
04 11 09 35	CMP (CHARLIE BROWN)	Of the probe, yes.
04 11 09 38	LMP (SNOOPY)	No - you're a fink, I told you.
04 11 09 48	CMP (CHARLIE BROWN)	The fink sure is sending a man out to do a boy's job, though.
04 11 09 53	CC	Roger that.
04 11 10 37	LMP (SNOOPY)	Hey, Joe. There's slew for a MAX signal. I brought it up a little bit but all I did was move the numbers and they're reading the same thing: 182 and minus 5.
04 11 10 46	CC	Okay. We copy, Gene-o. 182 and minus 5. And, as you're coming through the tunnel you might take a look at the docking angle there and see how close it is.
04 11 11 16	LMP (SNOOPY)	Make that 182 and minus 10.
04 11 11 20	CC	Roger. 182 and minus 10.
04 11 12 10	CC	Charlie Brown, Houston.
04 11 12 15	CMP (CHARLIE BROWN)	Go ahead. Over.
04 11 12 16	CC	Roger, John. We got our tail between our legs, here. We'll need for you to load in your DAP 61102, and you get an "atta boy" for that.
04 11 12 31	CMP (CHARLIE BROWN)	Alrighty.
04 11 12 33	CC	And Snoopy, once he gets that set up, in the narrow deadband, I'm afraid we're going to have to ask you to slew for MAX signal again.
04 11 14 07	CC	Snoopy, Houston.
04 11 14 12	LMP (SNOOPY)	Go ahead. Over.
04 11 14 14	CC	Roger, Snoopy. When we were -
04 11 14 15	CMP (CHARLIE BROWN)	... should be the other compartment.

04 11 14 18	CC	Monitoring your activation 69, the last two steps. We'd like for you to verify that you've put 616 to zeros and 411 to plus 1.
04 11 14 38	CC	Snoopy, this is Houston. What we copied down here on the last step was 611 instead of 411.
04 11 14 48	LMP (SNOOPY)	Yes. I put 411, I'll check it for you.
04 11 14 50	CC	Okay. Thank you Gene-o.
04 11 14 55	LMP (SNOOPY)	There you go.
04 11 15 09	LMP (SNOOPY)	Okay?
04 11 15 11	CC	Okay, Snoopy. We got it. Thank you very much, and we'll need no ascent feed on this, Snoop.
04 11 15 20	LMP (SNOOPY)	Okey doke. I only forgot the FCM switch HIGH one time when I went to update, how's that?
04 11 15 28	CC	That's better than the average bear.
04 11 16 30	CC	Snoopy, Houston.
04 11 16 35	LMP (SNOOPY)	Go ahead, Joe.
04 11 16 36	CC	Okay, Gene-o. Referring back to activation 64 on step 2, we'd like pressure REG's A and B to EGRESS, please.
04 11 16 51	LMP (SNOOPY)	Thank you sir. That one happened in a big fast rush.
04 11 16 55	CC	You bet you. Copy that. Thank you very much Gene-o.
04 11 17 03	CC	And Charlie Brown, this is Houston. I've got a maneuver pad for you, John, when you're ready to copy.
04 11 17 11	CMP (CHARLIE BROWN)	Have a what, sir?
04 11 17 14	CC	I have a maneuver pad, TEI [illegible].
04 11 17 20	CMP (CHARLIE BROWN)	Roger. Wait one.

04 11 17 21	CC	Roger. Let me know when you're ready.
04 11 17 28	CMP (CHARLIE BROWN)	What's your LOS time, Joe?
04 11 17 32	CC	Say again, please.
04 11 17 53	CMP (CHARLIE BROWN)	Joe, that's about as high as I can tweak those things and it's 182 and minus 5.
04 11 17 58	CC	Okay. I copy, 182 and minus 5 and our LOS time is 107 31. We've got about 13 minutes, yet.
04 11 18 12	CMP (CHARLIE BROWN)	Okay. Now you're going to give me the TEI pad, huh?
04 11 18 15	CC	If you're ready to copy, John.
04 11 18 18	CMP (CHARLIE BROWN)	Go to it. Over.
04 11 18 19	CC	Roger that. SPS G&N coming up. Okay you're NOUN 47: 37100, minus 060, plus 079 119 41 2885, plus 29472, plus 00558, minus 00165, NA 071; all else is NA. And stand by for the readback, Charlie.
04 11 19 14	LMP (SNOOPY)	Okay. What is the zero SXP 1, the pitch angle? Right?
04 11 19 17	CC	That's pitch angle, and before you read it back, Snoopy, I'd like for you to double-check on this activation 69: 616 to all balls and 4ll to plus 1. Those are the last two steps.
04 11 19 35	LMP (SNOOPY)	Say again.
04 11 19 42	CC	Okay, Snoopy. This is Houston. Do you copy?
04 11 19 51	LMP (SNOOPY)	Yes. I copy, but I didn't hear what you said.
04 11 19 53	CC	Okay. We need for you to go 616 to all zeros. This is still activation 69. This is the last 2 steps: 616 to all zeros and 4ll to plus 1.
04 11 20 11	LMP (SNOOPY)	Babe, I just read it out and it is all zeros.
04 11 20 13	CC	Okay. Thank you much.
04 11 20 15	LMP (SNOOPY)	I'll do it again.

04 11 20 19	CC	Okay. We'll appreciate it if you'll give it one more try.
04 11 20 25	LMP (SNOOPY)	That's what I'm doing.
04 11 20 43	LMP (SNOOPY)	I'm reading in address 500 158.2, it bounces around 142.2, 134.3 -
04 11 20 56	CC	Okay. Those sound good Snoopy.
04 11 21 04	CC	And Snoopy/Charlie Brown, this is Houston. We've got about 10 more minutes until LOS and Charlie Brown, when you're ready to read back, I'm standing by for your readback on that maneuver pad.
04 11 21 17	CMP (CHARLIE BROWN)	Roger. SPS G&N: 37100, minus 060, plus 079 119 41 2885, plus 29472, plus two balls 558 - two balls 165 pitch 071.
04 11 21 37	CC	Readback is correct, John.
04 11 23 23	CC	Hello, Snoopy. This is Houston.
04 11 23 40	CC	Hello, Snoopy, Houston.
04 11 23 45	LMP (SNOOPY)	Go ahead.
04 11 23 47	CC	Roger, Snoopy. We keep losing signal, on this high gain antenna. What I'd like for you to do, Gene-o, just before you leave the LM, I'd like for you to slew a MAX signal again and give us those settings one more time. We keep dropping a signal out and rather than going back and trying to slew it, just before you get ready to leave, slew it up again for MAX signal, if you would.
04 11 24 38	CDR (SNOOPY)	When are you going to have the debriefing in this one, Joe?
04 11 24 46	CC	Glen said in a couple of days.
04 11 24 55	CC	How soon can you shower and be ready?
04 11 24 57	CDR (SNOOPY)	That's the first nominal run - That's the first nominal run we ever had.
04 11 25 03	LMP (SNOOPY)	You should see those MED's they have up here.

04 11 25 48	CMP (CHARLIE BROWN)	Hey, Houston. Have you been watching this package A temperature? We never have got it to go down much all day.
04 11 26 02	CC	We'll be with you on that. Just a minute there, Charlie Brown.
04 11 26 09	LMP (CHARLIE BROWN)	Okay. I guess we've gone this long. We can go another week or so.
04 11 27 03	CMP (CHARLIE BROWN)	Snoopy wants to know if he should go into P42. Over.
04 11 27 07	CC	Say again, Charlie Brown. I missed part of that.
04 11 27 12	CMP (CHARLIE BROWN)	Snoopy would like to know if he should go into P42. Over.
04 11 27 16	CC	Okay. Stand by. I'll find out.
04 11 27 32	CC	Charlie Brown, this is Houston.
04 11 27 33	CMP (CHARLIE BROWN)	Houston, do you read Snoopy?
04 11 27 35	CC	Negative, Snoopy. Leave it in 2.
04 11 27 41	LMP (SNOOPY)	Okay. Just let me verify my guidance control switches for you. Okay?
04 11 27 44	CC	Roger. GO.
04 11 27 48	LMP (SNOOPY)	Okay. Guidance control is PNGS. AGS S-band is MAX. Attitude control is MODE CONTROL on roll, pitch, and yaw and mode control switches both PNGS and AGS are in AUTO. Is that correct?
04 11 28 03	CC	That's correct, Snoopy. You got them all right.
04 11 28 09	LMP (SNOOPY)	And you wanted the DSKY left in P00.
04 11 28 11	CC	That's affirmative. Leave her in P00.
04 11 28 15	LMP (SNOOPY)	And the updata link switch is ON.
04 11 28 19	CC	Okay. We copy. And did you copy? We want you to slew that S-band for MAX signal one more time and give us a reading just before you leave.
04 11 28 34	LMP (SNOOPY)	Okay. I've got one more thing to stow here and then I'll do it. How much time have I got here yet?

04 11 28 39	CC	Okay. We've got about 2 minutes and 30 seconds until LOS.
04 11 28 45	LMP (SNOOPY)	Let me do it now, and I'll take the canister on my way out. Let me slew this thing.
04 11 28 49	CC	That sounds great, Gene-o.
04 11 29 37	LMP (SNOOPY)	Hey, Joe, would you believe I've got all the circuit breakers pulled? And I can't tell, I don't know where MAX signal strength is anymore. Let me see.
04 11 29 48	CC	Okay. That's good right there, Gene-o, the way you've got it.
04 11 30 00	CC	Snoopy, Houston TELCOMM says you got her right there. That's a good shot in the blind.
04 11 30 09	LMP (SNOOPY)	Okay. Same numbers I gave you before. I'm going off the air.
04 11 30 12	CC	Roger that. See you back in Charlie Brown. Good show, Gene-o.

END OF TAPE

04 11 45 --		BEGIN LUNAR REV 17
04 12 18 08	CDR	Hello, Houston. This is Charlie Brown.
04 12 18 11	CC	Charlie Brown, this is Houston. We read you loud and clear. How are things going?
04 12 18 17	CDR	Well, we're all back in the command module, the tunnel's all locked up, and we're in attitude, and standing by to SEP here when you give us the word.
04 12 18 28	CC	Okay. We're looking good for SEP here, now, Tom.
04 12 18 35	CDR	Okay, Joe. Now again that tunnel won't vent, so what we've done is pumped our cabin pressure up about 4 psi above it - four-tenths - and we're holding real good.
04 12 18 47	CC	Roger. Understand, Tom.
04 12 18 52	LMP	Okay. Now, what attitude do you wish us to go to when we - after we separate. Over.
04 12 19 06	CC	Okay. Charlie Brown, stand by just 1. I'll get you that.
04 12 20 07	CC	Charlie Brown, this is Houston. We'll get you some gimbal angles for that attitude after SEP. In the meantime, we'd like for you to, on your CRYO H_2 heaters: on tank 1, go to AUTO; and on tank 2, go to OFF, please.
04 12 20 26	LMP	Roger. Now do we have a GO for PYRO ARM, here?
04 12 20 39	CC	Okay. Charlie Brown, this is Houston. We're standing by for LOGIC. We'll give you a GO on the PYRO ARM here in just a minute.
04 12 20 50	LMP	I got the LOGIC off. You want me to turn it on?
04 12 20 56	CC	Roger, Charlie Brown. Go ahead and turn it on.
04 12 20 58	LMP	Okay. We're on.
04 12 21 03	CMP	Okay.
04 12 21 14	CC	Okay. Charlie Brown, this is Houston. We got your switches on, now.
04 12 21 21	CMP	Roger.

04 12 21 30	CC	Charlie Brown, this is Houston. Your gimbal angles for attitude after SEP are roll 180, pitch 252, and yaw three balls.
04 12 21 52	LMP	Roger. Roll 180, pitch 252, and yaw is all balls.
04 12 21 57	CC	That's affirmative.
04 12 22 01	CMP	And when do you want us to separate, Joe?
04 12 22 09	CC	Okay. Want - We can go ahead and separate now, Charlie Brown.
04 12 22 19	CMP	Okay.
04 12 24 15	CDR	Okay, Houston. We'll give you a countdown. We're all set to go for SEP. Right?
04 12 24 19	CC	That's affirmative, Charlie Brown. We're standing by for your count.
04 12 24 29	CDR	Okay. Give you a five count. 4, 3, 2, 1.
04 12 24 37	CDR	FIRE.
04 12 24 43	CDR	Cabin pressure's holding. Snoop went some place.
04 12 26 17	CMP	Houston, Charlie Brown. Over.
04 12 26 20	CC	Roger, Charlie Brown. GO.
04 12 26 24	CMP	Man, when he leaves, he leaves.
04 12 26 28	CC	Yes. Okay. Don't back into that dude, now, John, when you get turned around. Are you keeping it in sight?
04 12 26 36	CDR	Yes. Okay. Joe, he took off so fast, he's gone; he went right into the Sun.
04 12 26 44	CC	Roger. Copy.
04 12 26 45	CDR	We don't have any idea where he went. He just went boom and disappeared right into the Sun.
04 12 26 53	CMP	If you give us gimbal angles and allow us to burn out of here, we'll be okay.
04 12 27 01	CC	Okay. Stand by.
04 12 28 50	CDR	Hello, Houston. Charlie Brown.
04 12 28 52	CC	Roger, Charlie Brown. Go ahead.

04 12 28 57	CDR	Okay. Look, let's take a quick look at these orbital mechanics. When we separated ORB rate, he was straight up, and he had that 5 psi on the tunnel; and he took off like a scalded rock, straight up. Okay?
04 12 29 08	CC	Roger that.
04 12 29 10	CDR	Now, if we go to this attitude, do you want us to - Okay. Now when we go to this attitude we're going to be looking down local vertical. All right?
04 12 29 19	CC	Roger.
04 12 29 20	CDR	Now he's up above us some place, and I don't know where. Now, do you want us to thrust down?
04 12 29 27	CC	Okay. Stand by, Charlie Brown. We're running this thing through right now.
04 12 29 35	CDR	Yes. Because we don't want to see Snoopy come back here with a full head of steam.
04 12 29 41	CMP	It's not nothing you have to make an immediate decision about.
04 12 29 49	CMP	You still have plenty of time.
04 12 31 15	CC	Charlie Brown, this is Snoopy - Charlie Brown, this is Houston.
04 12 31 21	CDR	Yes. I hope this is Houston. We're going to try to pick Snoop up on our VHF ranging, but go ahead.
04 12 31 27	CC	Okay. You didn't leave anybody in there did you, Tom?
04 12 31 33	CDR	No. I don't think so.
04 12 31 37	CC	Okay. This is Houston again. Tom, what we want you to do is to - in the attitude that you're going to now, this attitude we passed up to you - We want you to burn plus X instead of minus X, and this should give you separation based on this velocity, which we think is due to that pressure in the tunnel; and, also, we want you to ENABLE Bravo 3 and Charlie 4 jets.
04 12 32 08	CDR	Okay. Bravo 3 and Charlie 4. Okay. Now this is what I thought, too. But when we separated that attitude, Snoop took off in a vertical climb like mad, so we're going down and out in front of him, and so if we go down and thrust plus X, that'll

take us down even further and out in front. Over. Does your FIDO agree with that?

04 12 32 37	CC	I think they do, Tom. They're kind of scratching their heads right now. Roger on that. And the reason that Snoopy took off - we're showing that he vented all the pressure out of the cabin. We think that vented out through the tunnel, and that probably gave him some DELTA-V.
04 12 32 56	CDR	We had the hatch valve in AUTO, set right and everything. Everything was squared away for Snoop.
04 12 33 09	CC	Roger. We may have some problem with some of that stuff sticking in valves, Tom.
04 12 33 16	CDR	Well, I would believe that. It was like a snow storm when Snoop took off. You wouldn't believe it.
04 12 33 21	CC	(Laughter) I bet that's right.
04 12 33 26	LMP	And it was right into the Sun, babe, right into the Sun. How soon do you want to do this burn?
04 12 33 37	CC	We want to sit tight for a little while here. We got about another 20 minutes before we want to burn.
04 12 34 02	CC	Charlie Brown, this is Houston. We're firming up all of these things on attitudes and burns for you. We want to make sure we've got everything right before we torch off Snoopy.
04 12 34 14	CDR	Yes. Thank you. I think we'll be in good shape thrusting down, but that initial callout looks like we were just trying to make another high sight on him if we were going to use minus X.
04 12 34 25	CC	(Laughter) Okay.
04 12 34 26	CMP	It's really impossible to hit him if you aim to hit him, anyway.
04 12 35 14	CC	Charlie Brown, this is Houston.
04 12 35 19	LMP	Yes, sir.
04 12 35 21	CC	Roger. Charlie Brown, while these troops are getting all their numbers all confirmed here, let me pass up some other data to you. We've got a new sleep attitude we want you to go to. This is to cool quad A; and the attitude is roll 090,

pitch 210, yaw 000. And in that attitude, we'd like the high gain antenna, pitch to minus 5, yaw to 231.

04 12 36 01	LMP	Okay. And this sleep attitude is roll 090, pitch 210, yaw three balls; and high gain: pitch minus 5 and yaw 231.
04 12 36 11	CC	Roger. That's right Gene-o. In addition, tonight we'd like a waste-water dump, and we'd like it at your convenience; that can be at any time. Down to 25 percent again.
04 12 36 26	LMP	Okay, Joe. Almost everything, including going to bed, is going to have to be at our convenience before we get out of suits and things.
04 12 36 32	CC	Yes. Okay. And, did you happen to notice the docking angle when you came back through the tunnel; and, also, did you get that big old canister back on board?
04 12 36 44	CDR	Yes, Joe. We got the canister on board and John greased it in again. The roll angle was plus one-tenth.
04 12 36 53	CC	Okay. Plus one-tenth; that's pretty darn good.
04 12 36 58	CMP	You don't believe that do you, Joe?
04 12 37 01	CC	I believe that, John.
04 12 37 04	CMP	It's the guy - It's the guy that aligned it that made it that way.
04 12 37 09	CC	I don't believe that, John.
04 12 37 10	LMP	It's got a sliding scale in the tunnel; we put it anywhere - It's got a sliding scale in the tunnel; we put it anywhere we want to.
04 12 37 17	CC	That I believe.
04 12 37 34	CC	And, Charlie Brown, this is Houston. In your configuration - In your sleep configuration, we want you to DISABLE C and D quads with the AUTO RCS SELECT; in the DAP we want you to fail C and D and select AC roll and DAP.
04 12 38 01	CC	And, Charlie Brown, this is Houston. We want you to go ahead and initiate your plus X, 2-foot per second in X, now.

04 12 38 14	LMP	Roger. Okay. I'll get that quad stuff back here after we do this, Joe.
04 12 38 24	CC	That will be fine.
04 12 40 36	CDR	Hello, Houston.
04 12 40 43	CC	Charlie Brown, this is Houston.
04 12 40 55	CC	Charlie Brown?
04 12 40 58	CDR	Hang on just a minute.
04 12 41 01	LMP	Go ahead. Over.
04 12 41 03	CC	Okay. We want you to enable all quads: that will be five 1's in your DAP.
04 12 41 36	CDR	Okay. We got 2.1 on plus X, here. Read our DSKY: X is 2.1, Y is 0.1, and Z is minus 0.1. Over.
04 12 43 46	CC	Okay, Tom. We copy; and verify on the - -
04 12 43 48	CMP	And 1.9 on the EMS.
04 12 43 51	CC	1.9. Roger.
04 12 43 54	CMP	And 1.9 on the EMS.
04 12 44 58	CC	Charlie Brown, this is Houston. We show you separating, and we'll keep you posted on countdown on the ignition. In the meantime, I've got a map update to send to you and also, some data for your photography when you're ready to copy.
04 12 45 15	CDR	Roger. Look, we're kind of bushed right now, and we don't need any more photography for today, Joe. Over.
04 12 45 22	CC	Okay.
04 12 45 29	CDR	Yes. It's going to take us a couple of hours to get out of the suits and to get all the spacecraft squared away and all the stowage squared away, and we've had a long day, so we want to - And we got a lot of landmark tracking to do tomorrow, so we'd just like to call it quits. Over.
04 12 45 45	CMP	Yes. We're still set up to do the contingency EVA. We've got the couches stowed and everything.
04 12 45 51	CC	Roger. We concur on that. One item I want to send up to you though, in case you start to charge batteries in the morning before we get in contact with

you, we're going to start charging A instead of B, but we'll give you a call first thing, and when you wake up.

04 12 46 08 LMP I'll wait to talk to you in the morning before I do that, huh?

04 12 46 11 CC That will be fine, Gene.

04 12 46 12 CMP I wish they'd have -

04 12 46 17 CMP And anytime tonight if one or the other of those quads starts to heat up and we need to change the attitude, for crying out loud, call us and tell us.

04 12 46 26 CC Okay. We sure will, John.

04 12 46 30 CDR Houston, this is Charlie Brown here. What's the analysis on that quad A; are we near the fracture mechanics limits? It looks like it may be starting to cool off a little bit on the gage and come down maybe to about 390 degrees. Could you give us a quick synopsis?

04 12 46 46 CC We sure will. Just a minute, Tom; I'll get it.

04 12 46 51 CDR Okay.

04 12 48 45 CMP Hey, Houston, this is Charlie Brown.

04 12 48 49 CC Go ahead, Charlie Brown.

04 12 48 56 CMP I'm glad they don't put that days one on top of each other, I'll tell you that.

04 12 48 59 CC Boy, you guys had a real one today, but you sure did good work.

04 12 49 05 LMP That's not a bad day's work for four and a quarter, is it?

04 12 49 10 CMP And those machines have been doing the work. They really were slick.

04 12 49 16 CDR Yes. And we also had a lot of good help from you down on the ground, and we sure appreciate it. I thought the total system and everything what the flight was for to test the system turned out real well. We still had some rough spots and some COMM's and a few other things, but, by and large, the whole system pulled it off. And it made us real happy, but needless to say we're a little bit tired tonight. Over.

04 12 49 35	CC	Well, we can sure understand that, Tom, and we concur with everything you say.
04 12 49 43	LMP	Hey, Joe, tell - I'll buy a super FIDO and a super GUIDO a beer for the CSI burn.
04 12 49 50	CC	Roger that.
04 12 50 02	CMP	And our new model in this thing is really a slicky, boy. It knows right where it's going all the time. Both those - all those solutions were just - shoot, you could just flip the coin and picked any of them.
04 12 50 40	CC	Okay. Charlie Brown, this is Houston. We show you about 2000 feet separation on Snoopy, now, and we'll keep you posted on - on our ignition. And on this quad A, we're showing about 129 temperature - package temperature on the ground here, Tom. Did you say you're reading 390?
04 12 51 06	CMP	Not the package temperature, the helium tank temperature.
04 12 51 12	CC	Okay. Copy. Helium tank.
04 12 52 01	CC	Okay, Charlie Brown. This is Houston. We've had ullage; armed the engine.
04 12 52 10	LMP	Where is it?
04 12 52 15	CC	Okay. We got ignition on Snoopy, Charlie Brown.
04 12 52 21	LMP	Hey, I may see it out there; I'm not sure but I think I do. I do!
04 12 52 25	CC	Very good.
04 12 52 30	LMP	I'll see if I can tell you when he burns out. That's a long burn, though, isn't it? 4 minutes.
04 12 52 36	CC	Yes. Can you tell which way he's going?
04 12 52 41	LMP	Dave, it's just fire to me; I think he's going up, but see, I'm not rightsideup either, but -
04 12 53 02	LMP	He's going, Joe. As long as I can see the fire, I guess he's going the other way.
04 12 53 09	CC	Roger. From down here he looks like he's doing real good, Gene-o.
04 12 54 23	LMP	Hey, Joe, would he be burning away from us, sort of like maybe his attitude is local horizontal or close to it?

04 12 54 32	CC	Charlie Brown, this is Houston. That's affirmative. He should be going in that direction.
04 12 54 38	LMP	Yes. I got him out my right-hand window here; he's getting smaller, and he's still on fire. How much more burn time has he got?
04 12 54 44	CC	Stand by, and I'll find out.
04 12 54 46	LMP	Hey, he just went out. It just went out.
04 12 54 55	CC	Okay. We've got him still burning - -
04 12 54 57	LMP	Maybe it's because the Sun went down.
04 12 55 00	CC	Yes. Maybe. We got him still burning Gene-o, and about 40 seconds of burn time yet.
04 12 55 06	LMP	Okay. Maybe I - that looked like him; maybe it wasn't.
04 12 55 13	CC	Deke says he thinks he may have turned around and probably burning back at you now.
04 12 55 17	LMP	... No, I fixed those switches so he couldn't do that. I'm glad to see that he's burning; that I didn't screw up or something in there.
04 12 55 29	CC	Roger.
04 12 55 33	LMP	I'm trying - I'm trying to remember now what I forgot in there - what I left in there, my helmet or something.
04 12 55 41	CC	The way he took off - -
04 12 55 42	LMP	... do you?
04 12 55 43	CC	- - it doesn't look like you left very much in there at all.
04 12 55 51	LMP	Man, we had PLSS's and probes and drogues and all sorts of things on there. How far will you be able to track him?
04 12 56 09	CC	Probably for several hours.
04 12 56 15	LMP	Is he really going to the Sun?
04 12 56 20	CC	Well, he's going in that general direction.
04 12 56 25	LMP	God, I feel sort of bad about that, because he's a pretty nice guy; he treated us pretty well today.

04 12 56 32	CC	Roger. That's affirmative.
04 12 56 40	CMP	That's what I talk about using up a piece of hardware, though, ain't it.
04 12 56 44	CC	Roger that.
04 12 57 40	CC	Okay, Charlie Brown. This is Houston, Snoopy did a real good job burning, and we're still tracking him real good. Getting good data from him, and we're going to let you go ahead and start through your pre-sleep checklist, and I'll try to keep the calls to a minimum until just prior to LOS.
04 12 58 01	CMP	Roger. Joe, should we go to sleep attitude now? Is that okay with you?
04 12 58 18	CC	Stand by, Charlie Brown. I'm trying to find out now.
04 12 58 30	CC	Charlie Brown, Houston. Roger. You can go ahead and go into your sleep attitude any time you want to, now.
04 12 58 37	CMP	Roger.
04 12 59 28	CC	Apollo 10, Houston.
04 12 59 33	CMP	Go ahead. Over.
04 12 59 38	CC	Roger, 10. That was a beautiful job today. If you do half that well tomorrow, we'll let you come home.
04 12 59 48	CMP	We'll do better than that tomorrow
04 12 59 50	CC	Okay.
04 12 59 54	LMP	Thank you, [illegible]. We'll probably be ready by then, too.
04 12 59 58	CC	Yes. Get a good night's sleep; you can use it.
04 13 00 06	LMP	Actually, like Tom said, there's a lot of people who did a good job, and, I'll tell you, these vehicles, so far - That little Snoopy was a real winner.
04 13 00 15	CC	We concur.
04 13 00 18	CMP	And big Charlie Brown - And big Charlie Brown is no slouch either.

04 13 00 36	CC	Charlie Brown, this is Houston. I hate to bother you, but if you'll give us the computer, we'd like to update your state vector.
04 13 00 47	CMP	Roger. You want it in the middle of this maneuver, or can you wait until we finish, or not?
04 13 00 54	CC	We can wait till you finish, John. My error. I didn't notice you were maneuvering there.
04 13 01 03	CMP	Okay. I don't think -
04 13 09 32	CMP	Houston, Apollo 10. You have the computer.
04 13 09 35	CC	Apollo 10, ready.
04 13 09 36	CMP	POO and ACCEPT.
04 13 09 40	CC	Apollo 10. Roger.
04 13 10 13	CC	Apollo 10, did you get our Roger?
04 13 10 19	LMP	I got it twice.
04 13 10 38	CMP	That's an interesting point about the communications, today. Sometimes I was hearing myself speak and, also, Gene and Tom speak twice. I don't understand all that.
04 13 10 56	CC	I'm not so sure either, John, unless maybe we were getting some relay modes in there today, and I think - yes, that - COMM guys are nodding their heads yes - We were getting some relay modes, where probably you were coming down to the ground and getting fed back to yourself.
04 13 11 17	CMP	Oh.
04 13 11 21	CC	Let me give you one instance, that I think - I know that happened: When Charlie was on, and you weren't able to reach Snoopy, and in order to read him, Charlie would key his mike down here. What would happen, is you'd come down to the ground - you'd come down to us and back up to Snoopy, but you'd hear yourself coming back up with about a 3-second delay; and it probably sounded like a pretty good echo.
04 13 11 49	CMP	Okay. Well, I understand that. That's a good capability to have, to be able to ground relay like that.
04 13 12 42	CC	And, Charlie Brown, this is Houston. I guess when you have these little intermittent times when you

were hearing yourself talk, that probably was the result of this same configuration being brought up inadvertently, when maybe you were trying to talk to Snoopy, and we didn't know it at the time and tried to make a transmission and were keyed for a few seconds. We would do the same thing; you'd relay down here and back to yourself for a short period of time there.

04 13 13 50	CC	Charlie Brown, this is Houston. We're through with the computer now; you can go back to BLOCK. It's all yours for the night.
04 13 19 31	CMP	Houston, Apollo 10. Over.
04 13 19 33	CC	Go ahead, 10. Houston
04 13 19 38	CMP	Roger. Could you review this DAP configuration one more time that you want us to be in?
04 13 19 47	CC	Okay. Stand by. I'll make sure I've got it right before I pass it up to you, John.
04 13 19 56	CMP	Okay.
04 13 20 21	CC	Charlie Brown, this is Houston.
04 13 20 30	CMP	Go ahead.
04 13 20 31	CC	Okay, John. On your DAPS if you'd make R2 read 11100, then you'll have the DAP in the right configuration.
04 13 20 44	CMP	Roger. Outstanding.
04 13 21 17	CC	And, also, Charlie Brown, on your quad A, we're showing less than 100 degrees right now on the temperature and going down, so we feel that there's no problem on that overtemperature on the con - on that quad.

END OF TAPE

04 13 23 32	CC	Charlie Brown, this is Houston.
04 13 23 39	CMP	Go ahead. Over.
04 13 23 40	CC	Okay. I just wanted to hit you with a couple of things before you go around the corner. First off, looks like you've got a real good, tight cabin there, in case there's any doubt in your mind of the stuff being in the seal. What we're looking at right now, and kind of thinking about, and going to let you think about it on this pass, and then pick you up if you're still awake on the - when we come around to AOS next time, that's thinking about giving you 4 more hours of sleep tonight. Right now we're already down to 6 to 7 hours of sleep, and we figured after the long day today, it might be good to - if you want it, to have a longer sleep period tonight. And what we'd do is just eat into the rest period down the line there. We've got about two REV's there, you know, where we can eat into without any problem.
04 13 24 27	CMP	Yes. I think, after today, tomorrow just can't be hard. I'll tell you, these pressure suits, even in zero gravity, are something else.
04 13 24 37	CC	What was that in zero gravity you said, John?
04 13 24 44	CMP	I said these pressure suits are something else, even in zero gravity.
04 13 24 48	CC	Roger. I can imagine that. Well, listen, it'll - You won't be asleep before you come AOS next time, will you?
04 13 24 58	CMP	I probably won't sleep at all tonight.
04 13 25 01	CC	(Laughter) Okay. Well, what I'm getting at is, you can think about it, talk it over, and see if you'd like to do that, or if you want to now, we can go ahead and start building the flight plan around that, but if you want to do that, we can work on revising the flight plan while you're asleep tonight then.
04 13 25 21	CMP	Okay. Let me talk it over with my compatriots here.
04 13 25 24	CC	That'll be fine. No rush; we got about 3 minutes and 45 seconds until AOS - until LOS, and we can catch you coming around the corner next time if you want.
04 13 25 [illegible]	[illegible]	Roger.

04 13 27 41	CC	Okay, Charlie Brown. This is Houston. We show about a minute and a half until LOS. And we'll expect to hear from you coming around on the other side. However, I will wait for a call from you.
04 13 27 57	CMP	All right. Thank you.
04 13 28 51	CC	Okay, Charlie Brown. We're just about to lose you. We'll see you at 110 15. That's about 46 minutes from now.
04 13 40 --		BEGIN LUNAR REV 18
04 14 17 55	LMP	Houston, Houston. This is Apollo 10. Over.
04 14 17 59	CC	Hey, Apollo 10, this is Houston. How are you guys doing?
04 14 18 05	LMP	I bet you thought we were sleeping. We were just getting dressed for the occasion.
04 14 18 10	CC	Okay.
04 14 18 16	LMP	I got some dope for you.
04 14 18 18	CC	You go ahead with the dope.
04 14 18 25	LMP	Okay, Joe. At a GET of 110 15, battery C read 37 volts; PYRO BATT A, 37; PYRO BATT B, 37; RCS ring A says 60 percent; B is 78, Charlie is 72, and Delta is 67. The canister change has been made. The fans have been cycled. And ...
04 14 20 08	LMP	Joe, are you still there?
04 14 20 09	CC	Roger, Charlie Brown. We're standing by. We got all your readouts so far, all the way down to the fans cycled. Have you anything more?
04 14 20 19	LMP	Yes. We got a dosimeter reading: CDR is 26038, the CMP is 05308, and the LMP is 15040; and on the CDR, that was 26039.
04 14 20 46	CC	Okay. We got all that, Gene.
04 14 20 55	LMP	And the crew status is tired, and happy, and hungry, and thirsty, and horny, and all those other things.
04 14 21 15	CC	Roger. We copy everything, and we've got solutions and pills for everything but item 5.

04 14 21 28	LMP	You're in trouble when I get back anyway.
04 14 21 33	CC	But we just didn't want you to forget what the good things are like back on Earth, Gene-o.
04 14 21 44	LMP	How can I? I keep looking at this flight plan.
04 14 21 50	CC	Okay. Roger.
04 14 21 51	LMP	We dumped the waste water, and we dropped it down to 20 - We dropped it down to 22 percent, Joe. But I guess that's all right, huh?
04 14 21 58	CC	Roger. That's okay.
04 14 22 07	LMP	Now what else can we do for you?
04 14 22 09	CC	Well, let's see, Gene-o. You can give us a pill report, and I guess you haven't had time to take any today. And, also, let us know if you've made the water taste bad for tomorrow. And, also, you can zero the command module optics. And I can't think of anything else right now.
04 14 22 32	LMP	You want us to zero the command module optics. We will chlorinate the water last thing, and we didn't take any pills yet.
04 14 22 40	CC	Okay. We kind of figured that. And, let me ask you about - Let me ask you about this proposed change for the flight plan for tomorrow, in other words, adding a couple of hours onto your sleep tonight. Would - Did you guys get a chance to talk that over. Do you want to do that?
04 14 23 03	CDR	I'll tell you. Okay, Joe. What time would that - how many hours would that get us up from - like, what's our proposed get-up time now. Over.
04 14 23 20	CC	Okay, Tom. Your proposed get-up time is - Let's see. It looks like 117 30, about. And we'd add 2 hours onto that. Okay. I just got the word. We can make that 3 to 4 hours, if we wanted to.
04 14 23 54	CDR	How about standing by for one, Joe.
04 14 23 56	CC	Okay, Tom. We sure will. In other words, right now you're looking at about 7 hours from now for wake-up time, which - I don't know how soon you're ready to go to sleep, but that would give you something like 6-1/2 of sleep, I'm guessing. And we could add 4 hours on to that - 3 to 4 hours, which would give you 9 to 10 hours of sleep. That, incidentally, is not [illegible] - -

04 14 23 19	CDR	Okay. Stand by.
04 14 23 22	CC	Roger. That, incidently, will not compromise anything that we've got planned. We just - We got some pad time on down in the flight plan as you know.
04 14 24 37	CDR	All right, that was the rest period in the middle of the day, there.
04 14 24 40	CC	That's affirmative.
04 14 25 52	CDR	Hey, Joe. This is Charlie Brown. We think we'll take you up on that and sleep in for at least 2 hours longer, which will give us about 9 hours. I think we need it.
04 14 26 09	CC	Roger. We sure copy on that, Tom, and we'll go ahead and - I'll tell you what we'll do. We'll go ahead and plan - work a flight plan around giving you an extra 4 hours. And if you want to crank up earlier, we'll see what we can do about that - cranking early in the morning then, because I think you could probably use that rest, too. You guys had a whale of a day.
04 14 26 33	CDR	Yes. That was quite a day. You don't do that every day. (Laughter) And why don't we play it like that, so what - Give us what your proposed wake-up time is; and, just like this morning we got up a little early, give us the hours for proposed wake-up time; we may beat that. Over.
04 14 26 52	CC	Okay. Stand by just a second, Tom. I'll get it for you here.
04 14 27 19	CC	Charlie Brown, this is Houston. Tom, you sound like you could use a fountain of vigor about now.
04 14 27 27	CDR	Yes. Would you believe about two of them.
04 14 27 32	CC	I don't know what you'd do with them after you got them though.
04 14 27 38	CDR	Just throw them up, Joe.
04 14 27 41	CC	Roger that.
04 14 27 44	LMP	Can you uplink something like that, Joe?
04 14 27 47	CDR	Yes. Could you uplink something like that?
04 14 27 52	CC	We did our best on our flight plans and tool kits [illegible]

04 14 27 59	CDR	Yes. We noticed that on the LRL, there. Say, just wanted to ask you a question, too. How did the TV look? We haven't even had time to even think about it. Over.
04 14 28 11	CC	Say again. How did the TV look during that station - official stationkeeping? Over.
04 14 28 21	CC	Roger. That was outstanding today. That was really good. Really had a lot of good detail and man, that color, Tom - Well, I don't know what to use for words, but you'll have to wait until you get back. That really is going over.
04 14 28 37	CDR	Okay. But you can really pick up the silver and the black and the flag and all that on the LM, then? Over.
04 14 28 47	CC	Roger. Let's see, I don't know that we picked up the LM, but we sure got - Yes, the ascent stage was really great. We could pick up the colors on it all right. The Mylar showed up real good.
04 14 30 50	LMP	Hey, Joe. Where do you suppose Snoopy is by now?
04 14 30 54	CC	Stand by. I'll get a readout on that, Gene-o. He's still sailing along. I think - Let me check. Yes. We're still tracking him. Let me get some words on how far out he is.
04 14 31 24	CC	10, just for your info, we show about 9.7 foot a second separation, and we think it was just from that cabin venting on Snoopy after you'd separated.
04 14 31 40	CDR	Yes. Well, you know he - Up there's where our hatch has this insulation that's been bothering us, itching us, you know, and stored in both cabins. And when Snoopy took off, that insulation just exploded all over the whole place just like a snowstorm around the moon. And out of the midst of the snowstorm came Snoopy taking off.
04 14 32 00	CC	(Laughter) He did? (Laughter)
04 14 32 15	CDR	Houston, 10. Did you say that Snoopy's cabin pressure went down to zero? Over.
04 14 32 20	CC	That's affirmative, Tom. It went all the way down. Down to zero in 10 seconds, Tom.
04 14 32 31	LMP	Hey, Joe. I went back in a second time to make sure that dump valve was in AUTO, so it - Something must have happened, because it was in AUTO.

04 14 32 44	CC	Yes. I copy. It was probably that forward hatch you got in the command module with you. That may have had something to do with it.
04 14 32 52	LMP	Yes. (Laughter) Sure.
04 14 33 14	CDR	Hello, Houston. Apollo 10. Well, I guess Snoop performed real well with respect to the propulsion objectives that we had for it, didn't it, when you let it off? Over.
04 14 33 25	CC	Roger that. He sure did, Tom.
04 14 33 30	CDR	Well, real good. We got one heck of a lot of data today, that's for sure.
04 14 33 35	CDR	Boy, Roger that.
04 14 33 41	LMP	Joe, if you want a LM simulation ride, let your kids get - put a big - a big metal bowl on your head and beat on it with spoons.
04 14 33 50	CC	(Laughter) Okay.
04 14 33 57	CDR	Joe, I guess I've flown well over a hundred different types of aircraft, and that made my third spacecraft; but of all of them, I've never heard anything as noisy as Snoopy. It was too much. Between the fans and the bumps and those thrusters firing on that thin skin, it was really a kick. Over.
04 14 34 14	CC	I'll bet it was. You've just never been inside a dog when he is barking and kicking and scratching fleas all at the same time.
04 14 34 25	LMP	Yes, that's right. This dog even wagged its tail a little bit on the ascent burn.
04 14 34 32	CC	(Laughter) Yes. Roger.
04 14 34 40	LMP	And he chased his tail on staging.
04 14 34 42	CC	Roger.
04 14 34 48	CMP	You think that guy in the whole had a time.
04 14 34 52	CC	Roger.
04 14 35 21	CDR	Houston, Apollo 10. We have one other question. Just where did you propose that we stow that canister we brought back from the LM. Over.
04 14 35 30	CC	Okay, Tom. The best logical place right now looks like [illegible] your couch.

		However, what we're going to do tomorrow is run an exercise over there in the - in the mockup, and figure out where the set place is with all the other gear you got on board. We'll come up with several ideas and let you pick the one you like best.
04 14 35 53	CDR	You know, I can see what happens if that couch happens to stroke a little bit with that metal canister underneath it. Over.
04 14 35 58	CC	Yes. Well, I think it - If you keep it rolled up pretty close to your head there, up near the ORDEAL box, there, why the couch strokes down and toward the bottom, doesn't it.
04 14 36 11	CDR	Yes. It's by our heads. That may be okay.
04 14 36 49	CDR	And, Houston, Apollo 10. We're coming right back over Landing Site 1 in all the places. Say, it's just starting to look like we said before, NASA Road 1. We can sure pick out every little crater now. Over..
04 14 37 05	CC	I'll bet you can. I'll bet it's looking pretty familiar by now, too, isn't it?
04 14 37 12	CDR	Yes. We're coming right up on Landing Site 1 here. You can look straight ahead, and there's Maskelyne, Maskelyne B, lead up to 13129. I have Moltke over on the left, and out there the plains, the Oklahoma Hills on the left, and the landing site.
04 14 37 35	CC	Jack - Jack Schmitt's still here tonight. He says you guys are overtrained, reading off names like that. Hey, listen, Snoopy is about 6000 miles above you and still going, and we're still getting data on him.
04 14 37 49	CDR	Well, good. That sounds great. Sounds like you got some power left in those batteries. Well, we're really glad to see you get all the data on the ascent burn. Over.
04 14 38 00	CC	Okay, Tom. This wake-up now. It looks like - -
04 14 38 03	IMP	... miss her?
04 14 38 04	CC	Go ahead. I'll wait.
04 14 38 11	IMP	Go ahead, Joe.

04 14 38 17	CC	Okay, Tom. On your wake-up in the morning - Well, on Snoopy first, they say we're expecting the power on those batteries to last until about 120 hours, so we got about another 10 hours worth of tracking, it looks like. And on your wake-up in the morning, what it looks like now, the best plan is to wake you up just before LOS on REV 23, which would be at right about 121 hours. And we'll give you a little data right away, enough to get you through the next REV, and that'll give you the back side to get woke up and dressed and break out some chow and stuff.
04 14 38 53	CDR	Okay. So we're looking at about 121 hours.
04 14 38 56	CC	That's affirmative. And we'll call you just as - just as late as we can and still get what data we need to up to you before LOS.
04 14 39 07	CDR	Okay. Real good. Thank you. We're right now just passing over - We're exactly over Maskelyne, and here's Maskelyne B up ahead. And we've got the Sidewinder Rille over on the right. We've got - Here's Diamondback on the right, Sidewinder's on the left, and this whole chain of craters leading up to Site 2. And, again, if you didn't hear me, down below, there, it doesn't look near as rough and as rugged out here in the mare areas as it does in the other parts. It's pretty well chained up.
04 14 39 51	CC	Boy, that really sounds good, Tom. Jack Schmitt is standing here, and he says that he's setting up some briefings when you guys get back. This time you're going to be briefing him.
04 14 40 01	CDR	Okay. And I think we can sure tell the difference between old and new craters, and the way it - the site slips in, it was very obvious. Those pictures came out, we'll show him some boulders and tell him that Censorinus A has some nice great big, both white and black, huge boulders on both the inside of the rim and quite a - Well, most of them are on the outside of the rim, but it's pretty rugged country, and stay away from Censorinus A there.
04 14 40 26	CC	Okay. We copy that.
04 14 40 52	LMP	Hey, Joe. When this surface down here ceases to be interesting, it's time to bring us home.
04 14 40 59	CC	Okay. We'll send up a replacement, Gene-o.

04 14 41 03	LMP	Well, right now it's still pretty inter - Well, right now it's still pretty interesting.
04 14 41 10	CC	Okay. We'll leave you up there a while yet.
04 14 42 11	LMP	We just went over Moltke, and we got Sabine and Ritter right underneath us.
04 14 42 16	CC	Roger that.
04 14 42 22	LMP	You might tell Jack that U.S. 1, when you get down close, comparing it to a runway from about 50 000 feet, must be close to a thousand feet across.
04 14 42 34	CC	Roger. We copy.
04 14 42 36	CDR	Yes. I'd say it -
04 14 43 14	CDR	Okay, Houston. If Jack Schmitt's still there, we're passing over the crater. We got it named after him. It's right past Ritter and Sabine, and right here you can see some tremendous boulders down on the outside rim, there. They're great big white ones. I'd say they're, oh, to see it from this altitude here - and they got long shadows on them, they're at least about a hundred feet or more in diameter. And down near the bottom, you can see where the sides are slumping in. It's more like the tailings off a mine. And the sides are white and gray. You can see fractured structure in there, too. We got some pictures of it. Over.
04 14 43 52	CC	Very good. We copied all that, Tom. Thank you.
04 14 44 00	CDR	And right now, we're still just looking at U.S. 1 as it disappears over into the terminator. That's about ...
04 14 44 09	CC	Roger. Tom, speaking of the cameras, do you have any - any of those camera problems you want us to try and work on tonight? It sounded like you had some problems other than film packs. Is there anything that we can help you out with, trying to figure out tonight?
04 14 44 27	CDR	Joe, those were preflight problems. And the main thing, the packs we can see weren't fitted to the camera and run through. And the batteries on them, my Hasselblad, went dead just as I got to the site. I hope I got some pictures of it. I got all the approaches into it. Over.

04 14 44 43	CC	Very good. Understand, Tom.
04 14 44 51	CDR	And tell Jack tomorrow, we're going to get him a picture of this, because U.S. 1 suddenly jumps sideways up here. And maybe that's the strike slip fault he's been looking for, but it suddenly jumped sideways and you can see it, or else maybe it's just another one has gone into it.
04 14 45 09	CC	Okay.
04 14 45 10	CDR	And then it fades out. But it's been elevated in certain areas here.
04 14 45 15	CC	Roger. We copy. That's good to hear. And on the cameras, Tom, if you run into a problem tomorrow, or you want both Hasselblads available. Jack says you can put one battery in each camera, and it should operate okay.
04 14 45 37	CDR	Yes. Okay. We'll give that a try in the morning. We'll be all ready to go after them and what we're doing now is we're passing the terminator. We're going to go ahead and sack out tonight. It's been a long day, and we're just watching, still loving to watch the moonscape go by and observing here as we go over to the terminator. And we'll be talking to you tomorrow morning. Over.
04 14 45 59	CC	Okay. Mighty fine, Tom. That sounds good, and we'll talk to you some more about data and stuff in the morning. On your LCL recovery checklist, before you backpack that stuff all away, tomorrow we'll just go through them, and you can just call down the item numbers and let me know where you have them stowed so we can work out your c.g. Over.
04 14 46 22	CDR	Okay. Will do.
04 14 46 25	CC	And I guess that's about it. We want you to know you guys did one whale of a job today. You really did us all proud. The big troups on the back row walked out of here shaking their heads and grinning from ear to ear. They could have eaten a banana sideways and never touched it.
04 14 46 43	CDR	(Laughter) Well, great, that makes us real happy. It was a heck of a workload. One thing I wanted to check on. It looked like on board, Joe, that the landing radar did a great job on locking on at a pretty good altitude and performing all the way through. Have you got any word on that yet? Over.

04 14 47 00	CC	Roger. That agrees with what we were looking at down here, Tom. It looked like it performed just real well.
04 14 47 08	CDR	Okay. Now one reason I wasn't able to hold that right on exactly 10 degrees, but was off a few tenths, and even up to 1 degree, the rate needles on the attitude error indicator weren't calibrated. So when I had a zero pitch rate, actually, it ended up at the end with that calibrator, just before docking, it was three-tenths of a degree off. And I was trying to just eyeball that and eyeball the DSKY, but I think we got what we wanted was in the local horizontal reference there. Over.
04 14 47 34	CC	Okay. We copied all that.
04 14 47 48	CDR	Yes. Also, just a couple of more comments. It was a real ride, that ascent engine was; I guess we had the longest burn on it to date, and it takes you on quite a little pitch and yaw excursion there as you take off. I mean it continues on, you know, the way, just - with a nongimballing engine, but yet it burned out beautifully on residuals, but you're really hicupping back and forth on that bear. It was quite a ride for 15 seconds. Over.
04 14 48 11	CC	Roger. I'll bet. I'll bet it got pretty sporty there towards - You had a pretty light vehicle there, didn't you?
04 14 48 19	CDR	Oh, yes. Just one pulse in PGNS, you go bang, and it really takes off. Also, the vehicle's so light that you noticed all the structure shaking when you fired pulse. And it sounded just like you'd awake inside of a rainwater tub with somebody beating on it with a bongo drum.
04 04 48 38	CC	(Laughter) Is that right?
04 14 18 43	CDR	Yes. It's quite a machine.
04 14 49 29	CC	Tom, this is Houston. We've been talking with the doctor, and it sounds like there's only one way that we can get you unwound and to sleep tonight. We're not sure how to get that up to you.
04 14 49 42	CDR	(Laughter) Yes. Understand. Understand, Joe. Well, we're going to sack out shortly. But I say, after a day like that, we just want to talk about a few things there and relax.

04 14 49 53	CC	Yes. We sure understand.
04 14 54 13	LMP	Hello, Houston. Charlie ... just a little switching around over here.
04 14 54 17	CC	Roger. We're still reading you five-by, Gene-o.
04 14 54 23	LMP	Okay. I'll be listening to you tonight.
04 14 54 27	CC	Gene, very good. And we'll try not to bother you.
04 14 54 34	LMP	Don't feel bad if you have to.
04 14 54 44	CC	Barb called over just a few minutes ago. She stayed up right to the end listening, and she was happy as could be.
04 14 54 54	LMP	Beautiful. Appreciate that.
04 14 55 16	CC	Yes. We've been keeping in pretty close touch with all the gals, in fact, for all three of you guys. And those dang gals are running in to read the flight plans and the checklists, and they keep asking us when you're going to do this and why you didn't do that. And they come up with some pretty embarrassing questions sometimes.
04 14 55 27	LMP	John, we got enough of those people. We don't need anymore.
04 14 55 41	CC	You've got three of them waiting when you get back.
04 14 55 51	LMP	Yes. I guess we'll take it in stride ...
04 14 55 56	CC	Roger.

END OF TAPE

04 15 50 -- BEGIN LUNAR REV 19

REST PERIOD - NO COMMUNICATIONS

04 17 50 -- BEGIN LUNAR REV 20

REST PERIOD - NO COMMUNICATIONS

04 19 30 -- BEGIN LUNAR REV 21

REST PERIOD - NO COMMUNICATIONS

04 20 32 52	LMP	Hello, Houston. Houston. This is Apollo 10. Over.
04 20 32 56	CC	Good morning, Apollo 10. This is Houston. Go ahead.
04 20 33 03	LMP	Stand by one, Jack.
04 20 33 49	LMP	... I've got Battery A on the line, and I'm purging the fuel cells at this time. I've gone through mode 2 and 3 and I'm on mode 2A now.
04 20 33 59	CC	Roger. We copy.
04 20 34 24	LMP	How are things in Houston this morning?
04 20 34 28	CC	Everything's great. Everybody's raving about your performance yesterday and very happy. No doubt you guys are equally well pleased.
04 20 34 44	LMP	... good day, Jack. Pretty challenging and pretty satisfying really, when we look back at it.
04 20 37 29	CC	Apollo 10, this is Houston. You got up kind of early this morning. We were going to let you sleep in for quite a while yet. We've got a little information that will be of interest to you. Your consumables are away ahead of schedule as usual. We have you in a 65.9 by 55.6 orbit. Your spacecraft looks real good. You might be interested to know that the LM ascent stage is 23 000 miles from the Moon heading straight up at 5400 feet per second, and haven't quite been able to tell yet whether it's going into orbit around the Sun or if it's going to head straight at the Sun.
04 20 38 22	LMP	Hot, isn't he? 23 000 miles away?
04 20 38 25	CC	Yes. Old Snoop's really moving out.
04 20 38 32	LMP	I hope I didn't leave my watch aboard there.
04 20 38 41	CC	I - -
04 20 38 42	LMP	You can still track him, can't you?
04 20 38 47	CC	We're still tracking him.
04 20 38 48	LMP	You can?

04 20 38 50	CC	That's affirmative. We're still tracking him and checking the LGC, and so forth.
04 20 39 03	CC	Matter of fact, we just got an E-MEMORY dump of him. Oh - -
04 20 39 08	LMP	You got an E-MEMORY dump?
04 20 39 12	CC	That's affirmative. Old Snoop, he doesn't give up.
04 20 39 21	CC	I've - -
04 20 39 22	LMP	Holy smoley!
04 20 39 24	CC	And, 10, this is Houston. I've got a congratulatory message here. It says, "Congratulations on doing what I've been trying to do for a long time." Signed, Red Baron.
04 20 39 42	LMP	Beautiful.
04 20 40 18	LMP	Houston, I've got a status report for you.
04 20 40 20	CC	Roger. Go ahead.
04 20 40 26	LMP	We're all feeling good, and were about ready to ... We got in about 5 to 6 hours pretty fair sleep. ... is 26040; the CMP is 05309 ... and 15041. Cycling the fans at this time ... purge.
04 20 41 15	CC	Apollo 10, Houston. You're coming in very broken. We're going to have to repeat the report. Wait one until we check out the network. Over.
04 20 41 28	LMP	How do you read me now, Jack?
04 20 41 31	CC	You're cutting out. Let's attempt to fix it up with the network, and then we'll give you a call in a minute.
04 20 41 41	LMP	Roger.
04 20 42 12	CC	Okay, Apollo 10. This is Houston. We're ready to try it again. Go ahead with your crew status, please.
04 20 42 20	LMP	Okay. We got 5 or 6 pretty good hours sleep last night. Tom's fixing chow, John's taking targets of opportunity, and our rad readings are as follows in order: 26040, 05309, and

		15041. The purge is complete, and the fans have been cycled.
04 20 42 52	CC	Okay, Gene-o. We copy your 5 to 6 hours, 26040, 05309, 15041. And we'd like you to operate in BD roll today. Over.
04 20 43 08	LMP	You'd like us to operate in BD roll today.
04 20 43 11	CC	That's affirmative.
04 20 47 25	CC	Apollo 10, Houston. When you're ready, I have some updates. And we have the morning newspaper.
04 20 47 39	LMP	Jack, stand by on that for a minute. We'll all get on ahead.
04 20 48 06	LMP	Hey, Jack.
04 20 48 08	CC	Go ahead.
04 20 48 12	LMP	Okay. In doing a little troubleshooting on our 70-millimeter LM Hasselblad. It turned out that the batteries are good, but the LM - the lens - you cannot take the lens off. And what I really anticipate probably is that little docking pin on the lens is jammed. We never did have it off, so it wasn't a case of putting it on wrong. But it appears to be jammed, and I can't get the lens off at all. Do you have an idea that might help us troubleshoot this one?
04 20 48 44	CC	Okay. Understand.
04 20 48 45	CDR	Want me to break out my tool kit, Jack, and take that thing apart?
04 20 48 50	CC	Stand by.
04 20 49 24	CC	10, Houston. We'll get an answer to you on which camera procedure to use. We're working on that now.
04 20 49 36	LMP	Hey, Jack. I think that's what it is, though, since I can't take the lens off and the batteries are all good. It appears that it may be jammed.
04 20 49 46	CC	Roger. Thank you.

04 20 50 28	LMP	Okay, Jack. Tell the camera experts to forget it. I got it psyched out. I had to spin that gear wheel around until I got the flat side up, and now it appears to work. But it was apparently some sort of self-jamming capability.
04 20 50 44	CC	Roger. We copy. Neatly devised.
04 20 50 55	LMP	Hold off. Wait a minute. Let it work for 1 minute, and let me see what happens.
04 20 54 41	LMP	Hey, Jack.
04 20 54 43	CC	Go ahead.
04 20 54 55	LMP	Okay, here's the story on the camera.
04 20 55 01	CC	Say again, please.
04 20 55 04	LMP	There's a gear - Okay. I've got a story on the camera. I need some help, I guess, all right?
04 20 55 10	CC	Roger. Go ahead.
04 20 55 11	LMP	... listen for a second. Okay, that gear on the back, the gear on the back when you take the magazine off, this is on the camera base itself. It's got teeth on except for one area where there's a flat spot. If you turn the gear over, push the gear over so that the flat spot is face up, I can do two things. I can snap the picture and/or take the lens off. But as soon as I snap one picture, the gear does not rotate and I cannot take the lens off. The lens does not lock and the camera will not cycle any more after that. Now this occurs both with and without a backout.
04 20 56 09	CC	Okay, Gene. We copy that. And we'll get to work on it.
04 20 56 18	LMP	Okay. Thank you, Jack.
04 20 56 28	CDR	Remember, Jack, the right kind of picture might find out how all this started.
04 20 57 49	LMP	Houston, this is 10. One little bit of further information on that camera base is the fact that, when I do get it cocked for that one shot it'll take, that gear does not rotate, so as to turn the film pack over.

		It doesn't even rotate without a film pack in it.
04 20 58 11	CC	Okay. We copy that the gear won't rotate with or without a film pack in it after taking a picture. Is that affirmative?
04 20 58 21	LMP	Yes. And I can send it through one cycle myself and it's all recocked. And I have to do that with a pencil to wedge that gear around and it's recocked. And then it works fine for one more shot and that's it.
04 20 58 37	CC	Roger. We copy that the gear cycles - has to be cycled manually as opposed to turning automatically after taking a picture.
04 20 58 54	LMP	I'll play with it a little while longer and see if there's something screwed up in this lens thing.
04 20 58 58	CC	Roger. We have people working on it.
04 20 59 45	LMP	Roger. One final little bit more of information. When I did ... recocked that gear - took the lens off, rather, and recocked the gear, I get a one-shot affair, and it appears that the mechanism that's jamming is not in the lens, and it's obviously not in the pack, but it's somewhere in the body of the camera.
04 21 00 06	CC	Roger. We copy.
04 21 00 39	CC	Apollo 10, Houston. Could you give us an inventory of which cameras you have working and what ones you're having problems with at this time. Over.
04 21 00 51	LMP	Okay. We've got one 70-millimeter camera with all three lenses, LM lens, two CSM lenses, and I guess we've got two sequence cameras working.
04 21 01 04	CC	Roger. One 70-millimeter and two sequence cameras.
04 21 12 21	CC	Apollo 10, Houston. We'll be going LOS in about 10 minutes; and I still have REV 22 update and oblique photography update for you.
04 21 12 41	LMP	Okay, Jack. I'll copy it.

END OF TAPE

04 21 12 59	LMP	Go ahead, Jack. I'm ready to copy it.
04 21 13 03	CC	Okay. The map update pad REV 22: 117 22 53 119 32 46 118 09 03. Sunrise 117 36 00, sunset 118 48 26. Ready for your readback, and go ahead on your photography update.
04 21 13 53	LMP	Okay. 22 LOS 117 22 53. 150 is 119 ... Sunset ...
04 21 14 37	LMP	Houston, did you get that?
04 21 14 38	CC	Okay, 10. This is Houston. No, you were cut off part way through the readback. Start at 150, please.
04 21 14 51	LMP	119 32 46 118 09 03 117 36 00 118 48 26.
04 21 15 01	CC	Okay. That's affirmative. You ready to go ahead with LS2 photography pad?
04 21 15 26	LMP	Yes. I'm ready to copy something, John - or Jack. Go ahead.
04 21 15 29	CC	Okay. LS2 pad: f:8 is 118 28 52. P1 is 118 33 15, with your TCA at 2 minutes; f:8 is 118 33 15 with your TCA at 1 minute. P2 is 118 35 15 TCA.
04 21 16 46	LMP	Hey, Jack. I got that all down, but I'm not sure what you all said. I'm looking for the pad that it goes to.
04 21 16 56	CC	Okay. It's entitled "Oblique Photography," and f:8 is camera ON, P1 is start a half a degree - -
04 21 17 07	LMP	Yes. But what page - hey, is that - Don't we have an update here somewhere? Can you give me the page it's on?
04 21 17 30	CC	Apollo 10, Houston - -
04 21 17 32	CMP	Jack, we don't have the same - -
04 21 17 38	CC	Roger. On the flight plan - -
04 21 17 40	CMP	Jack, can you tell them like it is - -
04 21 17 44	CC	Roger. On the flight plan page 3-71 we have an update for oblique photography. However, that format has been changed and a new format as I have given it to you.
04 21 17 57	LMP	Well, we can't change it. Now you -

04 21 18 09	CC	10, Houston. We'll get it back in the old format for you. I'll get - -
04 21 18 15	LMP	Okay. I wish you would. We don't understand the new one.
04 21 18 18	CC	Roger. We'll get it back in the old format and - -
04 21 18 21	LMP	I've got all the words, Jack.
04 21 18 24	CC	Okay. We'll get it back in the old format and check with the appropriate people, and in the meantime, I have a correction on your map update pad. You'll be crossing 150 west at 117 33 36.
04 21 18 51	LMP	Yes. I guess that sounds a little bit better. Listen, while you're getting it in that old form, tell me what you told me, because we're going to lose LOS, and maybe we could do something with it here.
04 21 19 05	CC	Roger. We want the camera on f:8 at 118 28 52, and we want you to start your half-degree-per-second pitch rate at 118 33 15. And, we want you to go f:28 at 118 34 15. And then you can stop your pitch at 118 35 15.
04 21 19 50	LMP	Okay. We'll put the camera on at f:8 at 118 28 52. We start half degree-per-second pitch rate at 118 33 15. We go to f:2.8 at 118 34 15, and then we stop our pitch at 118 35 15.
04 21 20 10	CC	That's affirmative.
04 21 20 23	CMP	Boy, I knew you guys just couldn't resist waiting until we got airborne and then change all the formats. How about that?
04 21 20 37	CMP	That's what we get for missing that data priority meeting you had after liftoff.
04 21 22 11	CC	Okay, Apollo 10. Houston. Before you go out of sight here, some more information on your update for LS2. Your roll should be 180, your pitch 339, and your yaw 000, and the PCA numbers we were giving you were time-of-closest-approach, so that P1 would be 2 minutes before closest approach. And you go to f:2.8 1 minute before closest approach; and then P2, of course, is time-of-closest-approach. Over.
04 21 30 —		BEGIN LUNAR REV 22
04 22 11 34	CC	Apollo 10, Houston. How do you read? Over.

04 22 12 16	CDR	Hello, Houston. Apollo 10.
04 22 12 19	CC	Roger, Apollo 10. Read you loud and clear. How me?
04 22 12 24	CDR	Roger, Jack. We're all set up and we're getting ready to take obliques of the Landing Site 2. Over.
04 22 12 33	CC	Roger, Tom. When you've got time, we've got lots of information for you here.
04 22 12 44	CDR	Roger. Just to reconfirm, for the obliques on Landing Site 2, they want the 80-mm lens using the intervalometer. Over.
04 22 12 52	CC	Stand by. We'll get an answer.
04 22 12 56	CDR	Okay.
04 22 13 53	CC	Okay, Apollo 10. Houston. We confirm. We want the 80-mm lens in intervalometer on obliques for Site 2. Over.
04 22 14 45	CC	Apollo 10, Houston. Did you copy? We want the 80-mm lens with the intervalometer.
04 22 15 05	CMP	Houston, we're down to one sequence camera, because we don't have a power cable for the camera we brought back from the LM.
04 22 15 15	CC	Roger. We copy, John.
04 22 16 25	LMP	Jack, did you read us?
04 22 16 27	CC	That's affirmative. We copied.
04 22 16 46	CC	Gene, one sequence camera and one power cable ought to do the job.
04 22 16 53	LMP	Jack, we just want to confirm. We use a black and white on this oblique photography. Do you want f:8 or f:4 at 1/250, and then down to f:2.8?
04 22 17 53	CC	Apollo 10, Houston. Use f:4 for the black and white film.
04 22 20 12	CC	Apollo 10, Houston. On your camera settings we read up: at 1/250 go to f:4. And, you will get better pictures later on if, at 118 34, you go down to f:2.8. Over.
04 22 21 45	SC	Houston, Apollo 10. Over.
04 22 21 47	CC	Go ahead, 10.

04 22 21 52	LMP	Roger. Is Jack Schmitt around anywhere today?
04 22 21 55	CC	Yes. He's here today. Did you copy our last about the f-stops and the speeds and so forth?
04 22 22 04	CMP	Roger. f:4. Right?
04 22 26 25	CC	Apollo 10, Houston. We have the final change, change 12, on the camera setting. On the 80-millimeter camera -
04 22 26 37	CDR	Roger. GO on change 12.
04 22 26 38	CC	On the 80-millimeter camera, should be set at 1/250. And at 28 52, it should be set at f:8 when you turn them on. At 34 15 -
04 22 26 55	CDR	1/250 at f:8.
04 22 26 57	CC	That's affirmative. Then at 34 15, you will get better pictures if you will stop to f:2.8 and stop on the time read up to you. Then, one other item of information: actually, we would like you to perform this. We would like you to put both H_2 CRYO tank heaters to AUTO. Over.
04 22 27 24	CDR	Okay. Both H_2 are on AUTO now. Okay. So we will have f:8 at 1/25 at 118 28 52, 1/2 degree per second at 118 33 15, and then we will go to f:2.8 at 1/25 at 18 34 15.
04 22 27 46	CC	That's all correct, Tom, except for the time. It would be 1/250; 1 over 250. Over.
04 22 27 57	CDR	Oh, it's 1 over 250. Okay. We go to f:2.8 at 12 - 1/250?
04 22 28 07	CC	That's affirmative. All of your times should be 1 -
04 22 28 09	CDR	Okay, Jack. Let's go over this again, doggone.
04 22 28 13	CC	Okay, Tom. At 28 52, you turn your camera on. Your 80-millimeter setting should be 1 over 250 and f:8. Start your pitch rate at 33 15 and stop down to f:2.8 at 34 15. But your time will still be 1 over 250. And then stop your pitch on T2, as indicated.
04 22 28 41	CDR	Let's go -
04 22 30 42	LMP	Houston, Apollo 10. Over.
04 22 30 46	CC	Go ahead, 10.

04 22 30 51	LMP	Where do these changes to these film settings come from?
04 22 31 14	CC	Apollo 10, Houston. We believe that this information was made clear. It's coming from the camera people and it's information that we set up initially. Over.
04 22 31 38	CDR	Okay. We'll talk about it after we get back on the ground.
04 22 31 44	CC	Roger, 10.
04 22 33 10	CDR	Houston, Apollo 10. I'm looking straight down at Sidewinder Rille.
04 22 33 15	CC	Roger, 10.
04 22 33 35	CMP	Houston, this is Apollo 10. The reason I asked that question is I just shot up a bunch of film on the backside at f:4 at 1/250 in black and white.
04 22 33 48	CC	Roger. Those were the standard settings, but the settings we're giving you now are the best ones for oblique photography. Over.
04 22 34 01	CMP	Okay. Thank you.
04 22 34 15	CC	In other words, 10, the settings we're giving you now are better than the standard settings, but f:4 is standard.
04 22 34 26	CMP	Okay, Jack. Peace.
04 22 34 40	CC	Roger.
04 22 34 54	CDR	...
04 22 34 57	CC	Say again, Tom.
04 22 35 23	CC	Apollo 10, Houston. If you're transmitting, you're coming in broken. Over.
04 22 35 30	CMP	Okay. We're coming right to the latest site now.
04 22 35 36	CC	Roger.
04 22 36 18	LMP	Tell Jack Schmitt there's some very interesting looking type impacts here on the backside and also some very interesting looking things that sort of look like volcanoes. There's one on the backside that I - that, if it was in a different setting, you would call Mount Fujiyama.

04 22 36 38	CC	Ah so, gazaimaus.
04 22 40 54	CDR	- - Apollo 10. I'm looking backwards ... past us ... crater ... couple of minutes ... looking down now ... area ... over here ... all types of volcanic ... domes and ... uprisings, out here ... looks like you've had tremendous volcanic action, here.
04 22 41 17	CC	Roger, 10. We copy. You're coming in a little bit broken, though.
04 22 41 23	CMP	Roger, Houston. Apollo 10. Over.
04 22 41 24	CC	Okay. You sound better, John.
04 22 41 31	CMP	Okay. This morning when we were turning around, first time, we had about - I estimate maybe a foot-and-a-half or more of Mylar with that insulation coater on the back of it. It would appear out in front of our window, and I guess it was from the top hatch which is where that insulation came from in the first place. It just sort of sat there for a while and then quietly floated off. But my question is, will this cause us any thermal problems? And my answer is, I guess probably not.
04 22 42 10	CC	John, Houston. We didn't copy the first part of your transmission. You were broken. We'd like you to say again your observation. And we'd also like to get some information as to whether or not you are noticing any moisture collecting around that hatch. Over.
04 22 42 32	CDR	John's going up to take a look at it now.
04 22 42 35	CC	Roger. We have some questions we'd like to ask you regarding that, that you might be able to help us out with while John's up there doing that. And we'd like you to go over again the description of the forward hatch thermal blanket damage. Describe your recollection of the location, the directions, and the general appearance of the edges of the tears. And the reason we want this is because we're CCB-ing it today on 107 and we need the information.
04 22 43 09	CMP	Okay. What the problem was, when we opened the pressure equalization valve, it just blew the insulation blanket right up. And I don't know how much air was going in there, and we didn't open it any more than cautiously on that first time, I'll tell you that. And so it wasn't being opened very fast, and what it did was it blew the blanket right up and from then on it blew all the insulation out from

down in the Mylar covering, right in the center of the hatch, right in the pressure equalization valve, right around that area. So it seems to be a problem in attaching ... around that location. Realize that it's got to put up with the air that comes out of the pressure equalization valve, which could be a pretty considerable force, if you haven't thought about that before. I can see how it happened easy enough.

04 22 44 17	CDR	Houston, Apollo 10. Just inside the command module we picked up the bag that you stow your gloves in inside the helmet. We have one of those bags that we jettisoned in Snoopy completely full of this fiberglass Mylar.
04 22 44 35	CC	Roger, 10. Understand that when you opened the pressure equalization valve, the insulation blanket blew up and then blew out insulation from around the pressure equalization valve and you filled a whole bag of it. Is that affirmative?
04 22 44 57	CDR	That is affirmative. And we still have - still finding considerable pieces of insulation in the command module, and Snoopy looked like a snowstorm hit it inside there. Needless to say, it makes you itch quite a bit in the eyes, ears, nose, all over; but there's no problem.
04 22 45 17	IMP	Of course we didn't realize we had it until we pulled the hatch off ...
04 22 45 35	CC	Apollo 10, this is Houston. You're getting unreadable. We're going to have to clear up this COMM before we go on. Over.
04 22 45 41	CDR	...
04 22 45 47	CC	10, this is Houston. Let's actuate your high gain and see if it's any better.
04 22 46 44	CC	Apollo 10, this is Houston. And could you continue on with your description of the Mylar insulation, please.
04 22 46 53	CDR	Right, Jack. I'm sure you remember from LM 3, and we had the same problem initially on LM 4, when we vented the same forward hatch in the altitude chamber, how all the Mylar blew out and it blew out the skin on the top side. Well, this is exactly what happened except we just had a few layers of Mylar and all this fiberglass insulation or something of that nature down below it, and when the Mylar - There just was no provisions made for really properly venting through the Mylar and when that blew out, that let all the insulation just flake out in the tunnel, and the probe and drogue were just packed in there with all this fluffy insulation. As I'm not sure of the total

		design criteria for the new fix, but you sure want to fix it before the next command module flies because we've been itching and scratching in here for about 3 days. Over.
04 22 47 42	CC	Roger. We copy, Tom. Have you noticed any formation of moisture up around the forward hatch?
04 22 47 52	CDR	That's affirmative. There are some beads of water up there right now.
04 22 47 57	CC	Roger. Copy. Beads of water. Thank you, John.
04 22 48 02	CMP	And it's on the steel outer rim, which is that seat that sits against the seal. It's that outermost aluminum rim, and its just covered with beads of moisture. For that matter, the whole tunnel walls were kind of moist, but it's nothing. It's nice and cool up there.
04 22 48 27	CC	Roger. That's another question we wanted to ask you. How was the cabin environment up there during the night? Was the temperature and humidity higher than before? Over.
04 22 48 43	CMP	It was great.
04 22 48 44	CDR	The inside of the cockpit feels great. The only complaint is just all of the itching and scratching we had, due to the fiberglass. Over.
04 22 48 53	CC	Roger. Thank you.
04 22 49 00	CMP	Jack, could we get a consumables update from you, a complete one?
04 22 49 08	CC	Roger. Consumables update follows: for GET of 117: RCS total 61; A, 51; Bravo, 70; Charlie, 62; Delta, 62; H_2 total 30.4; O_2 total 392; your RCS is 15 percent above the flight plan. Also have flight plan updates and we are ready for the state vector update when we can have your computer.
04 22 49 49	CDR	Okay. We're in POO and ACCEPT. We are ready for the state vector.
-- -- -- --	CC	Roger. It's coming at you. I have a TEI pad and a flight plan update for you.
-- -- -- --	CDR	Go ahead with the update, then I will take the pad, Jack.

-- -- -- -- CC Roger. The flight plan update: way up the line, at 135 hours after LOS, we will have our waste water dump and all lunar activities are still about 12 minutes later than the preflight times, and that's the completion of the flight plan update.

END OF TAPE

04 22 50 39	CMP	Waste water dump at 135 hours. Thank you.
04 22 51 01	LMP	Okay, Jack. Go ahead with the pad.
04 22 51 04	CC	Okay. I have a TEI number 23 maneuver pad. SPS/G&N: 36818, minus 061, plus 076 121 41 0832, plus 29928, plus 3 balls 90, plus 01628, NA, pitch is 068, the rest in NA. Over.
04 22 52 07	LMP	Okay. I've got TEI 23 SPS/G&N: 36818, minus 061, plus 076 121 41 0832, NOUN 81 is plus 29928, plus 3 balls 90, plus 01628, roll is NA, and pitch is 068, and the rest in NA.
04 22 52 31	CC	That's affirmative on that copy, and I have the vertical stereo pad and a REV 23 update.
04 22 52 52	LMP	Okay. Go ahead, Jack.
04 22 52 55	CC	Okay. Your map update pad, REV 23: IOS 119 21 26, 119 32 46, AOS 120 07 36, sunrise 119 34 44, sunset 120 47 11. Over.
04 22 53 40	LMP	Okay. REV 23 119 21 26, 119 32 46, 120 07 36, 119 34 44, 120 47 11.
04 22 53 54	CC	Okay. And I have a vertical stereo pad for you. T_0 119 41 31, T_1 120 10 58, T_2 120 20 11, T_3 120 30 18. And if you want to delay your roll at the subsolar point, you will be at 75 degrees east at 120 16 56. Over.
04 22 54 46	LMP	Okay. Got T_0 119 41 31, 120 10 58, 120 20 11, 120 30 18, 75 east at 120 16 56.
04 22 54 59	CC	That is affirmative and also would like to tell you something about your PU valve procedure. It's changed since the last one. The new procedure is this: start with the PU valve in the normal position for TEI, and after you bring in the second bank of ball valves, then go to INCREASE. The old procedures could cause a transient on startup. Over.
04 22 55 36	LMP	Okay, Jack. I got it. Normal for start, we get 4 balls and go to INCREASE. And I guess we're all on now. If you want to pass us up that news you were going to do earlier, we're listening.
04 22 56 01	CC	Roger. I want to tell you also that you got the computer back. We're finished with the uplink. You can go to BLOCK.

04 22 56 10	LMP	We're in BLOCK.
04 22 57 03	CC	Apollo 10, Houston. Before we go on with the news, we'd like to advise you that it's been decided that we will remove the insulation from the hatch of 107, and we tell you that so you just don't worry about not having much up there in yours and we also want to know if you're having problems inhaling or any problems breathing because of this insulation problem. Over.
04 22 57 32	CDR	I figured that last question would come up as soon as we mentioned it. No. We've just been sneezing and coughing for 3 days and we understand what the problem is and how to take care of it. Over. We just wash them down and everything is okay. It's just kind of irritating and itchy. Over.
04 22 57 49	CC	Roger. Sounds like living in the Dust Bowl in Oklahoma.
04 22 57 56	CDR	Yes. I had some good training on that area.
04 22 58 00	CMP	That's right; he was right at home.
04 22 58 04	CDR	It's not that way now. It's a beautiful place now, Jack.
04 22 58 40	CC	Okay, Apollo 10. You've got LOS and AOS. We are well caught up on information going up, so let's go up with the news now. Prague, Czechoslovakia: U.S. astronaut Frank Borman, one of three lunar pioneers on the Apollo 8 Moon flight last year has been awarded the Czech Academy of Sciences Gold Medal for service to science and humanity. About 1000 Czechs, shouting "Long live, glory, glory" greeted Borman, first American to win the award, as he stepped from the Academy building Thursday. "By the end of 1970," Borman told the news conference, "we'll be able to take scientists and doctors of many nations on flights to the Moon." (Laughter) New York: Johnny Carson was honored Thursday as the Performer of the Year by the International Radio and Television Society. Carson told the audience at the Americana Hotel that he was once chewed out by a station manager for oversleeping and missing a broadcast. "So I got cocky and told them that someday I would have my own network show and win an important award," Carson said. And the station manager said, "The day that happens, they'll send a man to the Moon." Hong Kong: Communist Chinese authority (laughter) - thought you'd get a chuckle out of that - Communist Chinese authorities have confiscated a Hong Kong fisherman's fishing permit [illegible]

from Mao Tse Tung's thought study classes. A Hong Kong government spokesman said today, "The licenses allowed him to operate in Hong Kong and Chinese waters." Washington: one of our old friends, Charles A. Lindbergh, the Lone Eagle of pioneer aviation, says rocket pioneer Robert Goddard told him in 1929 a Moon voyage was theoretically impossible ~ theoretically impos - correction - theoretically possible, but economically improbable. In a rare public utterance, the reporters and news photographers barred, Lindbergh philosophized about the future of American aviation, and reminisced about Goddard. He said Goddard told him it was possible to send a multistage rocket to the Moon; then he smiled a little bit and said, "It might cost a million dollars and of course that was out." (Laughter)

Galton, England: Fred Alder, 67, saved all his life to buy an 11-bedroom house on the sea to give children from poor homes a vacation. "It's the happiest day of my life," Alder said, as the first contingent of 20 youngsters arrived at the house that cost him almost $20 000. He said 200 children will have 10 days at his new seaside home by the end of summer. And a trust fund has been set up for the future.

Oh, yes, we heard again from that unemployed local philosopher. With all the excitement he lost his head and digressed from his favorite subject of color television to say that, "For three fellows who, by their own admission, could not figure out which way was up, you sure did a doggone respectable job yesterday."

And here's the sports news. Houston beat Montreal 7 to 4. Atlanta beat New York 15 to 3. And the Cubs defeated Los Angeles last night 3 to 1. John Young has had these interesting astrocasts. Today it is, "Keep all operations above board. Confidential transactions are apt to blow up later with considerable embarrassment for all. Travel is better postponed; the people you would go to see are not yet set for the visit." (Laughter)

And in the golf world, at the Atlanta Classic, the first round leaders are George Knudson and Jackie Cupit, under par, 67. That's the news. Over.

04 23 02 44 CDR

Roger. (Laughter) Thank you very much, Jack. (Laughter)

04 23 02 51	CC	Oh, by the way, Tom, I've got your astrocast here too. "Your natural tendency for moderate, sparse consumption serves you well. Your system is a little more sensitive to strange foods."
04 23 03 06	CMP	He's been eating like a horse for 4 days. He's the only one that saved us from the Mylar. He ate it up.
04 23 03 24	CC	Gene, I think we should read your astrocast here, too. Gene, "Conditions are bewildering. There are so many odd and unfamiliar details. Just curb your impatience; question everything, and put things into place, one at a time."
04 23 03 51	CC	Gene, this is Houston. I think you've got a pretty interesting forecast here, too. It says for you: "Conditions are bewildering. There are so many odd and unfamiliar details. Just curb your impatience; question everything, and put things into place, one at a time."
04 23 04 17	LMP	Yes. That is interesting, isn't it?
04 23 04 20	CC	I guess so.
04 23 04 36	LMP	Thank you, Jack.
04 23 04 39	CC	Roger.
04 23 05 02	CMP	Just looking at that old world in the optics; sure looks nice.
04 23 05 59	CC	Apollo 10, Houston. We'd like to confirm that the ECS redundant component test is complete.
04 23 06 09	CMP	No, Jack. It is not. We'll get it here immediately after the P52.
04 23 06 13	CC	Roger. We're standing by.
04 23 06 14	CMP	I'll start on the secondary boilers right now. Okay, I'll start on the secondary boilers right now.
04 23 10 20	CC	Apollo 10, Houston. When you have time we'd like to have some discussion regarding three questions about yesterday's activities. Over.
04 23 12 26	CMP	Hello, Houston. Apollo 10.
04 23 12 29	CC	Roger. Go ahead, 10.
04 23 12 32	CDR	Okay. I talked to Jack Schmitt a time before the flight and on this pass if you'd like to correlate

		it, after I roll to 180 degrees there, and you can do that around the subsolar point or before. If you've got Goldstone in configuration, we can shoot you the tube for the vertical pass all the way down and maybe even shoot the solar corona at the end. Over.
04 23 13 04	CC	Roger. Stand by.
04 23 14 18	CC	Apollo 10, Houston. In order to have TV without compromising photography and so forth, you'll have high gain acquisition when you come AOS, but you should do your roll maneuver before 65 degrees east. Over.
04 23 14 47	CDR	Roger. Roll before 65 east. When are you going to correlate that time? Over.
04 23 14 52	CC	Okay. We've already given you that on the vertical stereo pad. It's your T_2 time of 120 20 11; that's 65 east.
04 23 15 06	CDR	Okay. And we'll have good high gain lock after that. Right?
04 23 15 16	CC	After 65 east, you'll lose it. Over.
04 23 15 23	CDR	Roger. After 65 east we will lose it. Yes. It's hardly worthwhile then to - We'll only be there for a few minutes. We'll hold off
04 23 15 35	CC	Roger. Copy holding off.
04 23 16 01	CC	Apollo 10, Houston. We're unable to copy your P52 torquing angles. We'd like you to read them down. Over.
04 23 16 17	CMP	Would you believe we didn't copy them down? We figured you were reading them. I seem to recall a 3 and a 6, three-tenths of a degree or something like that.
04 23 16 38	CC	Roger. Thanks.
04 23 16 45	CMP	I realize that's not what you're looking for, but it wasn't bad.
04 23 16 53	CC	Roger. We copy, John.
04 23 17 22	CMP	Okay, Houston. We're doing the main regulator checks now.
04 23 17 26	CC	Roger. Copy.

04 23 19 33	CC	Apollo 10, Houston. We think the unscheduled tube action would best come around REV 29, and we have a question about the LM acquisition lights after staging. Did John see the LM ACQ lights anytime after staging? Over.
04 23 20 17	CDR	Houston, Apollo 10. Talking about the big track light out there above the forward hatch. John saw it all the way in fact, we had to turn it off for him at the end it was so bright. Over.
04 23 20 26	CC	Roger. Copy you saw it all the way.
04 23 20 49	CC	And, Apollo 10, Houston. Do you have any idea what might have fixed the VHF problem after undocking yesterday?
04 23 21 06	CDR	Yes. We had the same switch configurations again that was - thought it might be corona but, I mean, there was no way for us to tell, but you did come in just unreadable before and after we undocked and squared away. We tried again and it was unreadable and we tried it one more time ...
04 23 21 21	CC	Roger, 10. See you around the corner.
04 23 33 --		BEGIN LUNAR REV 23
05 00 17 34	CC	Apollo 10, Houston. Standing by.
05 00 17 41	CDR	Roger, Houston. We're taking our vertical stereo photography now. We just rolled past the subsolar point there.
05 00 17 53	CC	Roger, 10. We copy.
05 00 18 16	CDR	Hey, Jack; now that we've got some time to pick out - really concentrate on this stuff, we're finding all kinds of features in here. And it's mostly been on the tape, but I hope you'll be able to get the tape and play it there.
05 00 18 28	CC	Roger. While we're talking about the tape, we've been getting on the playback some weak voice and background noise, and we found out on a prior flight that this comes out a lot better if you make sure you have the mike real close to your mouth when you talk into the tape recorder. Over.
05 00 18 51	CDR	Roger. Is that for all of us?

05 00 18 53	CC	That is affirmative. All of you who were talking to the tape recorder.
05 00 20 11	CDR	We're now yawing left 20 degrees.
05 00 20 14	CC	Roger, 10.

END OF TAPE

05 00 28 52	CDR	Houston, Apollo 10. We've just passed over Mount Marilyn and the crater Weatherford. Over.
05 00 28 58	CC	Roger. We copy.
05 00 30 58	CDR	Yawing right 20 degrees to pick up Landing Site 2, now.
05 00 31 05	CC	Roger, 10.
05 00 31 24	CDR	And we're right on top of Maskelyne at this time.
05 00 31 30	CC	Roger, 10.
05 00 31 59	CDR	Over Maskelyne B now.
05 00 32 09	CC	Apollo 10, Houston. Say again, please.
05 00 32 14	CDR	Roger. We're just past Maskelyne B and I'm right - looking straight down at Sidewinder Rille, coming up to the head of Diamondback Rille.
05 00 32 25	CC	Roger. We're following you.
05 00 32 33	CDR	Sabine E is on the left. On my left as we go backwards.
05 00 32 54	CDR	There's Faye Ridge.
05 00 33 00	CC	Roger, 10. We observe you're liable to get sunlight on the windows here pretty soon.
05 00 33 09	CDR	Roger.
05 00 33 24	CDR	Picking up U.S. 1 on the right.
05 00 33 30	CC	Roger.
05 00 33 52	LMP	We've got Moltke out my right window. We're right over Landing Site 2.
05 00 33 57	CC	Roger. Copy.
05 00 34 13	LMP	And there's landmark 130.
05 00 34 19	CC	Roger. Landmarker.
05 00 34 47	LMP	And Langrenus is quite a majestic crater with a tremendously beautiful central peak. One that we were just able to look at at sunset the other day that's just beautiful today.

05 00 35 03	CC	Roger, Gene-o. Langrenus. And you'll have to speak up a little louder, please.
05 00 35 11	LMP	And I see crater 133 with that little crater we talked about on the right of it for tracking.
05 00 35 18	CC	Roger.
05 00 35 56	CDR	We have a beautiful panoramic view looking back from Sabine and Ritter over the landing site back to Maskelyne A and B and then over past Mount Marilyn there.
05 00 36 09	CC	Roger, Tom.
05 00 36 35	CDR	I'll tell you, later on today - We'll talk about it when we have a chance for a REV, we may just go to a vertical strip, roll 90 degrees so you can get high gain, and we'll shoot the tube on it, because I know it will pick it up and you can pick out all these features. Over.
05 00 36 49	CC	Roger, Tom. We'll start thinking about that.
05 00 37 34	CDR	Also, you might tell Jack that we couldn't have a better crater named after him, because we are looking at him now back from Sabine and Ritter, and the boulders that have been kicked out of it on the outside slope nearly look like a forest of pine trees, there's so many big black boulders there.
05 00 37 54	CC	Say again the name of that, Tom.
05 00 37 55	CDR	It's really spotted the countryside with them. That's what we code named it: Herr Schmidt.
05 00 38 10	CC	Roger. He says tnanks, but it's - spelled the name wrong.
05 00 38 17	CDR	Well, we were in a hurry anyway. We didn't have too much time to worry about details. It looks just like a scattered - about the same density, you know, as pine trees up on a mountain ridge. That's about what these big black boulders look like.
05 00 38 37	CC	Roger.
05 00 39 34	CDR	We're now in an area that is really noticeably marked by volcanic activities. We have all types of humps - of lumps here and you can

really see there's just thousands of volcanoes here, just a tremendous volcanic field at this time. Over.

05 00 39 50	CC	Roger.
05 00 39 52	CDR	Lots of volcanic mounds.
05 00 40 01	CC	Roger. That makes the geologists happy.
05 00 40 49	CDR	I've got one interesting site here. Looks like a - It's probably too dark to take a picture, but you can see where you've had a big impact crater with the ramped edge. It looks like a stream of volcanic material has run over into it.
05 00 41 09	CC	Roger, Tom. If you went to 1/125 on the Hasselblad, you might get it.
05 00 41 18	CDR	Yes. We've got 1/125 now. It's getting awful dark here. We've got a lot of Sun on the windows. It's pretty bad.
05 00 41 35	CDR	We shot the whole strip. Sure hope we got you some good data. We got it in the sequence camera at one frame per second, color all the way through, and we got the Hasselblad all the way, too. Over.
05 00 41 46	CC	That's great.
05 00 42 29	CC	Apollo 10, Houston. If you're going to fly the next vertical strip photography, namely in REV 31, in that same attitude, why, then we can give you the TV. Over.
05 00 42 43	CDR	Okay. Did you have high gain lock on us that time? Say again.
05 00 42 52	CC	That's affirmative. We had it most of the way, and if we can confirm that you will fly in the same attitude in REV 31, why, TV will come through all right.
05 00 43 04	CDR	Yes. We will fly the same one as the last. You get a tremendous panoramic view looking back over Landing Site 1. Over. ... as you come over Landing Site 2, looking back over the mare area. It's just fantastic. We'll try to show it to you.
05 00 43 37	CC	Roger. We'll plan on it for REV 31, then.

05 00 43 23	CDR	Alrighty.
05 00 47 17	CDR	And the Sun went down and we had the solar corona.
05 00 47 24	CC	Roger, 10.
05 00 47 34	CC	And when you get things put away up there, we've got three pads and a state vector update for you and a couple more discussion type questions.
05 00 47 51	CDR	Okay. If you want to state vector update, we're in POO, and we can toss you the computers.
05 00 48 10	CC	Okay, 10. We're ready for the update when you're ready.
05 00 48 17	LMP	Roger. GO.
05 00 48 21	CDR	CMC and ACCEPT.
05 00 48 22	LMP	Go ahead, Houston.
05 00 48 28	CC	Apollo 10, Houston. We're ready with the state vector update when you're ready to accept.
05 00 48 36	CMP	We're POO and ACCEPT.
05 00 48 37	CC	Roger. POO and ACCEPT.
05 00 48 56	CC	Apollo 10, Houston. Our signal strength is going down. Could we get OMNI Charlie for this, please?
05 00 49 04	CDR	Okay. I'm going to roll 180 degrees in just a minute.
05 00 49 09	CC	Roger. We'll wait.
05 00 49 23	CMP	Houston, can we get the map update?
05 00 49 35	CC	Okay, Apollo 10. I've got a map data - map update for you. REV 24: LOS, 121 19 59, 121 31 11, 122 06 09; sunrise is 121 33 30; sunset 122 45 55. Read back, and I've got the landmark tracking update pad after that.
05 00 50 19	LMP	Roger. 121 19 59, 122 31 11, 122 06 09, 121 33 30, 122 45 55, REV 24.
05 00 50 39	CC	That's affirmative. You ready for your tracking update?

05 00 50 45	LMP	Go. Over.
05 00 50 47	CC	Okay. Charlie Papa 1: 121 39 49, 121 42 49, 3 balls, 050, 3 balls, north 13 miles, 11, 40. Charlie Papa 2: 121 55 10, 121 56 52, 3 balls, 2 balls 8, 3 balls, north 05 04 40. Fox 1: 122 07 55, 122 10 06, 3 balls, 326, 3 balls, north 10, 09, 41. Number 130: 122 29 03, 122 30 37, 3 balls, 265, 3 balls, north at 13, 12, 40. Go ahead. And I've got a maneuver pad after that.
05 00 52 59	LMP	Roger. Charlie Papa 1: 121 39 49, 121 42 49, all balls, 050, all balls, north 13, 11 and 40. Charlie Papa 2: I missed T_1. Over.
05 00 53 22	CC	Roger. On Charlie Papa 2, we had 121 55 and 10. And we want to confirm the nautical miles on Charlie Papa 1 as being 13 - 13. Over.
05 00 53 44	LMP	Roger. 13 north. Okay. Charlie Papa 2: 121 55 10, 121 56 52, all balls, 008, all balls, north 05 04, 40. F-1: 122 07 55, 122 10 06, all balls, 326, all balls, north 10, 09, 41. 130: 122 09 03, 122 30 37, 000, 265, all balls, north 13, 12, and 40.
05 00 54 33	CC	Roger. You got it, and we're ready with the maneuver pad.
05 00 54 40	LMP	Go ahead, Jack.
05 00 54 46	CC	Okay. This is TEI 24: SPS/G&N: 36818, minus 061, plus 076, 123 40 5233, plus 30443, plus 00131, plus 00682, NA, 066, and the rest is NA. Under ullage, two jets for 14 seconds. Over.
05 00 55 44	LMP	Jack, we had an antenna switch right in the middle of that. You'd better start it over.
05 00 55 56	CC	Apollo 10, Houston. Before we proceed, let's lock up with the high gain. Over.
05 00 56 05	LMP	Okay, we're still maneuvering. Stand by one.
05 00 56 07	CC	Roger.
05 00 56 56	LMP	Hello, Houston. This is 10. We're in ACCEPT and P00 and ready for your update and ready for your pad.

05 00 57 06	CC	Roger, 10. Reading you loud and clear now. The uplink's coming up and here's the pad. TEI 24: SPS/G&N, 36818, minus 061, plus 076, 123 40 5233, 0 - correction - plus 30443, plus 00131, plus 00682, roll is NA, pitch is 066. The rest is NA. Your ullage is two jets for 14 seconds. Over.
05 00 58 08	LMP	Okay, Jack. I got TEI 24: SPS/G&N, 36818, minus 061, plus 076, 123 40 5233, plus 30443, plus 00131, plus 00682, NA, and pitch is 066. The rest is NA; two jets for 14 seconds.
05 00 58 31	CC	That's affirmative.
05 00 59 54	CC	Apollo 10, Houston. The uplink is complete. Computer is yours; you can go to BLOCK. And we noted that on the last pass during the strip photography, you were rolled 180 degrees different than what we expected you to be. And we'd like to ask you a couple of questions about the LM S-band yesterday and LM pressurization when you have an opportunity to discuss it. Over.
05 01 00 27	LMP	Go ahead, Jack.
05 01 00 31	CC	Okay. On the S-band communications around the DOI period - Do you have anything significant to report having lost COMM for about 20 minutes on the high gain there? We were a little concerned as to what the problem might be. Can you discuss that?
05 01 00 53	LMP	No. I noticed we were having locked out - lockout problems as we went low across the landing site. It appeared that it occurred right at our low time, and the S-band didn't track - didn't follow us when we came across the landing site, and I went to OMNI's hoping - without having too much time to play with it. And, then, a period of time after that, I played with the S-band again and was able to acquire you and lock on. That's all I can really say, but it did occur somewhere near the low part of our trajectory.
05 01 01 25	CC	Roger. We understand. Another question is regarding the LM pressurization. We noted that right after you took old Snoopy off Charlie there, that the LM cabin pressurization vent down. Do you - Did you observe anything or note anything unusual about that. Over.

05 01 01 48	LMP	Jack, he moved away with a blast, and the next thing we had in our eyes was sunlight right through the windows and we couldn't see a thing. I do know that both dump valves were in AUTO, however. We had a lot of garbage around after the blast from the PYRO's, but other than that - Tom may have seen something else.
05 01 02 09	CDR	Well, I was looking out the center hatch window and, as you know, the tunnel - We couldn't get the tunnel depressurized, and when we fired those PYRO's, some more insulation blew out, and I just saw Snoopy disappear in a big snowstorm going straight up into the Sun and that was all. Over.
05 01 02 25	CC	Roger. Thank you. And last time we saw Snoopy down here, he was 37 000 miles going straight up from the Moon at 5400 feet per second, and thank you for your comments. Over.
05 01 02 41	CDR	Okay. And the - look - Okay. I guess I got run ahead. We made some changes in here on that roll.
05 01 02 50	CC	Roger. We noticed.
05 01 02 52	CDR	And the way that the times have changed. But it didn't - I'm sorry about that - but it didn't seem to - We didn't get any shafting or anything on our windows at all until right at the last when we hit the terminator.
05 01 03 02	CC	Roger. That was the only thing we were concerned about.
05 01 03 05	LMP	Yes. I don't think it'll - No, I just don't.
05 01 03 09	CDR	There was no shafting at all on the windows and it looked like - We were giving our comments, and I don't think we had any problem at all.
05 01 03 16	CC	Roger. Thank you for your comments. They're good. And understand we will have this attitude for REV 31.
05 01 06 26	CC	Apollo 10, Houston. We'd like you to check the situation with fuel cell 1; insure that your fuel cell 1 pumps AC circuit breaker on panel 226 is CLOSED. And that your fuel cell number 1 AC 1 is CLOSED - correction - is AC 1. You copy, 10?

05 01 07 07	CDR	Okay, we just ...
05 01 07 18	LMP	Hello, Jack.
05 01 07 21	CC	Apollo 10, Houston. Do you read?
05 01 07 27	LMP	Yes. We read. I tried to push in breaker A and it's out, and as soon as we did we got an AC bus 1 light, a main bus A and a main bus B undervolt light. The breaker will not reset at this time, and it's fuel cell 1, AC pump breaker on 226.
05 01 07 49	CC	Roger. That's the one. We're looking at it.
05 01 07 54	LMP	Okay. When I push it in, I get those three lights, AC bus 1, main bus A, and main bus B undervolts.
05 01 08 05	CC	Roger, 10. We're working on it.
05 01 11 20	LMP	Say, Houston. This is 10.
05 01 11 25	CC	Roger, 10. We're working on this problem. Stand by, please.
05 01 11 32	LMP	Okay. I just wanted to tell you. Of course, I got - There goes the fuel cell 1 light. I just expected it. I think it's probably because of a condenser exhaust temperature down around 154 degrees. Also the skin temperature is going up at this time, and we do have the fuel cell 1 light. The bus lights now are all reset and everything's normal from that. It's just fuel cell 1.
05 01 11 55	CC	Roger. We copy and confirm.
05 01 14 07	CC	Apollo 10, Houston. Here's what we'd like you to do on fuel cell 1. Open circuit fuel cell 1. Fuel cell 2 go to main bus A only. Fuel cell 3 go to main bus B only. Over.
05 01 14 27	LMP	Roger. You want me to open circuit fuel cell number 1. You want me to go fuel 2 to main bus A and fuel cell 3 to main bus B. I'll do it now.
05 01 14 38	CC	That's affirmative. We're standing by.
05 01 14 58	CC	Apollo 10, Houston. In the event that you get an undervoltage light, disregard the voltage and come right back up again.

05 01 15 10	LMP	Okay. I'm ... 26.9 on both main A and main B at this time.
05 01 15 30	CC	Roger, 10. We copy. And it's looking good.
05 01 15 37	LMP	How good does all that look to you?
05 01 15 41	CC	Say again, 10.
05 01 15 47	LMP	How good does all that really look to you?
05 01 15 51	CC	We're assessing it right now.
05 01 15 57	LMP	Okay. I guess we're going to lose you in a couple of minutes here.
05 01 16 22	LMP	And, Houston, this is 10. Do you want me to maintain my battery charge on A at this time?
05 01 16 42	CC	Apollo 10, Houston. Terminate your battery A charge at this time and if we get a CRYO O_2 heater cycle, well, you may lower the bus voltage momentarily. Over.
05 01 16 58	LMP	Okay. Fine. I understand I'm to terminate the battery A charge at this time.
05 01 17 38	CDR	Houston, do you have a - What's your latest hack on when we'll have AOS, please?
05 01 17 43	CC	Okay. AOS will be 122 06. And we'll be losing you in 2 minutes.
05 01 17 52	CDR	Roger. Roger. 122 06 and we're going to plan to continue on with the landmark tracking, and we'll talk to you about this as soon as we get AOS.
05 01 18 05	CC	Roger. We'll have some new word for you then.
05 01 18 11	CDR	Okay. Thank you, Charlie.
05 01 19 00	CDR	Okay, Houston. Apollo 10. I'm going to go ahead and start a roll around so I'll come around to rate of 3 - I'll wait until after we get loss of signal and pick up an ORB rate of 339 for landmark tracking.
05 01 19 13	CC	Roger. We copy.

END OF TAPE

05 01 27 --		BEGIN LUNAR REV 24
05 02 07 43	CC	Apollo 10, Houston. Standing by.
04 02 07 49	CDR	Roger. We're right square in the middle of a landmark tracking.
05 02 07 59	CC	Roger. And we've cranked up a plan-of-attack on that fuel cell.
05 02 08 05	CDR	Okay. Can you hold off for just a couple of minutes? We'll be right with you.
05 02 13 10	CDR	Okay, Houston. Apollo 10. Go ahead. We're between the F-1 and 130 sites.
05 02 13 15	CC	Okay, Tom. Here is our plan-of-attack on this fuel cell. First, we're going to look at the fuel cell temperature for a little while, and after that, we're going to put it back on line to look at the temperatures it generates versus its loading. And then we're going to work up a fuel cell purge. We've got 25 hours of hydrogen purging available. Looks like we've lost a pump package in that fuel cell 1, but we're going to maintain the temperatures of the fuel cell by purging it, and then we'll use the cell only for burns, et cetera. At the present time, we're not proposing any changes in the flight plan, and we expect when it goes back on line it will go on both main A and main B, and so at this time we're working up a purge cycle and looking at your fuel cell. Over.
05 02 14 05	CMP	Okay. We'll get that checked.
05 02 14 09	LMP	Okay. Jack, we did, when the heater cycled. We were looking at about 20 to 20.2 volts and we've got the main bus voltage undervolts light and cycling the heaters to the AUTO position on the CRYO's, one at a time, as they appeared to need it. It's just not a good feeling to have those lights - undervolts lights come on in here. I've also temporarily turned the power on the high gain antenna OFF until we can catch a high gain again.
04 02 14 42	CC	Roger. We copy.
05 02 14 43	CDR	And we've also turned - We've also turned the potable H_2O heater OFF, just some other small things to start saving power.

05 02 14 53	CC	Roger. High gain antenna, and potable water heater OFF.
05 02 15 02	LMP	So, Jack, if you see my CRYO pressure dropping, don't hesitate to tell me to get the heater ON. I just don't like to put all four of them on. We split the load when we get the lights on.
05 02 15 17	CC	Roger. Understand you're cycling your CRYO heaters, and we'll watch the temperatures.
05 02 15 21	LMP	Thank you.
05 02 33 14	CDR	Houston, Apollo 10. We've just finished tracking Landmark 130.
05 02 33 36	CDR	Hello, Houston. Apollo 10.
05 02 33 37	CC	Apollo 10, Houston. Go ahead.
05 02 33 42	CDR	Roger. We've just finished Landmark 130. We've got them all in.
05 02 33 47	CC	Very good. We have ginned up a fuel cell 1 plan. Over.
05 02 33 55	CDR	Okay. Stand by.
05 02 34 21	CMP	Houston, 10. You got the data off 130?
05 02 34 29	CC	Houston. Say again, please.
05 02 34 35	CMP	Roger. Do you have the data off 130 yet?
05 02 34 37	CC	Stand by.
05 02 34 43	CC	That's affirmative, 10. We've got the data off 130 now.
05 02 34 51	CMP	Okay. When we're at real time, I'll just hold on. I understand this is the one that's really important, so I can hang on to this until you give me a GO.
05 02 34 57	CC	Roger. That's fine. And we got it now.
05 02 35 32	LMP	Go ahead, Houston. This is 10, with your fuel cell plan.
05 02 35 37	CC	Okay. Fuel cell plan is relatively simple. We're just going to leave it off line, open circuit, and we want you to turn the fuel cell 1 inline heaters off and then monitor the skin temperature. Monitor

		the temperature to stay between 390 and 410, cycling the inline heaters on and off to maintain 390 to 410. This will keep our water production to a minimum, reducing our requirement to purge, and we may be able to go as long as 50 hours in this manner without purging. During the day, we will work out procedures to use during your sleep period on skin temperature. Over.
05 02 36 22	LMP	Okay, Jack. You must have been reading the same malfunction procedures I was. The fuel cell heater has been off now ever since we went through LOS. I've got a question on the heater. It's an AUTO heater, which recycles somewhere around 380, 390 degrees. Do you just want me to put it to AUTO position if it starts dropping, is that correct?
05 02 36 50	CC	Negative, 10.
05 02 36 54	LMP	- - We were wrong about that heater.
05 02 36 56	CC	We want you to manually keep the temperature between 390 and 410 by cycling the heater switch. Over.
05 02 37 07	LMP	What are you reading on the heater - the skin temperature right now?
05 02 37 11	CC	Stand by.
05 02 37 15	CC	Right now, we're reading skin temperature of 423, 10.
05 02 37 26	LMP	Okay. I'm reading about 430, I guess, and it's been pretty stable. I'll turn the heater ON, say down around 390, and keep it between 390 and 410.
05 02 37 36	CC	Roger. And whenever you've got some time there, we would like to update your state vector and pass you some pads.
05 02 37 51	CDR	Okay. We're in ACCEPT.
05 02 37 54	CC	Roger, 10.
05 02 38 06	LMP	Okay. I'm ready to copy your pad, and I guess I've got another question. You might be thinking up some words and things we can pull off the line here pretty quick in case we do get some underrolling problems going behind the backside, and I'm ready to copy your pad.

05 02 38 23	CC	Roger. We're working on that and we will give you the word. I have a map update pad, REV 25: 123 18 32, 123 29 - -
05 02 38 39	CDR	Hold it.
05 02 38 41	LMP	Wait a minute. Wait a minute.
05 02 38 42	CDR	Hold it, hold it.
05 02 38 44	LMP	Hey, Jack. Wait a minute. Wait a minute, Jack. I thought you meant a pad. Wait. We've got to get the right book out here. Hold it. Start it over again.
05 02 38 53	CC	Roger. I have a maneuver pad.
05 02 38 58	LMP	Go ahead with REV 25, now.
05 02 39 02	CC	Okay, REV 25.
05 02 39 05	CDR	Fixing to do a map update. Over.
05 02 39 07	CC	123 18 32, 123 29 36, 124 04 21; sunrise 123 32 14, sunset 124 44 39. Over.
05 02 39 39	CMP	Roger. 123 18 32, 123 29 36, 124 04 21, 123 32 14, 124 44 39, REV 25.
05 02 39 55	CC	Roger. Want you to check the AOS to be 124 04 21, sunset 124 44 39.
05 02 40 07	CMP	I concur.
05 02 40 12	CC	Okay. I've got a landmark tracking pad.
05 02 40 20	CMP	Go ahead.
05 02 40 23	CC	Okay. Charlie Papa 1: 123 38 14, 125 41 13, three balls, 051, three balls, north 13 miles, 12 41. Charlie Papa 2: 123 53 35, 123 55 17, three balls, north 05 04 42. Foxtrot 1: 124 06 20, 124 08 30, three balls, 329, three balls, north 10 10 40. Landmark 130: 124 27 28, 124 29 00, three balls, 265, three balls, north at 12 12 41. Give me a readback and tell me when you are ready for a maneuver pad. Over.
05 02 42 37	CMP	Roger.
05 02 42 48	CMP	CP 1: 123 38 14, 123 41 13, all balls, 051, all balls, north 13 12 41. CP 2: 123 53 35, 123 55 17, all balls, 007, all balls, north 05 04 42. F 1: 124 06 20, 124 08 30, all balls, 329, all

balls, north 10 10 40. 130: 124 27 28, 124 29 00, all balls, 265, all balls, north at 12 12 41.

05 02 44 08	CC	Readback correct.
05 02 44 13	CMP	Ready for the pad.
05 02 44 16	CC	Okay. This is TEI number 25, SPS/G&N: 36750, minus 061, plus 075 125 40 0381, plus 31008, plus 00112, plus 01154, roll is NA, pitch is 064, and the rest is NA. Your ullage is two jets for 14 seconds. Over.
05 02 45 20	CMP	Roger. TEI 25, SPS/G&N: 36750, minus 061, plus 075, 125 40 0381, plus 31008, plus 00112, plus 01154. Roll is NA, pitch is 064, and two jets for 14 seconds.
05 02 45 47	CC	Roger. That's a good readback, and we're finished with our uplink. The computer is yours; go to BLOCK. Over.
05 02 45 57	CMP	Okay. We're in BLOCK.
05 02 46 16	CMP	Houston, this is 10. That F-1 was right near the subsolar point, and boy, I really had a lot of trouble trying to figure out transfer. You could see it okay in the telescope but when you transfer from the telescope to the sextant it just vanishes.
05 02 46 29	CC	Roger, 10. What target was that?
05 02 46 37	CMP	F-1.
05 02 46 39	CC	Roger. F-1.
05 02 46 44	CMP	CP-2 is sort of that way, too.
05 02 46 49	CC	Roger.
05 02 46 53	CDR	Okay, Houston. Apollo 10. I'm going to pitch around and go to 092, inertial.
05 02 46 59	CC	Roger, 10.
05 02 47 10	CMP	It doesn't vanish. It's there, but you just can't see it. That sounds kind of funny. It's got the landmark in there, landmark line of sight and the lunar line of sight in there, all in one in the sextant, and you've got two different images and they're so bright it just doesn't - unless it has the dark feature in it, which most of these places don't. You just recognize them

05 02 47 34	CC	Roger, 10. Understand it's hard to see because it's bright as opposed to its size. Is that affirmative?
05 02 47 46	CMP	That's correct.
05 02 47 52	CMP	I just don't get ay definition. It's a bright blob down there, and there's whole bunch of bright blobs down there.
05 02 47 59	CC	Roger. Copy.
05 02 49 51	CC	Apollo 10, Houston. John, wherever you have a target that looks too bright in the sextant, we just recommend finding it in the telescope and using it that way. Over.
05 02 51 54	CC	Apollo 10, Houston. How do you read?
05 02 54 37	CC	Apollo 10, Houston. Standing by. Over.
05 02 54 42	CDR	Roger. We're just squared away down to a better IMU align attitude. Over.
05 02 54 48	CC	Roger. And I'd like to tell John that he can use the telescope where necessary, if field of view in the sextant is too bright.
05 02 55 00	CMP	Okay. I'm standing. 130 is no problem; that's easy to get, so I used the sextant on it. But maybe on F-1 and CP-2, I'll use the telescope.
05 02 55 18	CC	Roger. Go ahead and use that telescope if it's too bright to get in the sextant.
05 02 55 40	CMP	Boy! Whoever thought of using the telescope on landmark tracking.
05 02 55 50	CC	Say again, 10.
05 02 55 59	CMP	I was just making a facetious remark.
05 02 56 03	CC	Roger. That's what I thought. And they'll buy the telescope data. And we'd like to have the high gain antenna for dump. Over.
05 02 56 18	LMP	Okay, Jack.
05 02 56 54	LMP	Houston, this is 10. Can you give us some - -
05 02 57 06	CC	Apollo 10, Houston. Say again, please.
05 02 57 13	LMP	Could you give me some high gain angles, please, for my attitude?

05 02 58 23	CC	This is CAP COMM.
05 02 58 29	LMP	Go ahead, Houston.
05 02 58 40	CC	Apollo 10, Houston. If you haven't found them already, it's pitch minus 70, yaw 192. Over.
05 02 58 52	LMP	Roger. I got them; ... I'll be with you in a minute.
05 03 00 56	LMP	Houston, you got us now?
05 03 01 01	CC	Hello there, Apollo 10. Houston is reading you loud and clear. We're going to start the dump.
05 03 01 10	LMP	Okay. She's all yours.
05 03 01 14	CC	Roger. And your LOS will be at 123 18, about 17 minutes. And we owe you a powerdown list.
05 03 01 27	CDR	Roger. Will you have it by then? Over.
05 03 01 32	CC	If we don't, we'll find out why.
05 03 01 36	CDR	Okay.
05 03 07 06	CC	Apollo 10, Houston. We have some information on potential powerdown items. Over.
05 03 07 15	CDR	Stand by.
05 03 07 20	LMP	Okay, Jack. Go ahead.
05 03 07 22	CC	Okay. If you don't want to interfere with tracking and photography operations, there's not much more that you can powerdown that you've not already powered down. However, if you elect to terminate your tracking and photography operations, refer to checklist page S 2-8 which is powerdown, SPS burn. Start at the top and start powering down those items. However, do not power down BATT C. Delete BATT C on main A and B from the checklist and delete fuel cell pumps 3 off. Delete those two items and use that powerdown checklist as your guide. Over.
05 03 08 17	LMP	Okay, Jack. Yes, I was looking at that. I guess what I was looking for was some words on - not on emergency powerdown, but, you know, in case this interval comes on and persists to stay on, there might be a few other little things that we've overlooked, like I'm playing these heaters manually. We turned the portable heater off and turn the S-band off when we lose you, and a few of those things.

I wasn't looking for the emergency conditions, just maybe a few good words or something that would be very obvious to you and not to us.

05 03 08 47 CC Roger. You've already done a pretty good job of figuring that out, Gene.

05 03 08 55 LMP Okay. We thank you.

05 03 08 58 CDR Okay, Houston. Apollo 10. Just keep us informed, because this landmark tracking is real important. We'll get this bear wired down and we've already got one set, and we're going to continue on here and we'll monitor this cell. And, naturally, if the thing really starts to go out on us, we know what the mission rule is on it. But right now we plan to continue on and primarily concentrate on the landmark tracking. We've shot so much photography we're about out of color film. We're saving a little bit for the way back. And we still have some black and white to go, and we'll do some of that, but the main thing we're going to concentrate on now is the landmark tracking. Over.

05 03 09 36 CC Roger, Tom. We see no reason to change your plan of attack, and we have a change to landmark tracking update pad Foxtrot 1. Over.

05 03 09 52 CDR Okay. Stand by and I'll copy it.

05 03 10 06 LMP Okay. Go ahead.

05 03 10 09 CC Okay. On REV 25, target Foxtrot 1, the T_2 time should be changed. T_2 should be 124 08 03.

05 03 10 28 LMP Okay. I got: 03 vice 30.

05 03 10 39 CC Roger. That's affirmative. And so far, all the tracking data looks real good.

05 03 10 41 CDR Roger. Thank you. Have you got a pretty good way to evaluate it in real time, there? Over.

05 03 10 45 CC That's affirmative.

05 03 10 49 CMP I didn't get all the marks on one of those places, because I lost it in the sextant.

05 03 11 02 CC Roger. We copy, 10.

05 03 11 06 CMP I forget. It's one of the CP's back there. It's not 1.

05 03 11 09	CDR	It's CP-2.
05 03 11 12	CC	Roger. We detected that on CP-2, but 130 is the real important one, and that's coming through real good.
05 03 11 22	CDR	Roger. Thank you.
05 03 13 11	CC	Apollo 10, Houston. We have a revision to the way in which we'd like you to maintain temperature in the CRYO tanks. Over.
05 03 13 19	LMP	Okay, Jack. Go ahead.
05 03 13 26	CC	Roger. Instead of using your heaters to maintain the temperature in the CRYO tanks, use your fans manually. Over.
05 03 13 37	LMP	Okay. Use the fans to maintain the pressure in the CRYO tanks. Right? Is that correct?
05 03 13 43	CC	Use the fans to maintain the temperature in the CRYO tanks. This will be - correction - pressure. This will require less current and allow finer control. Over.
05 03 13 55	LMP	Very good. Thank you. Those are the kind of good words I really wanted. Thank you very much.
05 03 14 00	CC	Roger. We'll try to think up some more.
05 03 17 12	CC	Apollo 10, Houston. You're going around the corner in about a minute and a half. Your AOS is 124 04, and we'd like you to check and make sure the VHF is all OFF. Over.
05 03 17 24	CDR	124 04, and we'll check.
05 03 17 27	LMP	Yes, Jack. I checked. All the VHF switches are all OFF.
05 03 17 30	CC	Roger. Thank you.

END OF TAPE

05 03 25 —		BEGIN LUNAR REV 25
05 04 05 09	CC	Hello, Apollo 10. This is Houston. We're standing by. Over.
05 04 05 14	CDR	Roger, Apollo 10. Houston, we're doing landmark tracking, and we're coming up to landmark F-1.
05 04 05 23	CC	Roger, 10. Good afternoon, you guys. Just wanted to congratulate you on a great day yesterday. I didn't get a chance to do it yesterday. It was a beautiful show.
05 04 05 35	CDR	Okay. Thanks a lot, Charlie. You on the ground really came through coordinating those vehicles together. You must have had a heck of a load on your shoulders. But boy, it was fantastic, and we sure appreciate it.
05 04 05 45	CC	We've had a lot of fun, Tom.
05 04 05 47	CMP	... I could feel the tension down there ...
05 04 05 50	CC	Say again, John.
05 04 05 52	CMP	I could feel - I could feel the tension down there all the way up here.
05 04 05 57	CC	We were a little tight at times, but you guys did a great job. We'll let you get back to work now. Out.
05 04 06 06	CDR	Roger. Thank you. Out.
05 04 23 55	CDR	Okay, Houston. Apollo 10. We're coming up on Censorinus and we have Maskelyne, Maskelyne B, and 130 up ahead; and we'll call you after we finish the track on that. Over.
05 04 24 06	CC	Roger, 10. We're standing by. We're tracking you along.
05 04 30 56	CDR	Okay. Houston, Charlie Brown. We finished tracking 130.
05 04 31 02	CC	Roger. We copy, 10.
05 04 32 37	CMP	You got the data, Charlie?
05 04 32 42	CC	That's affirmative, John. We got it all. Over.
05 04 32 52	CMP	Houston, Apollo 10. Did you get the data? Over.

05 04 32 55	CC	Roger. 10, we got the data. Over.
05 04 33 01	CMP	Okay.
05 04 33 34	CC	10, Houston. How did F-1 look in the sextant this time?
05 04 33 41	CMP	It looked okay in the telescope this time.
05 04 33 46	CC	Okay.
05 04 35 50	CDR	Hello, Houston. Apollo 10.
05 04 35 55	CC	Go ahead, 10. Over.
05 04 35 58	CDR	I'm going to - Okay. I'm going to pitch around to the 092 attitude, and we'll get you some high gain then. Over.
05 04 36 03	CC	Roger, 10.
05 04 36 13	CMP	Houston, this is 10. Summary of the last four landmarks: CP-1 - I'm not sure, reviewing it in my mind, whether I tracked the same CP-1 on the first one as I did on the second one. CP-2, I'm sure I've got the right one; F-1 I'm sure is the right one, and 130 I'm sure is right.
05 04 36 40	CC	Roger, John. We copy. Maybe not sure on CP-1, the rest are the same.
05 04 36 49	CMP	Yes. And CP-2 I did with the sextant, CP-1 and 2 were with the sextant, F-1 was with the telescope, 130 was with the sextant, and I'm going back to the telescope on CP-1.
05 04 37 06	CC	Roger.
05 04 37 08	CMP	And probably CP-2.
05 04 37 10	CC	Roger. We copy, John. Next REV you're going to try the telescope on CP-1, 2, and F-1 and use the sextant on 130.
05 04 37 21	CMP	Roger. And I may not do that. It depends on whether I can identify it in the sextant or not, once I get it in the scope.
05 04 37 28	CC	Roger. We copy. How's the old eyeball holding out?
05 04 37 32	CMP	Eyeball's okay. I just keep - I just keep - It's a question of washout and things like that. At

different inclination angles when you're passing over it, these little things look different; especially in that sextant where you've got these two landmark line of sites fighting. These two lines of sites are sort of in competition with each other.

05 04 37 56	CC	Roger.
05 04 37 58	CMP	130's been good, though. 130's been real good.
05 04 38 04	CC	Roger. Thanks a lot. Out.
05 04 38 16	CC	10, Houston. About 15 minutes before LOS. We'll have a little critique when we look at the data, and we'll talk to you a little bit more then about it. Over.
05 04 38 30	CMP	Roger.
05 04 38 42	CC	Hello, 10. Houston. We'd like you to go to POO and ACCEPT. We've got a state vector for you. Over.
05 04 38 53	CDR	You're in ACCEPT. Go.
05 04 38 56	CC	Roger. And, 10, if you're ready to copy now, we got a TEI 26 pad for you.
05 04 39 17	LMP	Go ahead, Charlie.
05 04 39 20	CC	Roger, Gene. TEI 26 SPS/G&N: NA down to NOUN 33, then we got 127 39 20.00, NOUN 81, plus 3163.8, plus 2 balls 56.0, plus 0160.1, pitch angle is 062, and it's two jet ullage for 14 seconds. Over.
05 04 40 06	LMP	Charlie, we lost you. I picked you up at NOUN 81. You'll have to go up through - up to NOUN 81 again.
05 04 40 13	CC	Roger, 10. Why don't we hold off till we get the high gain, and we'll be back with you. Over.
05 04 40 20	LMP	Okay. Fine.
05 04 41 39	LMP	Go ahead, Charlie. We got your high gain now, and ...
05 04 41 45	CC	Roger, 10. You copy now, Gene? Over.
05 04 41 51	LMP	That's affirmative.
05 04 41 55	CC	Okay. We were NA down to NOUN 33. NOUN 33 is 127 39 20.00, plus 3163.8, plus 0056.0, plus 0160.1, [illegible] pitch angle is [illegible] ullage [illegible]

05 04 42 31	LMP	Okay. I got TEI 26, SPS/G&N, NOUN's 47 and 48 are NA, 33 is 127 39 20.00, plus 3163.8, plus 0056.0, plus 0160.1. Pitch is 062 and two jets for 14 seconds.
05 04 42 53	CC	Roger. That's a good readback, 10. And we have a REV 26 update for you. Tracking in the map update if you're ready to copy that now.
05 04 43 25	LMP	Okay. Go ahead, Charlie.
05 04 43 28	CC	Okay. We got the state vector in, 10, you can go back to BLOCK. Okay. The map update for REV 26 coming at you: 125 16 41, 125 28 00, 126 02 51. Okay. For the CP-1, starting with T_1: 125 36 38, 125 39 38, 000, 052, 000, north of track 14 12 41. Going to CP-2 now. And starting with T_1: 125 52 00, 125 53 42, 000, 007, 000, north of track 05 04 43. You with me?
05 04 45 24	LMP	Go ahead, Charlie.
05 04 45 26	CC	Okay. F-1: T_1 time, 126 04 46, 126 06 29, 000, 330, 000, north of track 10 14 41. 130 - Okay, T_1 for 130: 126 25 53, 126 27 25, 000, 267, 000, north 12 12 40. And that's all of pad. Standing by for your readback.
05 04 46 54	LMP	Okay. REV 26 is 125 16 41, 125 28 00, 126 02 51, CP-1 is 125 36 38, 125 39 38, 000, 052, 000, north 14 12 41. CP-2 is 125 52 00, 125 53 42, 000, 007, 000, north 05 04 43. F-1 is 126 04 46, 126 06 29, 000, 330, 000, north 10 14 41. 130 - 130 is 126 25 53, 126 27 25, 000, 267, 000, north 12 12 40.
05 04 48 33	CC	Okay, 10. That's a good readback, Gene-o. Out.
05 04 48 41	LMP	Okay, Charlie. From what we saw a little while ago, it looks like the Sun might be shining down there.
05 04 48 48	CC	Yes. We've got a big growler coming up just north of the site here. Since I came in, it might be raining out there.
05 04 49 03	LMP	Okay. That was with the naked eye, from a quarter-million miles away.
05 04 49 17	CC	Your friendly geologist, Jack, just advised me that he just came in, and summer has really arrived at Houston, and it is clear and hot.

05 04 49 29	LMP	Very good.
05 04 54 44	CDR	Hello, Houston. Apollo 10.
05 04 54 51	CC	Go ahead, 10. Over.
05 04 54 54	CDR	Okay. We are looking ahead of you. We've got this REV of landmark tracking and it calls for a TV pass. And - I tell you right - I'd like to show you this moonscape out here. It's really - we think we've got some definition of the color out there: about being in the shade of light brown and light tan and it's gray right near the sunset; an early sunrise and also the new craters look like a gypsum, more of a whitish, chalky - things, but after 130 there is not much light left. An ideal thing would be maybe right near the end of the rest period just give you a big panoramic sweep coming in through there. How would that be? Over.
05 04 55 37	CC	Roger. That sounds good to us, 10. We understand that you would like to skip the regular TV at 1 26 20 and then schedule it in at the end of the rest period. Over.
05 04 55 51	CDR	Yes. That's right. By the time we do that you have to link us a state vector, John does an IMU, and we come around and do one more REV of landmark tracking. It's pretty crowded, plus I don't think we'd have too much to show you. We've got to get squared away for the landmark tracking again, but the way that the Sun is now, out on that maria area there and everything, it is really beautiful and I think it would be lots better if you could figure out an angle where we could get high gain, and we could be looking backwards. Unless we progress forwards, look back. Kind of show you the whole zone. Or we could go forwards so you can get a high gain angle during that rest period. We could take about 15 or 20 minutes in there without any problem and show it to you. Over.
05 04 56 34	CC	Roger, 10. We can come up with that for you. Do want us to schedule this at the beginning of the rest period or right at the end, Tom?
05 04 56 48	CDR	Stand by, Charlie.
05 04 56 54	CC	It looks like to me - 10, it looks like to me the best time would probably be at the end of the rest period. As you begin your rest period, you are already in darkness, starting REV 28. We could probably do it at the end of your rest period. Oh, it's at 131 50 or thereabouts. Over.

05 04 57 17	CDR	Yes. I - We're just looking ahead here and this looks real good, Charlie. In other words, when we come around at about 131, say 30 or so, give us the angles and we've got some beautiful panoramic views. If we can be looking out obliquely ahead down at about 15 to 20 degrees, and looking ahead with the Sun to our back there you should get a fantastic view of the whole maria area. It's really beautiful. And we could show that on TV. At least so far, the colors have been coming through good; show you what we mean by color up here. Over.
05 04 57 52	CC	Roger. Would you like to combine it with the oblique strip photography of Landing Site 3? Over.
05 04 58 04	CDR	Yes. That would be okay. Be fine.
05 04 58 08	CC	Roger. I think we are pretty well squared away on that, Tom. We'll give you some - We'll look at it for a little bit longer, and we can come up with an attitude for high gain and TV, and allow you to get your oblique strip in there, and we'll have it for you in a little while. Over.
05 04 58 28	CDR	Okay. Thank you, Charlie.
05 05 03 41	CC	Hello, Apollo 10. Houston. Over.
05 05 03 47	CDR	Go ahead.
05 05 03 49	CC	Okay, Tom. We've got a little critique on your REV 25 tracking for John. On Site 130, it appeared that he started about 50 seconds early. The spacing was good, but the geometry was not quite as good as we'd like it; and if we could just move that up 50 seconds, we'd appreciate it. I'll repeat, though, that - Go ahead, John.
05 05 04 21	CDR	Go, go. We're listening to you; John is busy. Go ahead.
05 05 04 27	CC	Okay. The spacing was real good on the marks but the geometry wasn't quite as good as they liked it, so they just wanted to pass on that remark. On F-1, the mark spacing was excellent and we started right on time. We only got four marks recorded and it appeared that we were in just - Stand by. Roger. It appeared that on F-1, that we initially were just in attitude hold and we ran out of duration before we got all the marks in, but the spacing was real good. Over.

05 05 05 08	CDR	Okay. Okay, Houston. We started the marks on 130 right on the time that - we thought, right on the time sequence that you passed up to us. Over.
05 05 05 30	CC	Stand by one.
05 05 05 43	CC	10, Houston. The experts here were saying that the T_2 time, the mark should be started about 30 to 40 seconds after the T_2 time. Over.
05 05 05 59	CDR	Okay. All right. We'll start them 30 to 40 seconds after T_2.
05 05 06 06	CC	Roger. And Tom, we're going to have Goldstone up for you on the TV at about 132, and we'll have the 210 dish. It looks like we're going to be in good shape for the oblique and the TV, and we'll get all the info up to you next REV. Over.
05 05 06 28	CDR	Okay. Sounds real great, Charlie. Thank you.
05 05 06 31	CC	Roger. And we got 10 minutes to LOS. We'll see you next REV at 126 02, and we're looking good going over the hill. The fuel cell - Everything is looking good. Over.

END OF TAPE

05 05 06 52	CDR	Okay. Real fine. Thanks a lot, Charlie.
05 05 07 36	CDR	Houston, this is 10. On that ... pass, we'd like the obliques, if we could get into some attitude where we wouldn't have to be upside-down, like maybe if we yawed right or pitched looking out the side window. Over.
05 05 07 51	CC	Roger. Stand by on that one, Tom. Over.
05 05 07 57	CDR	Okay.
05 05 08 29	CC	Hello, 10. Houston. We have your request, and we'll work it out on the back side. And we'll have it for you next ACQ. Over.
05 05 08 42	CDR	Okay. Real fine, Charlie. Thank you a lot. It looks like the old orbit here is being torqued around just like predicted. Apogee is getting higher and perigee is getting lower. Over.
05 05 08 50	CC	Yes. Old FIDO's been showing me what the potential does to you guys there. And it's a really weird looking thing there. It's as predicted, though. I guess ... - Oh, go ahead.
05 05 09 07	CMP	No, I was just going to say. We've been noticing, we expected it but right there we're in the 67.3 by 54.7. Looks like total energy is conserved, but it's really changing the APS ... Over.
05 05 09 21	CC	Roger. That's just about what we have you in. We agree with all those comments. Over.
05 05 09 28	CDR	Roger.
05 05 14 18	CC	Hello, 10. Houston. Two minutes to LOS. You're looking great going over the hill. Over.
05 05 14 46	CMP	Okay, Charlie. Thanks a lot.
05 05 23 --		BEGIN LUNAR REV 26
05 06 03 37	CC	Hello, Apollo 10. Houston. We're standing by. Out.
05 06 03 42	CMP	Roger. We're coming up to 130.
05 06 08 27	CDR	Hello, Houston. Apollo 10.

05 06 08 29	CC	Go ahead, 10.
05 06 08 32	CDR	Okay. We've been delaying a little bit like you suggested about that T_2 time, but the thing gets just about out of sight here and John had to hurry up on the last one, so we've been waiting about 20 seconds, and that's about it, after the T_2 time.
05 06 08 47	CC	Roger, 10. We copy. Sure that's okay. That sounds good. And little run down on your CP-1 and CP-2 marks on REV 25. They looked real good to us. The marks were good and the spacing was good. We are real happy with that. Over.
05 06 09 08	CDR	Okay. Real fine and just might pass along to the FIDO troups down there that we noticed a star we could not identify coming up and we said well, there must be something else in orbit with us and sure enough this last pass it got close enough. It's the bottom part of Snoopy and Gene-o with his monocular can see his legs - the reflection off his legs. So as he went out ... behind us, like, I guess I read that ... we're going to slowly catch up with him. Well, we're starting to catch up with the bottom part of Snoop, but something has torqued him out of plane a little bit, and he's going out of plane into the south of us. Maybe a MASSCON grabbed ahold of him, or something, but we're catching up with him. There's no doubt about it. And we can actually see the different colors of reflected light off the black in the silver panels. Over.
05 06 09 58	CC	Roger. Good show. We'll pass that on to the FIDO.
05 06 10 07	LMP	Got the data there, Houston?
05 06 10 09	CC	Stand by. We got it all. You can proceed.
05 06 10 33	CC	10, Houston. We can - you can increase your marking time slightly if you'll push your pitch rate up a little bit, as you go through the marking cycle. Over.
05 06 10 47	CDR	Okay. Yes, we thought about that.
05 06 11 31	SC	Okay, Flight. Let's pay attention to business now.
05 06 29 47	CDR	Houston, that completes [illegible] Marks. We had exactly [illegible] seconds between the [illegible]

05 06 29 47	CC	Roger, 10. We copy.
05 06 30 46	CMP	Houston, this is 10. Do you want me to go ahead and pitch over before you give us the update and ... go ahead and talk a little bit.
05 06 30 55	CC	Stand by. Hello, 10. Houston. You can go ahead and maneuver and give us the high gain. Then we'll give you the update after that. Over.
05 06 31 18	CMP	Alrighty.
05 06 31 19	LMP	You got the data, Charlie?
05 06 31 21	CC	Stand by. We got it, 10. You can proceed.
05 06 31 26	CMP	Okay. Pitching over.
05 06 32 38	CMP	Houston, Apollo 10. Over.
05 06 32 42	CC	Go ahead, 10. Houston.
05 06 32 45	CMP	Roger. On that last pass, I'm sure the same CP-1 I marked on with the sextant on REV - on the first - on the second track REV, I marked on with the third one. Acquire at CP-2 is the same in all three cases and F-1 is the same in all three cases and that 130 is the same in all three cases.
05 06 34 19	CC	Roger, John. We copy all that. John, we copy all that.
05 06 34 26	SC	The last pass I only got four marks on ... because the sextant wasn't ...
05 06 34 43	CC	10, Houston. You're breaking up. We'll talk to you when you get on the high gain. We've lost you. Over.
05 06 37 31	CMP	Houston, how are you reading us on high gain?
05 06 37 40	CC	Hello, Apollo 10. Houston. We have a TEI PAD for you and REV updates and landmark tracking updates. Over.
05 06 37 55	CDR	Go ahead. You want to start on the map update?
05 06 37 58	CC	Your choice, 10. Over.
05 06 38 04	SC	Go ahead.

(GOSS NET 1)

05 06 38 06	CC	Roger, Tom. First we'd like - we got a state vector for you if you'd give us POO and ACCEPT, and I'll start out with the map update for REV 27.
05 06 38 19	CDR	Okay. We're in POO and ACCEPT.
05 06 38 27	CC	Okay, 10. Coming at you with REV 27 map update, 127 15 15, 127 26 26, 128 01 26. Okay a landmark tracking update coming at you for CP-1, 127 35 02 127 38 03 000 053 000 north 14 12 41. Are you with me? Over.
05 06 39 30	CDR	Go ahead. Over.
05 06 39 32	CC	Roger CP-2 is T_1 127 50 25, 127 51 30, 000 011 000, north 05 03 50. F-1 T_1 time for F-1 128 03 10, 128 04 55, 000 331 000, north 10 14 41. Okay for 130 T_1 time for 130 is 128 24 16, 128 25 47, 000 268 000, north 12 12 40. And we got a TEI 27 pad if you're ready to copy. Over.

END OF TAPE

-- -- -- --	CDR	Okay. Stand by on the TEI pad. Okay. Go ahead, Charlie.
-- -- -- --	CC	Roger, Tom. TEI number 27, SPS G&N: we're N/A down to NOUN - through NOUN 48, NOUN 33 is 129 39 1871, plus 32367, plus 00410, plus three balls 75, pitch angle 061, and it's two jets for 14 seconds on the ullage. And I'm standing by for your readback.
05 06 42 28	CDR	Okay. We'll start on the landmarks. First, we'll start the maps promptly to 27: 127 15 15, 127 26 26, 128 01 26. CP-1: 127 35 02, 127 38 03, 000, 053, 000, north 14 12 41. CP-2: 127 50 25, 127 51 30, 000, 011, 000, north 05 03 50. F-1: 128 03 10, 128 04 55, 000, 331, 000, north 10 14 41. 130: 128 24 16, 128 25 47, 000, 268, 000, north 12 12 40. Over.
05 06 44 02	CC	Roger. All a good readback. Standing by for the TEI pad.
05 06 44 08	CDR	Roger.
05 06 44 16	LMP	TEI 27, SPS G&N: NOUN 33 is 129 39 1871, plus 32367, plus 00410, plus 00075, and pitch is 061, and two jets 14 seconds.
05 06 44 33	CC	Roger. Good readback, Gene, and the computer is yours. You can go back to BLOCK. And Tom, we got a TV plan for you if you'd like to turn to page 3-85 of your flight plan, and we'll run through this and see what you think about it. When you get there, give me a call. Over.
05 06 44 57	CDR	Okay. I'm there, Charlie. Go.
05 06 45 01	CC	Okay, what we'd like to do is - we think we can - on REV 29 we can get good high gain and TV on both REVS 29 and 31 by doing the following things: on REV 29, we'd like to get the obliques to Landing Site 3 at - fly as inked into the flight plan; that is, roll angle 180, ORDEAL of 339 in pitch, heads down, and we'll send you the Landing Site 3 pad as scheduled. This will give us good TV obliques for training and a high gain acquisition, but the high gain acquisition may be delayed just slightly, but we think we'll probably get it right away. Now on REV 31, coming up on page 3-89, we'd like to - During the descent strip photos, we suggest that you fly them as you flew them this morning, when you were doing the vertical stereo on REV 23: with a roll angle of 180, and ORDEAL of 282 in pitch, and our remarks are to remember to pitch as required to shade the windows near the terminator. And again we'll send you the pad as scheduled. Now this attitude will give us good TV - good high gain

for TV panoramas of what you guys are seeing flying backwards, and if you concur with that schedule, we'd like to go as is. Over.

05 06 46 44	CDR	Okay. That seems real good now, and we'll get an update after that on - as you were - update pad for TEI after that, and we'll be all squared away.
05 06 46 58	CC	Roger. Very good. If you feel like we're pushing you on TEI on the REV 31, we can discontinue that TV at any time. Over.
05 06 47 10	CDR	Okay. We'll check and see how it goes. We want to get everything squared away before TEI, and that certainly has about last priority, but we'll see how it works out.
05 06 47 21	CC	Fine, Tom.
05 06 47 22	CDR	And, I guess we're all squared away to pick it up on the - Over. I guess we're all squared away to pick it up after TEI, when we come around to look back. Right? Over.
05 06 47 32	CC	That's affirmative. We've got you for the ATT then. We'll be standing by. Out.
05 06 47 38	CDR	Roger.
05 06 49 24	CC	Apollo 10, Houston. On the REV 26 tracking that we saw for F-1 and 130: John, you did a great job. It's looking really great. Over.
05 06 49 42	CMP	Thank you. But it was a team effort.
05 06 49 47	CC	Roger.
05 06 52 08	CC	Hello, Apollo 10, Houston. You know, we'd like you to start charging battery B. Over.
05 06 52 16	CDR	Roger. Battery B.
05 06 52 20	LMP	Okay, babe. If you think we can hack it. Here goes.
05 06 53 00	LMP	Oh, it look good here, Charlie.
05 06 53 11	CC	Roger, Gene-o. You're really not pulling much more current at all out of this thing, and we think you're going to be in good shape. Over.
05 06 53 17	LMP	Hey, you know that idea on the fans to build up the CRYO pressure? Man, that's a great idea. It brings them up. It appears to bring them up faster and use less energy. Man, maybe we should be doing that all

05 06 53 35	CC	Roger.
05 07 05 14	CC	10, Houston. We've got 10 minutes to LOS. See you over the hill at 128 01.
05 07 05 22	CDR	Okay, Charlie. Look, we've been talking this over, and what we'll do is when we shoot those obliques in the Landing Site 3, we'll give you the TV pass then. We'd like to continue on, and if this Vidicon has the strength, like to show you what earthshine is around the Moon. It'll just continue on, it would delay P52 a little bit, and then that will be the only TV pass here. Now we think we want to get everything squared away before TEI, and then after TEI as we leave the Moon I'll turn it around: we'll turn that barrel full time for you. Over.
05 07 05 55	CC	Roger, 10. That's a good plan. We concur. Over.
05 07 06 02	CDR	Roger.
05 07 13 17	CC	10, Houston. 2 minutes to LOS. You're looking great going over the hill. Over.
05 07 13 25	CDR	Okay, Charlie. Thank you.
05 07 22 --		BEGIN LUNAR REV 27
05 08 03 55	CC	Hello. Apollo 10, Houston. We're standing by.
05 08 08 27	CC	10, Houston. We got the data. You can proceed.
05 08 08 37	CDR	Roger.

END OF TAPE

05 08 28 27	CDR	Okay, Houston. We've finished with landmark 130.
05 08 28 32	CC	Roger, 10. We copy.
05 08 28 37	CC	10, Houston. We've got quite a few things to talk to you about on the flight plan. We'd like you to, for your rest attitude, to change your roll angle from 180 to 090. Rest of it's okay. Your high gain changes to a pitch of 00 and a yaw of 240. Over.
05 08 29 09	LMP	Okay, Charlie. Why don't you run us by that again. Nobody was on the headset.
05 08 29 14	CC	Okay. Roger. We've got the data. You can proceed on out of 22, and we got the flight plan updates for you starting on page 3-82. Over.
05 08 29 29	LMP	Roger. Wait a second.
05 08 29 41	LMP	Go ahead, Charlie.
05 08 29 43	CC	Okay. On the rest attitude at 128 29, we'd like you to maneuver to a roll of 090 so we can cool down quad A, and the pitch and yaw are the same as listed in the flight plan. The high gain antenna angles are pitch of 00, yaw 240. Okay. Go on down the page to fuel cell O_2 purge - we'd like you to do the fuel cell on O_2 purge on fuel cells 2 and 3. And, same page, we have a map update REV 29, if you are ready to copy. Over.
05 08 30 30	LMP	Go ahead, and I am going to go ahead and start the fuel - the O_2 purge right now on 2 and 3.
05 08 30 35	CC	Roger. Okay. REV 29, map update: 131 12 24, 131 23 18, 131 58 35.
05 08 30 58	CC	Do you want to read that back to me. Over.
05 08 31 07	LMP	Okay, Charlie. REV 29 is 131 12 24, 131 23 18, 131 58 35.
05 08 31 16	CC	Roger. And let's go on to page 3-85 in the flight plan.
05 08 31 24	LMP	Okay. By the way, we changed canister B a little bit late. Let me find it for you. I'll tell you exactly when we changed it.
05 08 31 34	CC	Standing by.
05 08 31 35	LMP	We changed it at 120 - We changed canister B late. We changed it at 127 hours.

05 08 31 44	CC	Okay. We copy canister B at 127 hours, and we have an update on page 3-85 if you're ready to copy. Over.
05 08 31 55	LMP	Go ahead, Charlie.
05 08 31 58	CC	Okay, Gene. 3-85, the update for the oblique strip - we're giving you the same update as this morning. Roll, pitch and yaw are, roll 180 339 000 your T_0 f:8 time is 132 17 48 - change to f:2.8 at 132 27 16. Okay. Your T_1 time is 132 30 16. T_2 is 132 32 16. Now the f:8 and the f:2.8 f stops are - stop changes are for the sequence camera only. We'd like you to use f:4 at 1/125 for the black and white. Over.
05 08 33 32	LMP	Okay. I got oblique strip roll, roll 180, pitch 339, yaw 000, T_0 is at 132 17 48 - that's at a f:0 and go to f:2 at 132 27 16, and that's all under sequence. T_1 is at 132 30 16, T_2 is at 132 32 16 and use f:4 1/125 on the black and white all the way.
05 08 34 00	CC	Okay, Gene-o. Good readback. Those roll, pitch and yaw angles are ORDEAL angles. Okay, I've got a T - TEI 29 if you're ready to copy. Over.
05 08 34 26	LMP	Go ahead.
05 08 34 28	CC	Okay. Before we start on the pad, we'd like you POO and ACCEPT. We have a state vector for you. And coming with a TEI 29, SPS G&N: start with NOUN 33, 133 37 3669, plus 34079, plus 00166, plus 01719, pitch 056, two jets for 14 seconds on the ullage.
03 08 35 17	LMP	Charlie. Give me NOUN 81 DELTA-V_X again, will you please?
05 08 35 21	CC	Which DELTA-V you want, Gene?
05 08 35 27	LMP	DELTA-V_X.
05 08 35 29	CC	Okay. DELTA-V_X is plus 34079. Over.
05 08 35 38	LMP	Okay. TEI 29, SPS and G&N: NOUN 33 is 133 37 3669; NOUN 81 is plus 34079, plus 00166 plus 01719, and pitch is 056. It's two jets ullage for 14 seconds.
05 08 35 58	CC	Roger. That's a good readback. Now, I've got some stuff for you on the fuel cells and the CRYOS we'd like for your sleep period. It's quite lengthy. You might have a pencil ready so you can copy some down [illegible] to read it

slowly and repeat all that you need. We'd like you to stir the CRYOS and - before going to sleep - and then turn all the fans off. We'd like high ... power switch OFF, SCS ELECTRONICS to ECA. O_2 tank 2 heater AUTO, O_2 tank one heater to OFF. Are you with me? Over.

05 08 36 59 LMP I'm with you, Charlie.

05 08 37 01 CC Okay, Gene. Continuing on. We'd like H_2 tank 1 heater AUTO, H_2 tank heater to OFF. You can leave battery B on CHARGE, and we'd like to power up the high-gain antenna for the sleep. On the fuel cell configuration, you can leave as is, and we'll place fuel cell 1 on both MAIN A and MAIN B one and a half hours prior to the TEI burn. Over.

05 08 37 54 LMP Okay, Charlie. I understand. I'll cycle the CRYO fans and then I'll ... optics power off, SCS electronic, ECA: O_2 tank heater number 2 to AUTO; number 1 to OFF; H_2 tank 1 to AUTO, and 2 to OFF. Continue BATT B CHARGE, and I'll power up the high gain.

05 08 38 13 CC Roger, Gene. Good readback. Now that - at our present temperature decrease on fuel cell 1, we will not have to put it on the line prior to the above time. The minimum temperature for fuel cell 1 is now 370 degrees - that's 370 skin temp. So we'll place it on the main busses to raise the temp in lieu of using the inline heaters during transearth coast. I'd like to emphasize, please do not use the fuel cell heater on fuel cell 1. And, at the present rate of decay of temperature in fuel cell 1, it looks like we'll have to put it on the busses about every 20 hours. Over.

05 08 39 07 LMP Fine. That suits us fine, Charlie.

05 08 39 09 CC Okay. Good. One little last thing is that we got some word - some word for you on the storage of the LM cameras and the LiOH canister. We'd like - we suggest that you wrap the cameras in an LCG and store them in A-8. Stand by one.

05 08 39 41 CC 10. Stand by. We got a recent update on the camera storage. We'll be right with you. Over.

05 08 39 54	CDR	Roger. Houston. Say again, now. We - We're going to go to the - maneuver to the sleep attitude at this time.
05 08 40 05	CC	Roger. That's fine, Tom. Go ahead. Go ahead for the maneuver, and your computer is yours. And I'll be back with you when we get to high gain on the Hasselblad and canister. Over
05 08 40 20	CDR	Okay.
05 08 44 01	CMP	Houston, Apollo 10. Over.
05 08 44 03	CC	Go ahead, 10.
05 08 44 07	CMP	Roger. Let me summarize this landmark tracking thing, the last pass. I think we only got four Marks on one of those CP's. And - and let me summarize the whole thing by saying, I think you ought to throw out CP-1's first pass and F-1's first pass because I don't think they were on them - they were on the same site. I don't think CP-1 was the same site that actual CP-1 was on the other three passes. Same way for F-1's first pass. But I feel pretty good about all the rest of the sightings. I think they're all on the same spot of ground, and I'll point it out to you when we get back. And I guarantee you that all the stuff on 130 was on 130.
05 08 45 17	CC	Roger, John. We copy. It was really a great show on the landmark tracking. Everybody's worked real - very pleased with everything, and we understand you suggest throwing out the first pass of CP-1 and F-1 due to incorrect - possible incorrect landmarks. On the last pass of CP-1, we copy - we're only four Marks on that one, but they look real good. And everybody in is MPAD's happy as a clam with everything, and we're all set for you guys to go to sleep.
05 08 45 52	CMP	Okay. And if we don't learn nothing else, we ought to know where 130 is.
05 08 46 08	CC	Hey, John. On - On 130 you're within 300 feet on your altitudes on every pass across 130. It's really great. The MPAD's calling you the mechanical man.
05 08 46 25	CMP	I was just tracking that ...
05 08 46 29	CDR	Well, you should have seen him. He was really putting it right on the money there. It was good.

05 08 46 33	CC	Roger. We could tell that from the data, Tom. It looks really great. 10, that's all we got for you. We're going to hold up on - -
05 08 46 44	CDR	- - ... Yes, I was going to say, Charlie, if George Miller is around there, tell him to smile. Over.
05 08 46 53	CC	Okay. He was grinning last night. I haven't seen him tonight. That's all we got for you, 10. We're going to hold up on this stowage of the cameras and the canister until we come back in the transearth coast. Over.
05 08 47 11	CDR	Yes. Roger. We're only going to be pulling about one g when the engine fires off here, Charlie. We got everything already pretty much configured for that, so we'll be in good shape to take care of the rest of it. Over.
05 08 47 22	CC	Roger. We concur. Out.
05 08 49 41	CC	Hello, 10. We have you on the high gain now. Do you read me? Over.
05 08 49 47	CDR	Roger, Charlie. Read you loud and clear.
05 08 49 50	CC	Roger, Tom. One further recommendation. Quads Bravo and Charlie are the fattest, and we recommend for the sleep period you configure the DAP for attitude control using quads Bravo and Charlie. And otherwise you're in good shape. Good night, and we'll see you in 3-1/2 hours or so. Over.
05 08 50 11	CDR	Okay. Roger.
05 08 51 52	CDR	Houston, Apollo 10. Again on these quads, you want us - we don't want to use quad A. You want us to use quads B and D? Over.
05 08 52 01	CC	That's negative. Quads Bravo and Charlie. Over.
05 08 52 07	CDR	Roger. You want us to fail A and Dog. Over.
05 08 52 10	CC	Affirmative.
05 08 55 52	CC	Hello, Apollo 10, Houston. Sorry to disturb you again, but we notice your DAP quad fails incorrectly. We'd like you to load COll0 so that we'll have some pitch attitude control. Over.

05 08 56 22	CDR	Okay, you want 0 - Say that again, Charlie.
05 08 56 26	CC	Roger, Tom. In register 2, we'd like 00110. Over.
05 08 56 36	CDR	Okay. You got it.
05 08 58 06	CC	Hello, Apollo 10. Houston. We're not going to give up. We got - we noticed your quad Charlie AUTO RCS SELECT switch is OFF. We'd like for you to configure Bravo and Charlie AUTO RCS SELECT switches ON. Alfa and Dog OFF. Over.
05 08 58 27	CDR	Roger. Alfa and Dog OFF, Bravo and Charlie ON.
05 08 58 31	CC	Affirmative.
05 08 59 15	CDR	Hey, maybe it's late at night, Charlie, but you want Alfa and Charlie off, Bravo and Dog ON. How you going to get any pitch control?
05 08 59 23	CC	We want Bravo and Charlie ON, and Alfa and Delta OFF. Over.
05 08 59 33	CDR	Alrighty. Bravo and Charlie ON, Alfa and Delta OFF. Got it. Thank you.
05 08 59 38	CC	Roger.

END OF TAPE

05 11 15 -- BEGIN LUNAR REV 29

REST PERIOD - NO COMMUNICATIONS

05 11 59 09	CDR	Hello, Houston. Apollo 10.
05 11 59 15	CC	Hey, good morning, Apollo 10. How are you doing this morning?
05 11 59 19	CDR	Oh, just woke up from that little nap. Pretty good. We had kind of a long day.
05 11 59 26	CC	Roger that, Tom. What have you got there for the crew status? When you get a chance, we're standing by for that.
05 11 59 38	LMP	It was just a nap, Joe.
05 11 59 47	LMP	As I look around here - this is Gene Cernan calling from the Moon - As I look around there's three of us: John Young, Tom Stafford, and myself. And their status has been: Fairly confident. Can we help you?
05 12 00 07	CC	Okay. You got me.
05 12 00 30	CC	Okay. 10, this is Houston. We're standing by for some TV on this pass, and I've got some pads to update to you. I've got a maneuver pad and a couple of map updates, and as soon as you get a chance we would like to have a crew status as per the flight plan, there.
05 12 00 50	CDR	Okay. Nobody has taken any of the little pills, and we'll read you out some REV's in a minute. Over.
05 12 00 54	CC	Hey, that'll be fine. Thank you, Tom.
05 12 00 59	LMP	Go ahead with the maneuver pad. Let's get that one out.
05 12 01 03	CC	Okay. You're ready to copy?
05 12 01 23	LMP	Yes, Joe, I am. Go ahead.
05 12 01 26	CC	Okey doke. This is for TEI 30, SPS/G&N: on your NOUN 33, it's 135 37 1845, plus 35111, plus 00049, plus 01010, pitch 054, all else is NA, and I'll stand by for the readback.
05 12 02 07	LMP	Okay. TEI 30, SPS/G&N: 135 37 1845, plus 35111, plus 00049, plus 01010, pitch is 054, and if you didn't get NOUN 31, it's 135 37 1845.
05 12 02 49	CC	Okay, Gene-o. We copied that, and if you'll give us the computer, we'll send the state vector up to you.

05 12 05 43	LMP	Hey, Joe. Are you ready to pick up high gain at this time on TV? We're on the air.
05 12 05 51	CC	That's affirmative. We're all ready for it, Gene-o.
05 12 05 56	CDR	Okay. Are you finished with the computer? I need to get the VERB 83.
05 12 06 01	CC	Roger. We're all done. You can have it back, Tom.
05 12 07 11	CMP	Houston, Apollo 10. Over.
05 12 07 15	CC	Roger. Go ahead, 10. Houston.
05 12 07 19	CMP	Roger. That's Neper crater right there. You see it?
05 12 07 22	CC	No. We're not getting a - Yes, there we go. Okay. You bet.
05 12 07 34	CC	Roger. It's coming in real good now, John. It's right in - just about in the center of our screen.
05 12 07 42	CMP	Okay. Well, this is another crater, here, I just panned down to.
05 12 07 49	CDR	What does the color look like, Joe? Again, the lunar surface is tan except Neper is more of a dark brown; and again, the new areas look more like gypsum, like whitish - chalky white. Over.
05 12 08 03	CC	Yes, it's just the way it looks down here, Tom. And at the top of your - At the top of your picture, just a moment ago, we had a darker, looks like a mare area up there.
05 12 08 12	CMP	Yes. That's the crater in -
05 12 08 25	CMP	Roger. That is a mare area with a central peak.
05 12 08 28	CC	Roger. That central peak really stands out, John.
05 12 08 32	CMP	Yes, and it's white on the bottom and sort of - sort of black-gray on the top. And then there's some white up at the top of it.
05 12 08 47	CC	Those colors are coming through just as you're describing them. We've got that tannish color, kind of a grayish-tan color and the mare area comes out dark black and the white areas - just like you say, Tom, they look just like gypsum.

05 12 09 02	CMP	There's a really bright rayed crater. Little bitty one. Bit -
05 12 09 22	CMP	I don't know if you can see it or not, but it's that white crater in the center of your screen?
05 12 09 27	CC	Roger. We got it.
05 12 09 28	CMP	... small one. It has a black spot right in the middle of it. Okay. It has a black spot right in the middle of it. That's a very small impact crater, very - I don't know whether it's an impact crater or not, but it's very new. It looks new.
05 12 09 44	CC	Okay. You're talking about the fairly small one, are you not, John?
05 12 09 50	CMP	Yes. It's very tiny. Just a white spot.
05 12 09 56	CC	Yes. I think we got the one you're referring to; however, we can't see the spot in the center of it. We don't have quite that good a definition.
05 12 10 05	CMP	Roger. Here's another bright one inside of a rather larger crater with a little darker - little darker brownish-type bottom on it.
05 12 10 14	CC	Yes. We get the spot - -
05 12 10 15	CMP	... over on the side it has two, you don't have the two dark spots in the center of it.
05 12 10 23	CC	What is that white spot? Is that a small crater on the side of it there?
05 12 10 29	CMP	Roger. That's a small impact crater. If you're seeing the same thing I'm seeing on the monitor, why you're not - I don't imagine it would be terribly easy to tell what all is going on out there. But, it's a pretty good picture, all things considered, from how far it's going.
05 12 10 49	CC	We've got a real good picture down here, John. And - Yes, that little white crater on the left-hand wall there stood out real well, and the craters that you're showing us now; looks as though you've got a central peak in one of those. Let's see if we can figure out which ones they are, there.
05 12 11 06	CMP	Roger. Look at that hill over there on the horizon.

05 12 11 11	CC	Roger.
05 12 11 14	CMP	I'll sort of pan - I'll pan the horizon, here, and you can see that this is not a very flat Moon. Look at all these - That's actual hills you're seeing out there, and they really stick up. And we just saw Snoopy rising. Maybe you can see it in your picture.
05 12 11 38	CC	We can't see him. Whereabouts in the picture is he now, John?
05 12 11 45	CMP	He's just right behind us, but he's not very far back there.
05 12 11 48	CC	Okay. Hey, which way are you - are you looking now, John?
05 12 11 57	CMP	We're going backwards right now.
05 12 12 07	CMP	Okay. Here's sweeping the other side of the horizon. No matter where you look on the Moon, there's always some different geological structure to study. Boy, it's really got its share of them! Now, we're coming to a place where the mare is getting darker. And, I don't know if you can tell it from this picture here, but there are a couple of spots in the middle there, that stand out as better, evidently much blacker than the - than the actual mare.
05 12 12 40	CC	Yes. We got them. Those look pretty darn interesting.
05 12 12 49	CDR	Hey, Apollo - Houston, this is Apollo 10. Look, I know you ran some studies, but by golly, we can see Snoopy, and he isn't too far away! He's catching up with us. Can you talk to the FIDOS? He's right down below us. We can occasionally see him tumbling end-over-end down below there, and he's coming in closer each pass. That's Snoopy's descent stage. We can see him right down below us now, and he's right - I thought he was a little out-of-plane, but now he's looking more in-plane with us.
05 12 13 22	CC	Okay. That's real interesting, Tom. We'll try and get FIDO on that.
05 12 13 58	CC	Apollo 10, this is Houston. John, are you looking out directly east now, or were you looking directly east there?

05 12 14 07	CDR	We're looking backwards.
05 12 14 10	CC	Yes. Okay.
05 12 14 14	CDR	Snoopy is behind us. But we're going BEF.
05 12 14 21	CC	Roger. Copy.
05 12 14 25	CDR	Yes, we're looking back east and Snoopy's back there and evidently, he - Earlier we saw him, and he was out in front of us and going above us and now he's behind us; but he's right around in our area, I'll clue you.
05 12 14 40	CC	Can you estimate at all about how far below you think he is, Tom?
05 12 14 49	CDR	No. We've lost him down in the maria now.
05 12 14 59	CC	What kind of a pitch angle are - were you looking at him, do you think when you - when you last saw him, Tom? Some local or horizontal?
05 12 15 06	CDR	Yes. We're looking, oh, about - We were looking straight out at about 215.
05 12 15 24	CDR	It's taking forever for VERB 83 to come up here.
05 12 15 55	CDR	Originally, we thought he might be out-of-plane, but that sure didn't look much out-of-plane to me where we finally saw him. He's getting awfully close. You could see the silver panels and - There he is right down below us; he's cutting across the Taruntius twins. Yes, between Taruntius P and K. And that rascal is right in-plane with us. I'm looking down now at 257. He's right down below us.
05 12 16 19	CC	Okay, Tom - -
05 12 16 20	CDR	Which means he's down low and he's going to be coming up.
05 12 16 27	CC	Roger. Okay. You don't have any idea, range-wise, about how far out he is, do you Tom?
05 12 16 35	CDR	No, but I can see him occasionally in the sunglint down below. He couldn't be over 10 miles. Well, it's hard to say.
05 12 16 44	CC	Yes. Roger.
05 12 16 45	CDR	Seeing what I saw, John, yesterday - but we sure don't like to - around here playing footsy with that rascal.

05 12 16 52	CC	Roger that.
05 12 16 54	CC	You guys treated him so bad on staging, he's out to get you.
05 12 16 59	CDR	There he comes again.
05 12 17 06	CC	Okay. Are those the Taruntius craters you're showing us?
05 12 18 16	CC	10, this is Houston. That rille you're showing us now really is coming in clear.
05 12 18 43	CC	10, this is Houston. That sure is some mighty interesting territory you're showing us there. Those rilles and - look like slope features there are pretty darn interesting.
05 12 18 59	CC	Apollo 10, Houston.
05 12 19 10	CDR	Go ahead.
05 12 19 11	CC	Roger, Tom. If you can kind of keep one eyeball peeled out for Snoopy, there, and give us another hack when you pick him up again, with relation to either pitch angle or some ground features, we might be able to get a rough estimate on what his orbit is.
05 12 19 30	CDR	Well, that isn't the idea - Yes. Okay. But the academic question, he was out in front of us and now he's moved down. It looks like our orbits are crossing. And I know - -
05 12 19 40	CMP	Okay. There's Censorinus there, folks.
05 12 19 53	CMP	And, boy, you can't - You can't see it from here, but is that rascal bright!
05 12 19 58	CC	It sure looks bright from down here, John. It's standing out like a diamond.
05 12 21 12	CC	And, 10, this is Houston. Is that area outside the bright ray, there - bright ray area, is that kind of brownish gray? That's the way it's showing up on our color, anyway.
05 12 21 41	CMP	There's a ...
05 12 21 49	CMP	Okay. This is Rattlesnake and Diamondback Rilles, right here.
05 12 21 54	CC	Roger.

05 12 22 39	LMP	We're coming right - coming right into Site 2. The small craters that make a light ringing of Site 2 - You can see some of the ridges probably very plainly, and if we get there, John can probably show you Moltke, which will be on the right-hand side of your screen.
05 12 22 54	CC	Okay.
05 12 23 02	LMP	And just to the right of Moltke is what we're calling U.S. 1, which is a tremendously wide gulf.
05 12 23 44	CC	Okay. 10, this is Houston. We got you on the map there. Looks like you're panning right over the gashes right now, and just about to come into Moltke. Is that affirmative?
05 12 23 50	LMP	That's affirmative.
05 12 24 07	LMP	Okay. Here's U.S. 1, and we're just right over the landing site, ourselves, looking back.
05 12 24 14	CC	Roger. U.S. 1 standing out real good.
05 12 24 20	CC	And we pick up a chuck hole right in the middle of U.S. 1, there.
05 12 24 27	LMP	Yes.
05 12 24 32	LMP	You can probably see where U.S. 1 up here, it sort of looks like a straight slip fault. It's displaced the full width of the gulf, itself.
05 12 24 45	CC	Roger.
05 12 25 01	LMP	And, we're coming up on Sabine and Ritter, at this time.
05 12 25 06	CC	Okay.
05 12 25 23	LMP	You're looking at Sabine and Ritter, and very shortly we'll be crossing Schmidt. We just went over Landing Site 2.
05 12 25 44	CC	Okay. We're getting real good resolution again on this TV tonight. We're picking up all these things real good. And that's Schmidt crater. Is that affirmative?
05 12 25 54	LMP	If I'm not mistaken. That's affirmative. You're looking right down into Schmidt.

05 12 26 02	LMP	Okay. Do you see any of the boulders around the edges that we can see from here?
05 12 26 08	CC	Can't honestly say that we see anything like boulders there, Gene-o. It's sure a good picture, though.
05 12 26 19	LMP	Okay, Joe.
05 12 26 30	CC	10, Houston. We couldn't see any boulders, but we could sure make out the slumps on the inside of that crater, there.
05 12 26 42	LMP	Some of these rascals look pretty deep to us.
05 12 26 46	CC	Roger that.
05 12 27 12	CC	10, that shadow pattern on the bottom of that crater is real interesting. That looks like Theon. Does that copy with what you're showing us?
05 12 27 25	LMP	Say again, Joe.
05 12 27 27	CC	Roger. That crater you were just showing us, the shadow pattern on the bottom was a real interesting patterr, there. That looked like Theon crater.
05 12 27 37	LMP	That's affirmative. You're right. We're almost past Landing Site 2 now, on the stretches up on into ...
05 12 27 54	CC	Roger.
05 12 28 06	LMP	Okay. Here's an interesting - more than a ridge, it's a cliff-like ridge, jagged feature; it looks like it's smooth up to one end and then cliffs on the other side. It looks like it might also be very high in contrast. Much lower than some of the other surrounding craters, though.
05 12 28 25	CC	Roger. I think we see what you're - what you're talking about.
05 12 28 27	LMP	It almost looks - Okay. It almost looks like it's a flow that's come down the valley and stopped right - right at that point, and then it's been dusted over. But it appears to be the front edge of some type of flow. The first time we really had a chance to look at that.
05 12 28 41	CC	Yes. That looks real good from down here, Gene. We can pick that up. That's a good call.

05 12 29 05	CC	Boy, that one really looks rough. I think we got that as Godin crater. Is that affirmative?
05 12 29 13	LMP	That's affirmative and the walls are very light, whitish-gray and the bottom is a dirty, dirty, tan. And it's got a central peak that - It's got very big boulders in the bottom. We can see from here. And it's got on the - On the far side, on the upper side of your screen, the side is slumped down in stages, it appears like, and it's not slumped down smoothly like you see on the bottom side. It's mostly in shadow, but you might be able to make it out.
05 12 29 43	CC	That's just great and that's a good call. That's a great description, too. We couldn't make the boulders out, but that slumping is coming through, just as you're describing.
05 12 29 58	LMP	We're getting into the area of long shadows as we approach the terminator at this point.
05 12 30 06	CC	Roger.
05 12 30 20	CDR	Okay. Pitching down at a half degree per second.
05 12 30 43	CC	Apollo 10, this is Houston. I know you all are keeping an eye out for Snoopy. You haven't happened to seen him again, have you?
05 12 30 53	CDR	Negative. It's going to be awful hard to. We're going into sunset here.
05 12 30 56	CC	Roger.
05 12 30 57	LMP	You know, about 4 minutes ago, I thought I saw him go - I thought about 4 minutes ago, I thought I saw a glimpse of him go vertically below us. However, it was just a quick glimpse. It was something glistening; it was hard to tell whether it was a close-by particle, or something way down, so I - I only saw it once.
05 12 31 14	CC	Roger.
05 12 31 18	LMP	We're moving to the left-hand window now because of the sun off the hatch window.
05 12 31 23	CC	Okay. Gene, about 15 or 20 seconds ago, you were showing us a bunch of little - what looked like domes, there. Did they look like little domed hills to you?

05 12 31 38	CMP	There's some little domes out there. There's plenty of little domes out there, now. Which ones you're talking about, I sure don't know.
05 12 31 47	CC	Okay.
05 12 31 53	LMP	Tom's going to give you a look at a lot of rilles in the area he's looking at outside the left-hand window.
05 12 32 00	CC	Okay. Our signal is breaking up a little bit right now, but keep shooting. We'll try and get her squared away.
05 12 32 07	LMP	Okay.
05 12 32 37	LMP	Joe, because the Sun's shafting on the forward window, Tom's got you out the left-hand window, looking to the north.
05 12 32 44	CC	Okay. We're still not getting a good picture. You'll - -
05 12 32 46	LMP	And as we see an area - We're seeing down in front of us a number of rilles that look very much like we saw back on Landing Site number 2 area. We're just beginning to see some of these areas because they're coming into sunlight now. The area right here, appears to be very familiar in terms of number of ridges and Highway 1 type of rille, and I see again another area where a very wide rille, probably three-quarters of the widest Highway 1, where there's another, what could be or what would appear to be a strike-slip fault-type of movement between one side and the other.
05 12 33 28	CC	Okay. We've lost our picture, we think because of our high gain antenna, Gene-o. If it's possible, if you could - If you could rotate back around to your original attitude.
05 12 34 07	LMP	Okay, Houston.
05 12 35 48	CC	Apollo 10, Houston.
05 12 35 53	LMP	Go ahead, Joe.
05 12 35 57	CDR	Go ahead, Joe.
05 12 36 00	CC	Roger, 10. We're just barely reading you. We're not getting any TV picture now. Have you secured the camera?

05 12 36 18	CDR	And one thing, we'll try to keep it on just a few minutes to see if we can pick up earthshine, here.
05 12 36 23	CC	Okay. Very good.
05 12 36 24	CDR	And what do your FIDO's say about Snoopy? Over.
05 12 36 27	CC	I'm sorry, Tom; I cut you out. Say again.
05 12 36 31	CDR	What do your FIDO's say about Snoopy? It appears in our analysis that basically we've seen him going small end forward. And now we were turned around and, you know, BEF, and he's always been out in front of us going above us, but this time he was right down below us. So it looks like we are catching Snoopy. Is that their analysis? Over.
05 12 36 54	CC	Well, Tom, I think maybe we misunderstood your first call. When you first called him out on this pass, did you say he was down behind you and you were at about a 215 pitch angle?
05 12 37 08	CDR	Well, he was - he was - We were looking right at him at 215 pitch. So evidently he's out in front of us. Well, maybe he is behind us. You see I didn't have the ORB rate going. The computer wouldn't cough me out a solution and so I was looking inertial, and I finally got him; and, as we were pitching around at 330, I think he was out in front of us. But he wasn't out in front of us near as much as he has been and he was down below us, definitely, and always before we've seen him out in front, but way up above. But there's no doubt, he's getting lots closer. Over.
05 12 37 47	CC	Roger. Okay. And when he passed right directly below you, that was right over Taruntius. Is that correct?
05 12 37 57	CDR	Yes. Around Taruntius; when we were there, he was down below us.
05 12 38 03	CC	Okay. We got that call okay. And we're trying to figure out what he - what Snoop's doing right now.
05 12 38 13	CDR	Yes, I know it's highly improbable - a collision but it'd sure ruin your whole day, if it ever happened.
05 12 38 19	CC	Roger that.

05 12 38 44	CDR	Okay. I've got Snoop down there and - and reflected - I'm aiming right at him. He's down below us. I'm pitched at 336, and Snoop is in about the plus-X going across the crater. See him down there?
05 12 39 01	CDR	He looks right plain. He's in reflected sunlight. He's in reflected sunlight; the rascal isn't too far out there. I'm now pitched at 340 degrees, and my X-axis is right at him so Snoop is out in front of us and below us. Over.
05 12 39 17	CC	Roger. We copy, Tom. And he's probably coming up. Is that affirmative?
05 12 39 23	CDR	That's affirmative. I would say he'd be coming up and heading up towards his apogee.
05 12 39 28	CC	Roger that.
05 12 39 29	CDR	Or should I say apolune?
05 12 39 32	CC	Roger.
05 12 39 33	CDR	He's moved out in front of us.
05 12 39 43	LMP	He's just playing into his own sunset right now. We've just lost him.
05 12 39 47	CDR	We may be able to pick him up in earthshine.
05 12 39 51	CC	Okay. We'll crank those angles in and that, alongside of your sighting of him right directly under you over Taruntius, that should - We should be able to come up with some sort of a guesstimate on how close he's going to be. The FIDO troops think that when you saw him directly under you, that's probably the closest point that he'll be to you in his orbit. We're going to keep working that, though, Tom.
05 12 40 14	CDR	Okay. Of course, you know, in reflected - right, Joe. In reflected sunlight it's awful hard. However, earlier, just - We could see the sparkles off of his legs, you know - and some different colors there as the sun would rotate off the panels, but that was with the 28 power monocular. Over.
05 12 40 31	CC	Roger. Understand. That's still plenty close.

05 12 40 36	CDR	Yes, I'd say so. Okay. We have earthshine real good here, and Gene will try to give it to you out the window. We got the ...
05 12 40 56	CC	Okay. Old Snoop's just a devoted old hound dog, Tom. He'll probably try and follow you back home.
05 12 41 04	CDR	Just as long as that rascal doesn't sniff too close.
05 12 41 53	LMP	Joe, earthshine is very bright to us, but it doesn't appear like it's going to be very bright to the camera. I don't think we're going to get anything. I thought maybe we'd even get the earthshine horizon here, but I don't think that - -
05 12 42 06	CC	Okay. I'm afraid we're not getting any picture at all down here, Gene.
05 12 42 17	CDR	Okay, Joe. We'll go ahead and terminate. I thought the light level was pretty low where the eye could adapt to it. It's pretty dark down there, I must admit.
05 12 42 27	CC	Okay. Mighty fine. I've got a couple of landmark tracking updates and a map update for you when you're ready to copy.
05 12 42 38	CDR	Stand by. We're getting ready to get the camera secured and some other stuff.
05 12 42 45	CC	Roger that.
05 12 43 19	CDR	Okay. Houston, Apollo 10. Go ahead.
05 12 43 27	CC	Okay, Tom. I'll give you the landmark tracking update pads first. This is for REV 30. Your T_1 is 134 15 56; T_2 is 134 17 30. For roll, all balls, pitch 282, and yaw all balls, north 29 29 41. And that was for site B-1. For 150, T_1 is 134 27 40, 134 29 12. Roll is all balls, pitch 246, yaw all balls, north 02 02 40. And I'll stand by for readback on those two.
05 12 43 45	CDR	Okay. Give me the first one on B-1. I missed that, the first T_1.
05 12 43 49	CC	Roger. T_1 is 134 15 56.
05 12 45 10	CDR	Okay. With the readback: T_1 for B-1, 134 15 56, 134 17 30, 000 282 000, north 29 29 41. 150: 134 27 40, 134 29 12, 000 246 000, north 02 02 40.

05 12 45 46	CC	Roger. That's good copy on a readback, and let me know when you're ready for your map update.
05 12 45 57	CDR	Go ahead, Joe.
05 12 45 59	CC	Okay. This is for REV 30: LOS will be 133 10 56, 133 21 44, 133 57 05.
05 12 46 23	CDR	Roger. Readback: 133 10 56, 133 21 24, and 133 57 05.
05 12 46 31	CC	Okay. On your second row there, Tom, that's 133 21 44.
05 12 46 47	CDR	Roger. That's 133 21 44.
05 12 46 53	CC	Roger. That's correct, Tom.
05 12 47 10	CDR	Okay. John's going to an IMU realign just for academic interests. I'd like to talk a little more about Snoopy. Obviously, he was out in front of us, and he'll be going out in front of us and coming up higher. As such, I'm trying to make a relative motion plot in my own mind here, and it looks like at TEI, if he continues to do that and we burn and zip out there, well we could be fairly close. Over.
05 12 47 40	CC	Okay, Tom. What FIDO has come up with - If you initially pick him up behind, or if he was behind you and then he passed directly below you, and if coming up in front of you now, what he should do is continue to climb on up above you and, therefore, fall back behind. And he'll continue to fall behind, and at TEI, you should be between 5 or 600 miles out in front of him. What has happened, evidently, is you've lapped him once and this probably will be the only time you'll get a chance to see him until you leave the lunar orbit.
05 12 48 16	CDR	Okay. That's what my initial estimate was and what I called into Charlie earlier. It looked like that we were, you know, naturally he went away, out - oh, above us and behind us, and it looks like we'd already caught up with him. And I didn't know what the rate of catch-up was. But - The whole thing when we saw him down below and like that, I see - so we've already lapped him and he's going to continue to go. That's good. Over.
05 12 48 44	CC	Roger. Understand, Tom.

05 12 48 48	CDR	I could tell we're right in the place where the orbits would cross and I was trying to plot a relative motion, picture in my mind and fly at the same time, and do ... and it wasn't too easy. But there's no doubt about it, we were so close to the rascal you could see different colors in the sunglint between the black and silver panels on the sides of the descent stage there. Over.
05 12 49 12	CC	Roger. That's getting pretty close.
05 12 49 19	CDR	Yes, I admit that the possibility of a rendezvous is real low, but still just like to keep my hand on it. Over.
05 12 49 27	CC	Roger that, Tom.
05 12 49 32	SC	Roger.
05 12 49 38	CC	10, this is Houston. Tom, other than this REV can you recall what other REV's you've seen Snoopy on?
05 12 49 49	CDR	We've seen Snoopy every REV on the landmark tracking. And - You know the landmark tracking we did for those four REV's? And every time he was out in front of us and would disappear over our head. Over. And when - that's - We were going just about local - We were pitched down from local horizontal about 20 degrees, you know, as John was doing the landmark tracking, maintaining ORB rate, and Snoop would come up over the horizon and then disappear out over our center hatch window. And each time it looked like we were getting closer, which meant, you know, that we were catching him. Over.
05 12 50 25	CC	Roger. Understand.
05 12 50 49	CDR	Roger, Houston. Like I know we were lapping him, but like I said, he was out in front of us now and the whole thing what I was concerned about was the next two relative perigees that Snoop would make the way he'd be coming down and what our pitch would be in that period of time. Over.
05 12 51 10	CC	Okay, Tom. We understand that, what you told us. We're trying to piece together what seems to be the most logical route that Snoopy's taking there.
05 12 51 22	LMP	Joe, since we were late changing our last canister, do you want us to back off this one or do you want us to change it on time?

05 12 51 34	CC	Okay, 10. We'd like for you to go back on the normal schedule.
05 12 51 41	LMP	Okay.
05 12 55 11	CDR	Okay, Joe. I'm going to roll over 180 degrees here.
05 12 55 16	CC	Okay.

END OF TAPE

05 12 57 17	CMP	Houston, this is Apollo 10. Over.
05 12 57 22	CC	Roger, 10. Go ahead.
05 12 57 26	CMP	Roger. We're showing a 68.5 by a 53.6. Where is the perilune now? At what point - -
05 12 57 33	CC	Stand by. I'll get it.
05 12 57 34	CMP	- - over the surface, is it?
05 12 57 37	CC	I cut you out there at the last, John. Say your last again, please.
05 12 57 43	CMP	At what point over the lunar surface is perilune?
05 12 57 46	CC	Okay. I'll get that for you. Just a minute.
05 12 58 37	CC	Apollo 10, Houston.
05 12 58 42	CMP	Go ahead. Over.
05 12 58 43	CC	Roger. John, we've got your perilune there at 58 minutes north and longitude is 86 degrees 58 minutes east.
05 12 58 56	CMP	Roger.
05 12 59 28	CMP	That means the people that were watching the TV were watching at the closest point of approach?
05 12 59 34	CC	That's affirmative, John.
05 12 59 44	CMP	Hey, Joe, is it 1 o'clock in the morning or 1 o'clock in the afternoon.
05 12 59 49	CC	It's just about 1 o'clock in the morning.
05 12 59 54	CMP	What morning?
05 13 00 01	CC	It's Saturday morning. The 24th, John. Can't you guys what - where it is daytime, there?
05 13 00 14	CDR	Oh, yes. We can see how the Sun progresses across the Earth up there everytime we get an earthrise. Over.
05 13 00 19	CC	Roger.
05 13 00 21	CMP	You can see earthshine - you can see the - when you get night adapted - you can see the lunar surface through the telescope almost well enough so that I believe you might be able to do landmark tracking, on some large feature.

05 13 00 39	CC	Very good.
05 13 00 41	CMP	You - You can't see anything through the sextant, but the large features come through loud and clear in earthshine.
05 13 00 55	LMP	Joe, I'm going to lose you. I'm going to put you on OMNI.
05 13 00 58	CC	Okay. Thank you, Gene.
05 13 01 00	CMP	I don't know why we didn't think to look for that before.
05 13 01 12	CC	John, this is Houston. Do you think that you could pick up the same type of features in earthshine but about within 10 degrees of the terminator?
05 13 02 49	LMP	Houston, do you read us at all?
05 13 02 52	CC	Okay. Apollo 10, this is Houston. We're reading you now, John.
05 13 03 00	LMP	You keep calling me by the wrong name.
05 13 03 05	CC	You keep sounding like the wrong guy.
05 13 03 12	LMP	I keep getting mixed up myself.
05 13 03 39	CC	Hey, Apollo 10, this is Houston. On your comment on being able to pick up these features through the - through the telescope in earthshine, do you think you could pick up these features within about 10 degrees of the terminator? This is still in the earthshine?
05 13 04 01	LMP	The earthshine terminator or the nighttime terminator?
05 13 04 06	CC	The nighttime terminator.
05 13 04 08	LMP	No. I do not, because - No. You mean 10 degrees?
05 13 04 14	CC	Roger.
05 13 04 15	LMP	Which earthshine are you talking about? The regular front terminator? It would be impossible, because you're not that adapted. You can't see anything when you go into the dark through the telescope.
05 13 04 29	CC	Roger. Thank you.
05 13 04 30	CMP	Until you get night adapted and then you can - then you can see - then you can see all the terrain features.

05 13 04 37	CC	Yes. Okay. We understand. Thank you.
05 13 05 00	CDR	Okay, Houston. Apollo 10. All the way through the landmark tracking we shot p..tos of opportunity, and we just about ran out of film here we shot so much of it. So on this one we're just going to maintain ORB rate with our heads up here and - instead of heads down - but we can get pretty good coverage really out the side windows, and we shot the whole strips out the other way. So we're - on the REV we're just going to maintain ORB rate with heads up. And I - and I don't think there's really any photos of opportunity that we haven't already got, but we'll still be shooting some.
05 13 05 42	CC	Okay, Tom. We understand.
05 13 06 06	CC	Apollo 10, Houston.
05 13 06 12	LMP	Go ahead. Over.
05 13 06 13	CC	Roger, 10. FIDO is predicting that on the backside at sunrise at 133 26, that Snoopy should be directly overhead. So if you pitch up you might - might be able to pick him up and - right at sunrise.
05 13 06 30	CDR	Roger. At sunrise, 133 26. Thank you.
05 13 08 45	CC	Apollo 10, this is Houston. We show LOS here in about 2 minutes, and we should pick you up again at 133 57, which is about 48 minutes from now. We'll keep in contact with you until you go around the corner.
05 13 09 03	CDR	Okay, Joe. Real good. Thank you.
05 13 10 15	CC	Okay, 10. This is Houston. We'll probably lose you here in about half a minute, so we'll see you on the next round; and keep an eye for ol' Snoop.
05 13 10 25	CDR	Okay. Will do, Joe. Thank you.
05 13 15 —		BEGIN LUNAR REV 30
05 13 57 13	LMP	Hello, Houston. Houston, this is Apollo 10. Over.
05 13 57 16	CC	Roger, Apollo 10. Reading you loud and clear. Go ahead.
05 13 57 22	LMP	Hey, Joe, we got another little fuel cell we want to throw at you, fuel cell 2.

05 13 57 28	CC	Roger. Go.
05 13 57 33	LMP	The condensor exhaust temperature is cycling on fuel cell 2 between the ... about 155 degrees about. It's cycling 2 cycles per minute. It's been doing this for at least the last 30 or 40 minutes. And one in every 10 cycles it rings the MASTER ALARM for module exhaust temperature on fuel cell 2. In addition, I guess maybe we are seeing things we haven't before, but on fuel cell 2 and 3 the O_2 flow rate dips to - The gage, it keeps bobbling up and down just maybe 0.01 or so but just enough so the needle went up and down so flow rate ran continuously on both fuel cells. Over.
05 13 58 27	CC	Okay, 10. We copied everything except the band that the temperature is cycling between. It's between 155 and something. What was the other number?
05 13 58 40	LMP	It's between about 173 and about 155. It's cycling right in the green band at 2 cycles per minute and rings the MASTER ALARM on the low side about 1 every 10 cycles.
05 13 58 56	CC	Okay. Thank you, Gene-o. We copied all that.
05 13 59 51	CC	Okay, 10. This is Houston. We'll monitor - -
05 13 59 55	LMP	And Houston, this is - -
05 13 59 57	CC	Go ahead, Gene.
05 13 59 58	LMP	Go ahead, Joe. No, you go ahead.
05 14 00 01	CC	Okay. We'll monitor that fuel cell down here the best we can and keep us advised if anything new happens. Also, did you get a chance to look for Snoopy on the back side of the sunrise?
05 14 00 15	CDR	No. We looked up there, but as soon as the Sun comes up, it blanks everything and it's real funny. We had a planet to spot to the right and above Snoopy, but the phasing was wrong and we didn't see him at all.
05 14 00 30	CC	Okay. We copies that, Tom. Go ahead, Gene. You were going to say something.
05 14 00 36	LMP	I was going to say we got our water dump out of the way a little bit early. We dumped it about 15 minutes ago.

05 14 00 44	CC	Okay. I copied that. We got a power configuration for TEI burn with respect to this fuel cell. Now, this is with the original fuel cell problem; we may want to change it some if we've got another problem. But if you'd like to copy this down, I'll read off this configuration for you.
05 14 01 05	LMP	Go ahead. And believe it or not, it looks like that condensor exhaust temperature cycle has now closed. its band down to be about plus or minus 10 degrees, well within the green band, just as we came on here, within the last 5 minutes.
05 14 01 22	CC	Okay. That sounds real good. We'll still keep a good close eye on it for you. On this configuration for the TEI burn, this will be for 136 hours. We'd like for you to verify that fuel cell 1 pumps are OFF on panel 5, and prior to the TEI burn, at approximately 136 hours, place fuel cell 1 on both main buses. And after the TEI burn, take number 1 fuel cell off main A, main B buses whenever it's convenient.
05 14 02 03	LMP	You want it ON the half hour before - an hour and a half before the burn, is that correct?
05 14 02 08	CC	That's affirmative, Gene.
05 14 02 14	LMP	Okay. Do you want fuel cell 1 pump off now?
05 14 02 23	CC	Okay Gene, the circuit breaker for 1 is open now, is that affirmative.
05 14 02 32	LMP	That's affirmative, but the switch according to what I'm reading here says the switch must be ON to enable power for power factor correction, is that correct?
05 14 02 44	CC	You're coming through a little scratchy.
05 14 02 47	LMP	... Fuel cells according to what I'm reading. As long as you're going to use the fuel cells for the burn what I read here is that the pump switch for fuel cell 1 and/or 3 should be left ON for power factor correction.
05 14 03 15	CC	Okay, Gene. I think, if I read you correctly, if we understand what you mean, we're not going to try and activate the pump during the TEI burn. We're going to leave it turned off. So you can leave that switch at whatever it is now, if you like. The circu breaker is pulled. We're just going to bring the fuel cell - we're going to activate the fuel cell. We won't turn the pump on.

05 14 03 41	LMP	I'm with you. We cannot turn the pump on because the circuit breaker will not reset. I'm referring primarily to the switch, and I'll leave it - it's been in the AC-1 position. We never did turn it off after the circuit breaker popped. An unless you have anything other I'll just leave it there.
05 14 03 59	CC	That will be fine, Gene; just leave it where it is. It's inactivated now, anyway.
05 14 05 02	LMP	Say, Houston, do you read us on high gain? We're getting a semisteering signal.
05 14 05 07	CC	Roger. We're reading you, 10.
05 14 05 12	LMP	Okay. I'll stay here them.
05 14 05 14	CC	Okay.
05 14 05 18	LMP	Okay. It looks like that oscillation on the condenser exhaust temperature, fuel cell 2, has damped out, believe it or not. But I timed it. It was going 2 cycles per second throughout the region and, as I said, triggering the MASTER ALARM on fuel cell 2, but it's stable now.
05 14 05 37	CC	Okay.
05 14 05 40	LMP	That was 2 cycles - that was 2 cycles per minute Joe.
05 14 05 48	CC	Okay. We were monitoring some of that oscillation down here but we didn't see quite the width of oscillation that you were seeing, Gene.
05 14 05 57	LMP	Okay. I just took it right off the gage here, and that's why I wanted to let you take a look at it now.
05 14 06 03	CC	Okay. And 10 this is Houston, you can terminate your battery B charge now if you want to.
05 14 06 30	CDR	Houston, this is 10 again. It looks like I may - like - I've got Snoopy right out in front of me again. There's something going down just went by us. It just went down below. You can see ... a bright - 30 seconds ago he was at 350 pitch.
05 14 06 53	CC	Okay, Tom. You're breaking up a little bit. I understand about 30 seconds ago he was ahead of you. Say again the pitch angle?

05 14 07 00	CDR	Roger. The pitch angle was 350. Again, it could be a big hunk of Mylar wrapping. That's the only thing I can think of that would cause a reflection. We had a big hunk of our insulation blow off. It was with us for a while, and now it's disappeared completely beyond ....vision
05 14 07 22	CC	Roger, Tom.
05 14 07 30	CDR	In this ... Sunlight it's awful hard to tell exactly the distance or dimension of anything. Over.
05 14 07 36	CC	Roger. Understand, Tom.
05 14 14 02	CC	Apollo 10, Houston.
05 14 14 08	CDR	Okay. We're right near B-1 for this mark. Go ahead; keep it short. Over.
05 14 14 15	CC	I've got a maneuver pad. Give me a call when you're ready to copy, Tom. I'm sorry.
05 14 14 22	CDR	Roger.
05 14 19 35	CDR	Okay, Houston. Go ahead with your maneuver pad.
05 14 19 40	CC	Roger, 10, this will be - -
05 14 19 41	CDR	Stand by.
05 14 19 43	CC	Okay. I'm standing by.
05 14 19 47	CDR	Okay. We're in between B-1 and Site 3. Over.
05 14 19 52	CC	Okay. Do you want me to hold off on this pad, Tom?
05 14 19 56	CDR	Go ahead, Joe.
05 14 20 00	CC	Roger. TEI 31, SPS/G&N: 36685, minus 062, plus 089 137 36 28 20, plus 36255, plus 00401, plus 01889 181 051 002, NA, plus 00212 36306 241 36079 16 1464 294. The next three are NA. NOUN 61: minus 1508, minus 16500 12038 363941 91 50 43. Your stars are Deneb 43, Vega 36; 241 240 013. For ullage: two quads with 14 seconds; and use quads Bravo and Delta. Horizon on 6-degree window, mark at ignition minus 1 minute. Sextant star not available until 137 06 00. Sun not visible in COAS at ignition. Horizon will be lit at ignition. That's the end, and I'll stand by for your read-back.
05 14 24 11	LMP	Okay, Joe. Give me NOUN 47 again, and then I'll read it back.

05 14 24 16	CC	You want noun 47?
05 14 24 21	LMP	Yes. The first number, the weight.
05 14 24 23	CC	Roger that. 36685.
05 14 24 33	LMP	Okay. That's TEI 31 SPS/G&N: 36685, minus 062, plus 089 137 36 2820, plus 36255 00401, plus 01889 181 051 002. Apogee is NA; perigee is plus 00212; 3606 241 36079 16 1464 294. NOUN 61 is minus 1508, minus 16500, plus 12038 363941, 91 50 43. Deneb 43, Vega 36, 241 240013, 2 jets, 14 seconds plus Bravo and Delta. Horizon is on window ... the horizon is on the 6-degree window mark at TIG minus 1 minute. Sextant star not available until 137 06 00. Sun not visible in COAS at TIG and horizon is lit.
05 14 26 00	CC	That was a real good readback, Gene. That was a full one, too. We had all the squares filled out in that one, right?
05 14 26 08	LMP	Fooled me.
05 14 27 09	CC	Okay, Apollo 10. This is Houston. Let's see, Gene, I've got a short map update and a photo update; however, did I copy before, that - You say you are out of film, or you're about out of film?
05 14 27 25	CDR	Stand by, Joe. We're in the middle of a landmark tracking. We'll call you. Over.
05 14 27 28	CC	Sorry. Standing by.
05 14 28 11	CC	Okay, 10. This is Houston. We observed on your last Mark there, that you got four Marks and the last one was just past the nadir. It looks like if you increase your pitch rate just a little bit, you can probably get five Marks without any problem.
05 14 28 27	CDR	Roger.

END OF TAPE

05 14 32 09	CMP	Houston, this is 10. Over.
05 14 32 12	CC	Roger, 10. Go ahead.
05 14 32 17	CMP	Roger. That first Mark of that group was not on what I think is Site 150. This low Sun angle - You got so darn many craters out there - The grouping don't stand out like they do with a high Sun angle, and I'm not even sure that I marked on 150, although it was one of three craters in there, with pretty high contrast.
05 14 32 45	CC	Okay. We copy that, John. Thank you.
05 14 32 50	CMP	The first Mark definitely was not on the - on the site - on what I thought was 150, but the last four were.
05 14 32 59	CC	Okay. We copy that. Thank you.
05 14 33 06	CDR	Joe, I've got this object out in front of me again. I'm sure that you can say orbital mechanics - it must be a big hunk of Mylar out there in reflected sunlight. It's going into its own terminator now, and it's held about the same. It's pitched down at a local vertical of about, I'd estimate - I'm coming up to it now - 330 degrees. It's holding out there at 330.
05 14 33 33	CC	Okay. Sure understand. And you think that's a - -
05 14 33 36	LMP	Joe, could I have the - -
05 14 33 37	CC	You think that's a hunk of Mylar, you say, Tom?
05 14 33 40	LMP	You have the data, Joe?
05 14 33 41	CDR	Yes, to be - to be that - that low down with the lowest and still keep about the relative position, you got to be, Joe. Over.
05 14 33 51	CC	Okay. You can't get the monocular on that, can you?
05 14 33 57	LMP	Joe, I'm looking at it now, and to be in sunlight where it is, it has to be awfully close to us and I got the monocular on it and I think it's a piece of Mylar, too.
05 14 34 08	CC	Okay. Mighty fine. Thank you.

05 14 34 09	LMP	It will probably go into darkness about - I'll give you a hack. It ought to go into darkness about the same time we do, if we can tell here, and I'm pretty sure it's not too far away.
05 14 34 21	CC	Okay. We understand. And understand you're ready for this map update pad?
05 14 34 28	LMP	No, let me watch this thing first. Then I'll get it.
05 14 34 31	CC	Okay. Give me a call when you're ready.
05 14 34 41	LMP	Houston, do you have the data from that landmark? Over.
05 14 34 46	CC	Roger. We got it.
05 14 34 57	CC	10, this is Houston. Jack says that it looked like your last four Marks were spaced very nicely over the target.
05 14 35 08	CMP	Yes. Whatever it was.
05 14 35 11	CDR	Roger.
05 14 35 12	CMP	I think that was Site 150, but boy, there are a lot of shadows out in that place right now, and I wasn't 100 percent sure that that was Site 150 crater.
05 14 35 24	CC	Okay. We copy.
05 14 35 33	CMP	That was darn close to the ...
05 14 35 35	CC	Okay.
05 14 36 20	CMP	Houston, both those - Both those last sites were done with a telescope. I couldn't pick either one of them up in the sextant. The first one was almost dead. It was washed out in the sextant due to sunshine, and the second one, I just didn't - With all the shadows, I couldn't see anything.
05 14 36 42	CC	Roger. Copy, John.
05 14 36 44	CMP	It wasn't defined in the sextant.
05 14 36 51	LMP	Joe, I'm ready for your update.
05 14 36 54	CC	Okay. This is for REV 31. LOS is 135 09 24, 135 20 09, 135 55 30. And that's all; I'll stand by for your readback.

05 14 37 22	LMP	Okay. They're all 135. They go 09 24, 20 09, 55 30.
05 14 37 29	CC	Roger. That's correct, and on this photo update, again Gene-o, just - Did you figure you guys are out of film up there? There's no sense sending it up if you're all out.
05 14 37 42	LMP	No, we're going to load this last ... Give us the update.
05 14 37 45	CC	Okay. Coming up. Descent strip and Site 3: 135 59 24, 136 01 01, 136 18 52. Your ORDEAL angles are roll 180, pitch 282, yaw 000. At T_1, yaw right 20 degrees. At T_2, yaw left 20 degrees. That concludes, and standing by for the readback.
05 14 37 48	LMP	Okay. 135 59 24, 136 01 01, 136 18 52. ORB rate is in roll 180, pitch 282, yaw 000. At T_1, yaw right 20 degrees, and at T_2, yaw left 20 degrees.
05 14 39 06	CC	Okay. Readback's correct, Gene-o.
05 14 39 25	LMP	And are you going to update us the OMNI'S or you want us to get high gain?
05 14 39 28	CC	We'd like to have high gain, Gene-o. We'd like to look at some of the data.
05 14 39 38	LMP	Stand by.
05 14 40 56	LMP	Houston, are you reading us high gain?
05 14 41 00	CC	Okay. We got it. Thank you, Gene-o. And if you'll give us POO and ACCEPT now.
05 14 41 22	CDR	Okay, Joe. You're CMC and ACCEPT. You got it.
05 14 41 25	CC	Okay. Thank you, Tom.
05 14 46 45	LMP	Houston, how's your high gain lock now?
05 14 46 56	CC	Okay 10. It looks like we're on WIDE right now.
05 14 47 04	LMP	Negative. ... We're ...
05 14 47 42	CC	10, this is Houston. We're not able to read your transmission here. You're coming through a little broken up and it looks like - From the data, it looks like you're coming in on the scan limit.

05 14 47 57	LMP	Okay. Now I think you got it. Go ahead.
05 14 48 00	CC	Roger. You're booming in loud and clear now. And we got good data now, Gene-o.
05 14 48 04	LMP	Okay.
05 14 48 54	CC	Apollo 10, this is Houston. The computer is yours. You can go back to BLOCK now.
05 14 49 01	CDR	Roger. We're in BLOCK.
05 14 52 08	CDR	Hello, Houston. Apollo 10.
05 14 52 11	CC	Roger. Go ahead, 10.
05 14 52 15	CDR	Okay. We're loading the DAP to set up for TEI. We've got the two-jet ullage in, set up for B and D and plus X translation in register 1, if you're reading our DSKY. Okay. Now for register 2, just to reaffirm here, we're going to use B and D for roll, too. Over.
05 14 52 36	CC	Roger. That's affirmative.
05 14 52 43	CDR	Okay. You know, we want to activate quad D, though. Is there any quad we want to have fail there in register 2 other than use BD in the first digit? Over.
05 14 53 06	CC	Okay, Tom. We do not want to fail any quads. We want a zero and four ones in there.
05 14 53 15	CDR	Okay. That's what we thought.
05 14 55 13	LMP	Hello, Houston. This is 10.
05 14 55 14	CC	Roger. Go ahead, 10.
05 14 55 18	LMP	Okay. It looks like our condenser exhaust temperature, once we come into nighttime, is now starting to cycle again. It's starting slowly. You can watch it from where you are, I guess.
05 14 55 34	CC	Okay. We'll monitor it down here, Gene. Thanks for alerting us. And also, Tom, just to remind you, we want you to ENABLE all the AUTO RCS for your burn.
05 14 55 49	CDR	Roger. You want all AUTO RCS. That includes AC for roll, too? Over.

05 14 55 53	CC	That's affirmative.
05 14 55 57	CDR	Say again.
05 14 55 59	CC	That's affirmative.
05 14 56 03	CDR	Okay.
05 14 58 53	CC	Apollo 10, Houston.
05 14 58 58	CDR	Go ahead.
05 14 59 00	CC	Okay. On your fuel cell there, we're monitoring this power output on 2 and 3, and the load sharing appears to be normal, although we are monitoring this change in temperature on the condenser exhaust. We're showing about - Oh, it's grown to about an 8- or 9-degree spread, now. However, it doesn't look like we could recommend any kind of changes right now. We'll keep watching it, though.
05 14 59 28	CDR	Okay, Joe. Thank you.
05 15 07 48	LMP	Houston, this is 10. What's your temperature limits at that exhaust temperature's oscillating through now?
05 15 08 17	LMP	Hello, Houston. 10.
05 15 08 19	CC	Roger, 10. I was just getting those numbers, Gene-o. The lower limit is 149.5, and the upper limit is 177.
05 15 08 30	LMP	You mean it's going from 149.5 to 177?
05 15 08 34	CC	I'm sorry; I misunderstood you. What we're reading is from about a 154.2 or so up to 167. The limits where you're liable to get a light is 149.5 to 177. Over.
05 15 08 50	LMP	Okay. Thank you, Joe. You're reading about the same thing I am, I guess. I expect the light here about a minute and a half after we lose you.
05 15 08 59	CC	Okay. I'll tell you, Gene, we've been monitoring the cycles here, the oscillation, and it looks like it opened up to about a 15-degree - 14- or 13- or 14-degree spread. And it appears to be holding that pretty steadily, and it's going up and down between about the same limits. Is that about what it looks like to you?

05 15 10 29	CC	Apollo 10, Houston.
05 15 13 --		BEGIN LUNAR REV 31
05 15 56 57	CC	Apollo 10, This is Houston.
05 15 57 05	CMP	Go ahead. Over.
05 15 57 07	CC	Roger, 10. I've got a bunch of updates for you. First off, though, I would like to have you turn on your H_2 purge line heater, and we'd like to have POO in ACCEPT on the computer.
05 15 57 22	CDR	You've got it.
05 15 57 28	LMP	What kind of updates, Joe?
05 15 57 30	CC	Okay. I've got a maneuver pad update and, Gene-o, this is for TEI 31. There are six items that have changed that we have different numbers for. Would you like for me to just call up those changes or do you want me to read the whole pad?
05 15 57 46	LMP	Why don't you call up the changes and then I'll read back to you the whole pad?
05 15 57 50	CC	That'll be great. And let me know when you're ready to copy.
05 15 57 55	LMP	... I'm ready, but give me a lot of time between each change.
05 15 58 00	CC	I sure will. Understand. Okay. Then on your maneuver pad, this is for TEI 31: under NOUN 33, the time is - on seconds - is 2821. Okay, for NOUN 81.
05 15 58 26	LMP	Go ahead.
05 15 58 27	CC	Roger. NOUN 81: Plus 36252, plus 0 - -
05 15 58 41	LMP	No.
05 15 58 43	CC	Okay. DELTA-V_Y is plus 00400, and DELTA-V_Z is plus 01880. Okay. Your DELTA-V_T is 36303, and DELTA-V_C is 36077. And that concludes all the changes. I'll stand by for your readback, Gene.

05 15 59 44	LMP	Okay, Joe. I'm going to read back the whole pad to you.
05 15 59 48	CC	Roger.
05 15 59 50	LMP	TEI 31, SPS G&N: 36685, minus 062, plus 089, 137 36 2821, NOUN 81 is plus 36252, plus 00400, plus 1880 - correction, - that's plus 01880. Roll is 181, pitch is 051, yaw is 002, apogee is NA, perigee is plus 00212 36303 241 36077 16 1464 294. NOUN 61 is minus 1508, minus 16500 12038 36394 191 50 43. Deneb, 43, and Vega, 36, are the set stars. Roll is 241, pitch is 240, yaw is 013. We're going to be two-jets for 14 seconds using quads Bravo and Delta. The horizon is on the 6-degree window mark at TIG minus 1 minute. The sextant star is not available until 137 06 00. The Sun is not visible until after TIG and the horizon is lit. Over.
05 16 02 02	CC	Good readback, Gene. That's all correct.

END OF TAPE

05 16 02 20	CC	Okay. Apollo 10, Houston. We'd like for you to put fuel cell 1 back on main A and B, please.
05 16 02 28	LMP	Okay. Fuel cell 1 is coming on; main A and then main B.
05 16 02 32	CC	Okay. And I've got a TEI 32 maneuver pad for you, Gene. Preliminary.
05 16 02 48	LMP	Stand by.
05 16 03 26	LMP	Houston, it should be on the line right now. It's carrying not quite its share of the load. When I put it on, I got the fuel cell bus disconnect, reconnected, and it stayed connected, and the same thing on bus B. It looks like it's warming up slowly.
05 16 03 45	CC	Okay, 10. We copy all that, and it looks okay down here.
05 16 03 53	LMP	Okay. And you want to give me a TEI what? 32?
05 16 04 02	CC	Affirmative. 32.
05 16 04 08	LMP	Go ahead.
05 16 04 12	CC	Okay. And prior to this pad, 10, you can go to BLOCK on your computer. You can have it back, now. And coming up with TEI 32, SPS/G&N: your first entry is NOUN 33, 139 36 2514, plus 37573, plus 00292, plus 00341. Pitch is minus 050. All else is NA. Ullage will be two jets for 14 seconds. That concludes, and I'll stand by for the readback.
05 16 05 18	LMP	Okay. TEI 32 and SPS/G&N: 139 36 2514, plus 37573, plus 00292, plus 00341. Pitch is minus 050. Two jets for 14 seconds.
05 16 05 37	CC	Readback correct, Gene-o. Okay. I've got one more - -
05 16 05 43	CDR	Okay, Houston. While we're taking this strip photography, we're going - -
05 16 05 55	LMP	Go ahead.
05 16 05 57	CC	Okay. I've got one more TEI map update, and I'm sorry to cut you out, Tom. Press on with what you were going to say.
05 16 06 05	LMP	... on the map update a minute ago.

05 16 06 07	CDR	You didn't send us the maneuver load, did you? And don't worry about the map update.
05 16 06 14	CC	Okay. Roger that.
05 16 06 33	CC	10, this is Houston. We sent up a state vector and a target load, external DELTA-V.
05 16 06 42	LMP	Yes. We got it.
05 16 06 43	CC	Roger.
05 16 07 01	CC	Apollo 10, Houston. Gene-o, did you notice about the same kind of excursions on your temperature on that fuel cell on this time on the back side?
05 16 07 13	LMP	All the way, Joe, exactly as it was the previous time, only we never did get the MASTER ALARM this time. And when we came out in the sunlight, she seemed to slow down. And it's okay now. We also found something; it was this light oscillation in the O_2 needle on both 2 and 3, but it's gone now, too.
05 16 07 35	CC	Okay. We copy that. And that's just on the dark side of the Moon. Is that affirmative?
05 16 07 43	LMP	It occurs after we go into darkness about 15 minutes. And then apparently very shortly after we came out of sunrise - in the sunrise, it starts - it starts damping out.
05 16 07 54	CC	Okay. Understand.
05 16 08 32	CC	10, this is Houston. What are you showing for yaw now?
05 16 08 40	CDR	Roger. We're making this in a different attitude than what was called up to us here. We only have just a couple of film shots left here. Over.
05 16 08 48	CC	Mighty fine, Tom. Thank you.
05 16 08 53	CDR	Don't worry about it. We've already got a lot of pictures of this - on this site.
05 16 08 59	CC	Roger. Understand.
05 16 09 01	CDR	Tell Jack to have a cup of coffee and just relax.
05 16 09 04	CC	(Laughter) Okay, Tom.
05 16 09 09	CDR	We got more pictures of Censorinus than you can shake a stick at.

05 16 09 12	CC	Okay.
05 16 09 24	CMP	In fact, I'll be surprised if there's anything left to take a picture of up here much.
05 16 09 29	CC	Jack says that that's a highland dike, John.
05 16 09 48	LMP	You got me there, Joe.
05 16 10 03	CC	Okay, 10. This is Houston. In your flight plan, when you go to your TEI attitude, we're going to recommend OMNI Delta. OMNI Delta.
05 16 10 15	CDR	Roger. OMNI Delta for our attitude there at a pitch of 052.
05 16 10 20	CC	Affirmative.
05 16 10 33	CDR	Okay. As soon as we get into that attitude, I'm going to turn all AUTO RCS thrusters on. Over.
05 16 10 41	CC	Okay. Fine, Tom. And for your info, we'll have LOS this pass at 137 07 53 and AOS with your TEI will be at 137 45 26. And, with no TEI, we'll get you - We won't get you this. But, for your info, it's going to be at 137 54 03.
05 16 11 12	CDR	Okay. And when is LOS again?
05 16 11 15	CC	137 07 53.
05 16 11 50	LMP	I like your "atta boy" attitude, Joe. We'll see you at 45 26, huh?
05 16 11 58	CC	Roger that.
05 16 12 11	CDR	And again, just over this maria area here, this area is definitely a brownish tan. And up there in the highlands, it is a light tan and the new craters look like - more like Egyptian colors - been around an Egyptian mine. Over.
05 16 12 30	CC	Okay. We copy that, Tom. Thank you.
05 16 12 49	CMP	Anyway, that tube ought to give the true pictures, whatever it is. True colors.
05 16 12 55	CC	Yes. The colors we've been seeing on that are just exactly as you've been describing them all the way through - all the way from the whites to the browns down to the blacks. And when you talk about the brownish grays and deep grays and blacks, why, it looks just like that on the tube.

05 16 13 11	CDR	Roger. Good show. One quick thing after TEI and we give you all the report, we're going to turn away so we can just look back at it and take some motion pictures of the Moon. See, then will be kind of relax time, and we'll flip the tube on for you and we'll see what it looks like in total color going away. But I hear we're going to be through Honeysuckle. Is that right? Over.
05 16 13 32	CC	That's affirmative. We're coming through Honeysuckle, Tom, and I guess they're going to be watching you coast to coast for the first program of that type over there, too.
05 16 13 44	CDR	Okay. Have they got color over there? I say there, down below.
05 16 13 54	CC	I guess they're black and white over there, Tom.
05 16 14 00	CDR	Okay. I'm afraid they're not getting that. The station can't receive it and everything from the color camera.
05 16 14 06	CC	Roger that.
05 16 14 10	CDR	Okay. Good show.
05 16 15 46	CDR	Okay, Houston. Apollo 10. We're coming up on the highland areas. And again, in our general observation, even when we were down at 50 000 feet, and yet you do have some rough terrain here, but it doesn't appear as sharp-featured or as rugged in a lot of places like on the back side or over this highland area as the Lunar Orbiter photos showed. Over.
05 16 16 08	CC	Okay. We copy that, Tom.
05 16 16 12	CDR	And that's all free independent conclusions there.
05 16 16 20	CC	Roger. Understand.
05 16 16 36	CDR	A real rough area is over past Sabine and Ritter where you have strictly a volcanic area; you have these little cones all tossed up. But out here in the highland area - Yes. You've got a lot of slopes and things, but they're definitely not as rugged as what is shown there in those Orbiter photos. Over.
05 16 16 53	CC	Roger. Understand. Looks like you could find some places to put down in there. Is that affirmative?

05 16 17 02	CDR	Roger. Well, I don't want to try to push it. We'll have to get back on the ground on that one. But out in the mare area, you've got - what we saw yesterday down lower - like to point it out, that's qualitatively 25 to 35 percent smooth. We're in pretty good shape. Over.
05 16 17 18	CC	Roger. Understand.
05 16 17 56	CDR	Hey, as a matter of fact, for Jack, right here I'm looking right down in Censorinus from 60 miles up, and you can see the boulders on that outer edge. And the shadows from them. Over.
05 16 18 07	CC	That's pretty amazing, Tom. Those must be pretty good sized rocks down there.
05 16 18 15	CDR	Yes. You could make a building or two out of each one of them.
05 16 18 19	CC	Roger.
05 16 18 20	LMP	We could drop an apple core right in the hole down there.
05 16 18 25	CC	Roger.
05 16 20 39	CDR	Okay. We're passing over Site 2 for the last time around. Over.
05 16 20 43	CC	Roger.
05 16 20 49	LMP	Hello, Houston. What's your recommendation on a purge here? I turned the heaters on and I'm looking for it in the flight plan, and I don't see it.
05 16 20 58	CC	Okay. Did you say a purge, Gene-o?
05 16 21 05	LMP	Did you tell me to put the H_2 purge line heater on?
05 16 21 08	CC	Roger. We wanted the purge line heater on. We anticipate purging number 2 here shortly. We don't want to do it just yet, though.
05 16 21 17	LMP	Okay. I'll be standing by for some words from you.
05 16 21 19	CC	Roger. We do want the heater on though, Gene.
05 16 21 27	LMP	It's been on 22 minutes now.
05 16 21 31	CC	Very good. Thank you.
05 16 22 02	CMP	You know, you sure don't have any trouble telling a hole from the hills down here.

05 16 22 08	CC	Roger.
05 16 22 09	CMP	Like you do in some of those pictures.
05 16 22 16	CDR	Right now we're on top of Sabine and Ritter looking down in the dark shadows ... there, but you can see the ramping on the walls and one or two possible big boulders down in there. You know in the pictures it'll show them as black ... shadows down below ...
05 16 22 39	CC	Roger.
05 16 22 44	CDR	Okay. We checked the P30 and we're about to go through it. We've got the spacecraft configured for TEI ... AUTO RCS select switches, and everythi is strapped down, so we're basically ... attitude time around, so as soon as we finish this strip on the landing site here, we're going right to it. ... have any ... whether it needs the high gain. Over.
05 16 23 12	CC	Roger. Understand, Tom.
05 16 25 12	CDR	And we have Landing Site 3 coming up right ahead. It's also marked by the craters ...
05 16 25 20	CC	Roger, Tom.
05 16 25 26	CDR	...
05 16 25 57	CDR	In the area ... Landing Site 2 and Site 3 ... the highland area ... really marked with a lot of volcanic activity. You can see it all over. You can see the old impact ... volcanic activity ...
05 16 26 17	CC	Roger.
05 16 26 29	CC	Okay, Apollo 10. This is Houston. We'd like for you to go ahead and purge number 2 fuel cell now for 2 minutes. And we'd also like to have the high gain antennas as soon as you finish this photography. Over.
05 16 26 46	CDR	Okay. You got VERB 64 coming at you. And we'll start - Say you want the fuel cell 2 purged of O_2 at this time?
05 16 26 56	CC	Roger. Fuel cell 2 purged for 2 minutes. That's the hydrogen purge.
05 16 27 03	LMP	That's a hydrogen purge. Right?

05 16 27 06	CC	That's affirmative, Gene.
05 16 27 20	CDR	Purge is started.
05 16 27 22	CC	Roger.
05 16 28 09	LMP	Hello, Houston. Are you reading us?
05 16 28 11	CC	Roger, 10. This is Houston. We're reading you now, Gene.
05 16 28 16	LMP	Okay. You got AUTO track and narrow beam. About three-quarters signal frame. Coming in clear.
05 16 28 22	CC	Roger. Understand.
05 16 28 39	CDR	Okay, Houston. I'm going to go ahead and maneuver to TEI attitude and just fire the pitch. Over.
05 16 28 45	CC	Roger. Understand, Tom.
05 16 29 08	CC	10, this is Houston. Tom, could you hold off on that attitude change for awhile? We'd like to watch this purge until it's complete.
05 16 29 21	CDR	Okay. I want to have John get that P52 IMU.
05 16 29 28	LMP	And that's 2 minutes on the purge. How's that look to you?
05 16 29 34	CC	Okay. We're not getting the data down - the high bit rate data down, Gene-o.
05 16 29 44	CC	Okay. If you've completed the purge - -
05 16 29 45	LMP	Okay. Tell me what you want to do.
05 16 29 47	CC	Okay. You've completed the purge, so go ahead and maneuver to your attitude. That'll be fine.
05 16 29 55	CDR	Roger.
05 16 29 56	LMP	Okay. The purge is complete and the H_2 purge line heaters coming off at this time.
05 16 30 00	CC	Roger. Understand. Thank you, Gene.
05 16 33 19	LMP	Houston, how do you read us?
05 16 33 22	CC	Roger, 10. This is Houston. We're reading you okay. Go ahead.
05 16 33 28	LMP	Okay. Just wondering, Joe. I'm just playing with the OMNI's - Just playing with the OMNI's to hold onto

		you until we get to the final burn attitude. Then you recommend Delta.
05 16 33 37	CC	Roger. That's affirmative. And did you go all the way through P30?
05 16 33 45	CDR	We stopped before we got the final countdown. It was over an hour at that time.
05 16 33 51	CC	Okay.
05 16 33 54	CDR	We got the DELTA-V's. Over.
05 16 34 19	LMP	Hey, Joe. Did you want us to go all the way through P30?
05 16 34 25	CC	Roger. I guess - It appears down here that you didn't get your external DELTA-V flag set, John.
05 16 34 35	CMP	Yes, we - -
05 16 34 37	LMP	We didn't go through it. We're going through it as soon as we finish this P52.
05 16 34 40	CC	Oh, okay. Mighty fine, then. I'm sorry.
05 16 34 42	CDR	Yes, but we plan to go through it again. We just wanted to check - Yes, we just wanted to check that you had the values loaded in there and we got a COMP out of it, you know. We understand.
05 16 34 51	CC	Okay. Sorry about that. ...
05 16 35 44	CC	Apollo 10, Houston.
05 16 35 49	CDR	Go ahead.
05 16 35 50	CC	Roger. Gene-o, are you on high gain antennas, now?
05 16 35 57	LMP	That's a negative. I'm on OMNI Bravo.
05 16 35 59	CC	Okay. Thank you very much.
05 16 36 46	LMP	Houston, this is 10. I'm going to leave fuel cell 1 on the line until we come around the corner so you can take a look at it, and then we can talk about taking it off.
05 16 36 57	CC	Okay. That'll be fine, Gene-o. Thank you.
05 16 48 22	LMP	Hello, Houston. Houston, this is 10. How do you read?

05 16 48 25	CC	Roger, Gene-o. Reading you loud and clear. Go ahead.
05 16 48 30	LMP	Okay. How's that DSKY been looking to you?
05 16 48 37	CC	Okay. We're watching it. It's looking good, 10.
05 16 48 43	CDR	Okay. We went through P30 all the way, and now we're just going to do a crew defined maneuver over to the attitude, and then we're going to call P40. Over.
05 16 48 52	CC	Okay. Copy. We'll monitor.
05 16 49 00	CC	And, 10, this is Houston. I've got some attitudes for your post-TEI TV, if you'd like to copy them down.
05 16 49 14	CDR	Stand by.
05 16 49 15	CC	Roger.
05 16 49 18	LMP	Okay, Joe. Go ahead.
05 16 49 20	CC	Okay. This will be for time 138 00. Use the hatch window, and your attitudes are roll 180, pitch 293, yaw 000. And we'd like the high gain antenna angle pitch minus 58 and yaw 005. Over.
05 16 49 50	LMP	Okay. For a time of 138 00, out the hatch window, roll 180, pitch 293, yaw 000, pitch minus 58, and yaw 005.
05 16 50 00	CC	Readback's correct, Gene.
05 16 50 02	CMP	And, Houston, we have all the AUTO RCS switches on. Do you confirm them?
05 16 50 10	CC	Roger. Concur, 10. Thank you.
05 16 50 51	LMP	Houston, this is 10. I'm going to cycle the CRYO fans.
05 16 50 55	CC	Roger. Concur.
05 16 54 16	CT	Honeysuckle signal level, minus 105.
05 16 57 49	CC	Apollo 10, this is Houston. We show about 10 minutes until LOS, and at this time everything looks GO for TEI.
05 16 58 11	CDR	Roger. We're going to call up P40 before we have LOS.

05 16 58 17	CC	Roger. Understand.
05 16 58 43	CDR	Okay. The AUTO maneuver in P40, we're all set there and trimmed up.
05 16 58 51	CC	Roger. We copy, Tom.
05 17 01 06	CMP	Houston, could you give us a time hack at 35 seconds countdown?
05 17 01 11	CC	10, say again, please.
05 17 01 16	CMP	Roger. We'd like a time hack around 35 minutes countdown.
05 17 01 25	CC	We'll have to give it to you a little before that, John. We show about 6-1/2 minutes until LOS and then you're about 44 minutes. Oh, okay. I'm sorry, we'll get it for you.
05 17 01 49	CMP	Count down the burn, Joe.
05 17 01 51	CC	Roger that.
05 17 02 01	CC	Okay, 10. This is Houston. I can give you a countdown to 34. Will that be okay?
05 17 02 09	CMP	That will be fine.
05 17 02 11	CC	Roger that. We're showing 34 12 now. 5, 4, 3, 2, 1.
05 17 02 27	CC	MARK.
05 17 02 28	CC	34.
05 17 02 50	CC	And, 10, this is Houston. Did you get that, or would you like another countdown?
05 17 02 58	CDR	We got it. Give us a mark for 33 just to correlate.
05 17 03 01	CC	Roger that.
05 17 03 22	CC	Okay. 33 coming up in 4, 3, 2, 1.
05 17 03 27	CC	MARK.
05 17 03 28	CC	33.
05 17 03 33	CDR	Roger. We're SYNCED right on.
05 17 03 35	CC	Very good, Tom.

05 17 03 54	CC	10, this is Houston. We're showing about 4 minutes until LOS, and that fuel cell 1 is looking good to us right now. Everything looks good for TEI.
05 17 04 05	CDR	Roger. We're GO here, and we'll see you on the way home.
05 17 04 10	CC	You bet your life. We'll see you in about 41 minutes.
05 17 04 16	CDR	Okay.
05 17 05 51	CC	Okay, 10. Houston. We show 2 minutes until LOS. We're still GO; everything looks good.
05 17 06 00	CDR	Roger. We're all set here and we'll check the boresight star ... Over.
05 17 06 05	CC	Roger.

END OF TAPE

05 17 13 --		BEGIN LUNAR REV 32
05 17 46 06	CC	Apollo 10, this is Houston. We are standing by.
05 17 46 25	CDR	Hello, Houston. Apollo 10.
05 17 46 27	CC	Hello, Apollo 10. This is Houston. How did the burn go?
05 17 46 32	CDR	Roger, Houston. We are returning to the Earth. Over.
05 17 46 38	CC	Glad to have you on the way back home, 10.
05 17 46 43	CDR	Roger. The burn was absolutely beautiful and Gene-o has a report, and we have a fantastic view of the Moon now. Over.
05 17 46 51	CC	Mighty fine, Tom. Standing by for that report.
05 17 46 56	LMP	Hey, Joe. You've got an "atta boy" for that pad update. Here it comes: burn was on time: it was 2 minutes and 44 seconds. Residuals were plus 0.3 which were reduced to 0.2 plus 1.6 and minus 0.2, DELTA-V_c is minus 19.9. Fuels remaining is 6.7 percent, oxidizer of 9.2 percent. My PUGS is reading OFF SCALE HIGH on the increase. I put through the procedure but apparently it did no good at all. I'm still reading full scale increase on the PUGS and my oxidizer flow valve is still in INCREASE at the completion of the burn.
05 17 47 41	CC	Roger, 10. We copied all of that.
05 17 48 15	CC	10, this is Houston. We'd like to go ahead and take that fuel cell 1 off both buses now.
05 17 48 23	LMP	It's going off right now, Joe.
05 17 48 58	LMP	Houston, the TV is being turned on now, and as Tom is starting to pan we have a couple of quick short words for you.
05 17 49 06	CC	Roger. We're standing by. Go ahead.
05 17 49 07	SC	(Music: "Going Back To Houston")
05 17 49 31	CC	Roger, 10. This is Houston. We copied that transmission. Thank you.
05 17 49 37	LMP	Glad you got the message.

05 17 49 51	CMP	Boy, this view's got to be a fantastic thing.
05 17 50 03	CDR	Houston, 10. I hope the Aussies have their sets tuned in because it's utterly fantastic here.
05 17 50 08	CC	Roger that, Tom. I'm sure they're all watching.
05 17 50 26	CMP	We are taking a picture right now of Tsiolkovsky down south there. That's impressive.
05 17 50 35	CC	Roger. Copy.
05 17 50 36	CMP	What a place.
05 17 51 00	CMP	Joe, that's Tsiolkovsky back there. It's big and black and very distinguishable. Fantastic! Incredible!
05 17 51 11	CC	Roger. We can see it pretty plainly on the set. That's the one right up near the horizon. Is that affirmative?
05 17 51 18	CMP	It's just on the horizon; way out there. Right.
05 17 51 26	CC	Hey, there you go. Now we're picking it up. We can see the center of it now.
05 17 51 29	CMP	We can see the whole of the Smyth's Sea now.
05 17 51 32	LMP	That's it, Joe. That's full zoom. You ought to be able to see that real good.
05 17 51 36	CC	We can. That's just real good, Gene.
05 17 51 38	CMP	I can see the whole of the Smyth's Sea and I see old F-1 down there.
05 17 51 54	LMP	There's Neper.
05 17 52 04	CMP	Got this big bright ray crater up on the northern horizon. They are going to try and put that on the tube. Boy, that's a big one. The rays of Schmidt Crater go all the way across the moon.
05 17 52 28	LMP	Must be new.
05 17 52 32	CC	What's your f-stop setting on the camera now?
05 17 52 40	CDR	Roger, Joe. I've got it at 22. The Moon's awful bright.
05 17 52 43	CC	Roger that, Tom. Thanks.

05 17 52 50	CDR	I'll occasionally flick it up, down, and then back to help saturate the tube, but that's what you see, there. Okay. We're taking all kinds of pictures. I've got the tubes, Gene-o has the sequence camera, and John has the Hasselblad. We're getting all this documented.
05 17 53 21	CDR	Is that better, Joe?
05 17 53 24	CC	Yes. That's a little better there, Tom. What did you do there?
05 17 53 41	CDR	Stand by. I'll change my ALC switch on it.
05 17 53 58	CC	Yes. That's a little bit better, Tom. That's great. The detail is coming out a lot better.
05 17 54 06	CDR	Okay. Again, as we move away, the basic Moon looks tan to us. The new craters are definitely white from the impact and some of the volcanic ones; but from this Sun angle, it's basically tan out there - a white, white tan. And the rays you can see are even whiter. And moving over this way, the one crater you can see over there is a brownish in color with the one central peak in it. I'll try to put the zoom on it for you.
05 17 54 55	CC	Roger, Tom. We're picking it up now. We can see the central peak in the crater.
05 17 55 02	CDR	Okay. Do you have any color there, Joe, at all?
05 17 55 06	CC	Say again, Tom, please.
05 17 55 09	CDR	Roger. Do you have color in Houston, or just black and white? Over.
05 17 55 13	CC	We got color here in Houston. There's quite a bit of light for the color, although we can make out the crater and we can see the central peak in it. The black and white is coming out real good.
05 17 55 25	CDR	Okay.
05 17 55 30	CDR	Okay. What I'm looking at now is a brown, and the peak in it is light tan - around it is a little darker tan. Does that correlate with your colors? Over.
05 17 55 45	CC	Roger. That looks real good on the monitor here, Tom. That's just what we're seeing here.
05 17 55 52	CMP	This is absolutely incredible!

05 17 55 58	CDR	I thought it was a fantastic view leaving the Earth, but it is going to be even a more fantastic one leaving the Moon here and heading back to the good old Earth.
05 17 56 04	CC	Roger that, Tom.
05 17 56 14	CMP	I got the whole of the Smyth's Sea.
05 17 56 18	CC	Roger.
05 17 56 23	CDR	Okay. The way you're seeing it right now is about f:50, pardon me, 55 on the zoom. That's about the way we're seeing it now, maybe a little more.
05 17 56 34	CC	Roger. Understand.
15 17 57 01	CDR	Okay. I'll hand the camera over to John here and he'll show you the Sea of Crises. Over.
05 17 57 09	CC	Roger. And while you're doing that, Tom, we got confirmation on your burn. It looks like we'll have about 1 foot per second at your first MCC at 15 hours.
05 17 57 21	CDR	Roger. I think we can afford about 1 foot per second. That isn't bad.
05 17 57 29	CC	Can't hardly beat that.
05 17 57 35	CDR	Yes. The old guidance system is doing great work for us on this mission.
05 17 57 40	CC	Roger that. That's a real interesting picture that you're showing us now, too.
05 17 57 41	CDR	... Tell the people responsible for it that it works just fantastic ...
05 17 57 54	CDR	And also for the first time, we're seeing what we call I guess, what Gene just termed a gigantic turtle-backed crater that's fractured. We'll put the zoom on that in just a minute.
05 17 58 03	CC	Roger.
05 17 58 04	LMP	There's a real interesting crater here on my right, Joe. It's an enormous thing and it's fractured almost symmetrically in a number of pie-shaped pieces. Let's see if we can get it for you in a minute.
05 17 58 16	CC	Okay. We're standing by.

05 17 58 27	CDR	In fact, looking straight ahead, just now coming into view, even though we're really starting to climb out from it - In fact, I can finally see the whole Moon right in the hatch window. But looking down the road, there's Messier A and B, the Taruntius twins. We have Censorinus there for Jack. And on up ahead I can see Landing Site 1 even from this distance from the landmarks on that lead in. Over.
05 17 58 47	CC	Roger. Understand. That's real good to know.
05 17 58 53	CDR	Boy, you can't believe this rate of climb. It looks like we're just going out just vertically. Just beautiful. It would scare the heck out of you if you came at this angle, but maybe it was just because we came in the dark and didn't see the thing. Over.
05 17 59 12	CC	Roger. Understand.
05 17 59 16	LMP	Hey, Joe, that's that crater I was talking about. I don't know how that is, but I can see a little bit of it in my monitor.
05 17 59 23	CC	It's coming in real good, Gene. It looks like you're just about to crowd the top part of the window there, but we've got the whole crater, and yes, we can see those fractures in there.
05 17 59 35	CDR	It looks like the outer rim is slumped down and you have some maria material near the edges and the whole thing is fractured there in the middle from a couple of impacts near the center.
05 17 59 43	CC	Roger. We can make it out.
05 17 59 53	CDR	Okay. Down in the central part here it's still a tan color and as we move further away, it's starting to get a little more white and the maria areas are turning to a light brown - a whitish brown. Over.
05 18 00 06	CC	Roger. Understand.
05 18 00 07	LMP	Kind of looks like the real Moon.
05 18 00 11	CC	Roger. The crater that you were show - -
05 18 00 13	LMP	It's a little rounder, too, isn't it? Go ahead, Joe.
05 18 00 16	CC	Roger, Gene. I was just going to say that that crater you were showing us, your fractured crater there, it looked like there was a dark patch on the left-hand side. I wonder if that was just something that showed up on the tube or if you observed that up there. In the upper left-hand corner there now.

05 18 00 35	CDR	No, Joe. That looks like maria material. That's right, that's maria material in that crater, Joe. Over.
05 18 00 43	CC	Roger. That's real interesting.
05 18 00 51	CDR	Just wait till about another 30 minutes. Bet you'll be able to see the whole thing, then. Over.
05 18 01 05	CMP	That engine did it again, boy. What a friend.
05 18 01 08	LMP	Does it look a little rounder?
05 18 01 11	CC	Roger. Looking real round now. If one of you guys get half a chance, see if could give us ACCEPT on the computer, we'll shoot you up a new load.
05 18 01 22	CDR	That sounds good. We are POO and ACCEPT. You got it.
05 18 01 25	CC	Roger. Thank you. Man, it looks like you guys are climbing out of there.
05 18 01 34	CDR	Roger. You'd better believe we're climbing out, just like we're in a vertical climb going straight out from the center: it's a fantastic sight. Also for the record, I was just looking here. It's a beautiful beach but where's the ocean? Over.
05 18 01 50	CC	Roger. (Laughter)
05 18 02 15	CDR	Okay. I've got the camera back in the central window again.
05 18 02 36	LMP	Joe, this is incredible. That thing is getting rounder and rounder and rounder and smaller all the time.
05 18 02 40	CC	Roger, Gene-o. Understand.
05 18 02 46	LMP	The real show is on the inside here; like three monkeys in a string pod.
05 18 02 51	CC	Yes. I'll bet that's right.
05 18 02 53	CDR	Joe, I'll tell you what you see out there is real close to what we have; maybe the curvature is a little more. Now one thing real interesting, you see, the two dark spots there in the center of your screen, the maria material. Over.
05 18 03 03	CC	I've got them.

05 18 03 05	CDR	Okay. Now to us, and all three of us have correlated this, that is a light brown color and surrounding it you have the highland areas there which is a tan color, and you can see that one impact spray crater up there that's a white chalky color. That looks just like the material of gypsum, I'd say. Over.
05 18 03 25	CC	Roger. We're getting the same colors that you are describing, Tom. It's just great, fantastic!
05 18 03 38	CDR	Okay. I've got another crater over here I'll zoom in on. It is to the right of that one maria area, and you can see it: it's real bright with rays coming out of it, and I'll zoom on it.
05 18 03 48	CC	Roger.
05 18 04 03	CC	Okay, 10. This is Houston. You can go back to BLOCK on the computer. It's yours and the fuel cells are looking real good and you might be interested to know you are coming in real great all the way across Australia.
05 18 04 18	CDR	Well, to the people of Australia from the crew of Apollo 10, we'd like to say good morning. We've seen your country many times on the way up to the Moon, and we'll see it many times on the way back. It looks very beautiful from even 210 000 miles out. Over.
05 18 04 42	LMP	That Tommy is a charmer.
05 18 04 45	CC	I should say.
05 18 04 49	LMP	Hey, Joe, the Moon is almost small enough now where I can see the whole thing from the top, one corner of my forward window to the other corner of my forward window.
05 18 05 00	CC	Roger. Understand.
05 18 05 02	LMP	I can see the whole Moon from top to bottom in my forward window.
05 18 05 05	CC	Roger. Understand, Gene.
05 18 05 14	CDR	Looks like the camera is doing a pretty good job here, zooming in and out picking up spots.
05 18 05 32	CC	You guys are really hauling the mail out there.

05 18 05 37	CDR	Boy, you better believe it. We're climbing straight out, Joe. It's a fantastic sight: it's like we were shot straight out from the center of the Moon.
05 18 05 46	LMP	Is that what you call it, Joe?
05 18 05 49	CC	That's what we call it tonight. You're going about 6000 feet per second.
05 18 06 03	CDR	Okay. We're picking up now more of the maria material and, again, even from this distance still, to keep the recording going, it is a brown in the maria area; the surrounding area is a light tan. In fact, I've got one crater I'm going to try to zoom on. See the maria area on the left side of your screen now? Over.
05 18 06 20	CC	Roger. Got it.
05 18 06 24	CDR	Okay. Up in there is a little rather small maria area of round spray crater. Let's see if we can zoom on that spray crater there.
05 18 06 32	CC	Roger. Okay.
05 18 06 42	LMP	Joe, that fractured crater that had the dark material off on the left side is also about one-fourth of the bottom right-hand side. You're not looking at it now, but the bottom quarter of the right-hand side - It's all full of that very dark gray material, also.
05 18 06 57	CC	Roger. Copy, 10.
05 18 06 58	CDR	In fact, right now all the people watching TV are at an advantage because what you're seeing in your screen is a bigger image than what we see. And see that little white crater that I put down there about the center of the screen?
05 18 07 10	CC	Roger. We got it.
05 18 07 12	CDR	The white chalky material is surrounded by some tan, and then around the base maria over here on the right, and that is brown. Over.
05 18 07 22	CC	Roger. Thank you, Tom. That's maria over on the lower right -
05 18 07 27	CDR	No. Hold on.
05 18 07 28	CC	Is that dark brown, or is that black?
05 18 07 33	CDR	No, no. The maria here that is right in the middle of the screen now, Joe, that is a brownish color.

We estimate a light brownish color with slight streaks of tan that are over from the right crater. But this one is coming up right here. I'll put the zoom on it. Do you see that rascal?

05 18 07 48 CC Roger. We got it.

05 18 07 49 CDR Okay. The crater that you have now: the inside of that is chalky color; the rays coming out are light tan; a darker tan surrounds it, and then you move into the maria which is a brown color. Over.

05 18 08 03 CC Okay. We got all that description. Boy, that little crater with the grays sure stands out nice.

05 18 08 11 CDR Right. And you can see down into it, and the sides are just a chalky white color; at the bottom is a tan like we've seen before, surrounding it is a white tan with the rays lighter. But going over to the maria, you can see the rays in the maria material there, a light tan over a brown. Over.

05 18 08 28 CC Roger. We understand.

05 18 08 33 LMP Hey, Joe, down at 9 miles has to be exciting, but this has got to be unbelievable. The Moon is now well within the boundaries of my forward rendezvous window.

05 18 08 45 CDR And now that we're showing you that crater, just one thing I wanted to check - Does our description of the color match with your picture down there? Over.

05 18 08 52 CC Right. It's coming up pretty good, Tom. The maria area that you described as brown looks a very dark brown here, almost black, a real dark brown, and evidently, that's a little lighter to you than it shows up on the screen.

05 18 09 07 CDR Yes. Okay. What about the tans? Is that somewhat about the same? Over.

05 18 09 12 CC Roger. That's looking real good. In fact, Tom, I'm at a little disadvantage. I'm looking at the big screen here on the board, and they say on the monitor in the back of the room there, that the colors are exactly as you are describing them.

05 18 09 26 CDR Okay. I passed my eye test I guess the last time for the T minus 4-day physical so I guess they haven't gone too bad. This is an interesting crater right here; looks like a lot of them formed after you have a big crater, then you have slumping in the walls. Here you can see a series of ridges where the walls are slumped down in, and I'll zoom in a little bit. Over.

05 18 09 48	CC	Roger.
05 18 09 55	CDR	Okay. And the whole view now is getting so fantastic I'm going to go out to the wide angle to show you what we see. I can see the whole Moon right out the hatch window.
05 18 10 03	CC	Roger.
05 18 10 13	CC	Oh, that's beautiful.
05 18 10 17	CDR	Well, there it is.
05 18 10 21	LMP	See what I mean about size, Joe. It just about fills up, roundwise, right smack in the hatch window. Boy, and is this a full Moon, I'll tell you.
05 18 10 39	CC	You're just about 1400 miles out now, Gene.
05 18 10 44	CDR	Roger. 1400 miles out from the burn, and the view is actually just incredible like Gene has described. We're all just laughing up here. Just looking at it. Again, as we've said before, it's a good thing we came in backwards at nighttime where we couldn't see it because if we came in from this angle you'd really have to shut your eyes. Over.
05 18 11 06	CC	Roger. Understand. Tom, how about going to the other position on ALC and let's see how it looks.
05 18 11 19	CDR	There's the other position. Joe, we've been shooting this whole thing in f:22.
05 18 11 31	CC	Roger. Understand. Okay. That's good, Tom. Go on back to - let's see, I imagine you're on -
05 18 11 36	CDR	We're going back to ...
05 18 11 42	LMP	We're on the outside now, Joe. How's that? That's where we were. We just went inside for a while and then came back.
05 18 11 47	CC	Roger. That's a lot better. Stay on the outside.
05 18 11 54	CDR	And, again, this whole area looks - That maria material is brownish and still the color hasn't changed much. It's brown and tan with lights. Over.
05 18 12 13	CMP	Hey, Joe, with a midcourse of a foot a second we must be in that corridor.
05 18 12 19	CC	That's pretty close.

05 18 12 24	CMP	Boy, that's absolutely incredible targeting down there. Congratulations - -
05 18 12 29	CC	You can almost begin to start smiling, can't you?
05 18 12 31	CMP	To the boys in the back room. Yes.
05 18 12 37	CDR	I'll bet Phil Shaffer has a smile across his face if he's around. Over.
05 18 12 47	CC	Yes. He's in a room down the hall. But I'm sure he's grinning.
05 18 12 48	CMP	Tell him to have one on me.
05 18 12 50	CC	Roger. Will do.
05 18 12 52	LMP	How come all you people are up? How come all you people are up this early in the morning?
05 18 13 01	CC	That's normal working hours, Gene-o.
05 18 13 08	CDR	I will try to pick you out a couple more interesting characteristics. Again, you can see that one sprayed crater up to the side. Actually, here's a better view. I can see the landing site coming in now, and we'll go down and take a look at Messier, Messier B, the Taruntius twins; we can see it from here. We'll put the zoom to them.
05 18 13 34	LMP	You can walk right up the landing site just like we did when we were down there. You can see Secchi; you can see the Apollo Ridge; you can see all those little ridges reflected very well in sunlight. You can't quite see our Sidewinder or Diamondback Rille at this time, however.
05 18 13 52	CC	Okay. We understand. Yes. That little crater that you're bringing into focus, bringing in the zoom now, with the rays, that's a real interesting little feature in it.
05 18 14 06	CDR	Yes. Would you ask Jack Schmitt, please ask him what the name of that crater is, just for identification? I think we may have seen that before. Over. And it's Censorinus A.
05 18 14 22	CC	I think, I think you got a "got you" on Jack Schmitt. He's grimacing and his head is furrowing now, but he'll have a name for you in a minute.
05 18 14 34	CDR	Okay.

05 18 14 56	LMP	Jack, since we didn't get any pictures on Censorinus, we thought we'd zoom in on it from here.
05 18 15 00	CC	Roger, Jack says the name of that one is temporarily Tom's Crater.
05 18 15 11	CDR	That sounds good. Okay. And right ahead from the bright crater as you walk on across there, you can see Moltke. There's Moltke, and right up in there, if anybody from Oklahoma's listening, that's what we've termed the Oklahoma Hills. It's on the right. Over.
05 18 15 31	CC	Roger. We got those, Tom.
05 18 15 38	CDR	In fact, this camera's got such good resolution I think I can even zoom on Moltke from here.
05 18 15 44	CC	Okay. We'll stand by.
05 18 15 50	CDR	Can you see the bright crater in the center of the screen there?
05 18 15 53	CC	Roger. We got it.
05 18 15 57	CDR	That is Moltke. The Landing Site L is right to your left there. At least, it's in my monitor. So here we can see Landing Site 1. In fact, we can even see crater 130 in this, too. And all the white area which would probably be the tan area. It's white in my black and white - It's white in my black and white tube, but it's brown and tan out there as you look there. That's what we call the Oklahoma Hills. Over.
05 18 16 20	CC	Roger, Tom. We've got it. It looks great. That's too bad that you all don't have color TV up there. This is a great view.
05 18 16 30	CDR	Yes. Okay. I brought the zoom back again. That maria material is really looking a deeper brown, now.
05 18 16 37	CC	Roger. Okay.
05 18 16 38	LMP	Hey, Joe, we're starting to see the terminator come in, I believe. We're starting to see the terminator come in on the far side which is really getting to be interesting. And we might say we're real thankful for it too.
05 18 16 52	CC	Roger. Understand.
05 18 17 07	CDR	We're going to show you a picture of the far side of the terminator in just a few minutes. One thing I'd

like to point out if I could back on Messier. Those two sprayed craters, and I've made some drawings of them to bring back as to what it does - Leave it here, I'm going to zoom on them.

05 18 17 24	CC	Okay.
05 18 17 56	CMP	Well, we've got a lot of pictures to bring back and I'm sure they'll be very interesting to you, but I'm afraid they're going to ask as many questions as they answer.
05 18 18 06	CDR	Okay. If you look in the center of your screen you see two vertical craters. You got them? And you have the sprayed rays that come out down this way. Do you see those? Over.
05 18 18 14	CC	Roger. We got it, Tom.
05 18 18 18	CDR	Okay. That's the Messier Craters and from here again you can see the maria material. It is a brown and the inside of the crater is a light tan and the rays that are sprayed out of them. As you can see, there are just two rays pronged out of it. Out over the highland area it goes up to Censorinus, and those are tan rays that come out over the darker material. Now we're getting to see some of the back side, some rilles, some of the rugged side. We'll go down in this area.
05 18 18 48	CC	Roger.
05 18 18 50	CDR	Okay. I guess it can be, if you're upsidedown, it could be front side or back side.
05 18 18 58	CC	Okay.
05 18 18 59	LMP	The shadows are really lengthening and - The shadows are really lengthening in the terminator area and you can definitely see the terminator approaching.
05 18 19 11	CC	Roger. We can see it on our screen here, Gene-o.
05 18 19 26	CMP	I think what it is, we're approaching it.
05 18 19 33	CC	Good call, John.
05 18 19 34	CDR	One thing that we were real happy to see around - Roger. One thing that we're all happy to see around the Moon was some nighttime, because from the time we made TLI until we arrived at the Moon it was strictly out there in daytime all the time. It's really a pleasant change to get back for a little nighttime. Over.

05 18 19 49	CC	Roger. Understand.
05 18 20 08	LMP	Joe, it's still incredible. It almost doesn't look unreal. This Moon is set against a blackest black, incredibly black, that you can ever imagine.
05 18 20 19	CC	Roger. Understand.
05 18 20 21	CDR	The black has about the texture that you see oftentimes that comes out of an oil smoke fire. It's really a - It's a jet black.
05 18 20 31	CC	Roger. Copy. And you're about 2000 miles out now, 10.
05 18 20 38	CDR	Roger. Understand 2000 miles out.
05 18 20 41	LMP	I never thought anything could be as enjoyable as this, even with the fuel cell light on.
05 18 20 47	CC	Roger.
05 18 21 15	CDR	Okay. Again, here's a real good size crater with patterns. I'll zoom in on it.
05 18 21 23	CC	Roger.
05 18 21 34	CC	Roger. We can pick it up now and we're picking up the rays, Tom.
05 18 21 42	CDR	Okay. As you look at that crater, again, the bottom floor of it is tan. You can see some slumping on the walls; the sides are chalky white; the rays going out are light tan; the area surrounding it is a darker tan, and then you move over to the maria area which is a darker brown than up here. But the crater is really a beautiful crater. It stands out with all those rays on it.
05 18 22 07	CDR	Down below, you can see the remains of an old crater still in the maria material. Try to put it right in the center of your screen and it is right at the edge where the mare starts. Can you see it? Over.
05 18 22 16	CC	Roger. We got it. And it looks like there's another one on over to the left and down a little bit, another old crater with some maria in the middle. It may be shadows.
05 18 22 24	CDR	Sure is. Right there.
05 18 22 29	CC	What color did you say that was, Tom?
05 18 22 33	CDR	Say again. Over.
05 18 22 38	CC	What color did you say that was?

05 18 22 40	CDR	Oh, is that our Guidance Officer? Roger. If that was Phil Chambers, just tell him that he's got a bottle of champagne due him for that vector. Over.
05 18 22 52	CC	That was Deke. He was wondering - verify the color of that maria.
05 18 22 56	CDR	Okay. I know what he's talking about but I'll - We'll talk about that later.
05 18 23 08	LMP	He's got one coming for not passing up any pads while were gone from John.
05 18 23 15	CMP	Hey, I bet we fooled old Snoopy.
05 18 23 19	CC	Roger.
05 18 23 21	CDR	Okay, Houston. I've got an interesting sight like we've never seen. Houston, take a look at this. We've never seen this before. The varied colors. You see the maria areas on the left.
05 18 23 30	CC	Roger. Got them.
05 18 23 32	CDR	Well, the one on - They're different shades. The one right in the center is a darker brown than the one over the west. You can see where they've flowed together there. It is a lighter brown, heading to a tan. I'll put the zoom on and hope you can get it. Here it is. We've never seen this before ourselves.
05 18 23 51	CC	Okay. It's showing up pretty good right now, the way you're describing it. There you go. It looks great.
05 18 24 00	CMP	Looks like a couple of different flows there.
05 18 24 03	CDR	Right in the center of your screen you should see the discontinuity between the two maria areas. The one on the right is a darker brown, nearly a chocolate brown, and the one on the left is a tan. Over.
05 18 24 16	CC	Roger. That's just how they're coming in down here, Tom.
05 18 24 23	CDR	Roger. Great. Hey, if you look over in the distance, you can see the nighttime coming on the Moon up near the terminator and you do get some outstanding features there.
05 18 24 34	CC	Roger. We've got that.

05 18 24 35	CDR	That's the first time we've been able to look at this distance and see a real discernible difference in the maria material. But this is really kind of a classic, I think the ... You can see the flows, and also if you take a look, I'll try to zoom some more - the maria on the left, you can see some of the darker material near the upper edge of that where it's flowing in there.
05 18 24 53	CC	Roger.
05 18 25 32	CDR	Okay. That's the picture we have now. You can see we probably are well on our way out close to 3000 miles now. It's still a beautiful view. In fact, just looking at it, you recollect you've come a long way in a few years, so just imagine where we're going to go in a few more years. Over.
05 18 25 48	CC	Roger that, Tom.
05 18 26 06	CDR	Again, I just want to check the resolution of this camera and zoom in on Censorinus, the landing site where Apollo 11 will land, and I'll go back and zoom in on that again. Over.
05 18 26 16	CC	Roger.
05 18 26 27	CDR	Okay. There is Censorinus. Over here is the crater Moltke, above Maskelyne, Maskelyne B. We come down here to Little Bright Crater there. It's right near the dip of the Oklahoma foothills here. It's called Okie, and to the left, right in this area, is the landing site where Apollo 11 should land. Over.
05 18 26 45	CC	Okay. We got them all, Tom. They are coming through real good.
05 18 26 50	CMP	Boy, right now, it's like watching it through a telescope. It's fantastic.
05 18 26 57	CDR	Right in the center of your screen is the landing site. Again you can see the hills on the other side down in this area. But the approach is very well marked by Censorinus there on one side and the lead in there from the two Maskelyne craters. Over.
05 18 27 10	CC	Roger. We're getting real good resolution down here, Tom.
05 18 27 18	CDR	Okay.
05 18 27 32	CDR	I guess we've been up nearly 24 hours, but it feels so great, I don't think we will go to sleep for a few more hours. Over.

05 18 27 38	CC	Okay. Understand, Tom.
05 18 27 47	CDR	Just looking at this is about the best go pill you can ever stand. Over.
05 18 27 52	CC	Roger.
05 18 28 10	LMP	Tom's going to try and zoom in on Langrenus for you. It's a pretty interesting crater; it's in the sunlight at the moment.
05 18 28 25	CDR	Okay. What you have there is the crater Langrenus: again, that is somewhat on the path that leads up to the Apollo Landing Site number 2. It comes right down this way. There you have the - other craters, there is Messier, comes on down across - In fact, there is the crater Weatherford and Mount Marilyn, down to Censorinus and comes right on over into Moltke and the landing site.
05 18 28 53	CC	Roger. Very good tour.
05 18 29 01	LMP	Yes. John sort of explained it here for us all a second ago. He said he can't believe what he is seeing, and we really can't We just can't believe what we are seeing. I tell you, Joe, this satellite of ours, this moon of ours, had a rough beginning somewhere back there. Over.
05 18 29 15	CC	Roger. Understand, Gene.
05 18 29 16	CDR	It's really a privilege to - it's really a great privilege to just sit here and, as the spacecraft moves radially outward and look at it, to feel - just to share some of our views with you. Over.
05 18 29 30	CC	Copy that. Thank you.
05 18 29 44	LMP	The important thing about that camera, Joe, is what you're seeing is happening and what you haven't seen ain't happened yet.
05 18 29 53	CC	Roger.
05 18 39 05	CDR	All three of us are commenting again that for the scientific interest, about the difference in color on that one maria area I pointed out to you there. And it's really becoming pronounced now. The basic maria area - I'm going to zoom in again - is like a chocolate brown, and from this Sun angle and over to the left is like a tannish brown. And again I'll zoom in and see how it looks to you. Over.

05 18 30 44	CDR	Okay. There you are. I hope the colors come out the same to you, the same as we see them here. You can see the discontinuity there by those two craters. Over.
05 18 30 52	CC	Roger. It looks great, Tom: just like you're describing it.
05 18 30 59	CDR	Okay. Thank you.
05 18 31 13	CDR	Okay, Houston. This is Apollo 10. All three of us are commenting again about this fantastic view out here and how it's just as well we approached this thing in bright side where you can't see it, because if we approached at this angle coming in, you would really have to shut your eyes. Over.
05 18 31 29	CC	Roger. Understand.
05 18 31 34	LMP	Hey now, I wasn't skeptical when we came in. I just said I'd believe all that targeting when I saw 60 miles, and I'm a believer, and you've got one on me. But, boy, I tell you if we were going forward now it would be a different story.
05 18 31 48	CC	Roger.
05 18 31 52	CMP	Along that line, I want to congratulate you on that 5-degree window mark. It was perfect.
05 18 32 02	CC	Okay. We copy.
05 18 33 55	CDR	Houston, Apollo 10. You know you've often heard of the nursery rhyme about the man in the Moon. We didn't see one there, there were three men around the Moon and pretty soon we hope that there are three men - pardon me, two men on the Moon and one circling. But as far as seeing a man in the Moon directly, we just didn't see it this time. Over.
05 18 34 13	CC	Okay, Tom. Thank you.
05 18 34 18	LMP	And we were looking, too.
05 18 34 20	CC	Roger.
05 18 34 23	CMP	If there were any people down there, they had a lot of rocks to play with.
05 18 34 32	LMP	It won't be long now until Snoopy's descent stage will be there with a big red, white, and blue American flag on it, though.

05 18 34 39	CC	Roger that.
05 18 35 10	CDR	Houston, for just a quick break here we want to be able to show you that we're slowing down now as we leave the Moon. You've seen a fantastic sight. We want to just take you inside the cockpit and say hello for a minute, and then when we come back out you should be able to see the - to really get a better view of the Moon there with respect to having a whole sphere. Over.
05 18 35 35	CC	Okay. Mighty fine. We're standing by, Tom.
05 18 36 41	CC	Okay. Your picture is coming in real good, real clear.
05 18 36 47	CMP	Hello, everybody.
05 18 36 51	CDR	While the view outside is fantastic, inside here, we look like about three scroungy characters, but we really feel great, and it's been a fantastic trip. Over.
05 18 37 02	CC	Roger, Tom.
05 18 37 07	CC	You guys looking mighty good in there.
05 18 37 12	CDR	Roger. You getting any color on us in here?
05 18 37 14	CC	Roger. The color is real good inside.
05 18 37 20	CDR	Well, we feel great, and we've felt great ever since lift-off, and it's been a fantastic voyage. In just a minute we'll turn the camera around and show you John. Over.
05 18 37 36	CC	Roger. Who is winning the beard-growing contest in there?
05 18 37 44	CDR	Well, I don't know. John's got the mustache won. I don't know about the beard.
05 18 37 50	LMP	I'm the baby of the group, Joe.
05 18 37 54	CC	Okay.
05 18 37 56	CDR	Okay. We'll show you John.
05 18 38 04	LMP	John's got a little blue ink on his fingers.
05 18 38 09	CMP	I was writing a letter and I broke my pen. Does it show up in living color?

05 18 38 17	CC	Open your hand up again.
05 18 38 23	CC	Yes. It sure does.
05 18 38 29	CMP	How about that.
05 18 38 42	CMP	You can see we're pretty happy about this whole business.
05 18 38 47	CC	Roger that. It sure looks good to see you again.
05 18 38 54	LMP	What are you doing?
05 18 38 57	CC	We got your message on the blue dye, John.
05 18 39 03	CDR	Roger. You've got to watch when you write a lot with blue pens, and we're going to take you back outside and show you the Moon as we see it. Over.
05 18 40 04	LMP	Joe, the Moon is starting to lose its spherical shape. It's becoming oblong now with the terminator, with us going around into the area of the terminator.
05 18 40 15	CC	Roger. We are showing that on our screens down here.
05 18 40 26	LMP	You know, looking at the Earth terminator and the Moon terminator is the only way we can figure out which is up and which is down, and sometimes they don't agree.
05 18 40 36	CC	Roger.
05 18 40 37	CMP	For you people who aren't in the space flight business, I say it sure is fantastic and you really ought to try it.
05 18 40 47	CC	Thank you, John. I hope to some day.
05 18 40 49	CDR	This is Apollo 10. It appears that the tube - Roger, Joe. Houston, it appears that the tube is starting to saturate when I go to full zoom and then it's gathering in too much light and it's coming back normal from the Sun's rays. Are you getting that on your screen? Over.
05 18 41 08	CC	No. We're still getting a real good picture down here, Tom.
05 18 41 18	CDR	Okay. I'll go back to the full zoom and just hold it there for a little bit.
05 18 41 28	LMP	Joe, I've always believed that nothing is impossible, and now I'm convinced of it and I hope that what we

		are doing here and what's going to go on in the future is going to be something that's going to be a betterment to all mankind. I'm convinced of that.
05 18 41 41	CC	Roger that.
05 18 41 46	CDR	Houston, how does your picture look now, and are you saturated at all? Over.
05 18 41 50	CC	Roger. We're starting to get saturated now, Tom.
05 18 41 55	CDR	Okay. It appears that probably when I go to the wide angle enough to zoom it, it starts to saturate a little bit, so I'll keep it down to lower at this time.
05 18 42 07	CC	Roger. It's a whole lot better now.
05 18 42 27	CDR	And you notice - Now you can really start to notice near the horizons how rugged it is, and do you see the little peaks sticking up on it?
05 18 42 34	CC	Roger. We picked those out.
05 18 43 04	CDR	Okay, Houston. The Moon, as we move away and our velocity slows down, the Moon is starting to grow less in diameter relative - as far as our visual view, so what we'll do is terminate the TV now and we'll bring it back on in a little while after we get squared away here and show you a little bit better distant view. Over.
05 18 43 30	CC	Okay. Mighty fine, Tom.
05 18 43 34	CDR	Okay. And this is Apollo 10 signing off for a while, and we'll be back in about 30 or 40 minutes and see how it looks then. Over.
05 18 43 55	CC	Okay, 10. This is Houston. We'd like to dump the tape now, and we'd like to keep the high gain antenna while we do that.
05 18 44 07	LMP	Yes sir. Will this attitude be okay, Joe?
05 18 44 17	CC	Roger. That will be fine.
05 18 45 00	CMP	Houston. You want to delay - We're going to get the REALIGN and going to PTC REFSMMAT? That's what you are saying, isn't it? Is that correct?
05 18 45 07	CC	That's correct.

05 18 45 13	CDR	Roger, Houston. This is 10. We would like to stay in this attutide for a while, if it's okay. If we don't violate any thermal constraints. Over.
05 18 45 20	CC	Okay. Let me check on that, Tom. I think that will be okay.
05 18 45 27	CDR	All right.
05 18 45 45	CC	10, this is Houston. Roger, Tom. You can stay in that attitude. There is no restraint on the thermal world.
05 18 45 54	CDR	Okay. Real fine. Thank you, Joe. Over.
05 18 48 35	CC	Okay, 10. This is Houston. You can have the computer back now. And your REFSMMAT is in.
05 18 48 46	CMP	We've had the computer for quite a while.
05 18 48 49	CC	Okay. I'm sorry.
05 18 48 52	CMP	I hope. Because we've been playing with it.
05 18 48 57	CC	You're right.
05 18 51 20	LMP	Hello, Houston. This is 10.
05 18 51 24	CC	Go ahead, 10.
05 18 51 30	LMP	This is - We're circling 26 to 26-1/2 volts up here pretty regularly at the moment.
05 18 51 41	CC	Roger. We copy.
05 18 51 43	LMP	We're going to see if we can bring it up a little bit. We're going to see if we can bring it up a little bit. We've got the DDC power off - DEDA power, rather, and a couple of other things, and we'll watch it, but I just wanted to let you know we're looking at a low 26-1/2.
05 18 52 02	CC	Roger. We copy. We'll look at it.
05 18 52 10	LMP	And I guess we're up to about 27 now, so we're probably in pretty good shape.
05 18 52 19	CC	Okay, 10. I'm going to turn you over to the Marines now. I'll see you a little later.
05 18 52 27	CDR	Roger, Joe. Thanks a lot for all the help there on the CAPCOMM and the whole mission is real great. We'll see you back in Houston probably next Tuesday. Over.

05 18 52 36	CC	Roger that. You're right in the groove.
05 18 52 42	LMP	Thank you, Josep.
05 18 54 24	LMP	Houston, Charlie Brown. Do you want me to put my high bit rate into low?
05 18 54 30	CC	Stand by one.
05 08 54 41	CC	Affirmative, Apollo 10. Put your high bit rate to low.
05 18 54 49	LMP	Okay.
05 18 55 13	CC	Apollo 10, Houston. We're going to keep the configuration we've got until we get P52 finished and dump finished. Over.
05 18 55 26	CDR	Roger.
05 18 55 40	CMP	Houston, on these P52's REFSMMAT REALICN's, can you give us attitudes to go to so that we can avoid the gimbal lock alarm?
05 18 55 53	CC	Roger. I think we can do that. Stand by.
05 18 56 53	LMP	Hello, Houston. I've got some onboard readouts for you.
05 18 56 57	CC	Roger. Go ahead, 10.
05 18 57 03	LMP	Okay. BATT C is 37, PYRO A is 37, PYRO B is 37 - -
05 18 57 08	CC	Roger. Understand BATT B - -
05 18 57 10	LMP	- - RCS A is 55, B is 7 - -
05 18 57 16	CC	Apollo 10 - -
05 18 57 17	LMP	- - RCS A is 55 percent - Okay. I'm ready now. RCS A is 55, B is 71, C 66, D is 63 percent. Over.
05 18 57 48	CC	Roger, Apollo 10. We copy, 37, 37, 37, 55, 71, 66, 63, and you can do your P52 in the present attitude and go right from there to PTC. Over.
05 18 58 04	LMP	Okay. P52 in present attitude and right from there to PTC. As it says on page 94 of our flight plan, we can tell we're returning because we're facing the other way. A phrase by that one famous dog.

05 18 58 47	LMP	Houston, our condenser exhaust temperature is cycling one again between the limits, and I think it just triggered a quick MASTER ALARM on fuel cell 2, but it's cycling just like it was in lunar orbit.
05 18 59 01	CC	Roger, 10. We copy.
05 18 59 49	CMP	Houston, Apollo 10 You said it's okay to realign the PTC right now?
05 18 59 56	CC	Stand by one.
05 19 00 09	CC	Apollo 10, Houston. Go ahead with your PTC alignment.
05 19 00 16	CMP	Roger.
05 19 01 10	CC	Apollo 10, Houston. We'd like you to turn on your fuel cell 2 H_2 purge line heater. Over.
05 19 01 21	LMP	Yes. I've had the H_2 purge line heater on about 5 minutes now, Jack.
05 19 01 26	CC	Roger, Gene.
05 19 01 31	LMP	And I'm planning a H_2 - and an O_2 purge at 140. Is that correct, 139 30?
05 19 01 41	CC	Stand by.
05 19 01 50	CC	That is affirmative, Gene. 139 30, purge fuel cells.
05 19 01 59	LMP	Okay. Thank you, Jack. I assume not fuel cell 1, though. Is that correct? Just 2 and 3?
05 19 02 14	CC	Gene, just purge 2 and 3, not 1. Over.
05 19 02 20	LMP	Thank you, Jack.
05 19 03 29	CMP	Houston, Apollo 10. Confirm that this is an option 1 REALIGN.
05 19 02 36	CC	Houston, Apollo 10. Say again.
05 19 03 45	CMP	Roger. Confirm that this is an option 1 platform REALIGN.
05 19 03 48	CC	Stand by one.

05 19 03 51	CMP	I'm sure it is. I just wanted you to make sure.
05 19 03 57	CC	Okay, John. That's an option 1 confirmed.
05 19 04 04	CMP	Roger.
05 19 06 11	LMP	Hello, Jack. I've got some PAD readings.
05 19 06 14	CC	Go ahead with the RAD.
05 19 06 19	LMP	Commander is 26042, CMP is 05311, and I'm 15043.
05 19 06 29	CC	Roger. Copy 26042, 05311, 15043. Thank you.
05 19 06 37	LMP	And negative on the pills today.
05 19 06 40	CC	Roger. Copy.
05 19 06 46	LMP	And the fans have been cycled.
05 19 06 50	CC	Roger.
05 19 07 49	CC	Apollo 10, Houston - -
05 19 07 50	LMP	Houston, we're going through a regulator check at this time.
05 19 07 53	CC	Roger. We copy.
05 19 07 55	LMP	Go ahead.
05 19 07 56	CC	Yes. We'd like to know - Did you turn the GDC off by going to ECA? Over.
05 19 08 04	CDR	Roger. We turned it off and then turned it back on here since we're going to do this IMU REALIGN. Over.
05 19 08 12	CC	Roger. Understand off and then on. Thank you.
05 19 08 17	CDR	Yes. Just want to check again how much it increased our voltage and after we get the IMU completely torqued around, then I'm going to turn the GDC CA bar to ECA. Over.
05 19 08 31	CC	Okay, Tom.
05 19 10 17	LMP	Houston, this is 10. When I start up the secondary glycol pump I get main bus A undervolt. Probably is a transient, but I turned it off at this time.
05 19 10 30	CC	Roger. We copy.

05 19 10 35	LMP	I'm sure it's a start-up transient, but I haven't tried it again, so recommend we just delete it. It did start up and the secondary evaporator has been working well. Do you - Shall we delete that test or shall we give it a try?
05 19 10 49	CC	Stand by one. We'll check.
05 19 10 58	CC	Apollo 10, Houston. Delete the secondary loop check. Over.
05 19 11 03	LMP	Very good. Thank you, Jack.

END OF TAPE

05 19 18 36	CC	Apollo 10, Houston, on your next fuel cell purge, fuel cell 3 should be normal 80-second purge. but we'd like you to try something different on fuel cell 2 hydrogen purge. We'd like you to try five cycles on the purge at 15 seconds each, and then 2 to 3 seconds between cycles. So purge for 15, OFF for 2 to 3 seconds, and then back on five times. Over.
05 19 19 10	LMP	Okay, Jack. I'll start right now with hydrogen 2 H_2 purge. Okay?
05 19 19 19	CC	Roger. We'll be watching.
05 19 25 40	CC	Apollo 10, Houston. If you want to AUTO maneuver to PTC, we can give you some angles.
05 19 25 51	CDR	...
05 19 26 14	CC	Apollo 10, Houston. We're not copying you.
05 19 26 21	CDR	Roger, Houston. Go ahead with the angles. Over.
05 19 26 25	CC	Okay. Roll 105, pitch 90, yaw 0.
05 19 26 35	CDR	Roger. Roll 105, pitch 90, yaw 0.
05 19 26 41	CC	That's affirmative.
05 19 26 47	CDR	Roger.
05 19 26 58	CDR	Okay, Houston. And before - What time do you want us to maneuver there? Over.
05 19 27 07	CC	You can maneuver any time, Tom.
05 19 27 12	CDR	Okay. Before we go there, we're going to give you one last picture of the Moon now - see the terminator coming here - We'll just give you a short look at it if they're still configured for TV. Over.
05 19 27 25	CC	Stand by one.
05 19 27 36	CC	Okay, Tom. We're configured. Send it down.
05 19 29 15	LMP	Houston, you should have the tube coming down now.
05 19 29 54	CDR	Houston, do you have a picture now? Over.

05 19 30 05	CC	We're checking the network time on it.
05 19 30 07	LMP	Hello, Houston. Do you have a picture?
05 19 30 10	CC	We don't have it in the MOCR yet, but we are checking the network. Stand by.
05 19 30 16	CC	Okay. We got it now. Looks good.
05 19 30 28	CDR	When you see the terminator coming on there, it looks like the Moon is lopsided. John is holding the camera, panning, and Gene is opening focus on it. And it's a beautiful view there. Over.
05 19 30 40	CC	Yes. Really looks good from here, Tom.
05 19 30 45	CDR	Okay. How's your color look on it now? Over.
05 19 30 50	CC	In the MOCR here, we're seeing a green and white Moon.
05 19 30 55	CDR	Well. Green and white?
05 19 30 57	CC	Yes. It's green up near the terminator and white up near the - near the other limb.
05 19 31 08	CDR	You must be talking about the cheesy part of it, huh?
05 19 31 12	CC	Yes. I guess you guys must have done that to it.
05 19 31 18	CDR	Yes. You might say something like that. Okay. Again, just for correlation on the colors that we have - about the best area of that mare that I can describe. It looks like a chocolate milk-shake. That's about the best of color of brown that I can describe. Over.
05 19 31 37	CC	Roger, Tom. We copy. Move that camera a little bit to the right.
05 19 31 47	LMP	We'll get it in with our monitor. Stand by one.
05 19 32 38	CC	Okay, 10. That's real good.
05 19 32 39	LMP	How's it look from here, Jack?
05 19 32 43	CC	That's real good now, Gene.
05 19 32 49	CDR	And, Houston, 10. How does your color look? Over.
05 19 32 56	CC	Stand by one, Tom. I don't know if we're getting true color in here.

05 19 33 02	CDR	Okay.
05 19 33 09	CC	Our color is looking real good now, Tom.
05 19 33 14	CDR	Okay.
05 19 33 43	LMP	You're looking at the window. The mode now - We backed off so you can see the shade or the shadow of the hatch window, so you got an idea what size it might be if you could see any of the window frame at all. John's backed off to the point where the Moon is out through the hatch window.
05 19 34 05	CC	Roger. I can just make out the edge of the hatch window.
05 19 34 13	LMP	It gives you an idea of relative size as to what we're seeing compared to the window itself.
05 19 34 56	CDR	Okay, Houston. We just wanted to give you one last show to show how it started - the lighted parts started to look oblong as we can move out and see the terminator start to - continue to move out further and slow down. And it's been real great being able to show you this so you can share the same view that we have. Over.
05 19 35 17	CC	Roger, Tom. And it looks real good and I know the folks here at home are really enjoying the show. I bet you feel like you're really moving out.
05 19 35 29	CDR	Yes. That initial climb out was just fantastic, Jack. Like we were telling Joe earlier that it's a good thing we approached the Moon from the other way because if we approached it from this way straight going like that, you wouldn't - You'd have to shut your eyes. Over.
05 19 35 59	CC	And, Tom - -
05 19 36 00	CDR	It's going to be real interesting for us to look at is - Oh. Pardon me. I was just going to say it's going to be real interesting for us to look at the TV films after we get back. Over.
05 19 36 15	CC	Yes, Tom. I know you'll enjoy that. The TV experts wanted me to tell you that your adjustment of the color camera for both exterior and interior is just perfect. Over.

05 19 36 31	CDR	Okay. Real fine. Thank you.
05 19 36 44	CDR	Okay, Houston. This is Apollo 10. We've been up about 21 hours, nearly 22 hours, and we think we'll go ahead and start setup for the sleep cycle and just go ahead and start with the PTC attitudes. And at this time, we'll go ahead and turn the TV off, and this is Apollo 10 signing off for the TV.
05 19 37 06	CC	Roger, Tom. Thanks a lot for the TV show. It's a little early around here for some of the folks, but I know some of them will get it later in the day. It's a real good show.
05 19 37 21	CDR	Okay.
05 19 41 35	CMP	Houston, on this PTC, do you want to establish 20-degree deadband at one-tenth of a degree per second, or you want to try this other thing?
05 19 41 50	CC	John, this is Houston. We want the 30-degree deadband with a three-tenths degree per second. Over. Correction, three-tenths degree per second.
05 19 42 02	CMP	Okay. It's set up just the way you did - set up just the way we did coming here. Right?
05 19 42 08	CC	That's affirmative, John. And when you get down to disabling jets, we want you to disable all jets in quads C and D and we're standing here looking at the procedure, if you want us to help you out on it.
05 19 42 23	CMP	Roger. Understand. Charlie and Dog?
05 19 42 26	CC	That's affirmative.
05 19 42 30	CMP	Okay.
05 19 43 48	CDR	Hello, Houston. Apollo 10. Over.
05 19 43 50	CC	Go ahead, 10.
05 19 43 55	CDR	Okay, Jack. Looking ahead in the flight plan, what we'd like to do is make this a pretty long sleep period. I understand that the first midcourse occurs in 15 hours and was initially looked at at about 1 foot per second, which shows we're right in the slot. And what we'd like to do is sleep in a little bit longer than what was outlined here, see, since we've been up for about 22 hours. Over.

05 19 44 19	CC	Okay. Let's get these people to arrange that. Stand by, please.
05 19 44 26	CDR	Okay.
05 19 44 45	CC	Tom, looks like we're planned to let you sleep in already and the only thing that would possibly change that flight-plan-wise is some P23 activity, which we can postpone. Over.
05 19 45 01	CDR	Okay. We're all of us kind of bushed out now, just a little bit tired from doing all this today, and John particularly. He's really worked hard on that landmark tracking and his eyeballs are a little sore, so if we can postpone that for a little while and just sleep in, we'd sure appreciate it. Over.
05 19 45 15	CC	Sure. We'll work that out. And we want to ask you if you've been getting any caution and warning on fuel cell 2 recently.
05 19 45 29	LMP	No. The cycling is still there, but it hasn't cycled into the caution and warning region.
05 19 45 33	CC	Roger. It turns out that the purge fuel cell 2 didn't change anything, and we're trying to work something out, so this won't be bothering you during the time you're trying to sleep. Over.
05 19 45 47	LMP	Okay. Apparently the package or the pump, or whatever is cycling, doesn't bother you down there. Huh?
05 19 45 55	CC	Well, the exhaust temperature's getting down near the caution and warning limits. It hasn't gone over them yet. But we thought, if they started doing it, why, it was going to bother you and we're trying to figure out something else.
05 19 46 11	LMP	Yes. I know. But my question is, your analysis of what's causing the cycle, maybe the pump is going on and off, or there's a temperature sensor that's out of balance or something. Whatever you think it might be, it isn't bothering you, huh?
05 19 46 40	CC	Gene, we're just taking a look at fuel cell 2, and we're analyzing what it's doing, but at the moment, it is of no excessive concern. Over.
05 19 46 58	LMP	Okay. Thank you.

05 19 49 02	CC	Apollo 10, Houston. We have a presleep checklist here for you. A few items to turn off when you're ready to copy. Over.
05 19 49 22	LMP	Okay, Jack. Go ahead.
05 19 49 26	CC	Okay. Your optics power switch, OFF; your SPS electronics to ECA; and, using OMNI for PTC, go to OMNI in Bravo. Your high gain antenna track, MANUAL; potable water heater, OFF; high gain antenna power, OFF; your rotational controller power direct, both OFF; and, on your CRYO tanks, we want all CRYO fans OFF; and on the heaters, reading on your switches from left to right, your H_2 tank 1 heater OFF, your H_2 tank 2 heater AUTO, your O_2 tank 1 heater, OFF. Over.
05 19 49 38	LMP	Okay. On the heaters I got 1 H_2 is OFF, 2 H_2 is AUTO, 1 O_2 is AUTO, 2 O_2 is OFF, and all my fans are OFF.
05 19 49 51	CC	That's right. You got it right.
05 19 49 56	LMP	And, let's see. You gave me the ROT power, potable water heater, high gain to MANUAL, power off with the OMNI - SPS electronics ECA, optics power OFF.
05 19 51 11	CC	Roger. You got them all.
05 19 51 22	LMP	Going OMNI antenna at this time.
05 19 51 24	CC	Roger.
05 19 54 43	CC	Apollo 10, Houston. We'd like to have you confirm that you're now in the 20-minute wait period with jets on quads Charlie and Dog disabled. Over.
05 19 55 23	CMP	Houston, we're getting there. We'll do it yet.
05 19 55 30	CC	Okay, 10. Just trying to help you out a little bit. Know you guys are tired.
05 19 55 40	CMP	Yes, I know it. We're getting there.
05 19 56 38	CMP	Okay, Houston. We're starting a 20-minute wait.
05 19 56 42	CC	Okay, John.

05 19 58 07	CC	Apollo 10, Houston. We see your state vector's so good, it doesn't need any updating, so we'll delete that. Like you to ensure that your H_2 purge line heaters are off, and we noted that your DAP is in AUTO, and it should be in FREE for the 20-minute wait period. Over. Correction - It's in FREE, and it should be in AUTO for the 20-minute wait period. Over.
05 19 58 49	LMP	We got that, Jack - And the heaters were off. Thank you. ...
05 19 59 19	CC	Apollo 10, Houston. We're going to hand over to Madrid here momentarily, and you might get a little noise on account of that.
05 19 59 28	CMP	Okay, Houston. Would you believe that now we're starting the 20-minute wait period.
05 19 59 37	CC	Roger. I know. We're getting there.
05 19 59 48	CMP	Only problem is that I may fall asleep before the sleep period.

END OF TAPE

REST PERIOD - NO COMMUNICATIONS

REST PERIOD - NO COMMUNICATIONS

REST PERIOD - NO COMMUNICATIONS

06 01 46 42	CDR	Hello, Houston. Apollo 10.
06 01 46 50	CC	Hello, Apollo 10. Houston standing by. We were going to let you sleep in a couple of more hours, but we're ready to go if you are.
06 01 47 00	CDR	Roger, Jack. Just woke up, and feel great, and starting to take down a few of the window shades. Again, this RESFMMAT is really a beautiful attitude, because we can see the Moon out one window and the Earth out the other window, and then the Sun; and it looks like things have gone real good. I can't tell if you've fired a thruster ever since we set these up - this attitude up last night. Over.
06 01 47 26	CC	No. We haven't fired a thruster. The attitude's looking real good. And we got a little traveling music, if you'd like to listen.
06 01 47 38	CDR	Go ahead. Over.
06 01 47 39	CC	Okay. Stand by.
06 01 48 12	CC	(Music: It's So Nice To Go Traveling)
06 01 52 20	CC	Okay, 10. Houston. How'd the traveling music come through?
06 01 52 27	CDR	That was really great, Jack. You people have come up with some (laughter) some real great (laughter) numbers there for us. We sure appreciate it. Over.
06 01 52 35	CC	Well, thank you, Tom. Since the other day you made a special request for the Marine Corps Hymn, why, everybody around here has been trying to get us to play that. But I can't allow them to do that since you'd have to stand up, and you guys have said you don't know which way is up, so we can't play that one.
06 01 52 54	CDR	(Laughter) Okay. Understand. Over.
06 01 53 00	LMP	Hey, Jack, how come it takes us so much longer to train you to be a CAP COMM than Charlie and Bruce and Joe?
06 01 53 18	CDR	What Gene's trying to say is that good Marine Corps training must have come through, there. Over.
06 01 53 26	CC	I hear you. Keep talking.
06 01 53 33	CDR	Just kidding, there. Over.

06 01 53 39	CC	Well, you may notice that your exhaust temperature in fuel cell 2 is stabilized out, and sure enough, it's been that way for the last few hours. So it looks like that's no sweat. Your trajectory, by the way, is right on. You're laying right in the middle of the fairway there - it - taking us - It's going to take us about 15 hours to predict the uncertainties in your trajectory, as a matter of fact, so we're going to skip midcourse 5. And we have a choice of making either midcourse 6 or 7. And we're going to make midcourse 6, I believe, and it'll only be 1-1/2 feet per second. Over.
06 01 54 23	CDR	Roger. That just sounds beautiful. It looks like that burn back of the Moon - the guidance and the trajectory and everything put us right in the - like you said, right down the alleyway of the fairway. Over.
06 01 54 35	CC	Righto. You're going to pass through the lunar sphere of influence at 148 39. And during the time you were sleeping, you got to the point where you stopped decelerating, and you are now accelerating, and you're 187 300 miles out, and you're about 4800 feet per second.
06 01 55 01	CDR	Roger. 4800 feet per second. We've got a beautiful view out here of both the Earth and the Moon in our hatches and say, every half a REV, we can see both of them for quite awhile. And when you get high gain lock through Goldstone, we'll show them to you for just a couple of minutes. Over.
06 01 55 18	CC	Sure would like to take a look at that. Let's see if we can crank that up.
06 01 55 25	CDR	Roger. I don't know if Goldstone has contact yet. I'll leave that up to you. Over.
06 01 55 30	LMP	Hey, Jack, I just put battery A charge on. Started about 2 minutes ago.
06 01 55 37	CC	Okay. That was one of the items in the flight plan update, and I understand you've got BATT A charge on the line. Got a little bit of advance weather in the landing area. The forecast for your landing time is 1800 scattered, 10 000 broken, high broken, winds 120 at 15, seas will be 5 feet, and there are scattered showers in that area, which means less than 10 percent of the area has showers. Right now, there's a stationary front sitting over in that area, but it's quite weak. And the recovery forces this morning conducted a simulation in the area.

06 01 56 59	CC	And, 10, we've got some morning news here, if you want to listen to it sometime.
06 01 57 42	CDR	Hello, Houston. Apollo 10. Over.
06 01 57 44	CC	Apollo 10, Houston. How do you read me now?
06 01 57 49	CDR	Roger, Jack. Reading you loud and clear. I guess we switched antennas, and we lost COMM just about the time you said 1800 scattered. Over.
06 01 57 58	CC	Oh, all right. We'll go through that again. Your forecast weather for the landing area is 1800 scattered, 10 000 broken, and high broken. The winds will be 120 at 15, 5-foot seas, and there are scattered showers in the area, which means, however, that less than 10 percent of the area's getting showers, and the recovery people were conducting a simulation in your landing area this morning. There's a stationary front in the landing area. However, it's relatively weak, as you can tell from the weather. And we'll continue updating you on the weather periodically. We also have some morning news here if you want to listen to it.
06 01 58 48	CDR	Roger. Go ahead.
06 01 58 52	CC	Okay. Apollo 10 Morning Newscast from Manned Spacecraft Center Public Affairs Office. Everybody is really raving about your latest television pictures. They say, "The television pictures of the Moon beamed to Earth from Apollo 10 shortly after TEI are being described as the most spectacular of the mission. Because of the early morning schedule for much of the U.S., the transmission is being replayed at various hours throughout the day." However, the consensus of opinion here is the same as yours, "utterly fantastic." Aside from the Apollo 10 news, here is a summary of other news highlights and a look at sports. President Nixon took time off from his busy schedule to enjoy a band concert on the White House lawn yesterday with the Soviet Ambassador Dobrynin. Music was provided by the University of Minnesota Concert Band that had just returned from a concert tour of the Soviet Union. Dobrynin was so pleased with the concert that he suggested that the tuba player be named Secretary of State. Both Dobrynin and President Nixon were observed tapping their toes and clapping hands as the band played "Minnesota, Hats Off To Thee." Another historic voyage was scheduled to begin today from the coast of Morocco. Norwegian adventurer Thor Heyerdahl was scheduled to leave the North African coast for an ocean voyage to the Caribbean Islands. Remember,

he's the guy who had the crewman aboard that had three wives, the last one costing the outrageous sum of 60 bucks. Anyway, Heyerdahl and his crew of six are sailing in an exact copy of an ancient Egyptian sailing vessel. The boat is made of papyrus reeds. The U.S. Senate is expected to give quick confirmation of Judge Warren Burger as the new Chief Justice of the Supreme Court. Chief Justice-Designate Burger is reported to be a law-and-order-type judge. The City of Houston is without a symphony orchestra. Musicians rejected a 3-year contract proposal yesterday. Andre Previn also conducted his last concert with the orchestra. Former Governor John Connally told graduating students of the University of Saint Thomas that, despite the problems within the United States, our country is the "greatest organized society this world has ever known." Connally received an honorary doctorate at the school's commencement exercises. Here's a look at sports. The Astros shut out the New York Mets last night by a score of 7 to 0. A crowd of almost 11 000 saw Tom Griffin pitch a five-hit shutout, striking out 13 batters. The Cubs' Ken Holtzman shut out San Diego 6 to 0, and it was Philadelphia 6 Atlanta 2. The Cubs now lead their division by five games while Houston is nine games out of first place in the Western Division of the National League. One of these days Oklahoma will have a baseball team. The weather is good for time trials at the Indianapolis Speedway - The weather is good for time trials at the Indianapolis Speedway today. A. J. Foyt and Roger McCluskey are expected to battle it out for the pole position. In previous runs around the track, Foyt has done over 172 miles an hour and McCluskey over 170 miles per hour. Mario Andretti smashed into a wall yesterday and totaled his Lotus-Ford, but was not seriously injured. He came back to drive a test lap in his backup car at a speed of 169 miles an hour. Foyt will try to win an unprecendented fourth "Indy 500" race. Augie Erfurth is reported to have resigned his post as assistant athletic director at Rice University. Athletic Director Bo Hagan is expected to make the announcement today and appoint a successor to Erfurth. Pete Brown shot a 66 to take the halfway lead in the Atlanta Classic Golf Tournament. After 36 holes, Brown has a card of 135. And the big name golfers are all down in the pack, three to six strokes off the pace. Boxer George Forman has signed up a manager and will make his professional boxing debut at Madison Square Garden in June. The 1968 Olympic champ is, according to his new manager, Houston's first heavyweight champion of the world. The Dallas Cowboys yesterday announced that reserve quarterback Jerry Rhome has been traded to the

Cleveland Browns. In return, the Browns will get an undisclosed 1969 draft choice. The Cowboys will still have Don Meredith and Craig Morton, in addition to Roger Staubach, the former Navy great, who joins the team this fall. And a final note: preparations are being made for a hero's welcome for the Apollo 10 crew at Pago Pago, Governor Owen Aspinall says he will personally supervise the welcoming. Over.

06 02 04 11	CDR	(Laughter) Roger, Houston. That's quite a bit of news. And tell the governor down in Pago Pago we appreciate it, but he doesn't have to go to any special effort. Over.
06 02 04 24	CC	Yes. Well, I didn't read the last sentence here. It said, "Maybe there will be dancing girls there;" But now you know. And, by the way, the unemployed local philosopher now says that - -
06 02 04 36	CDR	Oh, well. If he wants to go to the special effort.
06 02 04 41	CC	Yes, I thought you might change your mind. By the way, the unemployed local philosopher - -
06 02 04 46	CDR	...
06 02 04 47	CC	- - now says that, due to your efforts, color television is now on its way back.
06 02 04 59	CDR	Roger. Give our best to the unemployed philosopher there. And that total situation down in Samoa sounds like it's - - Is that going to be a top hat or topless type of affair? Over.
06 02 05 24	CC	Just come as you are, Tom.
06 02 05 30	CDR	Okay.
06 02 05 32	LMP	Okay. Hey, Jack. You got our astrocast today?
06 02 05 36	CC	Stand by. We'll see if we can get them.
06 02 06 07	CC	And, Apollo 10, Houston. Looks like your TV lines will be ready from Goldstone at 146 47; 40 more minutes.
06 02 06 25	CDR	Roger. 146 47.
06 02 06 36	LMP	Hey, Jack, when we get back if we have time, I'd sure like to hear ...
06 02 06 48	CC	Sorry. You'll have to speak into the microphone. I didn't catch that.

06 02 11 25	CC	Apollo 10, Houston. How do you read?
06 02 11 30	CDR	Roger, Houston. Reading you loud and clear. Over.
06 02 11 33	CC	Okay. I hear you the same. The afternoon television program has slipped to 147 hours, and if you want some TV attitudes and high gain angles for subsequent television programs, why, I've got them here.
06 02 12 00	CDR	Roger, Jack. Actually, this PTC attitude we're in now, just - We can pan it when we slowly rotate. We can, in a period of time, get both the Earth and the Moon in right this attitude while we're still in PTC. But I don't know whether you can get high gain lock. Over.
06 02 13 54	CC	Okay, 10. Houston. Looks like you could probably give us TV in the PTC mode with your high gain at pitch plus 30 and yaw 270. Over.
06 02 14 09	CDR	Roger. Pitch plus 30 and yaw plus 270. Roger. In fact, why don't we go ahead and just - We'll make a try early and see if we can maintain high gain lock. Over.
06 02 14 23	CC	Roger.
06 02 14 27	CDR	And we'll do that later on. We're watching our voltages now. Houston, is Deke around there? Over.
06 02 14 38	CC	Negative, Tom. He was in here earlier, and he'll be back.
06 02 14 46	CDR	Okay. There's one thing that we wanted to put down as a flight change in procedure after we land. All three of us are still itching rather badly from all the fiberglass that we had in here from that insulation. I've got a little bit of rash on my hands. So, say, after the normal ceremonies on the carrier, I'm saying the first thing we're going to do is to take a shower and get rid of this fiberglass. Over.
06 02 15 09	CC	Roger. We copy.
06 02 17 38	LMP	Hello, Houston. This is 10.
06 02 17 40	CC	Go ahead, 10.

06 02 17 44	LMP	Okay. Looking back over my records, the last two readings I gave you for the CMP are wrong on the RAD readings. Wait a second. I'll be right back with you.
06 02 20 27	LMP	Jack, the up-to-date readings as of right now - If you want them, I'll give them to you.
06 02 20 34	CC	Go ahead.
06 02 20 37	LMP	Commander is 26043, the CMP is 05043, and the LMP is 15044. And the last two or three readings on the CMP, it's my fault, it may have been wrong. I just copied them wrong. But the incremental increase that you've seen on my RAD meter is typical of the increase in the other two right along.
06 02 21 03	CC	Roger. Copy. Thank you.
06 02 21 43	CC	And, Apollo 10, Houston. We'd like you to verify a switch. Please verify GLYCOL EVAP TEMP IN switch in the AUTO position. Over.
06 02 21 57	LMP	No, Jack. It's in MANUAL. GLYCOL EVAP TEMP IN is in MANUAL.
06 02 22 17	CC	Okay, Gene. Let's put the GLYCOL EVAP TEMP IN in MAN - correction - in AUTO. Over.
06 02 22 26	LMP	Okay. It's in AUTO. I'm not sure when it went to MANUAL, though.
06 02 22 32	CC	Roger. Our data shows that it was probably in MANUAL, and you didn't verify it. It should be in AUTO unless you've got a reason otherwise. Let us know.
06 02 22 46	LMP	No sir, Jack. It should have been in AUTO. I guess maybe I hit it accidently or something. I don't know.
06 02 24 03	CC	Apollo 10, Houston. When you have window number 5 looking at the Moon, then your high gain antenna angles will be pitch minus 62, yaw 266. Over.
06 02 24 32	LMP	Okay. When we've got window 5, it'll be pitch minus 62 and yaw 266. Roger. Thank you, Jack.
06 02 24 58	CC	And, by the way, Gene, your astrocast from your friendly communicator here says "Discussion fills much of the morning, and you'll learn a great deal that would never have come to your attention. That is, if you listen well."

06 02 25 12	CMP	That's right. I was going to have a briefing for him on the stars and planets today.
06 02 25 28	CC	Yes. And by the way, John, yours is "Keep your attention focused on your own affairs Saturday. The necessary chores are quite enough for the time being, and leave all the frills for another time and place." Over.
06 02 25 39	CMP	I promise.
06 02 25 45	LMP	Hey, Jack, if you're wondering about me, babe, I can't come back ... with that one.
06 02 26 04	LMP	What have you got for the ... commander?
06 02 26 22	CC	Oh, his isn't anything very exciting. Just says here "Problems tend to get out of hand, and logic is not quite enough. There is nothing to do but ride it out with a certain amount of leniency." Sounds like the boss.
06 02 26 39	CDR	(Laughter) Hey, you guys are too much down there today. Over.
06 02 26 51	CC	Apollo 10, Houston. If you want to acquire on the high gain a little early, you could go to pitch plus 30 and yaw 270 right now. Over.
06 02 27 00	LMP	Pitch plus 30 and yaw 270. We'll wait a second, Jack. We're getting some chow here.
06 02 27 14	CMP	Houston, I just want to give you an informal report on the star visibility up here in the PTC REFSMMAT.
06 02 27 21	CC	Roger. Go ahead.
06 02 27 23	CMP	With the Sun, the Moon, and the Earth light shafting, even with that, we are able to - And we're pointed up to the north constellations and so we are looking out at about an angle of 35 degrees to the elliptic pointed up. We were able to recognize the Big Bear, the Big Lion and, of course, Jupiter, Arcturus, Alphecca, and even old Rasalhague, and the Navigator's Triangle. And from then on, due to the Sun, things sort of get washed out, and they get washed out right on around until you pick up the Big Dipper again. But I'll tell you that's the first time translunar and transearth that I was ever able to recognize a constellation, and that is really encouraging.

06 02 28 31	CC	Okay. We understand you are able to recognize the Big Bear, the Big Lion, Arcturus, Rasalhague, and that you are washed out toward the Big Dipper and your eyes are getting better. Over.
06 02 28 44	CMP	No. Through - past Rasalhague, clean through the first part of the Great Square, and then it blanks out due to Sun shafting on the optics.
06 02 28 56	CC	Roger.
06 02 29 01	CMP	If you got a star chart in front of you, somebody can show you what I'm talking about. But I mean to tell you - There's a place in there, just about 180 out from the Sun, where it's exactly like nighttime. Just great. Every star is visible.
06 02 29 22	CC	Roger. We copy, John.
06 02 30 37	CMP	And another thing about that thing, Jack, is the shafting that keeps you from recognizing the star patterns isn't all from the Sun. The Earth is, of course, pretty close by the Sun, and when it comes out, it wipes out your night vision, too.
06 02 30 53	CC	Roger.
06 02 31 03	CMP	But the Moon - just for a very limited region around it - oh, it looks like about 30 degrees - is all - it hurts - 15 to 30. Pretty hard to get a correct handle on that number because it fades in and fades out.
06 02 31 23	CC	Roger. How about around the Earth? How much does it wash out?
06 02 31 41	CMP	Well, like I say, from -
06 02 31 53	CMP	I was able to see Mars in the -
06 02 32 13	CMP	Actually, the Earth doesn't hurt you too bad. For example, I was able to see Altair.
06 02 32 28	CC	Roger, John.
06 02 33 51	CC	And, Apollo 10, Houston. I have a consumables update and a flight plan update when you're ready.
06 02 35 15	LMP	Houston, this is 10. How do you read? Over.
06 02 35 20	CC	10, reading you loud and clear.
06 02 35 26	LMP	Okay, Jack. Go ahead with your consumables update.

06 02 35 31	CC	Okay. Consumables at 147 hours; RCS total 56 percent, 46, 63, 56, 59. That's 18 percent above the flight plan. H_2 totals 24.5, O_2 is 336. Over.
06 02 35 59	LMP	I got it all, Jack, and go ahead with the flight plan update.
06 02 36 06	CC	Okay. Flight plan update at 151 plus 30: delete all reference to midcourse correction 5. And at 152 hours, we want a waste-water dump. Over.
06 02 36 33	LMP	Okay. There will be no MCC 5, and at 152, you want a waste-water dump.
06 02 36 40	CC	That's at 152 hours, waste-water dump.
06 02 36 54	LMP	Okay. Got all that.
06 02 36 59	CC	And, Gene, I've got a lot more data on high gain antenna angles for lockup at different attitudes if - if and when you want them. Over.
06 02 37 11	LMP	Okay, Jack. Why don't you give them to me now?
06 02 37 14	CC	Okay. When you're in the PTC mode at a roll angle of 335 degrees, your left-hand window will be pointing at the Moon, at a roll degree - an angle of 318 degrees, you should be able to get lock with a pitch of plus 44 and a yaw of 272.
06 02 37 45	LMP	Hold it, Jack. Okay. Hold it, Jack. Wait a minute. Wait a minute. Go. Hit me again with all of that, a little slower.
06 02 37 52	CC	Okay. When your roll angle reaches 318 degrees, your high gain antenna pitch should be plus 44 and your yaw should be 272. Over.
06 02 38 23	LMP	Okay. You say when our roll is 335 we ought to have the left-hand - the Earth out the left-hand window, and when it's 065, we ought to have the Moon out the right-hand window.
06 02 38 34	CC	That's affirmative.
06 02 38 39	LMP	And when the roll is 318, the pitch for high gain is plus 44 and yaw is 272. Do you want me to set this high gain on a REACQ mode?
06 02 38 59	CC	That's affirmative, Gene. Once you acquire lock, let's go REACQ.
06 02 39 08	LMP	Okay. Fine. I'll try to acquire it this next time around.

06 02 42 29	LMP	Hey, Jack, what are my REACQ angles going to be? Or do you want me to just read them off the meter and set them up when we lose this lock?
06 02 45 07	CC	And, Apollo 10, Houston. On the high gain angles: set them up at pitch plus 30 and yaw 270. And then she'll roll in and then lock in the Earth. Over.
06 02 45 45	LMP	Jack, I haven't been reading you at all but we got high gain lock now. So my question was what's my REACQ angles?
06 02 46 03	CC	Okay, Gene-o. They're plus 30 and 270. Over.
06 02 46 12	LMP	Plus 30 and 270. Thank you.
06 02 46 15	CC	And we've got high gain lock.
06 02 46 18	LMP	Okay. Great, Jack.
06 02 47 28	CC	Apollo 10, Houston. We're ready with the P27 update when you can have the computer. Over.
06 02 47 40	LMP	You've got ACCEPT.
06 02 47 42	CC	Roger. Thank you.
06 02 50 09	CC	Apollo 10, Houston. We're finished with your computer. You can PLOCK.
06 02 50 17	CMP	Roger.
06 03 02 52	CC	Apollo 10, this is Houston. Over.
06 03 02 59	CDR	Good morning, Bruce. How are you this morning?

END OF TAPE

-- -- -- --	CC	Apollo 10, this is Houston. Over.
-- -- -- --	LMP	Good morning, Bruce. How are you this morning?
06 03 03 00	CC	Good morning. I am fine. Say, I'd like to verify that you are in MANUAL at the present time on the high gain antenna. And then at 4 minutes after the hour GET, go to AUTOMATIC. Over.
06 03 03 17	LMP	Okay. I'm in REACQ now. You say you want me to go to MANUAL?
06 03 03 19	CC	Roger. Go to MANUAL now, and then in about a minute, or a minute and a half, go to AUTOMATIC and you should reacquire.
06 03 03 27	LMP	Okay.
06 03 04 33	CC	10, this is Houston. We've got a high gain lock now.
06 03 04 37	CMP	Roger, Bruce. How far away - How far are we out now?
06 03 04 42	CC	184 000 nautical miles. Over.
06 03 04 51	CMP	Wow.
06 03 04 52	CC	And range is decreasing.
06 03 04 53	CMP	The Earth and the Moon are about the same.
06 03 04 59	CC	Roger.
06 03 05 01	CMP	There's an encouraging sign.
06 03 06 26	CC	10, Houston. For your information, you will cross the equipotential point between the Earth and the Moon at GET 148 39, and that point is 179 525 miles out from the Earth. Over.
06 03 06 49	CMP	Roger. Is that about where the computer switches over?
06 03 06 55	CC	Roger. It's very close. Over.
06 03 07 10	CMP	You know, but it's of academic interest, isn't it?
06 03 07 15	CC	Roger.
06 03 07 27	LMP	Bruce, how soon are you going to be ready for the TV?
06 03 07 37	CC	It's going to be about 5 minutes yet, 10. Over.

06 03 07 42	LMP	Okay. Fine. It'll take us that long to get it all set up.
06 03 07 47	CC	Roger. Out.
06 03 07 53	LMP	And, Bruce, would you check and find out what our hydrogen potential is down there in terms of tank loss and also in terms of our purge capability for fuel cell 1?
06 03 07 59	CC	Okay. Stand by and we'll get that for you.
06 03 08 57	CC	Apollo 10, this is Houston. Over.
06 03 09 00	LMP	Go ahead, Jack - or Bruce.
06 03 09 08	CC	Roger. With the hydrogen that you currently have available in both tanks, you have a 20 - that is, a 20-hour continuous hydrogen purge capability, which you can split up among the fuel cells any way you like. If you lose one tank and power down to 50 amps - 50 amps, you can get by until 225 hours GET or a little over 30 hours after anticipated splashdown. Over.
06 03 09 39	LMP	That's great, Bruce. Thank you very much.
06 03 09 44	CC	Looks like you are in good shape.
06 03 10 27	LMP	Bruce, I am a little bit confused on how you want me to handle the high gain now. I am in AUTO. Do you want me to go to REACQ? And are you switching back to OMNI D? How do you want us to handle this high gain for TV?
06 03 10 39	CC	Stand by.
06 03 12 44	CC	Apollo 10, this is Houston. I've got your antenna OPS plan here.
06 03 12 53	CMP	Roger. Stand by.
06 03 12 55	CMP	Are you ready for the TV?
06 03 12 56	CC	Roger. We're ready.
06 03 13 27	CMP	Hello, Houston. This is Apollo 10. 184 000 miles from Earth. You got a picture yet?
06 03 13 40	CC	Apollo 10, this is Houston. Roger. We are not receiving the picture yet. I'll give you a Mark when it starts coming in here.
06 03 13 52	CMP	Okay. We're sending.

06 03 14 18	CC	10, this is Houston. It looks like we're going to lose your high gain antenna in about 30 seconds. Suggest you wait until we reacquire the next rotation on the high gain. Over.
06 03 14 33	CMP	Roger.
06 03 14 37	LMP	Okay. Will you give us a Mark when that will be and - Go ahead. Are those REACQ angles still good?
06 03 14 42	CC	Roger. What we would like you to do is, we'll command OMNI Delta when we start losing signal strength there. And then you should go MANUAL on the high gain antenna. We'll give you a Mark when to go back to AUTOMATIC. And we'll switch you back in to high gain. This will eliminate any LOS. If you stayed in automatic REACQ, we'd have LOS about 36 percent of the time. You're not in close enough yet, though, so that we can get TV on the OMNI. Over.
06 03 15 24	LMP	Okay. Great. That sounds great, Bruce.
06 03 15 26	CC	And I will give you a call when to go back into AUTO and try to give you a couple of minutes warning for the TV. I think it's better this way than if you start out and run on TV for a minute or so then have to break it up and start again.
06 03 15 44	LMP	Agree.
06 03 15 57	LMP	Houston, do we have high gain right now?
06 03 16 04	CC	Negative, 10.
06 03 16 53	CC	10, this is Houston. You should be in MANUAL at the present time on hign gain antenna.
06 03 17 03	CMP	Roger. I am, Jack; I'm waiting for your Mark until we acquire high gain again.
06 03 17 09	CC	Roger.
06 03 21 16	CC	Apollo 10, this is Houston.
06 03 21 23	LMP	Go, Bruce.
06 03 21 25	CC	Roger. At 147 23 GET, we would like you to go to AUTO on the high gain antenna. We'll expect acquisition almost immediately. You will be in AOS with the high gain for about 11 minutes. Over.

06 03 21 44	LMP	Oh, that's great. Thank you.
06 03 22 08	LMP	Bruce, what we ought to be able to do is pick up the Earth out of Tom's window ... this pass and pick up the Moon out of my right-hand window at the end of the pass.
06 03 22 17	CC	Roger. Understand. The Earth out of the left-hand window at the beginning, and the Moon out of the right-hand at the end.
06 03 22 27	LMP	Let me know when you are going to relatch the high gain switch.
06 03 22 33	CC	You're getting very noisy now. Say again?
06 03 22 38	CMP	Roger. Do you have a picture?
06 03 22 41	CC	Not yet. We've got to get you on high gain first.
06 03 22 44	CMP	Roger.
06 03 23 01	CC	Hey! We got a picture.
06 03 23 07	CMP	Roger. Houston, this is Apollo 10. 184 000 miles out. This is the Earth, half-Earth. It's about - the Moon right now. We have practically a full Moon. The Earth, as you can see it right now, is - The terminator is going right across the middle of the Atlantic. You see that big circular weather belt that goes up across the United - up across the east coast of the United States, covers up Florida, and it appears that some sort of point is in the Gulf of Mexico between Florida and Texas. It's difficult to make out any landmasses and I doubt that you can see any, but with the monocular, I can see Cuba, Haiti, and the Indies, and most of South America which is cloudcover. The central United States appears to be open, as well as the western United States, as far as I can see. The orientation that our spacecraft is in is at about 90 degress to our plane of travel. We are pointed up with our axis - I mean propulsion system axis up at the north stars, so that we're in a rotation collar passive thermal control mode. We rotate 360 degrees at the rate of three-tenths degree per second. And what that means is that first, starting with our right window, passing through the hatch window, and going through the left window, and then passing out to the optics, we have the full northern - northern solar, Earth, Moon plane. And at each revolution - at each

revolution, we see the - the Earth passes through the right window, the center window, and the left window, followed by the Moon passing through the right window, the center window, and the left window, and the Sun passing through the right window, center window, and left window. Now we're transferring from the Earth to the Moon, and you can see what I mean about the term "diameter."

06 03 26 01	CC	Okay, 10. We've got the Moon now. It's coming in nicely.
06 03 26 07	CMP	Roger. That's the same zoom that you had when you were looking at the Earth, and you can see the apparent size relationship of the two bodies right now.
06 03 26 16	CMP	Well, we have a three-fourths Moon. I take it all back.
06 03 26 23	CC	Actually, on the monitor down here, 10, the Moon appears to be a little larger in diameter yet than the Earth.
06 03 26 33	CMP	That's what I said. It's about twice the apparent diameter to me. And it sort of looks tan still to us. You can see the Sea of Crises very plainly, all the great seas, Serenity. And you notice the crater structure very clearly with those rough craters down in the southern - southern lunar hemisphere.
06 03 27 09	CC	Roger. We can pick them out on our monitor.
06 03 27 19	CMP	How does your color look down there?
06 03 27 22	CC	The black and white is very clear, 10. The color looks like it's saturating a little bit on the Moon.
06 03 27 31	CC	It's okay up here. Roger.
06 03 27 35	CMP	The Moon is a - The Moon is a very bright body from here. When looking at the Moon through the optical system in our spacecraft, within about 15 degrees or so of the Moon, the stars are blanked out so that you can't tell what constellations right now - if you were looking this way in the optics. We're behind the Moon. Our window system on the vehicle right now is in excellent condition. We can see just as

clearly as anyone could ask for, on all five windows.

06 03 28 39 CMP Okay. In about an hour and 10 minutes, we'll be passing from the gravitational potential field of the Moon into the gravitational potential of the Earth. So you can see, even though the Moon's apparent diameter is larger, the gravitational attraction of the Earth right now is just about to take command.

06 03 29 23 CMP We've noticed in the TV monitor that the Moon has several egg-shaped bumps, and if you're seeing those on your screen, they're not real.

06 03 29 35 CC There's a few.

06 03 29 36 CMP Around the edges.

06 03 29 37 CC This is Houston. Roger. We noticed some. I guess they're characteristic of this particular TV camera you're flying - this unit.

06 03 29 59 CMP Okay, Houston. You can watch the Moon pass behind the right-hand window of the spacecraft. It's rotating around, and then it will be - you'll probably be able to pick it up through the hatch window. See. It's going behind the window frame right now.

06 03 30 13 CC Roger. Amazing.

06 03 30 16 CMP That shows what our rotation rate is, basically.

06 03 30 33 CC Roger, 10. We've been timing you down here. It looks like about three revolutions per hour.

06 03 30 47 CMP Okay. Now we're looking at the Moon out through the center hatch window. This mode of operation for finding out where you are with relationship to the rest of the world, for aligning your platform, for knowing your relationship with your velocity vector, and having a very essential psychological feel for what's going on is excellent. With this kind of an operation, we always know where we are and where we're going; and even more important, we know where to go to look for the stars which we use to align our platform. And that's necessary for us to perform all our navigational maneuvers and corrections. But right now, we're set up on a trajectory which is so good that most of our navigational corrections are really going to be very small, it appears.

06 03 32 13	CMP	I'm afraid that we're probably going to be seeing more of the Moon, as we come back, than the Earth, because we don't really have, right now, the ability to maintain high gain lock when the Earth is in the right - is in the right and center hatch windows. So, we're probably going to be showing you the Earth only out of the left-hand window.
06 03 32 35	CC	This is Houston. Roger. Out.
06 03 33 01	CMP	Going behind the center hatch window now.
06 03 33 05	CC	10, this is Houston. We've got about 1 more minute until we lose you on the high gain.
06 03 33 11	CMP	Roger. Well, I think that shows what we mean by where we are and what the relationship of the Moon/Earth system is right now and where we are in respect to it.
06 03 33 32	CC	10, this is Houston. We - -
06 03 33 33	CMP	How did the color resolution look, Bruce?
06 03 33 37	CC	Stand by a minute. The - -
06 03 33 40	CMP	Roger.
06 03 33 41	CC	The large screen here was saturating, but we've got another monitor in the back, and the comments were that it was excellent.
06 03 33 52	CMP	Roger. There's a great big - a great big swirl right over the - right over the point south of Florida, goes up through the eastern states. That was clearly visible on the - at least through the - in the monitor up here. So, you'll probably be able to see it down there. And, also, another swirl; it looked like it was up north somewhere, possibly as far north as the Canadian border there, coming down to sort of join them together. Couple of very interesting weather patterns.
06 03 34 25	CC	Roger. We were able to see the cloud patterns very clearly here, on the black and white monitor; and I understand, from people who were watching the smaller color monitors, that the color was excellent. Over.

06 03 34 40	CMP	Roger. Well, of course, I didn't expect you were seeing any more than we were on our monitor; and you couldn't - couldn't recognize any landmasses to speak of, or any - possibly you could see South America down there in the south, under that big bank of cloudcover, because that's the only thing that I could really pick out with my naked eye.
06 03 35 09	CMP	Yes. The Earth today is just a white and blue planet.
06 03 35 16	CC	Roger, 10. We couldn't make out any of the landmasses down here, either. Even on the color monitor. But that circular area of clouds did stand out very clearly. We were able to locate the areas you were describing.
06 03 35 42	CMP	Okay, Houston. I guess we will terminate. We just wanted to give you a feel for this spectacular picture. As we get a little closer to the Earth, I think it will be worth trying again. Probably we could maintain better look - have better Earth-viewing if we stopped the PTC or rotated in the other direction, probably.
06 03 36 13	CC	Roger. We appreciate all the viewing we can get, though.
06 03 36 23	CMP	Okay. I guess I feel if we rotate the PTC in the other direction, we can pick up the Earth and maintain high gain lock, and that's going to be the plan of interest from now on, as far as we're concerned.
06 03 36 39	CC	Okay. Let us kick that around down here, and we'll be back with you.
06 03 40 45	CC	Apollo 10, this is Houston. We'd like you to go to MANUAL now on the high gain antenna, until it slews into positon, and then to REACQ. Over.
06 03 41 04	LMP	Okay.
06 03 41 11	CC	Houston. Roger. Out.
06 03 47 31	CMP	Houston, this is Apollo 10. Over.
06 03 47 33	CC	Apollo 10, this is Houston. Go ahead.
06 03 47 35	CMP	Roger. What we are doing now is in a temporary hold here for stowage and securing. I think we are ending up bringing back more than we took.

06 03 47 51	CC	Roger. We'll be asking you some questions about your stowage in a few minutes. We were getting organized to run through the LCL here with you. Over.
06 03 48 02	CMP	Roger. Furthermore, it is quite clear to me that if you pack up a food bag, when you open it up and eat the food out of it, you've still got more stuff to dispose of than you started with.
06 03 48 13	CC	Roger. The surgeons are - -
06 03 48 16	CMP	I guess what I'm saying is right now - -
06 03 48 21	CC	The surgeons are wondering if you have negative intake, or something.
06 03 49 31	CMP	No. We're eating. But what I - What I wonder is how we're going to get 15 pounds in a 10-pound sack?
06 03 49 44	CDR	In scientific terms, Bruce, that is known as a "blivet." Over.
06 03 49 53	CC	(Laughing) Houston. Roger. Out.
06 03 -- 22	CC	Hello, Apollo 10. Houston. Over.
06 03 -- 27	LMP	Hello, Charlie. How are you?
06 03 -- 31	CC	Pretty good, Gene. How you guys getting along this afternoon?
06 03 -- 40	LMP	Pretty good.
06 03 -- 42	CC	Yes. Sounds good. Hey, we got a couple of items for you. If you'll break out your LCL recovery checklist, I'd like to go down where you've got the items returned and the stowage location, just by item number. Over.
06 03 53 00	LMP	Yes, Charlie. But we're not quite ready to do that yet. Can you hold on? It may be a couple of hours.
06 03 53 07	CC	Roger. We'll hold off until tomorrow. Whenever you get ready. We're standing by. RETRO is interested. Also, the people in the back room have been working for 3 days on the water bag, and we got a procedure for you that has been refined on separating out the bubble, if you want a lot of exercise. Over.
06 03 54 03	LMP	Go ahead with your procedure there. Over.

06 03 54 11	CC	Well, good. I didn't know whether you wanted that or not. First off, it's quite lengthy. It's a full page. I'll try to go through it slowly, and we can talk it through and then ask some questions. First off, fill the entire bag, both top compartment and bottom compartment, about half-full of water. Then, work the water and the gas to the lower compartment by either spinning it or just kneading it down. Then, after you get it all in the bottom, spin it up and then let it come to rest slowly; and, if possible, then squeeze the gas - if you have any gas in the upper compartment - squeeze the gas out of the upper compartment. Then, if the bubble is present in the lower compartment and top compartment is empty, add some more water to the approximate size of the bubble. Then, you want to spin it up again as in step - well, as in step 3. Now, after you spin it up again, you should have gas in the top, or partially gas in the top, and gas and water in the bottom; and repeat the procedure. Add more water to the approximate bubble size and spin it again. And by the time you get finished, you should have all of the gas in the top and - compartment, that is, and then the bottom compartment should be just about full of water. Now, if you fill it too full, so you got the bottom full of water and the top full of water - partially full of water, then the only way you can get that bubble out of there then is to squeeze out the bubble and the water in the top compartment. The object is to get the bottom compartment completely full of water and the gas in the top compartment, and then you can vent it off by pinching off the lower compartment. If that sounds reasonable to you guys, you can try it. It's going to take a lot of spinning, but that's what they recommend in the back room after 3 days. Over.
06 03 56 24	LMP	Hey, Charlie. With all due respect, would you play back Glynn's tape recorder in there on his desk and listen yourself, and then give us a call?
06 03 56 42	CC	Okay. I guess you couldn't understand that.
06 03 56 48	LMP	No. We understood it.
06 03 56 54	CC	(Laughing) I told you you might not want this.
06 03 57 01	LMP	Listen, babe, I'm glad that's all we got to worry about at the moment.

06 03 57 05	CC	Me, too, Gene-o. We had this thing here, and if - That was the only recommendations we could come up with, and as I said, if you wanted lots of exercise you could do it, but if not - You know the general principle of the thing and it's your druthers. Adios.
06 03 57 27	LMP	We appreciate the homework that was done on it. Here we are with this thing, Charlie. Now, what do we do with that bag that's down in the bottom? I mean that bubble that's in the bottom?
06 03 57 42	CC	Have you got all the water out of the top?
06 03 57 48	CMP	Yes sir.
06 03 57 50	CC	Okay. Is the bottom part - -
06 03 57 52	CMP	I got all the water in the bottom and - -
06 03 57 58	CC	I understand, you got all the water in the bottom. Now is the bottom compartment completely full of water?
06 03 58 03	CMP	Yes sir. Yes.
06 03 58 06	CC	And it's still got a bubble in it, right?
06 03 58 10	CMP	Yes. It's still got a bubble in it.
06 03 58 14	CC	Okay. Then it's not completely full of water, and what you want to do is add some more water and spin it again.
06 03 58 28	CMP	That didn't work.
06 04 01 17	CC	Hey, Apollo 10. Houston. You still swinging the bag?
06 04 01 25	CDR	Stand by, Charlie. Over.
06 04 11 08	CMP	Houston, this is 10. Over.
06 04 11 15	CC	Apollo 10, this is Houston. Go ahead.
06 04 11 17	CMP	Roger. I've got the bag - the bottom half of the bag full of water, and there is some - a little water in the top of the bag. But every time I rotate and rotate and rotate, no matter how much I rotate, that water in the top won't go down in the bottom, and that bubble in the bottom won't come up to the top.

06 04 11 32	CC	Stand by. I'll put the bagman on. (Laughter)
06 04 11 37	CC	(Laughing) This is your bagman. I think we ought to - -
06 04 11 40	SC	...
06 04 11 43	CC	Go ahead, 10.
06 04 11 47	CMP	Go ahead, Charles.
06 04 11 50	CC	I think I've said enough today about that water bag. I think we ought to forget the whole thing.
06 04 12 00	CMP	Well, you know this doggone water and these bubbles, they stick to each other, or something! I get the feeling that is what is going on in there.
06 04 12 07	CC	(Laughing) I think you're right, John. They tried - We tried it out in the back room there, in good old one g, and if the thing won't work, fine. I apologize profusely for that procedure, and we - I think we ought to just forget it. Over.
06 04 12 29	CMP	It's no problem.
06 04 12 30	CC	Okay. Fine. That's really - -
06 04 12 31	CMP	Look, we'd try it - -
06 04 12 33	CC	Go ahead.
06 04 12 34	CMP	We'd try it. If it would work, we'd sure use it, I think. And we tried it; but like I say, we got a problem here with a bubble that's still down in the bottom, and the water being on the top. The two are just not going to mix.
06 04 12 46	CC	Roger. Like I was saying, I think if you'd really rotate it for quite awhile, the stuff would finally, eventually work its way down, but it takes a lot of exercise. At least it did down here in the backroom, and I don't really think it's - it's up to you guys if you want to continue to spin it. You've got the basic procedure down, and we'd better be quiet. Over.
06 04 13 10	CMP	All I can - All I can think of when I look at this bag is: Is this what's going on in my stomach with these bubbles and this air? Because if it is, that stuff is just sitting in there floating.

06 04 13 26	CC	Roger.
06 04 13 28	CMP	It won't go to the top, and it won't go to the bottom.
06 04 13 38	CC	Roger. It sounds like we've got a little problem there. Hey, I'd like to change the subject to talk about the LM cameras. We recommend wrapping up both cameras individually and putting them in compartment A5. That's the Hasselblad and the sequence.
06 04 14 02	LMP	Roger.
06 04 14 05	CC	And, for the ECS canister, we recommend you roll it up in any kind of a plastic material that you can get hold of to prevent it from, a term term they call "breathing" all over everything, and I guess that's just seeping out. After you've done that you can - Recommend you roll the canister up in the third sleeping bag. And that's the one without the fittings on the end, and then stow it in food compartment L3. And the helmet that should have gone in L3, stow it on a suit, and put that under the left sleep restraint - correction - stow it in the left-hand sleep restraint, and stow with the helmet in towards the hatch. Over.
06 04 14 54	CMP	With the helmet in towards the hatch. Roger.
06 04 14 56	CC	Okay. That's all we got.
06 04 14 59	CDR	Charlie, did you want the - Roger. We'll do that the final day. We're using these sleeping bags; they are really great at night. And you wanted to leave the suit in that restraint bag in its position? Over.
06 04 15 14	CC	That's affirmative. Leave the - as it read here in the procedure: stow helmet plan, to be stowed in L3 on the suit, and the suit to be stowed in the left-hand sleep restraint attached to normal-use fittings. And stow the helmet end of the suit towards the hatch. Over.
06 04 15 36	CMP	Understand.
06 04 16 49	CC	10, Houston. Just talking to the surgeon, and the concern with the canister is that - the lithium hydroxide getting out into the cabin; so if you haven't already done so, we recommend you wrap the canister in some plastic material and tape it up. Over.

06 04 17 10	CMP	Do you - Got any idea where we get this plastic material?
06 04 17 17	CC	Roger. We recommend food bags or fecal bags and tape as required. Over.
06 04 17 30	CMP	Okay.
06 04 28 37	CDR	Hello, Houston. Apollo 10. Over.
06 04 28 39	CC	Go ahead, Apollo 10.
06 04 28 42	CDR	Roger, Bruce. Is Charlie there? I want to talk to him for just a minute. Over.
06 04 28 48	CC	Yes, indeed.
06 04 28 50	CC	Go ahead, Tom.
06 04 28 52	CDR	Hey, Charlie. Right. I just wanted to - Before I get my chance to settle down, I just want to amplify one thing that happened back there in staging on Snoopy. You were right on that switch position, but you know on a three-position switch, we finally figured it out later on, up around CSI. We went through the procedures okay, but I was floating up a little bit and had one restraint harness down. You know how you can look in the simulator if you're in different positions and how the switch positions look in different positions? Over.
06 04 29 19	CC	Roger.
06 04 29 21	CDR	Okay. Well, I put my finger on the switch and I was floating up a little bit and looked down, and it looked like it was in ATT HOLD, but if you stretched down a little bit you'd see it - It turned out it was in the other position. Anyway, as soon as it happened, we caught it and real fast it went into gimbal lock and got all squared away for the burn within about 30 seconds. So you might pass that on down to Chris and Deke. And we went through the procedure as outlined, and my finger was on the switch and everything, but just - In fact, you know, like in the command module, you look at the ATT 1, rate 2 switch and from where you are sitting, it could be either in rate 2 or ATT 1, rate 2. Over.
06 04 29 57	CC	Roger. We copy, Tom. We thought - There was a great recovery, and we'll pass this on. Over.

06 04 30 07	CDR	Yes. Roger. Our procedures were right, and we were - In the LM, with those hoses, you ride a little high, and I was held down with one restraint harness at the time. It was done on my tiptoes, and I looked down and put my finger on the switch, and the line was lined up with ATT HOLD. If you'd actually get down lower, you know quite a bit lower, you'll see that it is lined up there. And normally on three-position switches, you don't flip them back and forth all the way to justify the position. Over.
06 04 30 32	CC	Roger, Tom. Copy that. I know it is real easy to do, and we'll pass this on. All you can add is it was just a great recovery. So everything was - came out real great. You guys did a great job. Over.
06 04 30 49	CDR	Roger. Thank you, Charlie. Yes. We were like Speedy Gonzales there. We were squared away in attitude and - real fast, and then made a pitch input avoid the red cherry, and bang! We were over in the attitude back again in about 30 seconds, 40 seconds, and all set to go. Over.
06 04 31 04	CC	Roger.
06 04 31 08	CMP	Like in here, right now. It looks like the RMAGS are uncaged, but they are in fact caged. It's just the way those switches look.
06 04 31 14	CC	Roger. We copy. We figured something like that had happened.
06 04 31 22	LMP	Charlie, things were getting - -
06 04 31 24	CC	I was just going to say, we figured something like that was going to happen. Go ahead, Gene. I'm cutting you out. Excuse me.
06 04 31 32	LMP	That's all right. Things were getting a little slow at that point, anyway. We thought we'd add to the excitement.
06 04 31 39	CMP	They really added to it, I'll tell you that.
06 04 31 41	CC	...
06 04 31 43	CDR	Charlie, this is Tom again. I want to say - Roger. Sorry about cutting you out, but I just wanted to say again, we thought you did a great job on CAP COMM and all of the support people getting the pads up to both spacecraft

and coordinating. I know that you're like the left-handed paperhanger and everything else, but it really worked out smooth that day and I think we really tested the total system. Over.

06 04 32 05 CC Thanks, Tom.

06 04 32 09 CMP ... It's really beautiful.

06 04 32 10 CC Okay. Thanks gobs, you guys. I know that we had a lot of good guys in the room here looking at it that day, and it was a great team effort all the way around. You guys did a great job, and we're just real pleased to be part of the flight. It was really a great day last Thursday.

06 04 32 26 CMP Yes. What I appreciate was that quick recovery from that state vector. They zapped me a new one like nothing flat. That was beautiful.

06 04 32 35 CC The Trench is all listening. We'll pass it on to the guys, and I agree with you. Those guys were really on top of everything throughout the whole day.

06 04 33 00 LMP Charlie, another thing about the LM. We'll discuss it, of course at length, but you know that S-band antenna worked far, far better than I ever thought it would. And I think it worked far better than a lot of people thought it would.

06 04 33 13 CC We were certainly pleased with the operation of the steerable. The COMM was really fantastic. Our only bad pass was during phasing and we, of course, are disappointed in that pass of COMM. I've heard something that we might have had a side low block on there, but it's not been confirmed yet. We were disappointed with the OMNI's a little bit, but not too much.

06 04 33 50 LMP The capability of the high gain to lock on and go to AUTO TRACK with a fairly decent signal was great. That was just tremendous.

06 04 34 01 CC Well, it looks like old Snoop performed in a great style throughout the whole day. Over.

06 04 34 11 LMP How's he doing now? Is he still on his way?

06 04 34 14 CC Last we saw of him he was on his way toward the Sun, but we lost him at about 121 hours or thereabouts. He was still perking along.

06 04 34 26	LMP	Well, we got an American flag, and every state in the Union has got a flag in Snoop going around the Sun.
06 04 34 34	CC	Great news, 10. Just went by to visit the gals, and everybody's in great shape on the homefront. Over.
06 04 34 47	LMP	Very good. Thank you.
06 04 35 24	CC	10, Houston. If you got a couple of more minutes to talk, the back room would like to know - They've got some questions for you, so they can get one leg up on LM-5. The first one concerns on the operation of the LM steerable antenna during the phasing burn pass. It has three parts to it. I'll ask the first part. What were the circumstances surrounding loss of S-band steerable from AOS to the phasing burn on REV 13? Over.
06 04 36 01	LMP	Charlie, I don't know what the circumstances were, but we had good lock when we came on down and - good S-band lock - and I could hear. You can hear that S-band tracking because of the noise it makes, and I heard it tracking. And then I got somewhere down in there in the process of our comments and photography work and what have you, I heard us losing lock and I went down there to look at it and then I tried to tune it up - went to MANUAL, tried to tune it up and the fact is - I'm not sure whether we had the capability to call VERB 64, but I played with it a little bit there for a minute or so. I couldn't do that. I went to OMNI's so that we at least would have voice with you, and then I guess it was after the phasing pass when I had a breather. Then I went back and we called up VERB 64 and I got high gain lock again, and that's really all I can tell you.
06 04 36 57	CC	That's fine, Gene. Second part of the question was: what was your procedure when the antenna went into the stops and the circuit breaker popped? Over.
06 04 37 09	LMP	Well, when it inadvertently went into stops, I put it at pitch 90, yaw 0, pushed in the circuit breaker and it popped right around to 90 and 0, and we started over again. That happened about three times. I think once during a P52 - twice during a P52 - and one other time. Tell your girl Chelsie that it stopped one time when it shouldn't have.

06 04 37 33 CC Roger. We copy. One further question on the antenna. When did you switch to the AUTO mode? Was it within about 1 minute after AOS on that phasing burn pass? Over.

-- -- 37 -- LMP you know I came on in OMNI's and I heard John give you a GO for DOI and then I gave you the DOI burn report and it was after that that we went to high gain lock.

-- -- -- -- CC Roger.

-- -- -- -- LMP So you know we had a good high gain lock there. We had a good high-gain lock there for a while.

END OF TAPE

06 04 38 25	LMP	I believe you were getting high bit rate data.
06 04 38 31	CC	That's affirmative, I'm pretty sure we were. The TELCOMM's not here now, of course, but we can run back by them. I'm pretty sure, if I recall the circumstances, we had high bit rate during the early part of that phasing pass. I know because - well, I know we did because we got you a state vector and then I read - correction - That was the REV before. But, anyway, I can remember seeing some high bit rate data and then at some time we lost it and I don't know why. That about exhausts our knowledge on that question. The other one was the two-part question on the drinking water. Was the gas noted in the LM water only during the initial use of the system? Over.
06 04 39 23	LMP	It was initially when I first went in on the first day. There's no question about it. It got less and less, but I think even after we egressed we took some big gulps of water and there was still some bubbles in it.
06 04 39 36	CC	Roger. We copy. Second part: was any gas noted in the command module potable tank prior to diverting fuel cell water into the potable tank? Over.
06 04 39 49	LMP	Charlie, did you read that?
06 04 39 50	CC	Gene, I must have cut you out. I was asking B part on the LM water - correction - on the command module potable water. Was any gas noted in the command module potable water prior to diverting fuel cell water into the potable tank? Over.
06 04 40 10	CDR	Roger, Charlie. That was - In fact, when we started to take our first drink of water that had been serviced at the Cape it was as bad as it's been ever since. In fact, it might have been worse on the first day. So the first servicing that they gave it at the Cape probably was not deaerated water or was not deaerated properly because - the fact there was tremendous amounts of air in that water when we first started to drink it after TLI. Over.
06 04 40 39	CC	Roger. We copy, 10. Final question that's written down here was on the VHF Simplex A. Did Simplex A come on immediately upon switching from Simplex B to Simplex A when you rechecked behind the Moon on the 12th REV? Over.

06 04 41 00 LMP ... That's affirmative, Charlie. And as soon as we got Simplex A, we went ahead and tried the LM Duplex A, command module Duplex B capability from the LM, not in the voice range, there, but just the voice to make sure we could use that Duplex mode for the ranging capability; and that also worked.

06 04 41 22 CC Fine. Great show. I don't understand what was wrong with it when we first tried to check it, but we're sure happy that it fixed itself because the ranging really looked like it worked like a champ during the whole rendezvous. I've got a question. What exactly - Had the AGS started you off in attitude before you staged, or as you staged, or right before you staged? Over.

06 04 41 52 CDR Okay. You know our procedure. I throw the staging switch after Gene throws the ... and Gene thrusts forward 2 feet per second. Then he starts - starts 2 feet per second. Then just as he starts forward, I throw the switch. Okay. What happened: it started to go off a little bit as we started aft, and then as he started forward and I threw the switch we got on the ascent stage, it just took off. And then that's when I grabbed the hand controller and avoided the gimbal lock and got squared away. But it was just - you know the LM is actually - It has sharper maneuvers than the simulator. We noticed that right away, so the basic deviation that it started in didn't alarm us too much, just when it started wiggling a little bit. We thought that this might happen. Right. With the whole mass of that descent stage, it started off a little bit. But it was so slow we didn't notice, ... staging ... when we staged and went to the ascent stage, it really went bang in a hurry. Over.

06 04 43 01 CC Okay, Tom. Thanks a bunch. It was really a fill in for just me, and also FIDO was curious as to what kind of DELTA-V we gave to the descent stage when we separated, and that clears that point up. That's all we got for you for right now. If you guys can think of anything else that you'd like to pass on that we could get a leg up on, we'd appreciate it. Over.

06 04 43 28 CDR Okay, Charlie. I've got one. It was the same squawk that was noted on Gemini 9 - pardon me - I mean Apollo 9; that kind of dates me doesn't it. (Laughter) On the LM on the rate error needles -

You know they squawked at - When the rate error needles were zero, actually you had some rates. Well, we tried to get that calibrated, you know, in the testing there at KSC. When I got in flight, I found that's why I used a little more fuel, particularly during the landing radar test. I pulsed the error needles into zero but on half ... Right at the last, we calibrated them before docking, and when the spacecraft had zero rates, my yaw rate error needle was about three-tenths of a degree to the right. I'd estimate the pitch was two-tenths down, and the roll was about two-tenths. So when I came down for the landing radar pass - and I don't know if you can see my DSKY on VERB 83 - I was trying to pulse it and hold it just as close as I could to take some pictures. I'd zero the needles, but they would start to go off right away. Then I'd have to get back on it. But that is one thing that definitely needs to be corrected and, again, the main thing that costs you is fuel. Over.

06 04 44 41	CC	Roger. We got that. Thank you much, Tom. I was always under the impression that those needles were supposed, should have been zero except when power off, but it looks like we had problems just like, as you say, just like 9 did. By the way the - I don't know whether you've heard, but the landing radar appears to have worked like a champ. We had - As far as I can tell, we still had indications of lockon at about 68 000 feet. Over.
06 04 45 11	CDR	Right. And a good show. You know, we had some time there, so what I did was turn the radar on early and pick up that attitude. And as soon as I pitch down, boom, I could see the tape meter started to drive and also the velocity started to go the other - Well, of course the velocity didn't lock on until later, but right away it looked like we had altitude lockon way, way higher than we expected. Over.
06 04 45 35	CC	Roger. Thank you much, 10. That's all we have for you right now. Out.
06 02 45 42	LMP	Charlie, I've got another thing on the S-band - the LM S-band signal strength. It appeared that any time you call up the angles - and all the angles that we had preprogramed in the flight plan and the VERB 64's were excellent, but it appears that anywhere between 34 and 36 if you got that kind of signal strength and went to AUTO,

she'd acquire and pop right up to about 43 or 44 on the signal strength meter. But even better than that, if you call up the angles and you could tune it in manually very easy from that 34, 36 well into the 40 region and then, of course, go to AUTO ... popped up to about 43. So that was very encouraging, also. One other question that puzzles me. I updated the AGS prior to undocking with the PNGS, and I could never get the data out of ADDRESS 304 in the AGS to agree with VERB 83 as a check on the update. I then updated the AGS two more times before we undocked, and it still disagreed by some 20 to 30 degrees. As soon as we undocked, I checked those angles again and, by golly, they were perfect. And the AGS held a good update for a long time, so I don't understand what the problem was prior to undocking.

06 04 47 10	CC	Roger. We haven't found the answer to that one, Gene. You passed that on to us right at, as you came around AOS, and we've been working on it, but we haven't heard the answer on that one. We're still working that one. Over.
06 04 47 27	LMP	Okay. And in the lunar environment, never once did 407 go to 10 000. It stayed zeros all the time, which was expected, but contrary to Earth orbit environment.
06 04 47 40	CC	Roger. That's good news. Thank you much.
06 05 10 47	CDR	Hello, Houston. Apollo 10.
06 05 11 15	CC	Apollo 10, this is Houston. Did you call?
06 05 11 56	CC	Apollo 10, this is Houston. Did you call?
06 05 16 01	CC	Apollo 10, this is Houston. Over.
06 05 16 07	CDR	Roger, Houston. Apollo 10.
06 05 16 10	CC	Roger, 10. We lost contact with you there for a few minutes. Did you all go to COMMAND RESET or otherwise change your COMM mode?
06 05 16 21	LMP	No, Bruce. I saw the S-band hunting around, and then I went to MANUAL to get a hard lock. And we're in okay and back in REACQ, but I don't know where it was. Just hunting around and didn't want to get a signal for you.

06 05 16 51	CC	Roger, 10. At that time, we had selected OMNI Delta and, as the system is explained to me, the antenna should not have been going to any particular position but it won't hurt itself. When we got ready to lose signal strength on Delta we would have ground commanded back to the high gain antenna, and it should then reacquire. Over.
06 05 17 16	LMP	Okay. We didn't do anything up here.
06 05 17 18	CC	Okay.
06 05 17 25	CC	Hello, Apollo 10. Houston. Gene, we've got some preliminary word on that local vertical problem for you. The GUIDO's have been - Stand by one.
06 05 17 41	CDR	Okay. Go ahead.
06 05 17 45	CC	Hey, we - The GUIDO's would like me to wait a couple of minutes until they get their story confirmed by MIT before we pass it up to you. We'll give it to you in a little while. Over.
06 05 17 58	CDR	Okay. Over.
06 05 18 02	CDR	Hello, Houston. Apollo 10.
06 05 18 07	CC	Go ahead, 10.
06 05 18 11	CDR	Roger. Just wanted to describe ... kind of the total situation here internal. We've got all the spacecraft restowed. Got the music playing, got a beautiful view out here as we rotate around slowly. We've got the Moon in one window and the Earth in the other window. We got it worked out where no thrusters are firing and we just feel in great shape. Over.
06 05 18 36	CC	That sounds like you have a better view than the one from the top of the Astroneedle.
06 05 18 43	CDR	(Laughter) Right. Did you hear the music? Over.
06 05 18 48	CC	Yes, indeed. Actually our facilities down here for playing music in the MOCR are a little limited so you're about our only source of music.
06 05 19 04	CDR	(Music) Okay. We'll key a little bit in.
06 05 21 34	CMP	Houston, Apollo 10. Over.

06 05 21 37	CC	Roger, Apollo 10. This is Houston. Send your message.
06 05 21 42	CMP	All right. Roger. We've got a little coat of moisture all over the upper hatch, and it's fanning out - oh, small bubbles in 1/8 to 3/16 in diameter, very flat against the whole underside of the hatch. And we've been wiping it down at intervals. And the temperature in the tunnel is 20 degrees cooler. And it's very nice.
06 05 22 05	CC	Roger. We copy. How is the overall cabin temperature?
06 05 22 10	LMP	That's very nice, too.
06 05 22 11	CC	Okay.
06 05 22 16	LMP	This is WAP 10, broadcasting from the strongest station in the world from 200 000 miles out, saying hello to our favorite Flight Director and to one of the most outstanding teams in the world that we've ever been associated with. If you have any request, just give us a call. This is Tom, John, and Gene with your morning music.
06 05 22 41	CC	Oh! Roger to Tom, John, and Gene show. I don't know where you guys get this morning music bit though. I guess it's morning for you all.
06 05 22 53	LMP	Isn't it 6 o'clock in the morning? I have 10 after 6. Is that - -
06 05 22 59	CC	Would you believe - -
06 05 23 00	LMP	Is that a.m. or p.m.?
06 05 23 01	CC	Would you believe it's p.m. down here?
06 05 23 06	LMP	Okay. This is Tom, John, and Gene evening show.
06 05 23 11	CC	(Laughter) Roger. Out.
06 05 23 10	LMP	That's not bad, 200 000 miles for a volt and a half.
06 05 23 20	CC	Right. That's very good. You certainly - -
06 05 23 35	LMP	We can't handle all requests because our - -
06 05 23 37	CC	You certainly got the - -

06 05 23 38	LMP	Our library is limited however, so we - I want to say we can't handle all requests because our library is somewhat limited, but we'll do our best when the occasion arises. Over.
06 05 23 54	CC	Roger. You certainly got the highest antenna around. Over.
06 05 24 34	LMP	Houston, Apollo 10. Did you give us something specific to wrap in the LCG?
06 05 24 44	CC	Roger. We were looking for the - Stand by.
06 05 25 15	CC	10, this is Houston. Negative. We have nothing specific to be wrapped in the LCG with reference to the Hasselblad and the sequence camera. We ask you to put them temporarily in compartment Foxtrot 1 and Foxtrot 2, and after removal of the unsuited reentry provisions, to wrap individually those cameras in available garments and store them in compart Alfa 5. Over.
06 05 25 44	LMP	Roger.
06 05 42 44	CMP	Houston, Apollo 10. Over.
06 05 42 47	CC	Go ahead, Apollo 10.
06 05 42 53	CMP	Roger. I'm looking a little ahead in the flight plan to these star lunar landmark sightings, and I'm wondering what kind of W-matrix you want in there before we start that.
06 05 43 06	CC	Stand by.
06 05 43 13	CMP	Is this the same W-matrix data for the set of P23 no COMM cases around about that time?
06 05 43 19	CC	Stand by a minute, please.
06 05 43 47	CC	10, this is Houston. On page G 1-72 in the checklist, we've got the W-matrix that they're looking for. Over. That's in the CMP section. You copy?
06 05 44 11	CMP	Roger.
06 05 44 13	CC	Houston. Roger. Out.
06 05 46 17	CC	10, this is Houston. On that W-matrix, when you punch up VERB 67, we expect in R1 and R2, you get the values showing up in the flight plan. And we need a four balls 3 in R3. Over.

06 05 46 54	CDR	Stand by.
06 05 47 08	CMP	Say that again. Over.
06 05 47 10	CC	Roger. On this W-matrix. When you call up VERB 67 on page 1-72 of the checklist, you'll get values in R1 and R2 which are the ones that are already in the flight plan, that is three balls 94, three balls 57. And we need loaded in R3 a plus four balls 3 to put you in cislunar W-matrix. Over.
06 05 47 42	CMP	Roger.
06 05 47 43	CC	Houston, out.
06 06 02 35	CMP	Can you read me now?
06 06 02 43	CC	Loud and clear.
06 06 06 11	CDR	Hello, Houston. Apollo 10. Over.
06 06 06 18	CC	Apollo 10, this is Houston. Go ahead.
06 06 06 21	CDR	Roger, Bruce. On our flight plan at 150, I've got the temperatures on the command module RCS thrusters when you are ready to copy. Over.
06 06 06 34	CC	Roger. Go ahead.
06 06 06 36	CDR	Roger. 5 Charlie, 4.90; 5 Dog, 4.45; 6 Alfa, 4.50; 6 Bravo, 4.80; 6 Charlie, 4.40; 6 Dog, 4.70. Over.
06 06 06 57	CC	This is Houston. Roger. I believe we copied it correctly one time through. Thank you.
06 06 07 05	CDR	Roger.
06 06 07 12	CMP	The babies are nice and warm. Don't need to heat them.
06 06 07 22	CC	Right.
06 06 07 43	LMP	Hello, Houston. Charlie Brown.
06 06 07 46	CC	Go ahead.
06 06 07 51	LMP	I'm just interested in what your plan of attack is for the next day and a half on the use of fuel cell 1. Are we going to crank it up after it cools down to a certain point and use it for a while and then shut it off, or how do you want to

handle it? I noticed it is getting down now to - oh, I guess around 390 degrees - 80 or 90 degrees.

06 06 08 20	CC	Stand by, 10. EECOMM is coming. Over.
06 06 08 27	LMP	Okay, Charlie. I just wanted to sort of get the feel for what you are thinking about.
06 06 09 00	CC	10, Houston. I got some words on the fuel cell. Over.
06 06 09 09	LMP	Go ahead, Charlie.
06 06 09 10	CC	Roger, Gene-o. We'd like you to put fuel cell 1 on main A and main B at this time and keep it on line until we - for about an hour or so - until we hit TC of 420. Then the thing has been decreasing about 4 degrees per hour. That means we'll have to cycle it again at about 165 hours for another hour. Over.
06 06 09 37	LMP	Okay, Charlie. I'll go ahead and put it on main A and main B now. Thank you.
06 06 09 43	CC	Roger. It'll take about an hour and should be up to about 420 or so.
06 06 09 51	LMP	Okey.

END OF TAPE

06 06 19 12	CMP	Houston, 10. Over.
06 06 18 18	CC	10, this is Houston. Go ahead.
06 06 18 22	CMP	Roger. I was just thinking about that landmark tracking yesterday. Were you guys taking, was that the two REVS of tracking state vector that we were getting? And then we came around to the landing site and marked on it, that would give us an indication of how good our targeting was.
06 06 18 47	CC	Stand by.
06 06 20 27	CC	Roger, 10. The information that you requested was that your vector was based on the radar tracking from the two previous revolutions. Over.
06 06 20 43	CMP	Roger. So if we were repeatable on that landmark on Site 130, that would be an indication of how close you were getting it, probably. Right?
06 06 20 55	CC	Roger.
06 06 20 57	CMP	Or not - I don't know, probably not.
06 06 21 03	CC	FIDO down here is nodding yes, that it would be an indication of how close you were getting it.
06 06 21 10	CMP	Okay. Thank you.
06 06 21 30	CC	10, they had a local solution running down here at the same time, and the results that we were getting were consistent with the results that you were getting. And the landmark tracking exercises were set up so that if properly executed the values would be repeatable. Over.
06 06 21 55	CMP	Understand. I guess it was repeatable because that site never moved the whole time I was watching it.
06 06 22 32	CC	Roger, 10. That's what our reduction of your sextant data said, too. It gave us the site in a fixed location from REV to REV.
06 06 22 47	CMP	Outstanding.

06 06 25 04	LMP	Hello, Houston. 10. On that fuel cell, did you say you want me to go ahead and take it off the line at 420 or you want me to wait for some word from you?
06 06 25 20	CC	Roger. We'll keep our eye on it down here, and give you a call. However, the value we're working towards is 420 and if you see it first, why, I guess there's nothing to stand in your way of taking it off.
06 06 25 36	LMP	Okay, Bruce. - I'm reading - How about calibrating me right now. I'm reading about 390.
06 06 25 45	CC	Roger. We've got 378.5 on our TM here.
06 06 25 54	LMP	Okay. Fine. Thank you.
06 06 25 56	CC	We'll keep track of it for you.
06 06 25 58	CDR	Hello, Houston. Apollo 10.
06 06 25 59	CC	Roger, 10.
06 06 26 01	CDR	Roger. We're still just very gently rolling out here and have a beautiful view we'll be able to show you on our scheduled TV pass. And, again, from this distance as we look back out at the Moon there, the basic color of the highland light area is a tan and the mare area is a brown. And, again, that area I pointed out this morning, you can still see a difference. One looks more like a chocolate brown, the other looks more like a light, shall we say a chocolate milkshake, and the colors haven't changed out this far. Over.
06 06 26 35	CC	Roger. Those last ones you were referring to were the mare down in the southwest area of the Moon?
06 06 26 42	CDR	That's right, Bruce. Where I showed you that, the line of demarcation between those two flows. Over. By the difference in color. Over.
06 06 26 52	CC	Roger. I caught that this morning, and that line of demarcation is really very clear down here. And just to confirm - -
06 06 27 02	CDR	Roger.
06 06 27 04	CC	- - The TV pass is still 152 hours 35 minutes to 45 minutes is that correct?
06 06 27 11	CDR	That's what we've got in the flight plan. It looks like we're right on it, and everything's

		looking good. And John's going to go ahead with some of his work here. Over.
06 06 27 20	CC	Roger.
06 06 27 28	CC	10, this is Houston. On your waste water dump, we currently have it scheduled at 152 hours GET. We're trying to get some photographic observations of this dump. The east coast of the U.S. is pretty well overcast, and we've received some requests to schedule it at 153 30. We're wondering how you feel about this and whether you were planning to go to sleep in accordance with the time line? Over.
06 06 28 03	CDR	Okay. Stand by. Yes. Roger. That's no problem, and we really feel in great shape. And we might stay up a little bit later than the programed sleep period today. Over.
06 06 28 20	CC	Roger. If it's agreeable with you, we'll schedule the waste water dump for 153 hours 30 minutes. Over.
06 06 28 30	CDR	Roger. Sounds good, Bruce.
06 06 28 32	CC	Houston, out.
06 06 29 14	CMP	Okay, Houston. This is 10. We're going to stop PTC right about here looking at the Moon so we can do some star landmark tracking.
06 06 29 25	CC	Roger.
06 06 39 27	LMP	Houston, 10. What kind of high gain have you got locked at this point?
06 06 39 37	CC	Stand by. Roger, 10. We're on OMNI Delta right now. Your present attitude is not compatible for high gain.
06 06 39 52	LMP	Okay. Fine. Thank you.
06 07 05 24	CMP	Houston. This is Apollo 10. Over.
06 07 05 29	CC	Go ahead, Apollo 10.
06 07 05 33	CMP	Roger. I don't know if you can see my DSKY or not - -
06 07 05 37	CC	Yes. We can.
06 07 05 38	CMP	- - but this thing never even come close to

		pointing at Taruntius P, and I wonder if I should just go ahead and accept this mark.
06 07 05 51	CC	Stand by.
06 07 05 58	CMP	I marked it right into Taruntius P, I know.
06 07 06 02	CC	Roger.
06 07 06 08	CMP	Do I have the - Did I have the latitude and longitude of the thing loaded right? I checked that.
06 07 06 18	CC	Roger, 10. We were watching you down here. All the loadings seem to be correct. We suggest that you go ahead and accept it. Over.
06 07 11 19	CMP	Okay, Houston. You had better throw away that first one. Somehow that NOUN 89 got rewritten in there.
06 07 12 01	CC	10, this is Houston. GUIDO says that when you recycle, the data begins to write over what you've got in the cell and the program is performing as anticipated. Over.
06 07 12 19	CMP	It's not performing as I anticipated.
06 07 12 23	CC	Houston. Roger.
06 07 12 29	CMP	I mean anytime it writes over a NOUN it's already - just finished putting in there, there's something wrong.
06 07 20 45	CMP	Houston, do you want us to delay for this data that's coming down, or are you getting it anyway?
06 07 21 01	CC	Roger, 10. If you could slow down just a little bit more at the NOUN 49 point we'd appreciate it. We're having a little trouble copying it.
06 07 21 12	CMP	Okay.
06 07 25 26	CMP	Yes. The problem is that this thing don't - If you're marking on something that's been in there before, it's got 0 mark in there on second vector. It has some other landmark NOUN 89 in there rather than the first one.

END OF TAPE

06 07 50 03	CMP	Houston, Apollo 10. Over.
06 07 50 07	CC	Roger, 10.
06 07 50 11	CMP	That completes the star landmark - the first set. If I wasn't - If I hadn't messed up on that first one, that would have probably been pretty fair.
06 07 50 24	CC	Roger. We're writing the data now. We'll have an analysis of how it all worked out for you in a few minutes. Over.
06 07 50 34	CMP	Well, from a pilot's standpoint, it's far easier than star horizons. Boy!
06 07 50 41	CC	Roger. When you got a minute - -
06 07 50 45	LMP	It's just - -
06 07 51 07	CC	Roger, 10. When you have a minute, we got a maneuver pad for you.
06 07 51 33	LMP	A maneuver pad? I thought you scratched that last maneuver?
06 07 51 37	CC	Roger. We've had a minor revision, here. We have scratched midcourse correction 5. Over.
06 07 51 45	LMP	Okay.
06 07 51 50	CC	You ready to copy?
06 07 51 55	LMP	Roger. Go ahead.
06 07 51 57	CC	Roger. This will be midcourse correction 5 Alfa. Waste water/G&N: 25240, pitch and yaw trim not applicable, GET ignition 153 30 0000; NOUN 81 NA; roll 326 171 060; NOUN 44: Lima, Alfa, Romeo, Golf, Echo; H_p Bravo, Echo, Tango-Tango, Echo, Romeo 00001; burn time is 10 minutes 04 seconds; DELTA-V_C NA; sextant star 23 0669 297; remainder of the pad is NA. Knowledge remark: monitor in POO, do not trim residuals; shut down manually at 10 percent on the waste-water purge. For your information, this will change your entry angle from approximately minus 6.9 degrees to approximately minus 6.8 degrees. Over.
06 07 53 30	LMP	Roger. I got everything. Would you repeat the second line of NOUN 44, please?
06 07 53 42	CC	Which line? Roger - -

06 07 53 47	LMP	NOUN 44.
06 07 53 51	CC	Roger. The second line of NOUN 44: H_P is Bravo, Echo, Tango, Tango, Echo, Romeo. Over.
06 07 53 59	LMP	Roger. I had that. I just wanted to make sure.
06 07 54 02	CC	That's all right.
06 07 54 07	LMP	Okay. MCC 5 Alfa. MCC 5 Alfa is waste water/G&N: 25240, NOUN 48 is NA; NOUN 33 is 153 30 0000; NOUN 81 is NA; roll 326 171 060; NOUN 44 is Nema, Alfa, Rodeo, George, Echo, Bravo, Echo, Tango, Tango, Echo, Romeo; Delta-V_P is four balls 1; Birdseye is 104; Delta-V_C is NA; sextant is 23 0669 297. There'll be no ullage; we'll monitor in POO; we will not trim. We'll shut down manually at 10 percent, and - better not. Never mind.
06 07 55 08	CC	Roger. Readback correct except that due to the exceptionally long burn time here, the pad entry doesn't take the amount of time we're looking for. We need 10 minutes and 04 seconds, unfortunately. We're working on your overburn cut-off criteria.
06 07 55 35	LMP	Hey. Do you want to go over mission rules for this one?
06 07 55 36	CC	Roger. Did not burn to depletion. 10, what we're looking for is, if it's convenient to maneuver to this attitude, we think we can improve your entry angles just a little bit. If it's not convenient, why you can do the dump in any attitude you happen to be in. As it is set up, this will give you, I guess about a tenth of a foot per second translation plus X.
06 07 56 05	CMP	My golly! We'll be glad to maneuver to the attitude. Anything to improve that angle.
06 07 56 13	LMP	Oh, it sounds pretty darn good right this minute.
06 07 56 14	LMP	Roger. And I - I understand the world is going to be watching on this one to try and track it.
06 07 56 27	CC	Suppose to be. ... And, we show fuel cell 1 skin temp at about 421 degrees now. You can take fuel cell number 1 off the line. And, I don't know if you put the potable water heater back on or not. It looks like you can carry that load with no problem if you want to warm up some water for meals. Over.

06 07 56 56	LMP	Okay, Jack. I'm taking - We've got the potable water heater, and I'm taking fuel cell 1 off at this time.
06 07 57 07	CC	Roger. Out.
06 07 58 57	CMP	Houston, 10. Over.
06 07 58 58	CC	Go ahead, John.
06 07 59 01	CMP	Could you give us an attitude that would be good for this TV pass, so we get the Moon out one window and the Earth out the other window, if feasible?
06 07 59 09	CC	Roger. FAO just handed it to me. Recommend roll of 338, pitch 270, yaw 000. That puts the high gain at pitch 019, yaw 272. This is pointing south, it gives us more time of the Earth in the windows. Over.
06 07 59 41	CC	Roger. We're going to go to the south orientation now, huh?
06 07 59 46	CC	Well, it's your druthers, this will give us some more time. This orientation, we get the Earth in - the windows more of the time with the high gain. Over.
06 08 00 00	CMP	Roger. Let's do it, then.
06 08 00 08	CC	Okay.
06 08 00 09	CMP	Houston, this is an attitude to go for the TV pass, right?
06 08 00 12	CC	Affirmative.
06 08 00 22	LMP	Charlie, you don't want us to set up PTC until after the waste-water dump? Right?
06 08 00 27	CC	That's affirmative. You can hold off on the PTC until after the dump.
06 08 00 33	LMP	Okay.
06 08 08 40	CDR	Houston, Apollo 10. Over.
06 08 08 43	CC	Hello, Apollo 10. Houston here.
06 08 09 05	CC	We're not reading you, Apollo 10.
06 08 13 29	LMP	Hello, Houston. This is 10.
06 08 13 34	CC	Go ahead, 10. Houston.

06 08 13 39	LMP	Okay. I just hit COMMAND RESET so I can get my high gain back, and you're locked on AUTO TRACK NARROW.
06 08 13 44	CC	Affirmative.
06 08 15 57	CDR	Hello, Houston. Apollo 10.
06 08 16 04	CC	Go ahead.
06 08 16 09	CDR	Roger. At 52 30, could you give us - At 52 30 when we start this pass, could you give us our distance from the Earth, and also our distance from the Moon, and our relative velocity? Over.
06 08 16 23	CC	Roger. Tom, we'll be with that - get that up to you just in a minute.
06 08 20 33	CC	Apollo 10, this is Houston. Over.
06 08 20 35	CMP	Go ahead. Over.
06 08 20 39	CC	Roger. I've got your distances from Earth and Moon and velocities, when you're ready to copy.
06 08 20 47	CMP	Go ahead. Over.
06 08 20 49	CC	Roger. Distance from the Earth, 168 375 nautical miles; velocity with respect to the Earth, 5008 feet per second; distance from the Moon, 45 313 nautical miles; velocity with respect to the Moon, 5048 feet per second. Over.
06 08 21 24	CMP	Roger. So we're pulling away from it, huh?
06 08 21 27	CC	Yes, indeed. And are you all making plans to consume any food before turning in this evening? We don't see it in the flight plan.
06 08 21 40	CMP	That doesn't mean we won't do it, because he left it out of the flight plan.
06 08 21 45	CDR	If we get hungry, we're going to eat. Over.
06 08 21 48	CMP	Listen, there's no place in the flight plan to put snacks, either, but that's what we've been doing.
06 08 21 51	CC	Roger. The motivation for that is that Deke is sitting down here at the console, and he says he is hungry.
06 08 22 05	CDR	Deke must have been using that Exer-Genie. Over.

06 08 22 08	CMP	Tell him to see if he can find a good candy bar out there in the - -
06 08 22 10	CC	(Laughing) No. He's only going to eat if you all eat.
06 08 22 13	CDR	Okay. Well, we've consumed most of it up through, starting on day 6. We're about on meal B of day 6, and we have about two meals that are not consumed out of that total. Over.
06 08 22 30	CC	Roger. Understand. You - -
06 08 22 33	CDR	Also - Also, tell Deke he's really missing something if he doesn't combine that water - that food with water that's filled full of gas, because that's really a thrill. Over.
06 08 22 44	CC	(Laughing) Roger.
06 08 23 00	CMP	Hey, Bruce. That star landmark: we never did any of that in the simulator and we never had any way to practice it, and all we've ever done is star horizon. But, my opinion of that, as a task, is that it's far easier than star horizon, and it would probably be just the way to go for a no COMM NAV case. You could pick a couple of good sites on the world which, like out there in Arabia and Baja California, usually always open; why, it would be a good way to go.
06 08 23 29	CC	Roger. We copy that. And we're still working on reducing the data from your sightings.
06 08 23 38	CMP	Roger. I would think it would be more, at least as accurate as star horizons. The stars at this point - the brighter stars like Arcturus and Spica - filled up the entire crater so it was really no problem. The smaller stars: Denebola, Gienah and - and Gienah, they didn't quite fill up the whole crater, but it was so easy to put those things in there and make a Mark that it's just no task.
06 08 24 17	CC	Roger. I understand that Gienah was bright enough against the background to be used for marking. Is that correct?
06 08 24 26	CMP	Sure was.
06 08 24 28	CC	Roger.
06 08 26 36	CMP	Hello, Houston. We're configured and waiting and standing by for your GO on the TV. Over.

06 08 26 45	CC	10, this is Houston. Roger. We'll let you know in a minute.
06 08 26 57	CC	10, this is Houston. We're GO for TV now. Over.
06 08 27 02	CMP	Okay. We'll be coming your way in about 30 seconds.
06 08 27 09	CC	Roger.
06 08 28 57	LMP	Hello, Houston, this is 10. Are you seeing the TV?
06 08 29 02	CC	Negative, 10. It's not coming through the network yet.
06 08 29 08	LMP	Okay. It should be on the way.
06 08 29 10	CC	Roger.
06 08 29 24	CC	Roger, 10. We're receiving your signal now. It looks like you're showing us the Moon.
06 08 30 06	CC	Roger, 10. We've got you now on the monitor. It's coming in very clearly. Very good picture. Not much noise at all in the loop, and the color looks like it's in pretty good shape, also. Over.
06 08 31 43	CC	10, this is Houston. We're getting a good picture now. Over.
06 08 32 29	CC	10, this is Houston. At the present time we're getting good TV, but no downlink voice right now. Stand by.
06 08 32 59	LMP	Hello, Houston. How do you read now?
06 08 33 03	CC	Roger, 10. This is Houston. Reading you loud and clear on the voice now and a clear TV signal. Over.
06 08 33 10	LMP	Okay. The Moon and the Earth are the same relative size to us now. The planet Jupiter is easily visible about 5 diameters from the Moon. We can see stars within 6 diameters of the Moon. Anything within that is washed out. The maria areas are very easily visible. The Sea of Fertility, the Sea of Tranquillity, where the basic landing sites are, the Sea of Serenity, are the large maria areas to the center part of the height of your screen as you approach the terminator. I don't know whether you heard me the first time, but the Moon is technically - to us it's upside down. The north pole is at the bottom, the south pole at the top. The east is the most prominent area to the left, and the west goes toward the terminator. We're actually pointing in the heavens towards the southern stars.

06 08 34 12 CC Houston. Roger.

06 08 34 15 LMP The Moon with the naked eye and through our monocular, we can still see very vividly some of the most important landmarks. We can see Apollo Ridge, which we crossed over and used as a basic IP for our approach for Landing Site 2; we can see some of the smaller craters that surround our landing site area, are clearly visible to us yet at this time and, I might add, that the Moon from this position is pointing off to the side. I hope that this picture is giving you the detail, the resolution that we see with the naked eye here.

06 08 34 47 CC Roger. We are getting very good resolution on the black and white monitor here at the console, and I guess we all wish that we could be up there with you looking at it firsthand.

06 08 34 59 LMP Well, Jack, you and the folks that are seeing us - watching us leave the Moon, and we're moving away as you see this picture, Bruce, about 3500 miles per hour. So, if the picture looks like it is getting smaller slowly, it really is.

06 08 35 17 CC Roger, Gene.

06 08 35 19 LMP Let me take you over, Bruce, to show you the Earth from Tom's window.

06 08 35 54 CDR At this time, you should have the Earth coming through on your set down in Houston. Over.

06 08 36 01 CC Roger. We've got it.

06 08 36 04 CDR Okay. Houston, Apollo 10. We're looking at the Earth out of our left window. We now are approximately 168 000 miles on our return journey to the Earth, and again relative to the Earth, we're traveling approximately 3500 miles per hour. At this distance, as Gene has described, the Earth and the Moon look approximately of the same diameter. And, as we look at it here, the Earth is growing from, say slightly smaller than a tennis ball, where it looks about the size of an orange. As you can see the Earth there, actually it's upsidedown with the white cap as the North Pole. And, since most of you watching your TV sets can't turn upsidedown very easily, what I am going to do is turn this camera over upsidedown, since it's no trouble for us. See if that will work. Okay. There we go. It's pretty easy for us to go upsidedown and rightsideup as far as attitude. It makes very little difference except for a maneuver. So, instead of requiring all you people to stand on your heads to recognize the great

state of California out there, I'll just turn this upsidedown in my hand. As we look out there, we can see the terminator, and it has definitely crossed over to the Arizona area, and at Baja California is barely discernible. You may not be able to see it through the cloudcover. Also, it looks like we have some clouds all the way up to Los Angeles. It may even be smoggy out there today. Toward Seattle, Washington, it looks like some cloudcover, and the North Pole still has that same complete coverage as Northern Canada, over into Russia; the same cloudcoverage that we have observed all the way on our trip out from Cape Kennedy starting last Sunday. It's a very beautiful, beautiful view as we start our return visit - journey - there to the Earth, and we do have a great attitude for seeing it all the time. As we slowly rotate going back home to the Earth, we'll have the Earth out one window and then the Moon out the other, and later on the Sun. At this time, again you can see that the majority of the features are strictly clouds. The blue you see down near the bottom of your screen there is the lower South Pacific Ocean, down toward the Galapagos Islands. Now, how is your picture, Houston? Over.

06 08 38 44	CC	Coming in beautifully, Tom.
06 08 38 49	CDR	Roger.
06 08 38 51	LMP	A good relative size for both the Earth and the Moon. Tom mentioned one and another one might be: if you took a nickel and held it about 18 inches from your eyeball, that's what the size of the Earth - the diameter of the Earth and the diameter of the Moon, appear to us at the present time.
06 08 39 10	CC	Roger. Understand. This tennis ball - Is that a tennis ball at arm's length?
06 08 39 20	LMP	It's more like a nickel at arm's length, for the average eyeball.
06 08 39 27	CC	Roger.
06 08 39 31	CDR	A tennis ball is a good size just looking at it at a distance, but in a correlation, it would be to that. And, Houston, how is the color coming through? Mostly whitish browns to the right of the set and darkish brown in there towards the California coast, and the blue down in the South Pacific. Over.
06 08 39 51	CC	Roger. The color is coming in here with high fidelity.

06 08 40 00	CDR	Sounds great. Okay, Houston, we're going to take you inside the cockpit for just a couple of minutes here. Over.
06 08 40 03	CC	Roger.
06 08 40 30	CC	Okay. We've got the interior scene. Looks like you are looking at the dosimeter or radiometer there.
06 08 40 54	CC	10, this is Houston. We're not getting very much illumination. Is that John at the NAV base?
06 08 41 03	CDR	Roger.
06 08 41 07	CC	We can make out the wall of the spacecraft clearly, but as for John's back, it's pretty well shadowed right now.
06 08 41 16	LMP	Okay. John is using the optics in a rather unorthodox fashion right at the moment. He appears to be upside down. Just a second. I'll see if I can turn him rightsideup for you.
06 08 41 35	LMP	Okay. Now we have John rightsideup, but the spacecraft is upsidedown. We've got - still got a problem here. Stand by.
06 08 41 50	LMP	I guess we'll just have to accept the spacecraft rightsideup, and John upsidedown. Here he comes.
06 08 42 16	CC	Oh, say. That's a lot better.
06 08 42 21	CDR	That's what the average space navigator looks like, after 543 Marks.
06 08 42 27	CDR	You can observe the patch over one eye to help him adapt.
06 08 42 47	CC	(Laughing) Roger. You've really got a - -
06 08 42 51	CDR	You might think he was some ancient pirate, but actually this is what the modern day space navigator looks like after all the Marks that he has been taking. He's done a fantastic job on determining the altitude of the Moon's surface, and shooting all the star sightings. Over.
06 08 43 05	LMP	You can see John's star chart above his optics right there, and above that are some of the codes that are used to operate the computer - the guidance computer on board.
06 08 43 17	CC	Roger.
06 08 43 55	CMP	Okay. This is what happens to the optics in zero-gravity.

06 08 44 06	CMP	Once you start a screw or bolt turning up here, it just keeps right on going forever. There is just absolutely no friction associated with operation of moving parts. That's why we have to stick everything together with glue. And since they have been rotating like this, I have lost both of them at least once.
06 08 44 31	CMP	If you don't think it's hard for a one-eyed guy to find something like this when it's running around in the cockpit, you're not with it.
06 08 44 44	LMP	I'll back off and show TP here.
06 08 44 58	CC	Okay. We've got Tom on the screen now.
06 08 45 11	CC	10, this is Houston. Tom's voice isn't coming through.
06 08 45 18	CDR	As you can see, all of us have grown a little bit of a beard in the 6 days since we left Cape Kennedy. It's been a fantastic voyage out here, and it's certainly been a sight, and we hope we've been able to share a part of it with you by sending back some pictures.
06 08 45 38	CC	Roger. They've been some very impressive pictures, too.
06 08 45 53	CDR	Again, just like we showed you one time before, once you're in zero gravity and you're adapted to it, it makes no difference whether you're rightsideup or upsidedown. And we have been floating all over the cockpit doing chores, making attitude maneuvers, shooting stars, as you can see John there. And we'll say we feel in really great health. In fact, we've felt great ever since we climbed aboard the Saturn V rocket on Sunday, and we're certainly looking forward to a return to the Earth, and I think we'll be about as healthy when we return as when we left. Over.
06 08 46 31	CC	Roger.
06 08 46 37	CDR	Here you see a pair of our scissors that we open the food with, just slowly floating.
06 08 47 37	CDR	Okay. We'll go over to the right side of the cockpit, and here's Gene Cernan. Right now, Gene and John are vying for the basic contest of who's growing the best moustache.
06 08 47 54	LMP	For Jack Schmitt's sake, this is how we take targets of opportunity.

06 08 48 08	LMP	This has been a, it's been a great trip, so far. We've worked hard, but it's been very challenging and very, very rewarding to us as a team here, and, I hope, to our team down there; because we couldn't be where we are if it wasn't for all you guys down there, and we really appreciate it.
06 08 48 31	CC	Thank you, 10. And I'll pass it on to everyone here in the MOCR and on the other shifts; and I guess it goes without saying that we admire the fine performance that you all have turned in up there.
06 08 48 43	CDR	Thank you, Bruce. It's really been great. That pass down to the lunar surface at 50 000 feet, and the rendezvous, and then shooting the top part of Snoopy around the Sun, and all the landmark tracking, and viewing the Moon as we saw it. And also, that climbout this morning as we left the Moon. Now, that's something you just won't ever forget; and it was so fantastic, that we just wanted to share it there with you. Over.
06 08 49 07	CC	Roger.
06 08 49 11	CDR	Here you see Gene turning around the flashlight that's turned on. Now, one thing we use in the spacecraft because we do have the problem of zero-g is some material called Velcro, and here you'll see Gene putting a light on one of the knobs, and John is also putting a pencil there. In fact, with just one small piece, he can hold this whole camera that we have. It's only less than 1 inch square, but yet it has the cohesive force to hold the desired object to the surface.
06 08 50 03	CDR	Well, we're going to end our TV cast, now, by again just showing you the Earth and the Moon for one quick glance, and Gene will take the camera and point it out to the Moon.
06 08 50 15	CC	10, this is Houston. Is there anything we could see in the vicinity of the tunnel regarding condensation, or anything up there?
06 08 50 21	CDR	Yes. We'll take you up in our tunnel there. We've got a lot of gear stored in it.
06 08 50 54	CC	Looks like Snoopy up there to me.
06 08 51 01	CDR	(Laughing) You better believe, that may be a part of Snoopy.

06 08 51 13	CMP	Okay. You're looking at the edge of the hatch. There's the hatch handle right there; the basic mechanism of the hatch handle mechanism that opens. If you can see it, there's condensation all over there. It's all wet, and right up there under the tunnel vent lights around the seal is drops of water condensing out.
06 08 51 45	CMP	Can you see that water on the tube? Does it show up on the monitor? And, there's condensation on the walls of the tunnel, as far down as the top of the hatch surface.
06 08 51 50	CMP	But there's very little electrical wiring in the tunnel, so we're not really worried about that.
06 08 52 13	CC	Roger. We can't make out much in the way of water. We can see a little bit of glistening occasionally. That's about the size of it.
06 08 52 17	CMP	That's it, that's it. Well, there's a thin, there's a thin film of drops all over the hatch, and - -
06 08 52 28	CC	Roger. We caught something there.
06 08 52 33	CMP	Can you see that?
06 08 52 39	CC	Roger.
06 08 52 44	CMP	That's the same type of film that's all over the hatch and the tunnel walls. Saw a lot on the hatch - on the pressure equalization valve. Look at it, right there.
06 08 53 00	CC	Roger.
06 08 53 03	CMP	Bright, shiny spots of water.
06 08 53 10	CMP	And like I said before, this morning, it's 20 degrees cooler in the tunnel; very nice up there. The pressure equalization valve is covered with water - well every piece of equipment in there, particularly the steel pieces around the rim of the seal and pressure equalization valve, are covered with a thin film of water drops. I think you can see some, even on the hatch mechanism. Can you see the alignment arrows - -
06 08 53 50	CC	- - Yes. Just one - -
06 08 53 51	CMP	- - that we use to align the hatch with?
06 08 53 54	CC	Roger. The alignment arrow comes through nicely. In fact, we could read, I guess it was "gear box disconnect" a few minutes ago.

06 08 54 05	CMP	Roger. This hatch weighs about 80 pounds or a little better, and in one g with - a man has very great difficulty to position this thing and install it, and locking it by himself. In zero gravity it's extremely easy to manipulate and operate, and it was even easy to wrestle it by these hoses the other day, which we had to take it out and put it in two or three times while we're checking out the lunar module, which was attached just above this hatch. But it was a piece of cake to haul it in and out.
06 08 54 47	CC	Reports like that are good news for our AAP package-handling problem.
06 08 54 57	CMP	I didn't say it would be easy for AAP, Bruce.
06 08 55 07	LMP	I don't believe you can see it, but there's some big drops of water about the size of a quarter right where John is putting his hand up there, right now. Right opposite that tunnel light, and opposite the end of the hatch handle. It's on the vertical portion of the hatch.
06 08 55 56	CDR	Right now, John has one of our absorbent towels and is mopping up the water around in that area on the hatch handle.
06 08 56 05	CC	Roger.
06 08 56 29	CC	Okay. We're getting an outside view, again.
06 08 56 33	CMP	Roger. As a matter of fact, I was just up in the tunnel feeling of that. That stuff on the outer hatch seal is not water. It's ice.
06 08 56 43	CC	Roger. Ice.
06 08 57 59	CDR	Okay. Gene is going to focus it on the Moon. There, I think he's got it. Over.
06 08 58 04	CC	Roger.
06 08 58 10	LMP	Okay. Like Tom did with the Earth, I've turned the Moon over for you and you're looking at the North Pole at the top; the east is to the right; and the south is to the bottom of your screen. You're looking at the main area that we were interested in as far as landing site operation is concerned, the dark area in the middle: the maria, Sea of Tranquillity, Sea of Fertility area. As I say, with the naked eye this is still very plain and very visible, and this is full zoom on the lens. The relative size again at - some - about 40 000 miles away from the Moon about 45 000 miles away. It looks like about

		a - fills up the size of about a nickel at about 18 inches. So, with that we'll leave you. Apollo 10 from Tom, John, and Gene saying, "We're proud to be here, we're proud to represent so many people back there." It's been a pleasure; it's been hard work, but it's been a tremendous challenge, and we're looking forward to a complete and successful landing; and thank you all again.
06 08 58 21	CC	Roger, Apollo 10. We're looking forward to having you all back in about 2 days here. We're standing by.
06 08 58 30	CDR	Roger, Bruce.
06 09 00 08	CDR	Hello, Houston, Apollo 10.
06 09 00 10	CC	Go ahead, 10.
06 09 00 14	CDR	Roger. You've heard our report: how we feel healthy and very hardy up here. Just want a report on how our boss is doing, going through the same simulation with the food on the ground. Over.
06 09 00 25	CC	Stand by a second. The boss just walked out - to go eat, we believe - -
06 09 00 31	CMP	Just walked out? He's probably about half sick.
06 09 00 33	CDR	What did you say, Houston?
06 09 00 34	CC	(Laughing) Roger. We're speculating he went out to eat. He came over here to watch the pass, and I guess it was a secondary objective to find out whether you all were inserting a meal in the flight plan for today or not.
06 09 01 02	LMP	He had some other conveniences to go with that food that we don't have, that might make it taste better.
06 09 01 08	CC	(Laughing) Roger.
06 09 03 28	CDR	Hello, Houston. Apollo 10. Over.
06 09 03 31	CC	Go ahead, 10.
06 09 03 36	CDR	Roger. For the G&N water DELTA-V, want to reconfirm that the yaw angle is 060 degrees. Over.
06 09 03 45	CC	Stand by.
06 09 03 51	LMP	You know, Houston, if it's 060 degrees according to the book on one of these burns, you got to realign the platform. That's too close to the middle gimbal. Over.

06 09 04 08	CC	Roger. We don't want you to have to do that, so we'll waive the 060 bit.
06 09 04 30	CC	10, Houston. Correction there. We will waive the platform realignment and use yaw 060.
06 09 04 39	CMP	I was afraid you were going to say that.
06 09 04 53	CC	10, Houston.
06 09 04 57	CDR	Go ahead, Houston.
06 09 05 01	CC	Roger. Understand you wanted a food report from the one-g test sample down here.
06 09 05 07	CDR	Roger. We're doing real good up here, Deke, and feel real healthy. Wondering how you were surviving down there on it. Over.
06 09 05 14	CC	I'm surviving real well, except I'm starving to death. That hydrogen up there must be real filling.
06 09 05 21	CDR	(Laughing) It is, and I guess that's the only factor that you're missing there, boss, because this water really seems to fill you up. Over.
06 09 05 30	CC	Well, we save some weight on food that way.
06 09 05 36	CDR	Right. Good reducing diet also. I guess our total BTU's per day is probably a little bit less, particularly after that rendezvous day here, as far as our movements and everything; and you start to use the Exer-Genie right away, you build up a heat load that 5 psi can't circulate out very well. Over.
06 09 05 56	CC	Roger. I expect that's true.
06 09 06 25	CDR	Houston, Apollo 10. Again, I mentioned earlier today, and I guess it got relayed on to you, that we're still itching quite a bit from all the insulation that we got in here from the tunnel hatch; and at least after that microbiology, the next thing we want to do after we get aboard the carrier is going to be to take a shower. Over.
06 09 06 49	CC	Roger. Got that message, Tom, and the medics are shaking their heads "yes." That sounds like a reasonable plan to them.
06 09 06 57	CDR	Okay. Real good. I wish we'd had a camera going inside. It looked like three people scrambling around in a snowstorm here when that vent valve was opened up there. And the same way over in Snoopy. Snoopy was completely covered with the snowstorm but we got it fairly well policed-up, but it still

		is settling around all over. And so, we're taking care of it the best we can, but I think that's the best way to get rid of the rashes we have. Over. There's no problem, but we just want a shower as soon as we get down.
06 09 07 27	CC	10, have you - -
06 09 07 28	CMP	We keep cleaning the inflow valve out at regular intervals.
06 09 07 33	CC	Roger. Have you tried using the wet-wipes? Do they help any?
06 09 07 40	CDR	Oh, yes. We've taken about the best type of shower we can, and all skin treatment - everything else, and we keep cleaning the inflow valve to the ECS system - oh, at least three or four times a day, and still just finding fibers - lint from the fiberglass in there. But we've got everything under hand, but in the meanwhile, we just itch a little bit. Over.
06 09 08 01	CC	Roger. We copy. And we'll work on lining up some showers for you.
06 09 08 08	CDR	Okay. Thank you, now.
06 09 12 24	CDR	Houston, Apollo 10. You can relay on to Deke that we aren't going to eat another meal before we go to bed. Over.
06 09 12 27	CC	Roger. He is here listening.
06 09 12 32	CC	Roger. Got that message. I'll start making the lineup right now.
06 09 12 34	CDR	Tell him not to get hungry, now, down there.
06 09 12 37	CDR	(Laughing) Okay. Real good, Deke.
06 09 20 10	CMP	Houston, this is Apollo 10. Over.
06 09 20 11	CC	Go ahead.
06 09 20 14	CMP	Roger. Should we be in NARROW DEADBAND for this water dump? Over.
06 09 20 27	CC	Stand by.
06 09 20 31	CMP	What quads do you want enabled and disabled today?
06 09 20 45	CC	Roger, Apollo 10. WIDE DEADBAND is satisfactory, and your DAP is configured properly. Over.

06 09 20 50	CMP	Thank you, sir.
06 09 20 54	CDR	And would you give us a Mark at 9 minutes to the maneuver? Over.
06 09 20 57	CC	Stand by.
06 09 20 59	CMP	So we can get our clocks SYNCED.
06 09 21 01	CC	MARK.
06 09 21 05	CDR	Roger. Our clocks are SYNCED, and we're counting down to the maneuver. Thank you.
06 09 21 20	CC	Roger.
06 09 21 44	CC	10, this is Houston.
06 09 21 47	CDR	Go ahead, Houston. 10.
06 09 21 49	CC	Roger. We just got informal word from the Princeton that they've got plenty of hot water and soap available on board for you.
06 09 22 01	CDR	Well, thank you very much. Certainly appreciate the effort, there.
06 09 22 05	CMP	Are you sure they're not on water, Ron?
06 09 22 09	CC	They said whatever the situation - -
06 09 22 11	CDR	Is that salt water? Over.
06 09 22 12	CC	They would make an exception for you all.
06 09 22 19	CDR	Okay. Tell them thanks a lot. Over.
06 09 22 21	CC	Roger.
06 09 23 00	CC	Apollo 10, this is Houston.
06 09 23 03	CDR	Go ahead, Houston, 10.
06 09 23 04	CC	Roger. For John, Barbara was in here in the viewing room watching the show, and she enjoyed the production and hearing you very much.
06 09 23 08	CMP	I see. Thank you.
06 09 23 09	CC	Roger. Out.

END OF TAPE

06 09 26 50	CDR	Houston, Apollo 10. We're in the maneuver attitude and counting down, coming up on 3 minutes to maneuver. Over.
06 09 26 59	CC	Roger. Coming up on 3 minutes.
06 09 27 00	CC	MARK.
06 09 27 01	CC	Three minutes.
06 09 27 05	CDR	Roger.
06 09 29 02	CDR	MARK.
06 09 29 03	CDR	One minute to the maneuver.
06 09 30 06	CC	Roger. Fifty-four seconds and counting.
06 09 30 11	CDR	Roger. Would you count us down to the last 5 seconds, please, Houston? Make sure we're accurate there when we start it. Over.
06 09 30 21	CC	Roger.
06 09 30 54	CC	Roger. Stand by. 5, 4, 3, 2, 1.
06 09 30 59	CC	FLUSH. (Laughter)
06 09 31 06	CDR	Roger. And we're on the way.
06 09 31 08	LMP	We've got a good ignition. The valves are open; the pressure's good.
06 09 31 36	LMP	Man, it's raining out there.
06 09 32 04	CDR	Houston, at 1 minute, the maneuver looks good. Over.
06 09 32 09	CC	Roger.
06 09 32 18	CMP	Steering is straight and true. We've got a ... 0.0000015 g, at the moment.
06 09 32 38	CDR	Houston, if Deke's still there, ask him what he thought of that rate of climb this morning after we lit the big afterburner. Over.
06 09 32 46	CC	That was pretty impressive, Tom. I've never seen anything quite like that.
06 09 32 52	CDR	Yes. Neither have I, Deke. All three of us just sat there in amazement. We just went vertically right out from it. It was really amazing. ... like you really pulled back on the pole after the burner was lit and you're up to V MAX.

06 09 33 07	CC	Yes. I'll have to take that ride with you some day.
06 09 33 12	CDR	Sure love to have you.
06 09 33 13	CMP	Boy, that engine really runs. I tell you that three-quarters of a g were getting felt like about 7 g's. It's hard to get your head off the headrest.
06 09 33 40	CDR	I think the real impressive thing about it, though, is the accuracy with which it controls and ends up. Once you get done with a burn, by golly, it doesn't look like we got any work to do much now.
06 09 33 54	CC	Yes. That was fantastic, that cut-off.
06 09 34 02	CDR	Yes. The guidance systems have really performed for us on this whole mission, in fact, even including the Saturn there.
06 09 34 10	CC	Roger. No question about it.
06 09 35 33	LMP	Say, Deke, I'm trading John one shrimp cocktail for two chicken soups, but you don't have that advantage down there. So you just have to stay with what you've got.
06 09 35 44	CC	Yes. I'm eating Tom's menu so I don't have much variety there.
06 09 35 50	CDR	Sorry about that.
06 09 36 12	CC	Actually, the flavor is pretty good down here, Tom. I don't know how it affects you up there, but my opinion it's probably the gas is giving you the most problem, and not the basic food.
06 09 36 25	CDR	Right, Deke. Yes. The food itself tastes real good and those wet packs are good. Man, they've made a real great effort. And the only thing is I'm sure just the water has filled us up so much and the lack of total activity in here, we just - we're staying completely filled up. There's no doubt about that, but we're just lagging a little bit behind in the total number of meals consumed. Over.
06 09 36 47	CC	Roger. Understand.
06 09 40 13	CC	10, Houston. We show you about 12.0 percent now.
06 09 40 28	LMP	Roger. I'm reading about 15. I'll bias it and cut if off at 10.

06 09 40 34	CC	Yes. We show 10 now.
06 09 40 38	LMP	Say again.
06 09 40 40	CC	Roger. We show 9-1/2 percent now. You're overburning.
06 09 40 44	LMP	Roger. Manuals cut off - shut off. We got it. Residuals look like about 0.05 percent plus.
06 09 40 58	CC	Houston. Roger. Out.
06 09 41 02	CDR	Houston, this is 10. It looks as if the I_{sp} might have been a little bit low as far as the total burn time was concerned. Over.
06 09 41 08	CC	Roger. Actually in defense of the EECOMM's, shortly before the burn they came up with a revised burn time about 10 plus 58, so looks like they were right about in the middle on it.
06 09 41 20	CDR	Roger.
06 09 41 23	LMP	Oh, EECOMM is doing the trench work now, huh?
06 09 41 29	CC	For a maneuver of this size, yes.
06 09 41 56	CC	10, Houston. When it's convenient for you, we can take your onboard readouts, crew status report, and things of this sort. Over.
06 09 42 07	CDR	Okay. Stand by. It will be a little while yet. We are right in the middle of this meal. Over.
06 09 42 15	CC	Oh, Roger. No rush. We're going to be here for a while, yet.
06 09 42 19	CDR	Okay.
06 09 44 47	CMP	Houston, this is 10. We're going to PTC attitude, heads down tonight, and look at the southern constellations for morning rrealign. Okay?
06 09 44 56	CC	Fine with us.
06 09 46 54	CMP	Houston, this is 10. Over.
06 09 46 58	CC	Go ahead, 10.
06 09 47 01	CMP	Roger. It is kind of - mighty cold in this tunnel area. If it really starts to freeze things up, we might want to orient this thing - hatch toward the Sun for a little bit one of these days. We'll keep an eye on it. That be all right?

06 09 47 17	CC	Roger. We copy.
06 09 53 04	LMP	Hello Houston, this is 10.
06 09 53 08	CC	Go ahead, 10.
06 09 53 11	LMP	I got some RAD readings for you in this order: 26044, 05044, and 15045. I got Battery C 36.8; PYRO BATT's are both 37; RCS 54, 66, 67, and 64.
06 09 53 39	CC	Roger. Readback - -
06 09 53 42	LMP	That's all right, Bruce. I've got them written down. I'm sure you got them right. I'm cycling the fans, and I'm going into an O_2 purge at this time.
06 09 53 56	CC	Roger. Like to confirm the RAD readings. 26044, 05044, 15045. Over.
06 09 54 06	LMP	That's it. You got them.
06 09 54 08	CC	Roger.
06 09 58 08	CC	10, this is Houston. Over.
06 09 58 12	CDR	Go ahead. Over.
06 09 58 14	CC	Roger. Looking ahead in the Flight Plan, there's nothing very critical immediately following your rest period. If required we could slip the P22 work by a couple of hours and if you want to go ahead and sleep in it's your option. Over. Sunday morning and all that.
06 09 58 38	CDR	Okay. I'll leave that - whatever John wants to do - Roger. Whatever John wants to do on that. Over.
06 09 58 59	CMP	Okay. It doesn't make any difference to me. Whatever is convenient with you all.
06 09 59 05	CC	Well, we're going to be here one way or the other and - your option.
06 09 59 10	CMP	Well, I figured you wouldn't turn loose the MOCR. How about we play it if we wake up we do it; if we sleep, we don't. Would that be fair?
06 09 59 19	CC	That's fair.
06 09 59 25	CMP	In other words, we do it when we wake up, if that'll be all right.

06 09 59 28	CC	Roger.
06 09 59 31	LMP	Hey, Bruce. The purge is complete; the canister has been changed. What COMM mode do you want us in tonight, OMNI or high gain? OMNI again?
06 09 59 40	CC	Okay. We'd like you in OMNI COMM mode. We'd like you to select OMNI Bravo on board with the rest of the COMM configuration per the flight plan, that is S-band squelch, ENABLE; S-band nominal mode voice, OFF; and the arch tape OFF.
06 10 00 01	LMP	Okay. Fine. I'll stay high gain here for a little bit.
06 10 00 05	CC	Roger. We'd also like you to terminate the charge on battery A and optics power switch to OFF.
06 10 00 17	LMP	Okay. We got that. Thank you.
06 10 00 19	CC	And then I've got your heater configuration for the CRYO tanks.
06 10 00 26	LMP	Stand by one. Okay, Jack. Why don't you take them one at a time, and I'll just go through them - Bruce, I'm sorry.
06 10 00 52	CC	Okay. Oxygen tank number 2, AUTO; oxygen tank number 1, OFF; hydrogen tank number 1, AUTO; hydrogen tank number 2, OFF.
06 10 01 16	LMP	Okay, Bruce. Here's what I got. I got hydrogen 1, AUTO; 2, OFF; oxygen 1, OFF; 2, AUTO.
06 10 01 24	CC	Roger. And we had an inquiry from Joe Garino as to what sort of utilization, if any, you're getting on the inflight exerciser? Over.
06 10 01 42	CDR	Roger. We've been using it after TEI, and it's working out real good. Would you pass the word on to Joe. We have been - All three of us have been using it and it's working out fine. And we were rather busy there all the time up before TEI on the whole mission, and now we're using it on the way back. Over. It works good.
06 10 02 02	CC	Roger. You're not having any problems with it are you, or anything like that?
06 10 02 07	CDR	Negative. It works as prescribed. It's real good. Over.
06 10 02 11	CC	Very good. I'll pass it on.

06 10 06 24	LMP	Houston, this is 10. I'm going OMNI's now. I'll power down the S-band.
06 10 06 28	CC	Roger.
06 10 09 01	CC	Apollo 10, this is Houston. Over.
06 10 09 06	LMP	Go ahead, Houston. Over.
06 10 09 09	CC	Roger. On the high gain antenna, we'd prefer you to leave the antenna powered up but in the manual mode overnight. Over.
06 10 09 18	LMP	Okay, Bruce.
06 10 10 48	CC	10, Houston. When you're through with your computer, we'd like to give you a NAV - a state vector update, and update the CMC clock. And do you have any comments on the EMS check? Over.
06 10 11 10	CMP	No. We haven't done it yet. Over.
06 10 11 12	CC	Roger. Out.
06 10 11 41	CMP	We're POO and ACCEPT. Over.
06 10 11 46	CC	Roger.
06 10 17 48	CC	Apollo 10, this is Houston. We've completed the state vector and clock DELTA-T uplink. We've also performed the VERB 66 for you. Over.
06 10 18 14	CMP	Houston, we're in a 20-minute wait period with our C and D jets disabled, prior to setting up a three-tenths of a degree roll rate.
06 10 18 23	CC	Roger. We copy. We're through with the computer. We did a VERB 66, state vector update, and clock update.
06 10 18 31	CMP	Houston, Apollo 10. Over.
06 10 18 34	CC	Apollo 10, this is Houston. Reading you loud and clear. Over.
06 10 18 50	LMP	Houston, this is Apollo 10. Over. How do you read?
06 10 18 55	CC	Apollo 10. Apollo 10, this is Houston. Reading you loud and clear. Over.
06 10 19 35	CC	Apollo 10. This is Houston. Over.
06 10 19 42	LMP	Roger. We're not reading you, Bruce. We know you're trying, but we can't make it out.

06 10 19 56	CC	Roger, 10. We'll keep trying.
06 10 20 01	LMP	Okay. Read you loud and clear now.
06 10 20 03	CC	Okay. We're through with the computer. We gave you a state vector update, a clock update, and we did the VERB 66 for you. Over.
06 10 20 15	LMP	Thank you. I was just saying we're in our 20-minute hold period prior to setting up a three-tenths degree rate and going to a wide deadband.
06 10 20 21	CC	Roger. We copy. We'll stick with you until you get set up in PTC, and then I guess we'll bid you a good night.
06 10 21 06	CC	10, Houston. On our displays down here, we show your rates nulled out sufficiently to proceed with setting up the desired roll rate. Over.
06 10 34 46	CMP	Houston, this is 10. Over.
06 10 34 50	CC	Go ahead, 10.
06 10 34 52	CMP	Roger. The EMS test was completed, worked just like it's supposed to.
06 10 35 00	CC	Roger.
06 10 35 09	CC	And 10, this is Houston. If you all want to sign off now, we have nothing further for you. I guess we'll expect to hear from you in the same way - I guess downvoice backup - as in the past.
06 10 35 22	CMP	Roger. We'll be talking to you.
06 10 35 25	CC	Roger. Out. Good night.
06 10 35 29	CMP	Good night.

END OF TAPE

REST PERIOD - NO COMMUNICATIONS

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06 18 54 27	SC	(Music: "Come Fly With Me")
06 18 56 10	LMP	(Whistling)
06 18 57 27	LMP	Good morning, good morning! This is Tom, John, and Gene from KATIO, broadcasting again from approximately 140 000 miles out into the universe. It's a beautiful day out here, and it appears that it might be a beautiful day down in Mother Earth country. For those of you who are not just ready for work or are just getting up: Get up lazy bones! It's time you got up! Big day ahead! And the thought for today is: Remember, National Secretary's Week was last month!
06 18 58 10	CC	Good morning, Apollo 10. You managed to wake everybody up early down here, and thank you for your brief program. And, we'll be giving your advice due consideration down here. And we've got a little bit of music for you.
06 18 58 38	LMP	Wonderful, Jack. Let's hear it.
06 18 58 45	CC	(Music: "Zippity-do-da")
06 19 00 43	SC	(Applause)
06 19 00 52	CC	Roger. Thank you for the applause. And watch out for migratory bird season.
06 19 00 59	LMP	That was a couple of seals up here.
06 19 01 10	CC	You might have recognized Deke Slayton, as solo, on that song we sent up to you, 10.
06 19 01 16	CDR	Roger.
06 19 01 22	LMP	If he's eating that food, he's zippity-do-da-ed all right.
06 19 01 25	CC	He's not in here yet, and I'm going home. I'll see you guys later.
06 19 01 31	LMP	Hey, Joe. We haven't had a chance to say hello to you.
06 19 01 36	CC	I know that. I hung around to wait until you wake up. It was an exciting night last night. I'm glad we SIM'ed it.
06 19 01 45	LMP	We just figured it out. We were rotating from three times an hour, and it's just 3 days and 3 nights every hour now. What day is it? That makes it about the middle of August, I think.

06 19 02 44	CDR	Hello, Houston. Apollo 10.
06 19 02 46	CC	Morning, Tom.
06 19 02 50	CDR	Roger. Is Joe still there? Over.
06 19 02 53	CC	Roger. He's still here. Go ahead.
06 19 02 56	CDR	Yes, Joe. How about doing me a favor, will you, old buddy?
06 19 03 02	CC	You name it.
06 19 03 07	CDR	Okay. We're kind of out of town for church today, and the minister - You know Reverend Parrot - wanted my - you know, reflections or something that might be appropriate to read in the service since I won't be around there. Have you got a pencil? I just had copied down a couple of things that I thought might be appropriate. Over.
06 19 03 --	CC	Roger. Go ahead.
06 19 03 29	CDR	Roger. From Psalm 8, Psalm 122, Psalm 128, and Isaiah 2:4. Over.
06 19 03 46	CC	Okay. Readback: Psalm 8, 122, 148 and Isaiah 2:4.
06 19 03 54	CDR	Right. Just tell the congregation hello for me and that I thought that those might be appropriate since he was asking for something that - you know - to go along with the mission. Over.
06 19 04 07	CC	Roger that, Tom. That is very appropriate; I'll see that the word gets around.
06 19 04 13	CC	Joe knows them all, right off the top of his head.
06 19 04 18	CDR	(Laughter) Right.
06 19 04 45	LMP	Hey, Jack, we're sorry to keep you off the golf course this morning.
06 19 04 51	CC	I gave up the game a long time ago.
06 19 04 56	LMP	We'll have to try it again after we get back.
06 19 05 00	CC	That's a good idea. Like to take it up.
06 19 14 04	CC	Hey, Gene. I've got your astrocast here. We're trying to whip up some news, but I think it will be a while. Your's is - -
06 19 14 13	LMP	Okay. Go ahead.

06 19 14 14	CC	This Sunday may find you in some quandary over home conditions. There should be some help available. Don't make smart remarks about Marines.
06 19 14 31	LMP	Who wrote that? Did the great philosopher write that?
06 19 14 36	CC	The unemployed philosopher. He's got the day off today.
06 19 14 46	LMP	I'm still waiting for that special song.
06 19 14 53	CC	And here's John's. His money has to be spent today on institutions and the use of them for various purposes. Take the time to check everything out before doing anything drastic. Finding out the "why" in a situation may be more important than any other determination.
06 19 15 16	CMP	They got me there, all right.
06 19 15 23	CC	Yes. And, Tom. Your relatives and neighbors expect to see you this Sunday. Do the amenities gratefully. Make the rounds; there are gifts for you here and there. Then seek solitude. Reprimand all those in your command who make smart remarks about Marines. Over.
06 19 15 44	CDR	(Laughter)
06 19 15 57	CDR	Tremendous, Jack. Just tremendous.
06 19 16 02	LMP	Hey, Jack. Don't you call us. We'll call you.
06 19 16 13	CMP	Are you just coming on duty, or are you leaving?
06 19 16 16	CC	Just coming on.
06 19 16 20	LMP	Oh, my golly.
06 19 16 22	CC	I've been out guarding the gate all night, of course.
06 19 16 29	CDR	(Laughter)
06 19 28 00	LMP	Hello, Houston. This is Charlie Brown.
06 19 28 02	CC	Go ahead, Charlie.
06 19 28 16	LMP	You're Snoopy. Jack, I'd like to hold off on this RCS redundant component check until we get fuel cell number 1 back on the line, which I assume won't be too long, judging from the temperature. The main reason is I'd just rather do that when I turn on the secondary pump.

06 19 28 33 CC Okay, Gene-o. That will work out good.

06 19 28 39 LMP Okay. Thank you, Jack.

06 19 49 12 CC Apollo 10, Houston. I've got the Orange Bugle, here, when you're ready to listen.

06 19 49 20 LMP Send it up, Jack.

06 19 49 33 CC Okay. Hilo, Hawaii: Kilauea Volcano on the Island of Hawaii erupted shortly before dawn Saturday, spewing lava 200 feet into the air. Dr. Howard Power, scientist in charge of the U.S. Geological Survey's Volcano Observatory said it was the 14th eruption of Kilauea since 1960. The last one occurred February 22 and one lasted for 55 hours. Aboard the Yacht Duchess: The first men scheduled to land on the moon practiced Earth splashdown procedures in the Gulf of Mexico Saturday and sprayed each other with disinfectant that will be used to guard against any unexpected moonbug contamination. Apollo 11 astronauts Neil Armstrong, Mike Collins, and Buzz Aldrin wore olive drab plastic-coated biological isolation garments designed to keep any hostile organism they might bring back from getting loose in the Earth's environment. The exercise began when a dummy moonship with the pilots aboard was dumped into the calm Gulf 3 miles south of Galveston, Texas, from the space agency's vessel retriever. The command module was turned upside-down and then flipped over using its own righting systems. Four swimmers attached a yellow flotation collar to the capsule and one of them donned an isolation garment while the other swimmers moved away in a raft. Miami Beach: Blond, hazel-eyed Miss Virginia, 19-year-old Wendy Datson, Saturday night was selected 1969 Miss U.S.A. over four other finalists in the annual pageant. Daughter of a Danville, Virginia, physician, Miss Datson is a former cheerleader who is now attending Stratford College. She said she entered the contest because a schoolmate said she might have a good possibility of winning. Pago Pago, American Samoa: The governor of this South Pacific American territory said he promised a Polynesian welcome of singing and dancing for the Apollo 10 astronauts, but nothing risque. The celebration on Monday, limited to 10 minutes, will include a typical Samoan dance by several of our beautiful girls, said Governor Owen Aspinall. The dancers will wear the Samoan full dancing costume, a colorful two-piece outfit consisting of a wrap-around skirt and blouse. There will be nothing risque, of course, said the Governor.

The dancers are well within the propriety of their Samoan custom. So while they're dancing, you can stand there itching. Moscow: A Soviet scientist said Saturday that Russia will depend on machines instead of man to explore the gloomiest corner of the solar system. He indicated the Soviets planned a spectacular series of unmanned space shots within the next decade, culminating in 1977 with a 9-year instrument odyssey to four different planets. "Such a trip," he said "could not be repeated in this century." Hagerstown, Maryland: Even in these days of affluence in society it may sound a bit hedonistic to own your own railroad car, but Rueben Darby has made a business of converting old railroad cars into private palace cars. The price is $50 000 and up. Wonder what they do with old command modules? London: The achievement of Apollo 10 is a superb combination of human courage and technical skills, Sir Bernard Lovell, director of Britain's Jodrell Bank Observatory and a leading space expert, said today in an article for the times. Khatmandu, Nepal: The five-member Swiss mountaineering group has conquered 22 686-foot Mount. ... in western Nepal. The leader of the expedition said today - named George Hartman - that his team scaled the mountain twice in 1 day. In the National League: Chicago 7, San Diego 5; Houston over the Mets, 5 to 1; and the Phillies beat the Braves 8 to 3. I've got the rest of the scores here if you want them. Oklahoma still doesn't have a baseball team.

06 19 55 14	LMP	Hello, Houston. This is 10.
06 19 55 15	CC	Go ahead.
06 19 55 18	LMP	Jack, I don't know whether we lost you or not, but the last we heard was the mountain climbing.
06 19 55 26	CC	Okay. You lost me. Let's just pick up the baseball scores. That's all I had left. Chicago 7, San Diego 5; Houston 5, Mets 1; Phillies 8, Braves 3; and still no baseball team in Oklahoma.
06 19 55 50	CDR	Roger.
06 19 55 52	LMP	Looks like the Cubs and the Astros are the hottest ball clubs in the league this week.
06 19 55 57	CC	Yes. The Cubs are quite a ways out in front and Houston really needs it.

06 19 56 07	LMP	Yes. I've got two loyalties there, and so I'm for both teams. Hey, listen, our heartiest and sincere personal congratulations to Miss Virginia.
06 19 56 26	CC	Roger. We copy. Sincere congratulations to 19-year-old Miss Virginia.
06 19 57 00	LMP	Thank you for the news, Jack. How's the weather back there these days?
06 19 57 04	CC	Well, the weather around Houston has been real nice. It's getting rather warm, up to about 90 each day. The old humidity is starting to climb, too.
06 19 57 19	LMP	We meant the recovery area.
06 19 57 25	CC	I have a request in for weather and we'll get that to you pretty soon.
06 19 57 28	CMP	Okay.
06 19 57 39	CDR	And, Jack, you might pass on to the Governor down there in Samoa that we're certainly looking forward to the reception and seeing his beautiful island. Over.
06 19 57 50	CC	Roger, Tom. We'll pass that on.
06 20 01 45	CC	Okay, 10. Houston. Here's the weather forecast for the landing area. Essentially no change from the weather I gave you yesterday. 1800 scattered, 10 000 broken, high broken 10 miles. Wind 120 at 15 knots, wave height is 5 feet, 81 degrees, widely scattered showers. Over.
06 20 02 15	LMP	Jack, we missed the first part of that.
06 20 02 17	CC	Okay. The weather conditions are no different than forecast yesterday. 1800 scattered, 10 000 broken, high broken in 10, wind 120 at 15, wave height 5 feet, 81 degrees, widely scattered showers. Over.
06 20 02 43	LMP	Okay. Thank you.
06 20 03 36	LMP	Houston, this is 10.
06 20 03 38	CC	Go ahead.
06 20 03 41	LMP	As we played "Fly Me To The Moon" about 4 days ago on our way out to remind you of help we needed, we'd like to play you one more song in its entirety to remind you of our determination.

06 20 04 01	CC	Okay. Go ahead. We're listening.
06 20 04 10	SC	(Music: "Going Back To Houston")
06 20 06 42	CC	Roger, 10. We can see you're really determined to get here. As a matter of fact, if you want, we probably could arrange it so as you didn't have to stop at Samoa on the way. Over.
06 20 06 55	LMP	Jack, after careful consideration here, we voted that you should go back and guard the gate.
06 20 08 39	CC	Apollo 10, Houston. We would kind of like to go to high gain antenna, and during PTC mode, if you would go to REACQ and NARROW BEAM, your settings are pitch plus 30 and yaw 270. Over.
06 20 09 07	LMP	Okay. How soon do you expect us tc pick that up, Jack? I'm in NARROW and REACQ right now and I will go to HIGH GAIN on my switches, here. And you can switch us whenever you think we will get ACQ.
06 20 09 31	CC	Roger. And during the times that you are not in PTC today, go HIGH GAIN to MANUAL and select OMNI B. Over.
06 20 09 41	LMP	OMNI B. Roger.
06 20 18 38	LMP	Hello, Houston. This is 10.
06 20 18 42	CC	Howdy, 10. Reading you loud and clear, now.
06 20 18 46	CMP	Yes. That - let me get that antenna set up for you, and then I'll put it in REACQ because it doesn't want to pick it up and lock onto you and REACQ you. Let me know when you want to make that switch over to high gain, and I'll set it up for you and then put it in REACQ, and then we'll let it run. Otherwise, I don't think it's going to lock on for us. And I've got some RAD readings for you if you'd like them.
06 20 19 30	CC	Okay. Let's go with the RAD readings.
06 20 19 31	SC	Okay. 26046, 05046, and 15047.
06 20 19 38	CC	Roger.
06 20 19 39	SC	Proper report from yesterday - proper reports from yesterday: the commander and the CMP both had ...
06 20 20 02	CC	Roger. We copy.

END OF TAPE

06 20 20 30	CC	And, 10, Houston. You can select high gain now. Over.
06 20 20 35	CMP	Okay. Will do.
06 20 29 23	CC	Apollo 10, Houston. How do you read now?
06 20 29 28	CMP	Okay, Jack. I'll give it to you now. It's in REACQ at plus 30 and 270.
06 20 29 38	CC	Okay. Good.
06 20 29 55	CC	Okay, 10. On the high gain antenna then, you can leave her hands off and we'll take her from there. Over.
06 20 29 07	CMP	It's all yours. I didn't mean to hit COMMAND RESET but since there's nothing critical, I'd play with it for awhile and get it set up because the first time around it didn't want to acquire. It was banging all over the place when we were trying to come back around, so I thought I'd get you a good lock on. So we're at REACQ narrow plus 30 270 and you've got them.
06 20 30 35	CC	Okay, Gene-o. We weren't quite in the high gain attitude there, and we weren't able to get our command in.
06 20 30 47	CMP	Okey doke.
06 20 30 53	LMP	Jack, what do you think about putting fuel cell 1 on, and I'll get on with that redundant component check and start the battery charge and what have you?
06 20 31 25	CC	Okay, Gene. Let's crank up fuel cell 1 and put it on both buses and give it a chance to warm up, and in about 1 hour we'll go with the redundant component check. Over.
06 20 31 38	LMP	Okay. Is it okay then to go ahead and put - start charging battery B at this time after I get it on?
06 20 31 48	CC	Affirmative, Gene-o. You can start your battery recharge.
06 20 31 55	LMP	Thank you.
06 20 32 01	CC	And when you're ready to copy I've got consumables and flight plan. Over.
06 20 32 24	CDR	Okay, Jack. Go ahead on the consumables. Over.

06 20 32 26	CC	Okay. On the consumables, Tom, at 162 hours we had total RCS, 55 percent; A, 44 60 56 58: H_2 and O_2 is 24.7 and 315. Your RCS is 18 percent above the flight plan.
06 20 32 37	CDR	Okay. I got all those. Thank you.
06 20 33 16	CC	And, Apollo 10, we've got you out there at about 130 000 miles at about 5700 feet per second, and we've got a nominal entry angle of minus 6.52.
06 20 33 33	CDR	Roger. You mean that last maneuver we made with the - using the G&N and the water put us in the corridor there? Over.
06 20 33 41	CC	Roger.
06 20 33 42	CMP	Fantastic!
06 20 33 46	CC	Roger. We'll - -
06 20 33 47	CDR	Well, from that I take it we don't - Pardon me. What I take from that is we don't make any more midcourses? Over.
06 20 34 20	CC	Okay, 10. The numbers that I gave you were with a midcourse, would be minus 6.52. So we're going to do a midcourse 6. Over.
06 20 34 32	CDR	Roger. Understand midcourse 6. Thank you.
06 20 34 42	CC	And in our present status without a midcourse, we'd be up around 6.95, so we're right in there anyway pretty close, but we ought to sweeten it up a little.
06 20 34 55	CDR	Roger. We agree. Over.
06 20 35 38	CC	And Apollo 10, Houston. We have a state vector for you when we can get your computer and we also have a minor flight plan update. Over.
06 20 35 50	CDR	Roger. Computer is in ACCEPT at this time and go ahead.
06 20 35 55	CC	Roger. Flight plan update. Here's a note first. The P23's scheduled for today are designed to determine the minimum Sun angle. However, you may have a little difficulty with one or more of these sets due to the Sun angle. However, the attempt should be made anyway on schedule. At 168 hours, consideration is being given to an S-band reflectivity test and the test procedures are on page 3-19A of the flight plan.

06 20 36 50	CC	Okay, Apollo 10. Apollo 10, Houston. Understand we didn't key, so I'll repeat.
06 20 37 00	CDR	Roger. We're trying to follow.
06 20 37 01	CC	Roger. How much did you copy, Tom?
06 20 37 06	LMP	Nothing.
06 20 37 07	CC	Okay. The site wasn't keying - -
06 20 37 09	CDR	We didn't copy at all.
06 20 37 10	CC	Roger. The site wasn't keying and they're keying for us now. So the P23's that are scheduled for today are designed to determine the minimum Sun angle. You may have a little difficulty with one or more of these tests because of the Sun angle. However, the attempt should be made anyway on schedule. At 168 hours, we're giving consideration to making an S-band reflectivity test and these test procedures are on page 3-19A of the flight plan. But - We'll come through with more word on this later. At 170 30, delete the ECS redundant component check. This check is duplicated in about an hour anyway, so we'll delete that one at 170 hours. Over.
06 20 38 12	CDR	Roger. We have the ECS redundant component check deleted.
06 20 38 52	CMP	Houston, with that state vector you just gave us, would it be okay to run through P37 to see what that midcourse is going to be? Just to see what this thing thinks it's going to be?
06 20 39 07	CC	Stand by one, John.
06 20 40 13	CC	Okay. Apollo 10, Houston. Uplink complete; you can go the BLOCK, and we'd like to see you do some P37's. And the time you can use is 176 50, and we would like to follow you through on it. Over.
06 20 40 47	CC	Apollo 10, Houston. Did you copy?
06 20 40 51	CMP	Roger. We're going to run through P37 right now.
06 20 42 48	CMP	Are you guys copying all this okay, Jack?
06 20 42 53	CC	That is affirmative, John. We've got it.
06 20 43 02	CMP	Time of transfer: 14 hours 58 minutes and 44.78 seconds.

06 20 43 10	CC	Roger. We see it.
06 20 43 38	CMP	Wow!
06 20 44 32	LMP	Houston, 10.
06 20 44 34	CC	Go ahead.
06 20 44 39	LMP	Jack, can you get me a recommended exposure setting to use the interior 16-millimeter film outside at distant Earth, please?
06 20 44 57	CC	Stand by one.
06 20 45 03	LMP	Just want to check it against my stopmeter here.
06 20 45 06	CC	Roger.
06 20 46 26	CMP	Gee whiz! Just two passes.
06 20 47 56	LMP	That's great.
06 20 49 04	CC	Apollo 10, Houston. We noticed you got DELTA-V - correction, inertial velocity 36314. We had difference by 1 foot per second, and you got minus 6.5. We got minus 6.52. Over.
06 20 49 30	CMP	Well, I don't know why. You guys sent me the data. I wouldn't argue over a 200th of a degree anyway; nobody knows it that well.
06 20 49 44	CC	Roger. We were just trying to tell you how well off you are.
06 20 49 51	CDR	Roger.
06 20 49 52	CMP	Never doubt.
06 20 50 02	LMP	What did you guys get for DELTA-V?
06 20 50 07	CC	Well we're looking a 1.2 on the DELTA-V.
06 20 50 13	LMP	Outstanding!
06 20 54 15	CC	Apollo 10, Houston. We have some dope on the exposure setting for you. Turns out the whole film, of course, has to be processed the same way, so if you are going to use a whole magazine for exterior shots, that is a whole magazine, your exposure settings should be f:11 at 1/250. If you want to use part of the film for - part of the magazine for interior shots, then do you exterior shots at f:22 and 1/500. Over.

06 20 54 53	LMP	Jack, I missed part of that. I understand exterior shots with the 69- and 60-millimeter interior is f:22 at 1/500. That's all I heard.
06 20 55 17	LMP	Houston, this is 10.
06 20 55 20	CC	Okay, 10. How do you read me now? Over.
06 20 55 23	LMP	Okay. Why don't you repeat that for us, Jack? Would you?
06 20 55 27	CC	Okay. Since the whole film has got to be processed in one batch, if you want to use the whole magazine for exterior shots, your setting should be f:11 at 1/250. But if you want to use part of the magazine interior, then do the exteriors at f:22 and 1/500, so that all the pictures will come out all right when they are processed. Over.
06 20 56 02	LMP	Okay. I got that. Thank you very much, Jack.
06 21 02 20	CC	Apollo 10, Houston. It turns out that it's quite important that we do this P23 midcourse navigation drill pretty much on time to get the appropriate data and solutions, and so would like to recommend that we get on with it pretty soon. Over.
06 21 02 46	CMP	Roger. We're going on with it right now.
06 21 30 10	CMP	Houston, we are wondering from that first look if the W-matrix is okay.
06 21 30 17	CC	Stand by one. We'll have somebody look at it.
06 21 33 28	CC	Apollo 10, Houston. Turns out the only way we can look at the W-matrix is to have you call up a VERB 67. Over.
06 21 33 39	CMP	Roger. Well according to the instructions, we're not supposed to change it from what it was the other day, but I was wondering if when you uplink a state vector that doesn't reshuffle it some way or another.
06 21 37 10	CC	Apollo 10, Houston. If you call up a VERB 67, all that does is let you look at the W-matrix - doesn't do anything to it and when we send you a state vector, it would just reinitialize it. Over.
06 21 37 28	CMP	Okay.
06 21 38 03	CC	And, John, when your buddies wake up up there, I've got a maneuver pad and an entry pad anytime you are ready for it.

06 21 38 18	CMP	Roger. Go. They are not quite ready.
06 21 38 51	LMP	... Only with you down there can we feel so secure, Jack, and we're ready to copy, babe.
06 21 38 59	CC	Okay. I've got a midcourse 6 maneuver pad. Midcourse 6, RCS/G&N: 25240 176 49 5728, plus three balls 12, plus all balls, plus all balls, 088 354 351, NA. H_P is plus 00212 00012 005 00012 40 2744 340 033 Delta 003, Lima 12. The rest is NA. Your set stars are Denet 43, Vega 36. Roll align 148 013 018. Your ullage is a two- quad burn; use Bravo and Delta. How do you copy? Over.
06 21 40 57	LMP	I think I got it all, Jack. It's midcourse 6 - it's an RCS/G&N burn: 25240, then we'll go to NOUN 33: 176 49 5728, plus three balls 12, plus all balls, plus all balls, roll is 088, 354, and 351. Perigee is plus two balls 212, three balls 12, two balls 5, three balls 12 40 2744 340 033 Delta 003 and Lima 12. Deneb 43, and Vega 36; 148 013 and 018; two quads: Bravo and Delta.
06 21 42 03	CC	That's right, Gene, and I've got an entry pad when you're ready.
06 21 42 16	LMP	Okay, Jack.
06 21 42 19	CC	Okay. Entry pad, Mid-Pacific: three balls 153, three balls 191 31 55 268, minus 1507, minus 164 68 067 36315 652 12040 36395, 191 48 55, 00 28; D_L MAX; D_L MIN is NA; NOUN 69 is all NA; 400 02 08 0018 0329.
06 21 43 39	LMP	Jack, stand by. After NOUN 69, where are you picking up, please?
06 21 43 51	CC	After NOUN 69, we are picking up at V circular, D zero.
06 21 44 01	LMP	Okay. Hit me with D zero again, would you, please? 400, but pick it up again.
06 21 44 03	CC	D zero is 400 02 08 0018 0329 0818 40 2611 347 033, Dog 080, Lima 22, lift vector is UP. Your gimbal angles on entry pad are based on option 2 at 191 48 55 which is at 400 000 feet. Your GDC align set stars for the entry alignment are Deneb 43, Vega 36. Roll is 067, pitch is 174, yaw is 343. Over.
06 21 45 37	LMP	Okay. I've got Mid-Pac: three balls 153 and three balls 191 3155 268, minus 1507, minus 16468 067 36315 652, 12040 36 395 191 48 55 00 28; picking up at

D zero, 400 0208 0018 0329, 0818 40 2611 347 033 Delta 080, Lima 22, lift vectors UP; roll and pitch and yaw angles are based upon option 2, and that's at 191 48 55 and I believe that's at 400 K. Our set stars are Deneb 43 and Vega 36; 067 174 and 343.

06 21 47 08 CC Roger. You got it all.

06 21 47 25 CC And, Gene-o, when you get around to it, for c.g. purposes, we're going to have to take a look at the LCL recovery checklist on activation serial number 1003, and with those items of significant weight, why if you'd just read the number and their stowage location, that will take care of it. Over.

06 21 47 57 LMP Okay, Jack. We'll get that to you.

06 21 49 15 CC Gene, this is Houston. If you're going to stay in this attitude for a few minutes more, it would be a good idea to start the redundant component check now. Over.

06 21 49 27 LMP Okay. Fine.

06 21 50 41 LMP Jack, I'm also starting a fuel cell purge at this time.

06 21 50 45 CC Roger. We copy.

06 21 50 50 CC Apollo 10, Houston.

06 21 51 02 CC 10, Roger. Go ahead with the fuel cell purge.

06 21 51 17 CDR Houston, Apollo 10. Do you want us to remain in approximately this attitude for the next 2 hours; and where we're going to be picking up next navigation stars horizon marks? Over.

06 21 51 30 CC Stand by one, Tom.

06 21 52 03 CC Apollo 10, Houston. We suggest going back to PTC after the redundant component check is completed, and we'd like to have some words from John as to Sun interference in his P23. Over.

06 21 52 22 CDR He'll talk to you in a minute. Over.

06 21 53 18 CDR Hello, Houston. Apollo 10.

06 21 53 21 CC Go ahead 10.

06 21 53 24	CDR	Say, Jack, we're starting to get pretty cold in the cabin since we've got to blank out all the windows here for John to do that tracking, and we'd like to get some Sun in this cockpit. Over. So how about delaying here for a few minutes to put the Sun in one of the windows? Over.
06 21 53 41	CC	Sure, this whole attitude business is at your convenience, Tom.

END OF TAPE

06 21 54 47	CMP	Houston, on that P23, I don't think the problem was interference with the Sun. The problem was to try to determine how close to the terminator you could mark stars, wasn't it?
06 21 55 07	CMP	So you can relax some those star selection sightings for no COMP.
06 21 55 14	CC	Stand by, John.
06 21 55 19	CMP	I think that the purpose of it was to be able to improve the star selection sighting schedules for the no-COMP cases. And I didn't have any problem tracking those close to the terminator. ...
06 21 55 32	CC	Roger. We copy. Yes, John. You're right.
06 21 57 46	CC	Apollo 10, Houston. Secondary coolant loop check looks good here, and you can go to RESET on your secondary EVAP. Over.
06 21 57 56	LMP	Okay.
06 22 01 39	CC	Apollo 10, Houston. Your secondary EVAP backpressure looks okay now, and you can turn your secondary pump off. This will help you out in that cabin temperature some, there.
06 22 01 55	LMP	Thank you, Jack. We've got it cleaned up, now.
06 22 18 57	CC	Apollo 10, Houston. I've got some flight plan information for you.
06 22 19 38	CC	Apollo 10, Houston. I have some flight plan information for you.
06 22 19 48	CDR	Stand by for a minute, Houston. Over.
06 22 19 50	CC	Roger.
06 22 24 36	CDR	Houston, Apollo 10. Go ahead on that flight plan. Over.
06 22 24 43	CC	Okay, 10. Before we go ahead with the flight plan, we'd like you to turn on your H_2 purge line heaters now, and start an H_2 purge on fuel cell 1 in 20 minutes. And here's the flight plan update. A good time to perform this S-band reflectivity test would be after the completion of P23. And we mentioned that the procedure is on page 3-19A of your flight plan. Your acquisition angle for beginning this test is roll 011,

pitch 196, yaw 337. And your high gain angles are pitch minus 010 and yaw 300. In addition, I have roll, pitch, and yaw attitudes and high gain angles for tests 1, 2, and 3, if you need them.

06 22 25 54 CDR Okay. Stand by.

06 22 26 13 CDR Okay. We're looking at 3-19A now, and go ahead for tests 1, 2, and 3. Over.

06 22 26 19 CC Okay. For test 1: roll 027, pitch 196, yaw 298. Your high gain angles will be pitch minus 010, yaw 340. For test number 2: roll is 065, pitch is 196, yaw 298. High gain angles are pitch minus 020 and yaw 350. Test number 3: roll 090, pitch 196, yaw 306. And your high gain angles are pitch minus 30 degrees, and yaw is 360 degrees. Over.

06 22 27 29 CDR Roger. On the callback here. For test 1: roll 027, pitch 196, yaw 298. High gain: pitch minus 010, yaw 340. Test 2: roll 065, pitch 196, yaw 298. High gain: pitch minus 020, yaw 350. Test 3: roll 090, pitch 196, yaw 306. High gain: pitch minus 030, and yaw is 360. Over.

06 22 27 59 CC That's affirmative, Tom.

06 22 28 04 CDR Okay, Jack. And then we'll pick this up around 168 hours. Over.

06 22 28 08 CC Roger. 168 hours. And did you copy turning on your H_2 purge line heaters? Over.

06 22 28 17 CDR Roger. You wanted that done in 20 minutes, or do you want it done now for a period of 20? Over.

06 22 28 21 CC We would like you to turn on your H_2 purge line heaters now, and then start your H_2 purge in 20 minutes on fuel cell 1. Over.

06 22 28 32 CDR Okay. Mark the purge line heaters on.

06 22 28 35 CC And that will be a continuous purge on each - on fuel cell 1. Over.

06 22 28 41 CDR Roger. In 20 minutes we'll start - In other words, you want us to continue to purge fuel cell 1 from now on, then? Over.

06 22 28 49 CC That's affirmative. We'll let you know when to terminate the purge on it.

06 22 28 55	CDR	Okay.
06 22 35 23	CC	Apollo 10, Houston. We have a request. We'd like you to - during the reflectivity test, to punch up VERB 64 for us so we can read out the high gain pitch and yaw angles down here on the ground. Over.
06 22 39 27	LMP	Hello, Houston. This is 10.
06 22 39 29	CC	Go ahead, 10.
06 22 35 33	LMP	Get your LCL recovery checklist, if you would, Jack.
06 22 35 38	CC	Go ahead.
06 22 35 43	LMP	Okay. The items I call out are the items that we will stow. That's 1, 2, 3, 4, 5, 6, 18, 20, 21, 22.
06 22 40 08	CC	Roger. Copy.
06 22 40 12	LMP	Okay. Items 20 and 21 are stowed in the tissue section of A-1.
06 22 40 29	CC	Understand. Tissue section of A-1.
06 22 40 31	LMP	20 - 22 is in A-8 with the exerciser.
06 22 40 40	CC	Go ahead.
06 22 40 44	LMP	All other items are stowed in a single bag. They will be on the onboard side of A-6 strapped down. They'll be between A-6 and the bulkhead.
06 22 41 04	CC	Roger.
06 22 41 09	LMP	That's it for the LCL. We're not sure exactly yet where we're going to put the canister.
06 22 41 17	CC	Roger.
06 22 41 24	LMP	You might pass on to - to Joe that items 9 and 10, which were highly cherished, were unavailable.
06 22 41 41	CC	Roger. We'll pass the word.
06 22 41 45	LMP	Tell him the LCL recovery checklist procedure was not applicable for those two items.
06 22 41 51	CC	Roger.

06 22 43 22	CC	Apollo 10, Houston. We have a stowage - a recommended stowage location down here for the lithium hydroxide canister. It says to wrap it in plastic, and wrap it in a sleeping bag, and put it in L-3. Did you get that word? Over.
06 22 43 42	CDR	Well, that's okay. But we're not eating that much food. L-2 and L-3 are still just about full of food. Over.
06 22 43 57	CC	Roger. We copy, Tom. Did you wrap the canister up to prevent breathing that hydroxide? Over.
06 22 44 09	LMP	Roger. We wrapped it.
06 22 44 43	CMP	It looks to us like turning the cabin into the Sun increases the cabin temperature about 3 degrees.
06 22 44 50	CC	Roger, John. We copy.
06 22 44 56	CMP	Maybe it was 1 degree. Would you believe a half a degree?
06 22 45 06	CC	Roger. We copy. It didn't do much good.
06 22 45 47	LMP	Hello, Houston. This is 10.
06 22 45 49	CC	Go ahead, 10.
06 22 45 53	LMP	On that - On that LCL recovery checklist, I did make one mistake. You want to get it out again?
06 22 46 03	CC	Sure, I got it.
06 22 46 06	LMP	I said we brought back items 20, 21, and 22 for stowage. Actually, it was 19, 20, and 22. 21 was really not in condition to bring back.
06 22 46 25	CC	Roger. We copy.
06 22 46 31	LMP	Think about that one.
06 22 46 41	CC	Roger. I'll pass the word on to the appropriate people and let them think about it.
06 22 46 50	LMP	You may not have to go too far.
06 22 46 53	CDR	Does super RETRO want to know how many tons of gear we left in the LM?
06 22 46 59	CC	That's affirmative. How many tons did you leave in the LM?

06 22 47 05	CDR	Seemed about like 20 or 30. We took a temporary stowage bag, three helmet bags full of fluid, materials, and insulation, which probably doesn't weigh very much, and - and - and I would - and the hatch stowage bag was full of a lot of gear - the hatch stowage bag. Actually, the weight of that stuff was probably - it was a lot in volume, but it didn't seem to be - You know, it didn't feel like much. But there's a lot of weight. We took one temporary stowage bag and three helmet bags - not helmet bags, but those inner bags in the helmets that you keep your gloves in. We had those full of gear, and one hatch bag. And it was all full of waste material. And I would - I wouldn't even try to guess how much that weighed, but it would be the equivalent of how many days fluid and materials you'd normally expect to use by that time.
06 22 48 27	CC	Roger. We copy.
06 22 48 39	CDR	Also, it seems like the docking target got misplaced and went with Snoopy.
06 22 48 48	CC	Roger. Copy. And we'd like you to start the purge on fuel cell 1 now, please.
06 22 48 56	LMP	Okay.
06 22 49 07	CDR	But the hatch bag turned out to be a very convenient waste disposal stowage thing. We had that thing just crammed full of stuff.
06 22 49 17	CC	Okay.
06 22 49 26	LMP	Jack, it's after the fact, and as far as LM stowage for that c.g. on that burn was concerned, but it was stowed opposite the probe and drogue on the right-hand side. But like John said, it was big and bulky, but I'm sure it didn't weigh but a couple or 3, 4, or 5 pounds, maybe. And at that time, I didn't think it significant to mention because of the LM c.g., and apparently it wasn't.
06 22 49 50	CC	Okay. Stowed opposite the probe and drogue. And that was the hatch stowage bag?
06 22 49 57	LMP	That's affirmative.
06 22 50 32	CC	Apollo 10, Houston. We've got some configurations to do on the H_2 and O_2 tank heaters. H_2 tank 1 heater OFF, tank 2 heater AUTO; O_2 tank 1 heater AUTO, and tank 2 heater OFF.

06 22 50 56	LMP	Okay, Jack. I've got those. You know, you're the first guy that's ever passed those up in order of H_2 1 and 2 and O_2 1 and 2? I always get them in some other order. But that's the way I've got them now.
06 22 51 07	CC	That's left to right, isn't it?
06 22 51 14	LMP	I knew it would have to be different from you, but it seems right this way.
06 23 08 49	CC	Apollo 10, Houston. Here's something that I didn't get acknowledgment on. If you're not using the computer during the S-band reflectivity test, we'd like you to do a VERB 64 so we can watch the high gain pitch and yaw angles down here. Over.
06 23 09 05	CDR	Roger. We copied that, Jack, and we'll give it to you.
06 23 09 10	CC	Thank you.
06 23 09 12	CDR	We will be using the computer to make AUTO maneuvers to those angles. Over.
06 23 09 17	CC	Roger.
06 23 14 59	CC	Apollo 10, Houston. We've got another news item here. In the Atlanta Classic, Bruce Crampton is leading. In second place by two strokes, Bert Yancy, Bruce Develin, and Gary Player. And the unemployed local philosopher - He just showed up unexpectedly, and he says that color TV is on its way back, just as he predicted, and it's going to make a real splash around here pretty soon.
06 23 15 28	CDR	(Laughter) Roger. Thank you very much for the news there, Jack.

END OF TAPE

06 23 29 26	CC	Apollo 10, Houston. We note down here that you are using only one RCS quad. Unless you'd rather do it otherwise, unless you'd rather continue to do it this way, we'd prefer to use two quads because it does perturb the trajectory somewhat to use only one quad at a time. Over.
06 23 29 46	CDR	Okay. Will do. I was just reducing the usage on A. We've got plenty of fuel; just trying to balance it out. I'll go do that. Okay. Got them.
06 23 30 08	CC	And, 10, according to our charts down here, they look pretty well balanced. The requirements are such that A should be looking about the way it is right now.
06 23 30 25	CDR	Okay. The onboard indicators are pretty much off then. Over.
06 23 30 30	CC	Okay, Tom.
06 23 30 51	CC	Now, these folks down here tell me that you guys have set the economy record on the fuel usage so far.
06 23 31 00	CDR	Roger. Thank you. We've been watching it real close. We did use quite a bit in the landmark trackings to really pulse and make sure everything was on there since we knew how important that was, but other than that, we've been watching it as tight as we could. Over.
06 23 31 14	CC	Roger, Tom.
06 23 31 18	CC	Put you in the Mobil Economy Run next year, Tom.
06 23 31 23	CDR	Yes. Right, Ed. Hello there.
06 23 31 32	CC	Watch who'll get you for a commercial.
06 23 31 38	CDR	Good morning, Gordo. How are you?
06 23 31 39	CC	Fine, Tom. We enjoyed your readings this morning.
06 23 31 46	CDR	Roger.
06 23 37 18	CDR	Houston, Apollo 10. That completes the star horizon check. I guess the next activity will be about 168 hours when we come up for the reflectivity test. Over.

06 23 37 29	CC	Roger, 10. We copy.
06 23 37 35	CDR	And we are going to open all shades now and get some heat in this place. Over.
06 23 37 39	CC	Roger.
06 23 38 00	CDR	And I notice our quad A temperature has gone up quite a bit, even though it is still lower than what we had in lunar orbit. We'll go ahead and start maneuvering into these attitudes for the S-band reflectivity test. Over.
06 23 38 14	CC	Roger, Tom.
06 23 39 58	LMP	Hello, Houston. 10.
06 23 40 00	CC	Go.
06 23 40 05	LMP	On the reflectivity test, do you want us to go to these angles we got copied in here for 1, 2, and 3, or do you want us to go to those acquisition angles that we've also got copied in here. They are a little different.
06 23 40 25	CC	Stand by.
06 23 41 52	CC	Apollo 10, Houston. We don't see any reason why you can't set up your deadband and then go right into test 1 attitude. Over.
06 23 42 03	LMP	Okay. Fine.
06 23 42 58	LMP	Hello, Houston. This is 10.
06 23 43 00	CC	Go ahead, 10.
06 23 43 04	LMP	Jack, you got 3-19A in front of you?
06 23 43 08	CC	I have.
06 23 43 11	LMP	Okay. Step 4 says when high gain meter compares to high gain control, you go through those next two steps and then you record the meter. It appears to me the meter reading is going to be the same as where you set the control needle just to do step 4.
06 23 43 27	CC	Stand by one.
06 23 44 25	LMP	Houston, this is 10. I'll go ahead and record step 5 and if there's any difference, just make note of it. I'll just go ahead and follow through with it.

06 23 44 35	CC	Roger.
06 23 45 02	LMP	Jack, just one other quick question. Step 2, where I've got the control values, I used the new control values that you read up to Tom here a little while ago for test 1, 2, and 3. Is that correct?
06 23 45 25	CC	Stand by one.
06 23 46 27	CC	Okay, Gene. In step 1, we gave you the attitudes to which to go to get the pitch and yaw angles as specified in tests 1, 2, and 3. And then we still want you to set your high gain control to those settings which are listed in step 2, which are all 20 degrees off in yaw.
06 23 47 10	LMP	Jack, you gave us a roll, pitch and yaw attitude and a high gain pitch and yaw for tests 1, 2, and 3. I'm just a little bit confused. On step 2, do you want me to use the printed numbers in the book or do you want me to use the pitch and yaw that you gave us before with the roll, pitch, and yaw for tests 1, 2, and 3?
06 23 47 37	CC	Okay. The attitudes that I gave you were just a convenience number. Those are the attitudes to which you should go to set up your antenna as specified in step 1. Then we want you to slew the - -
06 23 47 56	LMP	Okay. Fine - -
06 23 47 58	CC	Roger. Copy now?
06 23 47 59	LMP	Okay. Yes. I'll use your pitch and yaw for acquisition and then I'll go right through steps 1, 2, 3, and so forth just as written with the numbers.
06 23 48 09	CC	Right. And then when you go to step 3, this causes you to slew off and then you go to step 4 back to AUTO. This will tell us how well the antenna comes back to the position to which we want it to come.
06 23 48 26	LMP	Okay.
06 23 48 27	CC	And if we get the same numbers in step 5, why, then we know that the antenna is doing what we want it to, and if not, why, we want to know what those numbers are and reduce the data later.

06 23 48 42	LMP	Okey doke.
06 23 50 05	CC	Apollo 10, we're handing over the high gain. You may get a burst of noise.
06 23 50 09	LMP	Okay, Houston. We're at the first attitude and I'm going to my ranging switch off and we do have a good lock at this attitude.
06 23 50 18	CC	Roger.
06 23 52 46	CDR	Hello, Houston. This is Apollo 10. ... on this reflectivity test I'm rolling right ...
06 23 53 01	CC	Apollo 10, Houston. We've got lots of background noise. Stand by on your transmission.
06 23 53 36	CC	Apollo 10, Houston. You have a caution and warning on the H_2 PRESS CRYO tank. Don't worry about it. In fact, the heater's going to cycle momentarily to bring that pressure back up.
06 23 53 50	LMP	Okay. Looks like it's tank 1 to us. Tank 2 is well in the green.
06 23 53 55	CC	Roger. We copy tank 1. It'll cycle and come on up.
06 23 54 10	LMP	Yes. But the heater configuration switch is OFF. I just put the heater switch to AUTO.
06 23 54 22	CC	Roger, 10. They tell us that tank 1 is going to follow the tank 2 heater cycle. Over.
06 23 54 36	LMP	Okay.
06 23 54 57	CDR	Okay. We got the CRYO pressure again. Over.
06 23 55 23	CC	Apollo 10, Houston. Let's put heaters in both H_2 CRYO tanks to AUTO. Over.
06 23 55 35	LMP	Okay. And we're in step 5, test 1.
06 23 55 39	CC	Roger.
06 23 56 20	LMP	Hello, Houston, Houston. How do you read test 1?
06 23 56 24	CC	We're reading you, 10. A little background noise.
06 23 56 29	LMP	Okay. Very good. I'm going on to step 2 and I'll give you a reading test when it's all over.

06 23 56 35	CC	Roger.
06 23 58 51	CC	Apollo 10, Houston. We need the fans on in both H_2 CRYO tanks. Over.
06 23 59 11	LMP	Okay. The fans are on.
07 00 03 17	LMP	Hello, Houston, Houston. This is Apollo 10. How do you read on test 2?
07 00 03 23	CC	Read you loud and clear.
07 00 03 28	LMP	Okay. We'll proceed to test 3.
07 00 03 30	CC	Roger on 3.
07 00 09 51	LMP	Hello, Houston. This is 10. How do you read?
07 00 09 53	CC	Loud and clear. How me?
07 00 10 00	LMP	I'm reading you the same. I've got your readings if you'd like them for 1, 2, and 3.
07 00 10 07	CC	Go ahead.
07 00 10 13	CC	Roger 10. Go ahead with the reading.
07 00 10 18	LMP	Test 1 is pitch minus 10, yaw 360, and the percent signal is 65, and it was oscillating about two needles' width. Two is minus 25, 360, 65 percent, and steady. Three is minus 30, meter flipped to 000, 90 percent, and steady.
07 00 10 54	CC	Roger. We copied all that. Thank you.
07 00 10 58	LMP	Okay, Jack.
07 00 11 09	CDR	Houston, Apollo 10. We're all set to go back to PTC at this time. Over.
07 00 11 22	CC	Roger, Tom. Set yourself up in PTC.
07 00 12 05	LMP	Jack, two added comments on the first and second tests: it appeared to me that the high gain antenna did not regain a signal strength. However, in the third test, it appeared that it did 90 percent.
07 00 12 21	CC	Roger. We copy, Gene. Thank you.
07 00 12 38	LMP	I tell you, though, in the last 3 or 4 days, I've become a high gain fan.

07 00 12 44	CC	Roger. And the high gain sure sounds a lot clearer and a lot better down here than the OMNI's do.
07 00 12 58	LMP	Sounds like you're sitting in the cockpit with us, Jack.
07 00 13 33	CC	Apollo 10, Houston. We're going to do another high gain handover here in about 20 seconds; you might expect another burst.
07 00 13 42	CDR	Roger.
07 00 14 50	LMP	Hey, Jack, is it 12 o'clock noon down there?
07 00 14 54	CC	That's pretty darn close; I've got 12:04.
07 00 22 55	CC	Apollo 10, Houston. We'll need the S-band nominal ranging switch RANGING, please.
07 00 23 07	LMP	Sorry about that, Jack.
07 00 26 26	CC	Apollo 10, Houston. We expect that you are in the 20-minute wait period for setting up PTC and we notice that we have all four quads. We'll only need Alfa and Bravo. Over.
07 00 26 53	CMP	Roger. I'm still thumbing through my book trying to find out how to do this.
07 00 27 00	CC	It's all right.
07 00 27 44	LMP	Houston, will you give us a call when you think we've spent enough time waiting?
07 00 27 52	CC	That's affirmative. We'll tell you.
07 00 28 01	LMP	Hello, Jack. This is Charlie Brown.
07 00 28 07	CC	Go ahead, Charlie.
07 00 28 08	LMP	We're in the process now of commencing scientific experiment Sugar Hotel Alfa Victor Echo. And it's going to be conducted like all normal human beings do it.
07 00 28 30	CC	Atta boy. Roger. We copy. That'll impress the folks in Pago Pago.
07 00 28 40	CMP	I don't know whether we're all going to make it. We're going to take a look at it one at a time, and we may decide that we'll have one test subject.

07 00 28 49	CC	Roger. I hope we'll get a chance to take a look at that on TV tonight, or tomorrow.
07 00 28 57	CMP	You will for sure. We'll have it recorded for posterity also.
07 00 29 03	CC	Roger. Can't be worse than fiber glass.
07 00 30 45	CMP	Would you believe what the shaving cream packed at 14.7 looks like when you open it up a 5 psi?
07 00 31 17	CC	Yes. Bet that looks colorful.
07 00 31 24	CMP	It's white, but colorful.
07 00 31 51	CC	And, 10, Houston. We haven't come up with any better ideas on stowing that hydroxide canister. We want to make sure it's well protected, doesn't get damaged, so the only suggestion we've now got is to either find a place for it or have a big Sunday dinner and pack it in the L-3, or take the stuff out of L-3 and put it somewhere else, and pack the container in there. That's it. Over.
07 00 32 18	CMP	Okay.
07 00 32 20	CC	If you come up with a different location, we'd like to know what it is, so we can tell RETRO.
07 00 32 24	CMP	We'll let Gene hold it on his lap.
07 00 32 26	LMP	We'll find someplace for it and let you know, Jack.
07 00 32 29	CC	Okay. Thanks.
07 00 41 00	LMP	Houston, this is 10. The test is proceeding very successfully.
07 00 41 06	CC	Roger. Copy. Just as planned.
07 00 46 18	CC	Say, Tom, are those Navy guys getting themselves properly configured to keep up this immaculate Navy image? Over.
07 00 46 35	CMP	He's off the headset right now, configuring.
07 00 46 55	CMP	Jack, I hope you got John and my shoes done early enough to get sent out to the ship.
07 00 47 00	CC	I was going to say I wondered if you guys had a set of whites up there, or something like that. Maybe you've got some of those short pants they wear around.

07 00 47 17	LMP	Houston, how does that look to you for 20 minutes?
07 00 47 30	CC	We'd like to hold off about another minute to complete the dump.
07 00 48 27	CC	Okay, 10. It's complete. You can start PTC now.
07 00 48 34	LMP	Thank you.
07 00 49 28	LMP	Just to break the monotony of this PTC, we're going to roll left this time.
07 00 49 37	CC	Okay. Copy left-hand pattern.
07 00 51 29	CC	Apollo 10, Houston. Since you're rolling left this time, we'll have to give you some new high gain angles and here they are: pitch minus 50 and yaw 90. Over.
07 00 51 44	CMP	Roger.
07 00 51 55	CMP	I'm afraid we may have messed this one up. It looks for some reason like we got an operator error when we punched that last button, and it started to rate and went back some way or other.
07 00 52 47	CC	It looks all right down here, 10.
07 00 52 56	CMP	Okay. But there was a lot of jet firing in there when I was trying to initiate the - to start this thing while I was making the entries, which I don't understand.
07 00 53 22	CC	You probably just have a right-handed spacecraft and he doesn't want to go that way.
07 00 54 02	CMP	Houston, can you check and see that the deadband is opened up? I think it is.
07 00 54 10	CC	Stand by one.
07 00 54 56	CC	We've got you in wide deadband. We don't see anything different than the way it's supposed to be.
07 00 55 12	CMP	Okay, Jack. The only thing that I notice is that we're starting with both rates in both the - pitch and yaw a little and we're a little further off than we usually are by this time in the PTC. Usually it's gone for a couple of hours before it gets out 5 degrees.

07 00 55 28 CC Yes. We're copying that too, but what I'm saying is, you did everything right.

07 00 56 37 SC Okay.

END OF TAPE

07 01 00 46	CC	10, Houston. You call?
07 01 00 51	CDR	10. Negative. Houston, 10. Do we have Goldstone acquisition? Over.
07 01 01 41	CC	Apollo 10, Houston. We're on Madrid right now and expect to get Goldstone about 171 30. Over.
07 01 01 52	CDR	171 30. Roger.
07 01 05 23	CC	Apollo 10, Houston. We'd like you to turn the H_2 tank heaters off and tell us what position they're in at this time. Over.
07 01 05 37	CDR	Stand by. We're kind of scattered all over the spacecraft. H_2 tank heaters are in AUTO 1 and 2, and we'll turn them off at this time.
07 01 05 51	CC	Roger. Thank you.
07 01 05 52	CDR	The fans are both on.- on. Over.
07 01 05 56	CC	Roger. And fans on. Leave them on.
07 01 05 59	CDR	Roger.
07 01 41 13	CC	Apollo 10, Houston. We weren't able to get high gain the last time around. Want you to confirm that you are in the REACQ mode on the high gain. Over.
07 01 41 24	CDR	Okay. We're in REACQ, now. So we were - We were in AUTO before.
07 01 41 38	CC	Roger. We copy, Tom. Thank you.
07 01 41 49	CDR	Roger. What angles do you want for REACQ? Over.
07 01 42 01	CC	10, that's pitch minus 50 and yaw 90. Over.
07 01 42 08	CDR	Pitch minus 50 and yaw minus 90, right?
07 01 42 13	CC	Make that yaw 90 - plus 90?
07 01 42 19	CDR	Roger. Your yaw is 90 and pitch is minus 50. Over.
07 01 42 30	CC	Roger, Tom. Pitch minus 50 and yaw 90.
07 01 42 36	CDR	Roger.

07 01 46 41	CC	Apollo 10, Houston. We'd like at this time to terminate the hydrogen purge in fuel cell 1. Turn off your hydrogen purge line heaters and take fuel cell 1 off main A and main B. Over.
07 01 46 55	CDR	Roger. Will do.
07 01 49 08	LMP	Hello, Houston. This is 10. I've got the purge stopped on fuel cell 1. I took it off the main buses, and the hydrogen purge line heater is off. However, my indicator still shows FULL SCALE HIGH in fuel cell 1 for hydrogen flow rate. Can you confirm that the purge has stopped?
07 01 49 27	CC	Stand by one.
07 01 49 33	CC	Roger, 10. We're indicating that the purge is not terminated, just like you are. Stand by.
07 01 50 59	CC	Apollo 10, Houston. Let's try cycling the fuel cell 1 purge switch through all positions, then off. Over.
07 01 51 07	LMP	Okay.
07 01 51 26	LMP	Houston, I get an indication that I do come off - during this whole purge, I was FULL SCALE HIGH. And I did get an indication when I'd come back off the H_2 purge position. And I'm coming off of FULL SCALE HIGH right at about 0.20 pounds per hour. And I go back up to the fuel cell H_2 purge, and it goes FULL SCALE HIGH again. So I'm getting some indication in the indicator. And I know the indicator's on because it works okay on the other cells.
07 01 51 57	CC	Roger. Understand you're getting intermittent momentary drop and then back FULL SCALE HIGH.
07 01 52 05	LMP	Yes, Jack. When I actually go to the purge ON position in hydrogen, she'll go FULL SCALE HIGH. And when I go to OFF, it comes back down to the maximum calibrated position, which is 0.20. And as I'm watching it now, it appears to me like it's dropping off very, very, very slowly. I think we may have it okay if we watch it for a while. I think it's dropping down now.
07 01 52 30	CC	Roger, 10. We confirm it's certainly coming down now. We'll watch it for a short time here.

07 02 04 24	CC	Apollo 10, Houston. We'd like to get a little bit of - a little better handle on what's going on in the H_2 tanks, so we'd like you to make sure the fans are off in both H_2 tanks and the heaters in AUTO for both H_2 tanks. Over.
07 02 04 46	LMP	Okay, Jack. We've got the fans off now and the heaters in AUTO. Is there something unusual going on? You looking at the total quantity?
07 02 04 57	CC	No. We had reason to believe that one of the heaters may have stayed on one tank a while ago.
07 02 05 07	LMP	Okay. Fine. My hydrogen purge now is coming down to 0.05. My flow rates are excellent. It's going to hit zero.
07 02 05 15	CC	Roger. We confirm that.
07 01 05 22	LMP	Yes. I don't think you heard me earlier, but the experiment is proving to be a three-way huge success and you can pass on to the Governor of Pago Pago that we're ready to kick up our heels.
07 01 05 36	CC	Roger. We'll assure that you're probably escorted there, to Pago Pago. And the experiment came off successfully. Thank you.
07 01 05 44	CMP	Thank you, sir.
07 01 05 45	LMP	It really did, Jack. It came off very well, as a matter of fact.
07 01 05 49	CC	Just like everybody thought.
07 01 05 54	CMP	That's right. Just like we expected.

END OF TAPE

07 02 41 07	CMP	Houston, this is 10. Over.
07 02 41 10	CC	Go ahead, 10.
07 02 41 14	CMP	Roger. Wonder if we shouldn't knock this off. This seems to be a little too much rates here.
07 02 41 23	CC	Say again. Over.
07 02 41 27	CMP	I'm wondering if you shouldn't knock this PTC off and do some star landmark or something.
07 02 41 53	CC	Okay, 10. This is Houston. Why don't we knock off the PTC now and start working on the P23 again. Over.
07 02 42 03	CMP	Okay. Because it'll take us that long to get started on it anyway.
07 02 42 06	CC	Right.
07 02 55 32	CC	Hello, Apollo 10. Houston. We'd just like for you to turn both H_2 CRYO tank heaters off. It looks like they're stuck on in the AUTO position. Over.
07 02 55 48	LMP	Okay, Charlie. They're off.
07 02 55 50	CC	Roger.
07 02 55 58	LMP	How are you today?
07 02 56 00	CC	How are y'all?
07 02 56 04	LMP	We's fine.
07 02 56 18	CC	And, 10. Houston. We'd like you to verify that the CRYO fans are off also. Over.
07 02 56 26	LMP	Yes. They're off, Charlie.
07 02 56 27	CC	Roger.
07 03 01 48	CC	Apollo 10, Houston. Bruce and I are just sitting here looking at your weather tomorrow. It looks like it's going to be about 1800 scattered, 15-knot winds at 5-foot seas. Beautiful day out there, and it's a beautiful day in Houston here today with about 90 degrees. There's so many people on Clear Lake you can't even see the water. Over.

07 03 02 09	CDR	Roger, Charlie. Thanks for the weather report. John's getting started on his optics calibration at this time. Over.
07 03 02 17	CC	Roger. We see that. Thank you, Tom.
07 03 02 22	CDR	And, also, all three of us shaved today just using a very new technique called shaving cream and a razor, and it worked beautiful. Over.
07 03 02 30	CC	Roger. That's what Jack passed on to us, Tom. That's really good news. Thanks a lot.
07 03 37 06	CC	Hello, Apollo 10. Houston. John, could you pause for about - just 5 more seconds on the NOUN 49? You're a little too speedy for the guys.
07 03 37 25	CMP	Roger.
07 03 44 02	CMP	Houston, that completes the sightings.
07 03 44 05	CC	Roger, 10. Thank you much. Out.
07 03 44 31	LMP	While we've got a couple of minutes here, is there anymore news out today?
07 03 44 36	CC	Say again.
07 03 44 42	LMP	I said, we got a couple of minutes here to listen. Is there any news today of any sort?
07 03 44 48	CC	Stand by. We'll - -
07 03 44 49	LMP	We heard some news early this morning.
07 03 44 52	CC	Stand by. We'll see if we can get you something.
07 03 45 45	CC	Hello, 10. Houston. John, your marks put you within 10 miles of MSFN's best estimate of ... perigee. And it was very good. PAO is coming up with some news for you. We'll have it for you in a little while.
07 03 46 05	CDR	Okay.
07 03 46 07	CMP	Yes. But is it good enough, Charlie?
07 03 46 11	CC	Roger. Everybody's real satisfied with your marking. Over.

07 03 46 22	CMP	Well, I ain't too happy with it.
07 03 46 26	CC	Let me get you some exact figures. Stand by. I'll talk to FIDO.
07 03 47 51	CC	Hello 10, Houston. John, you're improving your perigee from set to set. We feel like, on the next set, it'll be very close to a MSFN prediction. Right now, we have 15 nautical miles for a perigee, and you're coming up with 5. Last time - That's a 35-mile improvement over the last set of marks. Over.
07 03 48 16	CMP	That's a step in the right direction, huh?
07 03 48 19	CC	Roger that.
07 03 48 26	CMP	Charlie, what I want to do when I finish this next set is go through P37 for the ignition time of the burn and see what it says I ought to do. Would that be fair?
07 03 48 34	CC	Roger. That's affirmative.
07 03 51 35	LMP	Hey, Charlie, where do you estimate Snoopy is these days?
07 03 51 40	CC	Stand by, Gene-o.
07 03 52 06	CC	10, Houston. FIDO hasn't updated his estimate since the last time we passed it up. He'll work you out one, and we'll pass it up in a little bit.
07 03 52 18	LMP	Okay. Thank you.
07 03 55 25	CC	Hello, Apollo 10. Houston. Could you give us a VERB 74? We'd like to look at your erasable.
07 03 55 34	CDR	You got it, Charlie.
07 03 55 36	CC	Roger.
07 03 55 41	CMP	Why don't you fix anything I messed up in there while you're at it.
07 03 55 46	CC	Roger. We can't find anything you've messed up. It's all looking great.
07 03 55 56	CMP	Listen, as many times as I punched them buttons, if there's not something wrong, it'll be a miracle.

07 03 56 01 CC Okay.

END OF TAPE

07 04 12 05	CMP	Houston, Apollo 10. Over.
07 04 12 08	CC	Go ahead, 10.
07 04 12 11	CMP	Roger. We have reached low enough to start PTC this time?
07 04 12 16	CC	That's affirmative.
07 04 15 16	CMP	Okay, Charlie. I think we've got a good one going this time.
07 04 15 20	CC	Roger, John.
07 04 15 24	CMP	It doesn't have any of the rates in pitch and yaw like we started out with last time.
07 04 15 29	CC	Roger. This thing's been working really good since - ever since the first thing.
07 04 15 38	CMP	Well, last time we did one, we did one to the left and it got out of hand and went into deadband - spent about the entire hour and one half in the deadband.
07 04 15 50	CC	Oh, that's a new one on me. I hadn't heard about it.
07 04 15 55	CMP	Yes. I don't know what caused it; maybe some way I pushed the buttons wrong. Anyway, we had rates when we started into it, which is very peculiar.
07 04 16 07	CC	Roger.
07 04 16 10	CMP	This thing sure - The guy that thought that up was really smart. Was it anybody back there in the back room?
07 04 16 15	CC	Yes. I think it was the CMS procedures and the SPAN guys back there that - or AGC or whatever they call themselves that came up with it. Looks - I got it in the checklist so we'll go pass it on to the other guys.
07 04 16 30	CMP	That's just - Boy, that's just great. Looks like it saved you about 100 pounds a mission.
07 04 16 46	CC	Roger. Hey, 10, We're considering a slip in the midcourse a half hour to give FIDO another half hour's tracking so he can get a little bit more confidence in his solution. If that's agreeable with you guys, we'd like to proceed that way. Over.

07 04 17 02	CMP	Okay with us.
07 04 17 10	CC	Okay. We'll plan then about 177 20 for the mid-course.
07 04 17 17	CMP	Roger.
07 04 18 56	CDR	Houston, Apollo 10. The world is just coming around in our left window, and it's really starting to get big now. Over.
07 04 19 03	CC	Roger, 10. We got you out about 150 000 miles right now.
07 04 19 09	CDR	Roger, Charlie. When I say big I mean big compared to when we were around the Moon. Over.
07 04 19 14	CC	Roger.
07 04 19 23	CDR	Still looks like the North Pole has that socked in solid cloud deck. It's been there ever since we launched. Over.
07 04 19 31	CC	Roger. We copy, Tom.
07 04 20 24	CDR	Houston, Apollo 10. We're taking documentary sequence and still photos about every 4 or 5 hours of both the Moon and the Earth, so we should have a pretty good history of how they look all the way back. Over.
07 04 20 39	CC	Roger. Thanks a lot. I'll pass that on to Jack.
07 04 29 08	CDR	Hello, Houston. Apollo 10.
07 04 29 10	CC	Go ahead, 10.
07 04 29 12	CDR	Roger. Are you working with Goldstone now, Charlie? Over.
07 04 29 17	CC	Roger. We just had a handover to Goldstone, Tom. Over.
07 04 29 22	CDR	Roger. We're sitting up here and we have already gone through our entry-state - our entry phase for tomorrow and we're just loafing here. And if you'd like to see what three clean-shaven looking individuals look like after 7 days, we could crank up the tube for you and also show you what the world looks like as it starts to grow, and the Moon really starts to shrink away. Over.
07 04 29 42	CC	Roger. Stand by. See if we can get the network up. We'd like to see what you look like after yesterday's

view of John down there with his patch on and almost we thought the camera was going to break. So, we'd like to see what you look like all fresh, Tom.

07 04 29 57 CDR Okay.

07 04 29 58 CC And, Tom, we just - the PO people just said that they were in contact with your mother and she's doing great and in great spirits and following the flight very closely.

07 04 30 09 CDR Real good. Tell them I sure appreciate it and thanks a lot. Over.

07 04 30 12 CC Roger.

07 04 30 24 CC 10, Houston. The network is working on the - see if we can get the lines up from Goldstone. Stand by.

07 04 31 08 CC 10, Houston. It'll take us 30 minutes to get the lines up so we can see it back here, but Goldstone is configured to record. You can transmit now. We have the high gain, and we'll look at it in 30 minutes. Over.

07 04 31 23 CDR Okay. I'm looking ahead in their flight plan. The next thing coming up is 174 and we are in no hurry here. When you get the lines up, we'll shoot it to you live. Over.

07 04 31 34 CC Okay. That's fine, Tom. We'll give you the word.

07 04 31 37 CDR Okay. Thank you now.

07 04 42 26 LMP Hello, Houston. This is 10.

07 04 42 27 CC Go ahead, 10.

07 04 42 31 LMP You might pass on appropriately that our CSM 16-millimeter camera finally failed. It's been trying for 2 days, and it just finally gave up the ghost. The fuse has been changed, but it just won't accept any cartridges and will not run at all. I'm using the 75-millimeter lens we have in the command module on the LM's 16-millimeter camera. This combination works, although I appreciate the fact that the masking for the lens might be inappropriate, but it's the last ditch effort. That's all we have left.

06 04 43 05 CC Roger. Understand. Your CSM 16-millimeter has failed and you've taken the 75-millimeter lens off

		the LM camera - correction - command module and put it on the LM camera. Over.
07 04 43 18	LMP	That's affirmative. I just wish you'd - It's awful frustrating, Charlie. I wish you'd pass those words on appropriately.
07 04 43 24	CC	Roger.
07 04 52 42	CMP	Houston, Apollo 10. Over.
07 04 52 43	CC	Go ahead.
07 04 52 45	CMP	Roger. We're looking at Florida through the optics. The Cape's open today. Looks like y'all may have some clouds out there, little scattered clouds around Houston. Is that right?
07 04 52 56	CC	It was like that when we came in 4 or 5 hours ago - correction - about 3 hours ago, John. Let me see if anybody's been outside lately.
07 04 53 10	CMP	Oh, it's no real problem, we're just sightseeing. Boy, it's a beautiful view. You can see the subsolar pointings in the Gulf of Mexico right about between the Yucatan peninsula and Mexico proper. And with these optics, I can look all the way into South America as far south as Chile.
07 04 53 37	CC	Sounds great. Not much happening in the world today. No real significant news to pass on this afternoon. We've got the ball scores and that's about all; I can read you up those. We've got about 10 or 12. In the National League: Cincinnati 7, Montreal 2; Atlanta 4, Phillie 1; St. Louis 4, LA 0 - after four innings; San Diego 7, Chicago 1 - after four; New York 1, Pittsburgh 1 - after seven and one-half; Houston 5, New York 3 - after six and one half innings. In the American League: Detrcit 10, California nothing; Seattle 3, Cleveland 2; Baltimore 5, Oakland 3; Kansas City 3, Washington 2; Boston 1, Chicago 0; Minnesota 2 to 1 in the first game and 2 to nothing over New York in the second game - after five innings. Gary Player's leading the Atlanta Classic and A. J. Foyt won the pole position yesterday for the Indy 500 with something like a 170-miles-an-hour average. Over.
07 04 54 55	CMP	Wow!
07 04 54 56	LMP	Hey, that's - That's dangerous work, babe. That's too fast.
07 04 55 03	CC	Roger. You want to be on your way to getting airborne at that speed, I think.

07 04 55 10	LMP	You want to have wheels in the ...
07 04 55 40	CC	10, Houston. At 173 hours and 10 minutes, you'll be 100 490 miles out. Velocity relative to the Earth of 6498 feet per second. You'll be 109 847 miles from the Moon. Velocity relative to the Moon is 5776 feet per second. Your sunset time is 191 19 55. And your subsatellite point is at 173, will be between Caracas and Panama. Over.
07 04 56 32	CDR	Roger. We got those down, Charlie.
07 04 56 44	CMP	That's how it looks, Charlie. I can tell we're directly between Caracas and Panama. That's what you said, wasn't it?
07 04 56 53	CC	That's affirmative.
07 04 56 57	CMP	It's quite obvious up here. Next time we go on one of these trips, we're going to take that big display down there with us.
07 04 57 14	CC	Okay. It's real pretty today. We got blue background and yellow lines and a green spacecraft and an orange Snoopy just dancing around up on the top of the board. FIDO's really outdoing himself.
07 04 57 36	CMP	Every time we make a successful water dump, does he light up?
07 04 57 41	CC	Oh boy; the top of his head just glows. You ought to see him.
07 04 57 47	CMP	I wish I could.
07 04 57 51	CDR	Yes. I bet that's a great sight down there. Over.
07 04 57 54	CC	It really is. He's been grinning the whole flight. He's going to be impossible to live with. 10, a little update on the Atlanta Classic. Bert Yancey and Gary Player are now tied for the lead with about six to play on the last round.
07 04 58 26	LMP	Very good. Thank you. They'll all be coming to Houston here before long.
07 04 58 43	CC	Yes. Just a couple of weeks. It should be fun.
07 05 02 32	CC	Hello, 10. Houston. We'd like you to leave the H_2 CRYO heaters off until sleep period tonight, and at that time we'll bring on one fan to stir them up. And that should bring the pressure up all right. Over.

07 05 02 47	LMP	Okay, Charlie.
07 05 04 11	CC	Hello, 10. Houston. Hey, Tom, it looks like it's going to take us an hour or more to get building 8 cranked up on the color converter. We're configured for black and white, if you want to give us that. We can look at the color later. Over.
07 05 04 27	CDR	Okay. Stand by one.
07 05 04 37	CDR	Roger, Charlie. We'll just hold off because you will be able to see more of the United States, the longer we wait here.
07 05 04 44	CC	Roger. We'll get building 8 cranked up, and we'll let you know then. Over.
07 05 04 51	CDR	Okay. We've got the optics calibration coming up. I think about 173 to 174. ... pardon me - -
07 05 05 03	LMP	Charlie, if it's going to be more than an hour, let us know, will you, because that will be pushing into P23.
07 05 05 08	CC	Roger. We copy, Gene-o. We'll give you a word.
07 05 05 15	LMP	Actually - actually you know, 45 minutes or an hour - 30 minutes to an hour would be a little bit better because more of the U.S. continent will come into view at that time.
07 05 05 27	CC	Roger.
07 05 05 32	LMP	It's really beautifully clear down there right now. It's just tremendous.
07 05 05 41	LMP	I can almost make Tracy splashing around in the back yard.
07 05 05 45	CC	I bet you that's what she's doing this afternoon, too, boy. It's about, as I said earlier, about 90 to 93 degrees out there. We concur on holding off - We should be ready to go in an hour. Over.
07 05 06 02	LMP	Okey doke.
07 05 19 30	CC	Hello, Apollo 10. Houston. We're about to lose the high gain. We'll come back around again at 173 25, and at that time we will be GO for high - the TV. Over.
07 05 19 44	CDR	Okay. Sounds real good, Charlie. Thank you.

07 05 24 58	CMP	Houston, Apollo 10. Over.
07 05 24 59	CC	Go ahead, 10.
07 05 25 01	CMP	Roger. Do you have a picture?
07 05 25 05	CC	We're on the OMNI's there, 10, and we'll - We'll be about another minute.
07 05 25 12	CMP	Roger.
07 05 25 15	CC	Hey, and we got some information on Snoop at 173 30, 5 minutes from now. He's 208 966 nautical miles above the Moon, and he's 405 188 nautical miles above the Earth. And stand by on his hyperbolic.
07 05 25 42	CMP	Boy, he's getting up there.
07 05 25 50	CC	And he's going hyperbolic with respect to the Earth and the Moon, so he's moving out away from us. And his velocity with respect to the Earth is 7530 feet per second, and he's going into solar orbit.
07 05 26 07	CDR	Wonderful. Looks like Snoop's going to take a long trip. Over.
07 05 26 10	CC	A real long one.
07 05 26 54	CMP	Houston, do you have a picture? Over.
07 05 26 56	CC	That's negative.
07 05 27 13	CMP	Houston, Apollo 10. Over.
07 05 27 17	CC	Roger, 10. We got the picture now.
07 05 27 22	CMP	Roger. Looks like this is the Moon, and we're about 110 000 miles from it. It still has a sort of a brownish cast to it, and it's still rotating very slowly. You can see when you look out your window tonight, you'll see it's only a three-quarter Moon or so.
07 05 27 53	CC	Okay. We just got it up - We just got it up on the - -
07 05 27 58	CMP	Roger.
07 05 27 59	CC	- - on the telemonitor now.
07 05 28 02	CMP	This is - -
07 05 28 03	CC	Excuse me, John. Go ahead. Over.

07 05 28 05	CMP	This is a full zoom on the lens, so it actually is a little smaller than it is on your screen. It's hardly enough to make any definition out of it at all.
07 05 28 20	CC	10, Houston. We can apparently make out the mare, the colors on our Vidicon are - has a greenish cast to it, but I think the color quality for the commercial is a little bit better than this, but we ... see the maria on it. Over.
07 05 28 39	CMP	Roger. And at about 110 000 miles, I don't think you expect to see very much.
07 05 29 11	CMP	It'll be a couple of minutes before - before the Earth comes around, so let us show you the interior.
07 05 29 18	CC	Roger. We're standing by for your smiling face. I've heard of the big eye before, but the big hand is ridiculous.
07 05 30 09	CC	Okay, 10. I think we're looking at Tom's right - left shoulder there now, and the Sun coming in his window. Yes. There's his old grinning face, clean shaven.
07 05 30 35	CMP	Roger. This is a remarkable innovation. After spending a lot of money on mechanical shavers which always manage to leave the whiskers flying around in the atmosphere, somebody finally came out with the idea of using a straight razor and brushless shaving cream. You rub it on, it keeps the whiskers when you shave it off, you put it in a towel and dispose of it, and you end up clean shaven. And after 8 days of wearing a beard, I guess you're looking at a couple of guys who aren't much hippies.
07 05 31 13	CC	That's amazing, 10. Absolutely. That's what the space age does for you.
07 05 31 19	LMP	I'll tell you, Charlie. That's one of the most refreshing things that's happened in the last couple of days. That was really great.
07 05 31 25	CC	You guys really look good, Gene. Over.
07 05 31 28	LMP	You know, actually - you know, it feels a lot different. We were getting where we could barely stand ourselves there for awhile.
07 05 31 45	CDR	We'll take you down to the lower equipment bay and show you how different our navigator looks today compared to yesterday. On the panel in front of

me, you can see the lower equipment bay with the guidance and navigation panel that John works all the time to determine our position and attitude.

07 05 32 10	CC	There's old one-eye. We got him.
07 05 32 21	CMP	There's really not much difference today, is there?
07 05 32 24	CC	You're - You're right, boy. You're right.
07 05 32 40	LMP	John likes to play in here. Every time he gets something in his hand, he has to do something different to it.
07 05 32 46	CDR	How's the color coming in now, Charlie? Over.
07 05 32 49	CC	Roger. The interior colors are fine. Little greenish tints, but I think that's a problem we got, Tom, with our converter here in building 30. The exterior also had a - quite a greenish tinge to it. It's better than the black and white. The black and white has a lot better definition, however, though.
07 05 33 12	CDR	Okay. We'll take you outside now and show how the Earth looks today. It's starting to get bigger as we approach 100 000 miles.
07 05 33 20	CC	Roger. We'll stand by for your commentary.
07 05 33 46	LMP	Charlie, we'll have it in a minute, and it's just coming right over the window edge. Here it comes now.
07 05 33 52	CC	Roger. We have it, 10. Out.
07 05 34 11	CC	Okay, 10 - -
07 05 34 12	CDR	Okay. Again as you look at the - pardon me - Again as you look at the Earth, it's upsidedown, so to keep all of you from standing on your heads, we'll just turn the camera upsidedown for the convenience of your viewing pleasure here.
07 05 34 26	LMP	Charlie, we'll be looking at - at the east coast of - of the United States. Primarily down off the tip of Florida. Actually to us here we can see the Grand Bahama Banks. You can see the color changes in the water. You can see most of Florida. It looks like almost all the Gulf of Mexico is extremely clear. The Gulf Coast of the United States, Florida, Alabama, Mississippi, Lousianna, on down through Texas all looks clear. We can look on across from

Houston all the way into the San Joaquin Valley, all the way into the Los Angeles area coming over the horizon into Baja California.

END OF TAPE

— — — —	LMP	We're vertically right now above the Earth, somewhere between Caracas and Panama. Charlie, how does the TV look to you down there?
— — — —	CC	Roger, 10. It's looking real good. Black and white is excellent. Definition of color is coming through on the commercial real fine. Our vidicon here on the big screen has got a lot of greens to it, but on commercial, it's looking great. Over.
07 05 35 47	LMP	Is it saturating right now?
07 05 35 51	CC	Negative. Only in the North Pole area where the cloud banks are pretty heavy, and then only partially up there so - We've got one clear spot up towards the Arctic Circle that we can't figure out what it is. Could you give us a little run-down on that? Over.
07 05 36 10	CDR	Okay. Wait just a minute. It's starting to disappear out the left hatch window, and John will take the camera there and go right and take it out thr ugh our center hatch window. And here you can see the Earth as it starts to go out the left side window.
07 05 36 24	CC	Roger.
07 05 36 37	CC	10, Houston. We got just 30 seconds left on the high gain on this pass.
07 05 36 47	LMP	Looks like we won't catch you this time, Charlie, but that big low-pressure cloud so very distinctive over the Alaskan area, Aleutian area is very distinctive to us with the naked eye. We can't quite get it for you out the hatch window at this time, as we're going.
07 05 37 06	CC	Roger. We'll stand by then. We got about 20 seconds left or so and if you want to show us, it will be - Stand by. Eight more minutes and we'll have the high gain back, if you want to keep the camera up. Over.
07 05 37 34	CDR	Okay. We just wanted to get a - show you how things are going aboard Apollo 10 today. So after shaving we all feel refreshed. In fact, we feel just great up here, and looking forward to splashdown tomorrow. We got about 100 000 miles more to go, but we really pick up the majority of it in the last few hours. Over.
07 05 37 55	CC	Roger, 10. We copy. Thank you very much for the show. Over.

07 05 38 02	CDR	Roger. And we just wanted again to show you the relative size of the Moon and the Earth today, as we see it here nearly equidistant between the two, about 110 000 miles from the Moon and 100 000 miles from the Earth. And we'll see you tomorrow. Over.
07 05 38 17	CC	Roger. Thank you much again, 10, for the show. See you later. Out.
07 05 40 01	LMP	Houston, this is 10.
07 05 40 03	CC	Go ahead.
07 05 40 06	LMP	For my own long-range planning, do you anticipate bringing fuel cell 1 up once more tomorrow, prior to entry?
07 05 40 16	CC	Stand by, Gene.
07 05 41 36	CC	Apollo 10, Houston. We don't plan to bring fuel cell 1 back on the line for the rest of the flight. And we got your E-memory dump, and it's GO. No mistakes after 7 days. And on your entry checklist, we got a couple of minor changes if you'd like to break that book out, and we'll talk to you about it. Over.
07 05 42 11	CDR	Okay. Stand by.
07 05 43 50	CDR	Hello, Houston. Apollo 10. Go ahead on that entry checklist. Over.
07 05 43 55	CC	Roger, 10. We'd like on page 2.2 - correction 2.2, step 6, about the middle of the page; we say, "fuel cell 2 main A and B OFF." We'd like to change that, of course, to fuel cell 1. Over.
07 05 44 22	CDR	Okay. John's got it in now, fuel cell 1 main A and main B.
07 05 44 27	CC	Roger. And we'd like to - We're going to have to reservice the primary EVAP before we bring it on the line. So you could just pencil that in. And that will be done at about minus 1 hour, when we nominally bring it on the line. Over.
07 05 44 47	CMP	Roger. I'd like to get the servicing of it done a little sooner, if that's possible. Over.
07 05 44 50	CC	Okay. Stand by.

07 05 45 16	CC	10, Houston. It's your choice on where you insert the servicing of that EVAP - 3, 4, or 5 hours, anywhere around in there is okay with us. And we'd like you to service it for 3 minutes. And final thing is, due to the problem that we've had with this EVAP, they'd like to run some altitude tests on it after we get it back to Downey. And, Gene-o, if you have time, on the - after the mains, if you could close back pressure valves on both the secondary and the primary, they would appreciate it. However, it's not a mandatory call. Over.
07 05 45 58	LMP	Okay. That - that ...
07 05 46 23	CC	Hello, 10. Houston. We're now on the high gain. Did you copy my last, about the back pressure valves? Over.
07 05 46 30	LMP	Yes. I did, Charlie. I'll give it a go on both of them after we get on the mains.
07 05 46 33	CC	Roger. That's all we had on the entry checklist at this point. Out.
07 05 46 39	CMP	Okay, Charlie. We want to service the evaporator right around 2 hours, if that's okay, right with the logic sequence check.
07 05 46 46	CC	That's fine, John.
07 05 47 07	CMP	And, Charlie, how important is it to get the secondary evaporator serviced - to get the evaporator serviced and running? If it doesn't come up, we'll just go without it like 8 did, won't we?
07 05 47 17	CC	Stand by. That's affirmative.
07 05 47 24	CMP	Okay. Is this just to find out if it will run?
07 05 47 31	CC	That's essentially correct, John. We'll have some more words on it for you, in a little bit.
07 05 47 37	CMP	Okay.
07 05 49 33	CC	Hello, Apollo 10. Houston. We've had second thoughts on the fuel cell. We'd like you to bring it on for the midcourse, and we'll let you know. If we didn't bring it on, it would die out on us at about 180 hours and we don't want to do that. We'd like to keep it for - until SEP. So, we'll give you a minimum time around the midcourse to have it on. Over.

07 05 49 56	LMP	Okay, Charlie.
07 06 00 26	CC	Apollo 10, this is Houston. Over.
07 06 00 31	CDR	Roger, Houston. This is 10. We're standing by to set up the optics calibration at this time. Over.
07 06 00 37	CC	Roger. Since we've slipped the midcourse correction number 6 about 30 minutes, to roughly 177 20, we suggest that you stay in PTC for about another one-half hour and slip your P23 by half an hour, to something on the order of 174 50, commencement or thereabouts. Over.
07 06 01 09	CDR	Houston. We're all configured for it, and John's getting pretty weary of making all these sights; and we want to go ahead and get it over with. Over.
07 06 01 19	CC	Roger. Press on. Out.
07 06 27 45	CC	Boy, look at that one.
07 06 27 49	CDR	Yes. Charge put ... right on the money.
07 06 35 40	CMP	Okay, Houston. That completes the sightings.
07 06 35 44	CC	All right, 10. This is Houston. Roger. We copy. And for your information, our latest analysis on fuel cell number 1 shows that it will not be necessary to bring it back on the line at all prior to separation from the service module; and if this changes, we will keep you posted.
07 06 36 08	CMP	Roger.
07 06 36 13	CMP	What's your - -
07 06 36 27	CC	Apollo 10, this is Houston. Go ahead. Over.
07 06 36 30	CMP	Roger. What's the best burn time you got now?
07 06 36 34	CC	You mean for midcourse 6?
07 06 36 39	CMP	Yes, sir.
07 06 36 43	CC	Roger. 177 hours 20 minutes GET.
07 06 47 10	CMP	Okay, Houston. You saw our P37 numbers. What do you think?

07 06 47 16	CC	Roger. We're comparing them with our solution for MIN DELTA-V ... center of the corridor, also. Over.
07 06 47 24	CMP	Well, just offhand, why don't we burn yours?
07 06 47 29	CC	Okay.
07 06 47 58	CMP	It didn't really look like it was big enough to get us in trouble, whether it was right or wrong.
07 06 48 03	CC	Roger. Out.
07 07 05 52	CC	Apollo 10, this is Houston. Over.
07 07 05 56	CDR	Go ahead.
07 07 05 58	CC	Roger. The pressure decrease in your hydrogen CRYO tank continues. We are expecting you to get a master caution warning light at about 175 hours 30 minutes, due to low pressure in the hydrogen tank. We would like you to just punch this out and let the pressure continue to decrease, and we'll set you up in configuration for this evening, based on that lower pressure and building it up overnight. Over.
07 07 06 30	CDR	Okay. Apollo 10. Over.

END OF TAPE

07 07 17 31	CDR	Houston, Apollo 10. How does it look now to start the PTC? Over.
07 07 17 38	CC	Roger. You can go ahead and start the PTC now.
07 07 23 11	CC	Apollo 10, this is Houston. When you are ready to copy, I have your pad for midcourse correction number 6.
07 07 23 23	CMP	Roger. Just a second. Okay. Go ahead.
07 07 23 29	CC	Roger. Midcourse correction 6, RCS/G&N: 252 00, pitch and yaw trim not applicable. NOUN 33 stuff: 177 19 5800, plus 00010, plus all balls, plus all balls; roll 088 354 350; H_A not applicable, plus 00210 00010 004 00010; sextant star 40 2756 338; boresight star 033, up 007, left 13; GDC align Vega 36, Deneb 43; roll align 148 013 018. This will be a two-quad burn, use Bravo and Delta. Remarks: Go with the onboard entry pad. If you have - it's still valid. Read back. Over.
07 07 25 43	LMP	Okay, Bruce. MCC 6. RCS/G&N: 252 00, 48 is NA, 177 19 5800, plus 00010, plus all balls, plus all balls, 088 354 350; apogee is NA, perigee is plus 00210, 00010 004, three balls 10; sextant star is 40 2756 338 033, up 007, left 13, Vega 36, Deneb 43 148 013 018, using two quads, Bravo and Delta. And our onboard entry pad is still good.
07 07 26 38	CC	10, this is Houston. Readback correct. Out.
07 07 27 00	CC	10, this is Houston. If you'll go to ACCEPT on your up telemetry, we'll give you a new state vector and target load. Over.
07 07 27 15	LMP	Okay. We're going to ACCEPT.
07 07 27 18	CC	Roger. Out.
07 07 27 50	LMP	Houston.
07 07 27 51	LMP	MARK.
07 07 27 52	LMP	We just got the CRYO pressure light.
07 07 27 55	CC	Roger.
07 07 31 48	CC	Apollo 10, this is Houston. We've completed the uplink. The computer is yours again. You can go to BLOCK.

07 07 31 59	CMP	Thank you.
07 07 32 03	CC	Roger. Out.
07 08 08 30	CDR	Hello, Houston. Apollo 10.
07 08 08 33	CC	Apollo 10, this is Houston. Go ahead.
07 08 08 35	CDR	Roger. Have you loaded P30 in the last uplink? Over.
07 08 08 46	CC	That's affirmative. You had a target load and a state vector in the last uplink. Over.
07 08 08 54	CDR	Okay. Thank you.
07 08 09 04	CDR	We'll go ahead and go through P30 at this time. Over.
07 08 09 09	CC	Roger. And for John's information, based on the resultant of his P23 Marks, we ran the data in our computer and got the same DELTA-V resultant out as you did on board using P37. Over.
07 08 09 32	CMP	I figured you would.
07 08 09 35	CC	Roger. We just wanted to run it through the same thorough routine, and give you confirmation that the routine you've got was working.
07 08 09 44	CMP	Okay. Thank you kindly.
07 08 09 46	CC	Roger. Out.
07 08 11 23	CDR	Okay, Houston. We've gone through P30. It looks good here. Over.
07 08 11 31	CC	Houston. Roger. Out.
07 08 30 17	CMP	Houston, we're going into our rest MIN REALIGN now.
07 08 30 21	CC	This is Houston. Roger. Out.
07 08 37 16	CC	Apollo 10, this is Houston. Over
07 08 37 20	CDR	Houston, go ahead.
07 08 37 23	CC	Roger, 10. We'd like to make a correction to our scheduled midcourse correction plan of operations here, by cancelling midcourse correction number 6 and definitely having midcourse correction 7. A little background on this is that with the long fuel cell purge and the secondary

evaporator checkout, the tracking still hasn't stabilized to the point where we can give you a midcourse correction number 6 and be confident 100 percent that midcourse 7 will not be required. And if there is a possibility of having to burn 7, the tracking people would like to consider - would like to continue their tracking without the perturbation caused by midcourse correction 6. For your information, you're still well within the corridor. These burns were in the form of tweaking, to get you in the center of the corridor. We anticipate a DELTA-V for midcourse correction 7 on the order of 3 to 4 feet per second, at the nominal time in the flight plan. Over.

07 08 38 36	CDR	Okay. Roger. Stand by.
07 08 38 40	CC	Roger.
07 08 38 57	CDR	Roger. Houston, Apollo 10. That's what we practiced all along in the simulator, so it really doesn't matter to us one way or the other. We can sure do it. Over.
07 08 39 06	CC	Roger, 10. Then we'll go with not burning 6 and definitely planning on having a midcourse correction 7, at 188 50 GET.
07 08 39 17	CDR	At 188 50. Okay.
07 08 39 21	CC	Roger. As nominal.
07 08 39 24	CDR	Roger.
07 08 40 40	CDR	Apollo 10 is going back to the PTC mode. Over.
07 08 40 45	CC	10, this is Houston. Roger. Out.
07 08 44 21	CMP	You're definitely getting larger in diameter there, Earth.
07 08 44 29	CC	Roger. We understand you see us growing larger. We can't see you yet with the naked eye, but hope to tomorrow. We're showing you about 90 000 miles out at the present time.
07 08 44 46	CDR	Roger. Got a beautiful view here of the Earth. It seems like there is a little - from here like a cumulus thunderstorm up on the cloudcover that covers up near the polar ice cap. It really is beautiful, the way it stands out. We got a couple of pictures of it. Over.

07 08 45 00 CC Roger. Out.

END OF TAPE

07 08 45 53	CDR	Hello, Houston. Apollo 10. Can you check and see at what GET should we hit nighttime just before we approach the entry interface? Over.
07 08 46 04	CC	Roger. Stand by a second.
07 08 46 37	CC	Apollo 10, this is Houston. Time of local sunset will be 191 19 51 GET. Over.
07 08 46 52	CDR	Roger. Could you say again, Bruce, please?
07 08 46 55	CC	Roger. 191 hours 19 minutes 51 seconds GET. Over.
07 08 47 04	CDR	Roger. Copy. Sunset at 191 19 51.
07 08 49 17	CMP	Houston, this is Apollo 10. Over.
07 08 49 20	CC	Go ahead, 10. We can hear you over the jukebox.
07 08 49 27	CMP	Okay. Would it be okay to run P37 through, taking your midcourse 7 time and see what we come up with? With this state vector we've got now?
07 08 50 02	CC	Apollo 10, this is Houston. Affirmative, and we'll run it down here, too. We can compare results, if you like. Over.
07 08 50 10	CMP	Roger.
07 08 58 35	CC	Apollo 10, this is Houston. Over.
07 08 58 40	CDR	Houston, go ahead.
07 08 58 42	CC	Roger. Using your vector and our machinery, we came up with burn of 2.2 feet per second in X, 0 in Y, and minus 0.1 in Z, compared with the observed calculations you had onboard of plus 2.50 and minus 0.1. Over.
07 08 59 06	CDR	Roger.
07 08 59 09	CMP	Ours plus 2.5 and minus 0.1.
07 08 59 13	CC	Roger. That's what we saw on the DSKY. We got 2.2.
07 08 59 22	CMP	What's the matter with your machinery down there?
07 08 59 38	CC	Yes. We've got one problem down here right now. There's a rumor going around that by

		stepping outside the Mission Control building, we can see you all with the naked eye. So a lot of us are out there looking.
07 08 59 53	CMP	Did the machine go out there, too?
07 08 59 53	CDR	We can see that the terminator is just passing over Houston right now.
07 09 00 01	CC	Roger. I believe that, but I haven't been outside in a couple of hours.
07 09 00 06	LMP	Did somebody really see us out there?
07 09 00 10	CC	That's the report. Charlie is out there looking right now, and we expect to have an eyewitness account in a minute or so.
07 09 00 17	LMP	I don't know what direction, but I would expect you would look to the southwest.
07 09 00 21	CDR	Yes. From our angle, Bruce, where we are looking at you, I would say to the southwest. We're up at an angle of at least 45 or 50 degrees. Over.
07 09 00 33	CC	Roger.
07 09 00 34	CMP	Anybody can see something 30 feet long at 90 000 miles has really got the eyeballs.
07 09 01 09	CDR	Hello, Houston. Apollo 10. Over.
07 09 01 12	CC	Go ahead, 10.
07 09 01 13	CDR	Roger. I'm sure you saw the TV pictures the other day when we left the Moon straight away? Over.
07 09 01 19	CC	Right.
07 09 01 21	CDR	Okay. Well, right now it looks like we are just doing a reverse process, only we are heading straight for the center of the Earth above, but we all know that we're going to be entering from west to east at a gamma of 6.5, don't we?
07 09 01 35	CC	Roger. We're working on that one, Tom.
07 09 01 39	CDR	(Laughing) Okay.
07 09 01 43	LMP	Sure hope that is a problem you've solved.

07 09 01 59	CDR	Bruce, from this position, it looks like we're going to hit oh, just down below Baja California, going straight in. Just watching the way it is slowly growing here. Over.
07 09 02 11	CC	Roger. Let me get you a current entry interface angle here.
07 09 02 16	CDR	Oh, no. No problem. We're just kidding about that. It's really funny to watch. It's just a reverse process of after we started to climb out from the Moon the other day. Over.
07 09 02 25	CC	Roger.
07 09 02 39	CC	Right now, 10, we're showing an entry interface angle of approximately minus 6.8 degrees. Over.
07 09 02 48	CDR	Roger. That sounds real decent. Thank you.
07 09 02 59	CDR	Houston, Apollo 10. The FIDO's pretty well squared away with our c.g., and where we are stowing things? Over.
07 09 03 20	CC	Roger, 10. We're in good shape down here on the stowage and c.g.
07 09 03 27	CDR	Okay. Real fine. Thank you.
07 09 03 28	LMP	We haven't yet told you where we are going to stow the canister, because we're not sure. We are probably going to wrap it up at the base of one of the suits. We'll have to let you know that.
07 09 03 42	CC	Okay. The last word I had on the canister was: wrap it up in sleeping bag number 3 when you got through using it, and - let's see, you said that food compartment L3 still had food in it, I guess?
07 09 03 57	CDR	Roger. You can tell the FIDO's that food compartment L2 and L3 all have - the ones here on the left - L2 and L3 are completely - no, I guess just L3 is just about completely filled with food, and our waste and one helmet is in B1 now.
07 09 04 26	CC	Say again what you got in B1 besides helmets, please.
07 09 04 30	CDR	Just waste wrappings from the food packs. There was one helmet in there and just the waste

		wrappings from food. Couldn't be over a couple of pounds.
07 09 04 44	CC	Roger. So, when you all find a stowage location for the lithium hydroxide canister, if you'll pass it down to us, we'll crank it in.
07 09 05 00	CDR	Okay.
07 09 05 14	CDR	Houston, Apollo 10. Do the rates look good to start the PTC? Over.
07 09 05 21	CC	Roger, 10. They're looking good.
07 09 06 00	CC	10, this is Houston. I'm afraid that report we got on visual observations of you earlier was erroneous. I think it was a planet over there.
07 09 06 10	CDR	Roger.
07 09 06 12	CMP	Roger. I was going to recommend about a 20-power telescope. Maybe 40.
07 09 09 52	CDR	Okay, Houston. Apollo 10. We're going to start through the presleep checklist. We're going to purge the fuel cells, make the canister changes. Over.
07 09 10 10	CC	Apollo 10, this is Houston. Would you hold off on the fuel cell purge? You can proceed with the other items at the present time.
07 09 10 17	CDR	Okay.
07 09 10 18	LMP	Okay. Can I take the battery charge off?
07 09 10 26	CC	That's affirmative. Discontinue battery charging.
07 09 10 30	LMP	Thank you.
07 09 11 05	LMP	Hello, Houston. Will you give me a hack on when you want to start that fuel cell purge, and also do you desire to stay high gain tonight?
07 09 11 22	CC	Roger. We'll give you the word on the fuel cells here in a minute.
07 09 11 42	CDR	Houston, Apollo 10. Are you ready to copy the CM RCS thruster temp's? Over.
07 09 11 47	CC	Roger. Send your message, 10.

07 09 11 51	CDR	Roger. 5C is 5.1, 5D is 5.1, 6 Alfa is 5.1, 6 Bravo 5.1, 6 Charlie is 4.0, 6 Dog is 4.6. Over.
07 09 12 14	CC	Roger. We copy. And the S-band operations this evening will be OMNI. Request you select OMNI Bravo and OMNI on board, and we'll do the switching from down here.
07 09 12 25	LMP	Okey doke. Going OMNI at this time.
07 09 12 58	CC	Apollo 10, this is Houston. You can proceed with the oxygen purge on fuel cells 2 and 3. Over.
07 09 13 07	LMP	Roger.
07 09 13 46	CDR	Okay, Houston. Apollo 10. We're ready for some onboard readouts on the batteries and RCS. Over.
07 09 13 54	CC	Roger, 10. Press on.
07 09 14 06	CC	Apollo 10, this is Houston. Go ahead with your onboard readouts.
07 09 14 09	CDR	Roger, Bruce. BATT C is 36.8, PYRO BATT A is 36.8, PYRO BATT B is 36.8. RCS A 53 percent, RCS B 65 percent, C is 65 percent, and D is 60 percent. Over.
07 09 14 30	CC	Roger, 10. We copied.
07 09 15 40	CDR	Houston, Apollo 10. Over.
07 09 15 42	CC	Go ahead, Apollo 10.
07 09 15 43	CDR	All right. Looking forward to tomorrow morning, we don't want to miss the major events; and so, what we'd like to have you do is wake us up about an hour earlier since we're going to hit the sack a little earlier tonight. We would like to have you wake us up at a GET of 85 hours. Over.
07 09 16 03	CDR	That is, 185.
07 09 16 06	CC	Roger. We'll wake you up at GET of 185 hours.
07 09 16 11	CDR	Roger. You can put a call into the desk and just have them wake us up with some soft music, please.
07 09 16 36	LMP	And, Bruce, put in an order for sausage and eggs, too, would you please?

07 09 16 45	CC	I suggest you hold off on those until lunch time.
07 09 16 50	CDR	Okay. We'll try to.
07 09 17 37	CC	Apollo 10, this is Houston. Over.
07 09 17 44	CDR	Go ahead, Houston.
07 09 17 47	CC	Roger. I've got your CRYO tank configuration for the night.
07 09 17 53	CDR	Okay. Stand by 1 second. We'll get it.
07 09 17 55	CC	Sounds like things are lively up there in the malt shop tonight.
07 09 18 10	CDR	Hello there, Deke. Yes, we're just taking things easy here and relaxing and going through the total program for tomorrow morning. In fact, we've gone through the checklist a couple of times and rebriefed it; so we're just taking it easy, watching the scene outside which is beautiful, and listening to some music. Over.
07 09 18 27	CC	Roger. That's great.
07 09 18 33	CDR	Yes. Did you hear me tell Bruce what our impression was of coming back to the Earth, how it looks just about opposite of going away from the Moon? Over.
07 09 18 40	CC	Roger.
07 09 18 44	CMP	Boy, this is really something, Deke.
07 09 18 48	CC	That last couple of hours is going to be the bear.
07 09 18 53	CMP	Yes.
07 09 18 56	CDR	Now, from this angle it looks like we're going to just approach the Earth here at a gamma of about 90 degrees. (Laughing)
07 09 19 10	CC	Yes. We indicate about 78.
07 09 19 16	CDR	(Laughing) Oh, that's great.
07 09 19 20	LMP	That ... getting to you.
07 09 20 05	LMP	Okay, Houston. I'm ready for the CRYO fan. If you want to go right down the panel, I'll configure it.

07 09 20 11	CC	Okay. I'll just run down the row of switches here. H_2 heaters: 1 OFF, 2 OFF. O_2 heaters: 1 OFF, 2 AUTO. H_2 fans: 1 ON, 2 OFF. O_2 fans: OFF, OFF. Over.
07 09 20 50	LMP	Okay. I got heaters: H_2 1 is OFF, 2 is OFF; O_2 1 is OFF, and 2 is AUTO. On the fans: H_2, I've got 1 ON, 2 OFF; O_2 fans, 1 OFF and 2 OFF.
07 09 21 10	CC	Roger. Readback correct. I think you're properly configured for the evening.
07 09 21 18	LMP	Thank you.
07 09 32 44	CC	10, this is Houston. What are your plans, as far as turning in now?
07 09 32 49	CDR	Okay, Houston. We're going to - -
07 09 33 20	CDR	Roger, Houston. This is 10. We're going to go ahead and sack out at this time. Over.
07 09 33 24	CC	Roger. Can you give us a crew status report prior to turning in?
07 09 33 32	CDR	Oh, we'd be glad to do that, Houston.
07 09 33 35	CC	Roger. They're interested in getting a hack on the - the radiation now, and then after you get back down through the Van Allen Belt.
07 09 33 44	CDR	Roger.
07 09 35 48	LMP	Hello, Houston. This is 10.
07 09 35 49	CC	Roger. Go ahead, 10.
07 09 35 52	LMP	Okay. The CDR is 26048, the CMP is 05048, and the LMP is 15049.
07 09 36 05	CC	Roger. We copy the PRD's.
07 09 36 08	LMP	And, we've never seen, on any of the checks we've ever taken, either in here or in the LM, anything more than about 0.001 off of the meter.
07 09 36 18	CC	Roger. Copy. Nothing more than 0.001 on the meter.
07 09 36 31	LMP	Well, maybe that scale is 0.01, Bruce, but it's on the 0.1 scale and it's barely readable. Barely above zero. I guess it's 0.01.

07 09 36 39	CC	Roger. Barely readable on the 0.1 scale.
07 09 36 43	LMP	I take it back. It is 0.001 is the highest we've ever seen anywhere.
07 09 36 44	CC	Roger. Copy 0.001.
07 09 37 14	CC	Okay, Apollo 10. This is Houston. The Black Team is signing off here. On behalf of everybody in the MOCR, we want to wish you a good night and a safe reentry and happy landings, and we'll all see you on the ground when you get back.
07 09 37 31	CDR	Roger, Houston. We just want to say thanks a lot to the whole team down there. There's been some fantastic support that we've had. We're going to come around and thank all of you personally, after we get back there to Houston. Over.
07 09 37 44	CC	Roger. And the Maroon Team is taking over now.
07 09 37 50	CDR	Roger.
07 09 38 02	CMP	Well done there, Black Team.
07 09 38 09	LMP	And, thanks a lot, guys.
07 09 38 34	CC	Okay, 10. This is Houston. That big ... got the eyeballs on you, so you guys hurry up every chance you get and get on home.
07 09 38 43	LMP	We're on our way, Joe baby. You just keep alert tonight, keep us in the corridor, and we'll see you soon.
07 09 38 50	CC	Roger that. Go get some huggy pillow. We'll keep our eyeballs on you.
07 09 38 56	LMP	Some what?
07 09 39 00	LMP	You ever spend the night in the command module?
07 09 39 04	CC	Roger that.
07 09 39 10	LMP	That's right, you did, and you know.
07 09 49 13	LMP	Hello, Houston. Houston, this is Apollo 10. Over.
07 09 49 17	CC	Roger, 10. Go ahead.

07 09 49 19	LMP	Okay, Joe. I just - We're just getting all configured. I got the duty. I just want to make sure that I can hear you in case I have to, and I guess I can.
07 09 49 27	CC	Okay. Mighty fine. Well, get a good night's sleep, and I'll see you in about 7 hours and 10 minutes or so.
07 09 49 33	LMP	Okay, babe. Listen, any - any news from the home front, Mike? At home or anything. Everything shipshape?
07 09 49 38	CC	Just came from there. Yes, everything's shipshape. We just made a run on your table there on your patio, and I think I'm going to need a little more practice on that.
07 09 49 53	LMP	No, man. There's - there's a few things you got to know about that one.
07 09 49 59	CC	Well, I got the lesson from the expert.
07 09 50 02	LMP	Oh, I believe it. I believe it. Listen, we'll try it when I get back. We'll see you, and I'll - If there's any question about calling, call, will you? And I'll see you tomorrow.
07 09 50 13	CC	Righto, Buddy. Okay. Good night.
07 09 50 18	LMP	Good night.

REST PERIOD - NO COMMUNICATIONS

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07 17 01 10	CC	(Bugle call)
07 17 01 32	CC	Hello Apollo 10. Reveille. All hands heave out and face up! Sweepers, man your brooms! Clean sweep down fore and aft! Take all trash and garbage to the fan tails! Standing by, this is Houston.
07 17 01 47	LMP	Oh, I love you. Where did you learn that kind of noise.
07 17 01 53	CC	It's Navy noise.
07 17 01 56	LMP	That's what I mean. Hey, you're - during the PS, that's 30 minutes early.
07 17 02 06	CC	Negative on that.
07 17 02 09	LMP	Huh?
07 17 02 12	CC	I want to get you up because it's your last day to enjoy out there and I don't want you to miss anything. How you guys feeling today?
07 17 02 18	LMP	Hey babe, I've been looking out that window all night long, so you ain't - you know I was waiting for that noise anyway. How are you?
07 17 02 26	CC	Hey, real good. Looks like you have been up for a little while.
07 17 02 30	LMP	Yes, Off and on. Off and on. It gets pretty anxious up here with that world getting so big. It's beautiful, babe, it really is.
07 17 02 38	CC	You look like you're just a hair over 50 000 out now, Gene-o.
07 17 02 43	LMP	53 huh, now? Beautiful!
07 17 02 48	CC	Hey, why don't you guys come on home today?
07 17 02 54	LMP	You know, I think we will.
07 17 03 17	CMP	What have you been doing? Taking lessons from Jack or something? I didn't know you knew that kind of music.
07 17 03 24	CC	Jack doesn't know what it means.

07 17 03 28	LMP	Oh, here you come, Joe. Oh, my God, you're about - you're about 3/4 the size of my side window, you're less than a full Earth. You're curved over at the poles which means we're going behind you which is good, and, oh my golly, are you getting big and beautiful, babe. I never thought I'd say that of you, but you sure do look good.
07 17 03 52	CC	You been gone too long.
07 17 03 58	LMP	Let me take a look in the monocular and find out where we are.
07 17 04 48	LMP	Joe, I'm looking at the Pacific and Indian Ocean, here. I've got the whole continent of India and Asia and coming over the horizon, it appears to be Africa. Beautiful.
07 17 05 02	CC	Okay. You got a pretty good looking weather forecast for your recovery area. It looks like about 18 000 scattered, 10 000 broken, high broken, 10 miles and the wind's out of the east-southeast at about 12 knots. The waves are 4 feet 5 seconds 81 degrees, and it says widely scattered showers, but you can probably get a better handle on that from up there.
07 17 05 29	LMP	Okay, Joe. What's the present weather?
07 17 05 34	CC	We're getting it now, Gene-o.
07 17 05 51	LMP	Joe, tell Captain Cruse to put it into the wind. We'll be down there in about 6 hours.
07 17 06 00	CC	Say again, Gene-o.
07 17 06 03	LMP	Tell Captain Cruse to put it into the wind and we'll be onboard in about 6 hours.
07 17 06 08	CC	Okay. We'll tell him.
07 17 07 35	CC	Apollo 10, this is Houston. The weather - current weather, is just about the same as the forecast. It looks like it may be getting a little bit better. It looks like they're going about 2 000 scattered high-broken now.
07 17 07 50	LMP	And the sea state?
07 17 07 52	CC	Sea state's 4 feet and 5-second intervals.
07 17 07 59	LMP	Sounds good, Joe.

07 17 08 16	CC	Okay. I'm going to sneak out of here and let the Marines take over. I'll see you guys a little later.
07 17 08 25	LMP	Joe, thanks for everything, babe. We'll see you back in home.
07 17 08 28	CC	Roger that.
07 17 08 57	CC	Good morning, Apollo 10. Just got off the gate. I wanted Joe to give you that reveille because I figured that if I gave it to you, you'd consider it a harassment.
07 17 09 11	LMP	Oh, Jack, you're just too much.
07 17 09 25	LMP	Jack, after 8 days, I got to make a public announcement. You're really a great guy, it's just your choice of services.
07 17 09 33	CC	I think you're talking about the oldest fighting service in the country and the best in the world, aren't you?
07 17 09 48	CC	And watch out for those lightning bolts.
07 17 09 54	LMP	You're talking about that gate-guard branch of the U.S. Navy.
07 17 10 17	LMP	I guess you're right, Jack. I don't know what the Navy would do it it wasn't for the Marines existence.
07 17 10 32	CC	Don't forget your astrocast from yesterday. It's the same today.
07 17 10 45	LMP	Yes, and I'm not going to say anything about anybody today. This has got to be a good day.
07 17 10 50	CC	Roger.
07 17 24 07	LMP	Hello, Houston. This is 10.
07 17 24 09	CC	Go ahead, 10.
07 17 24 11	LMP	Jack, the LM CO_2 canister is in the sleeping bag with the suit on the right-hand side, and it's at the foot of the sleeping bag, right next to A6.
07 17 24 33	CC	Roger. Copy. Thank you, Gene.

07 17 30 32	CC	Apollo 10, Houston. If you're eating breakfast and got time to listen, I've got some newspaper reports; otherwise, I've got some pads, and so forth. Over.
07 17 30 49	LMP	Okay. Go ahead, Jack; we'll listen.
07 17 30 52	CC	Okay. One technical item first, the hydrogen tank fans: we'd like number 1 OFF and number 2 ON. Over.
07 17 31 01	LMP	Number 1's going off and number 2's on.
07 17 31 06	CC	Okay. The Orange Bugle. Pasadena, California: Scientists have found minute forms of life on a volcano-racked Antarctic island. They believe it much like the polar regions on Mars. Dr. Roy E. Cameron, Jet Propulsion Laboratory microbiologist, said in a report released Monday that algae, fungi, and bacteria had started to grow in lava rubble a year after Deception Island was rocked by volcanic blasts in December 1967.
07 17 31 35	CC	Kansas City: The weather bureau Sunday night said that it had received many calls from people in Missouri and Kansas inquiring about a bright object seen to the left of the Moon. Many thought it possibly might be the Apollo 10 on its return trip to earth. At first a recording from the weather bureau informed callers the bright object was the planet Mars, but amateur astronomers in Kansas City said it was the planet Jupiter. In St. Louis, the weather bureau said it had been advised by the president of the Astronomical Society of St. Louis that the bright object near the moon is definitely Jupiter.
07 17 32 08	CC	Aboard the USS Princeton: About seven hundred and and fifty thousand dollars is being spent on live color television of Apollo 10's Monday splashdown in the Pacific. But the networks are uncertain about the quality of the pictures. The pictures will be beamed by communications satellites to Brusterflat, Washington. From there they will be transmitted by microwave circuit to New York. The trouble is nobody has ever tried to send a picture that far says Carl Loffenberg, a National Broadcasting Company producer as signed to the TV pool aboard this prime recovery ship.

07 17 32 45 CC Washington: President Nixon celebrated the sixth anniversary of the signing of The Organization of African Unity Charter in a colorful diplomatic reception Sunday evening and promised to work for the future progress and prosperity of that continent.

07 17 33 03 CC London: Two Soviet Scientists Sunday congratulated the Apollo 10 astronauts for contributing to man's knowledge of space. Soviet astronomer Nikolai Kartochev said on the Moscow radio's English service, "I should like to believe that the American Moon flight and the Soviet Venus probes will promote further progress in space exploration. I wish the crew of Apollo 10 successful completion of their space mission." Professor Ela Messovitch, a Soviet space researcher, said on the same broadcast, "Soviet and American space probes are advancing world science."

07 17 33 45 CC In the sports news, in baseball: Atlanta 4, Phillies 1; the Astros licked the Mets 6 to 3, having won 17 of the last 21 games; I don't think you want to hear about the Cubs; San Diego took a double-header from the Cubs - correction - San Diego 10, Cubs 2 - first game, Cubs 1, San Diego nothing in the second game. And in the golf world, Atlanta: Bert Yancey, America's lone hope on a day dominated by foreigners, sank his third consecutive birdie putt on the second hole, in a sudden death playoff Sunday, to edge Australian Bruce Devlin for the Atlantic Gold Classic's championship. Yancey and Devlin both sank 10-foot birdie putts on the final hole of regulation play to post matching 11-under-par 277's that enabled them to finish one stroke ahead of South Africa's Gary Player, who also closed with a birdie, and to put them into a sudden death playoff. Both had three-under-par 69's in the final round. And that's the news.

07 17 35 00 LMP Okay, Houston. This is 10. We just picked up three more guys. We've got the suits stowed flat. The CMP suit is under the left couch with the helmet on it up in the - excuse me - up in the right couch with the helmet on it, as per directed yesterday, in the sleepbag. The LMP suit and the CDR suit are under the center couch, stowed as per directed by the North American document that shows one suit with its head stowed footward, the other head stowed toward the head of the couch with the hat on the top of it. Over.

07 17 35 53	CC	Roger. Copy. Thank you.
07 17 38 10	CC	And, Apollo 10, Houston. We have another set bit of information here. Spacecraft 106 had a harness which would not release after latching, and the recommendation in your case is to, if you have time and can't get one released, to take it apart at the harness adjusters, or if you have to get out of it in a hurry keep a pair of scissors handy nearby to cut the straps, and both of these methods have been attempted and verified to work. Over.
07 17 38 55	LMP	Do you mean which wouldn't let go at the buckle? Over.
07 17 38 58	CC	That's right.
07 17 39 00	LMP	I'll be darn! How about that. Do you know which harness it was?
07 17 39 08	CC	No. I don't, but I can attempt to find out here.
07 17 41 15	CC	Apollo 10, Houston. We will make midcourse 7. It will be approximately 1-1/2 feet per second in order to bring the g-level down. Over.
07 17 41 27	LMP	Okay, Jack.
07 17 47 19	LMP	Houston, this is Apollo 10. Over.
07 17 47 21	CC	Go ahead.
07 17 47 24	LMP	Roger. When you give us this new REFSMMAT and we go to realign to it, can you give us that attitude which we will be able to avoid the prospect of gimbal lock PROGRAM ALARM to maneuver to, to do the realign? Over.
07 17 47 43	CC	Roger. I understand you want some angles to avoid the PROGRAM ALARM.
07 17 47 49	LMP	Yes, sir.
07 17 47 55	LMP	And some good angles to see the stars.
07 17 47 59	CC	Roger. Stand by. We'll get - -
07 17 48 01	LMP	If possible about 180 from the Sun.
07 17 48 04	CC	Okay. Thank you.

07 17 49 11	CC	And, 10. That lap belt business. We don't know which seat that occurred in, but it was in spacecraft 108. Over.
07 17 49 25	LMP	Okay. Well that's no problem then. That's spacecraft 108's problem.
07 17 49 32	CC	Roger. I wasn't sure that I gave you the right number. But we just wanted to alert you to this potential problem that arose.
07 17 53 31	LMP	Houston, according to my star chart, that thing out beside the Moon is Jupiter.
07 17 53 37	CC	Roger. Then the expert from St. Louis is correct, right?
07 17 53 45	LMP	Also, according to the optics that little rascal has about three or four Moons running around it right now that you can see through the optics.
07 17 53 56	CC	Roger.
07 17 54 06	LMP	Or maybe it's a fleet of - maybe it's one great big spacecraft with a fleet of a bunch of little ones. I guess we'd better not put that word out.
07 17 54 20	CC	Yes. Like somebody said before, you guys have been up there too long.
07 17 55 50	CDR	Hello, Houston. Apollo 10.
07 17 55 53	CC	Morning, Tom.
07 17 55 55	CDR	Roger. Say, how did the Soviet Venus probe go? Did it land okay? Over.
07 17 56 02	CC	Say again, please.
07 17 56 05	CDR	Roger. What about the Soviet Venus probe? Did it land all right? Over.
07 17 56 09	CC	Let us research that and get some word.
07 17 56 20	LMP	See if you can find out anything about your temperature measurements.
07 17 56 45	CC	Stand by on the Venus probe: we've got a - some super sleuths working on that.

END OF TAPE

07 18 10 04	LMP	Hello, Houston. This is 10.
07 18 10 07	CC	Go ahead.
07 18 10 10	LMP	Jack, you still want us to cycle the H_2 and O_2 fans, or just leave them in this configuration.
07 18 10 55	CC	Apollo 10, Houston. Leave the H_2 tank - or the tank fan configuration about the same as it is except that we'd like you to stir up the O_2 tanks for a minute or so. Over.
07 18 11 10	LMP	Okay. Thank you.
07 18 16 40	LMP	Hello, Houston. This is 10.
07 18 16 44	CC	Roger. I knew it was you calling.
07 18 16 47	LMP	Oh, yes. In addition to those other angles that John was talking to you about earlier, can you gin us up some TV angles, please?
07 18 17 00	CC	Roger. I've got the TV angles right here. We'll get John's angles - oh, about the time we have the TV pass - but you ready to copy?
07 18 17 11	LMP	Yes. Go ahead.
07 18 17 13	CC	Okay. TV at 186 50, left-hand side window, looking at the Earth. Roll is all balls, pitch is 090, yaw is all balls. And your high gain angles will be plus 18 degrees in pitch, and 268 degrees in yaw.
07 18 17 44	LMP	Jack, what will our distance from the Earth and relative velocity be placed, at that time?
07 18 17 52	CC	Stand by one. We'll extrapolate that.
07 18 17 58	CMP	Okay, Houston. This is 10 again. The lithium hydroxide canister, for purposes of determining the c.g., is butt up against A6, between A6 and A11. It's wedged in there, and the half a bag of water is stowed in A5. Only it's 25 percent of that half bag of water is probably going to be bubbles. I don't know how you weigh that.
07 18 18 30	CC	Roger. We got some experts here that can figure out how much the bubbles weigh.
07 18 18 35	CMP	Okay. And it's half - half filled with water.
07 18 18 39	CC	Roger.

07 18 18 43	CMP	They don't hardly weigh more than the water at zero g.
07 18 19 23	CC	Gene, this is Houston. At 186 50, about TV time, you're going to be at 38 435 miles. And your velocity will be 10 402 feet per second.
07 18 19 39	LMP	Finally starting to pick up a little.
07 18 19 42	CC	Yes, you're getting there. You jst crossed the 10 000 foot per second mark right now and you're really starting to move out mow.
07 18 19 53	CDR	We were going so slow there for a while, Jack, I thought we were about to stall out. Over.
07 18 19 58	CC	Yes. I was kind of wondering about all of that mathematics and automechanics, you know. I thought maybe you were going to fall through this time, but it looks like it's going to hang in there.
07 18 20 07	CMP	Okay, Houston. On the upper hatch, there is considerable water up there, and I guess if I was going to design a water separator, this would be a good place to put it.
07 18 20 21	CC	Roger. We copy.
07 18 26 47	CC	Apollo 10, Houston. On the Venus probe, Venus 5 landed on 16 May. Venus 6 landed on 17 May. Both were launched in January, 6 days apart, as you recall, and Soviet Scientists say that they are fully satisfied with results. Each probe has returned much new information which indicates and I quote: "Man will never go there" unquote. Their probes made a soft landing, lasted about 30 minutes after landing, measured a temperature of 537 degrees Fahrenheit. Over.
07 18 27 27	CDR	Roger. We'll look into the manned aspect later, but the crew of Apollo 10 wish you would give them our congratulations on their total engineering and scientific success. Over.
07 18 27 39	CC	Roger. Copy. Congratulations to the Soviets on their engineering success with the Venus probes.
07 18 31 14	CC	Apollo 10, Houston. I have a flight plan update.
07 18 31 23	LMP	Go ahead, Jack.
07 18 31 25	CC	Okay. At 189 plus 10 hours, we'd like you to read out the command module RCS temperatures off the

		system test meter. Because if preheat is required, we'll want to bring fuel cell 1 back on the line. And at 189 plus 20, we'll reservice the primary evaporator, using 3 minutes of water - 3-minute service. And I have a change to your entry checklist, as a result of the fuel cell situation. And the change is on page E-Echo 2-2, step 6, line 12, change fuel cell 2 main A and B OFF to read instead: fuel cell 1 main A and B OFF. And in addition we're standing by for your crew status reports and we'd like some PRD readings before you go through the radiation belt, so we can compare them with those afterwards. Over.
07 18 32 39	LMP	Okay. On that - On that checklist now, I just want to make sure, the preceding line says fuel cell pumps parentheses 3 OFF. Corrected line now says fuel cell 1 main A main B, OFF, and then it says verified loads balanced. Right?
07 18 33 00	CC	That's affirmative. You've got that right.
07 18 33 04	LMP	Okay. We'll we have fuel cell 1 main A main B OFF right now.
07 18 33 12	CC	Roger, 10. If we bring fuel cell 1 on, then this note will apply. Over.
07 18 33 20	LMP	Okay, Jack. I'm with you and at 1 - At 189 20, we're going to reservice the EVAP for 3 minutes, and at 189 10, we'll read off the CM RCS temps and at that time we'll decide on fuel cell 1, and stand by for those RAD readings.
07 18 33 39	CC	Roger.
07 18 34 20	LMP	Okay. Crew status check. The CDR took 1 "Lomo" last night and he's going to take a decongestant just precautionary prior to reentry. The crew slept well last night, from anywhere to 4 to 8 hours sleep apiece. The RAD readings are 26048, 05049, and 15050, and we've completed breakfast. The spacecraft is about 90 percent - 95 percent stowed, and we'll be in the couches here, and probably remain pretty much so there from now on in.
07 18 35 03	CC	Roger. We copy, Gene. Thank you.
07 18 47 00	LMP	Houston, this is 10.
07 18 47 02	CC	Go ahead, 10.
07 18 47 04	LMP	I'm going to high gain antenna at this time.

07 18 47 07	CC	Copied.
07 18 47 48	LMP	Hello, Houston. When do you want to conduct a Simplex check?
07 18 48 05	CC	Apollo 10, Houston. We're monitoring the VHF and we'll notify when we need VHF check. Over.
07 18 48 14	LMP	Okay. Fine. We'll be standing by for it.
07 18 48 24	CDR	Houston, Apollo 10. We're all squared away in the attitude for the final TV pass. Over.
07 18 48 30	CC	Roger. Copy, Tom.
07 18 48 36	CDR	And, Houston, are you going to be receiving this live at MCC? Over.
07 18 48 44	CC	Stand by one.
07 18 48 59	CC	10, Houston. TV will be live here.
07 18 49 03	CDR	Okay.
07 18 50 04	CDR	Houston, Apollo 10. We're ready to go with the TV, if you are.
07 18 50 07	CC	Stand by one.
07 18 50 12	CC	Okay, Apollo 10. Houston. We're going to TV at this time. Over.
07 18 50 39	LMP	Okay, Houston. You ought to be starting to pick up a view of the Earth at this time. We're coming to you on our final TV pass. Let us know when you're getting it, Jack.
07 18 50 56	CC	Roger, Gene. We'll tell you when we're getting it here.
07 18 51 40	CDR	Houston, Apollo 10. How does the screen look? Over.
07 18 51 45	CC	Roger, 10. We're not getting it yet. Apparently everything isn't quite warmed up yet. Oh, here she comes.
07 18 51 50	CDR	Roger.
07 18 51 51	CC	She's coming in now.
07 18 52 02	CC	Okay. We're getting TV of the Earth. We see the terminator, and you're getting it centered up pretty good right now.

07 18 52 16	CDR	Good morning from Apollo 10. We're now approximately 38 000 miles from the Earth and we're starting to accelerate rapidly as the Earth's influence becomes felt more and more the closer we get. We're doing now approximately 7500 miles an hour, and we're 5 hours out from final entry into the Earth's atmosphere. This morning as we look out there we can see part of China. India is the most predominant feature. But also we can see Saudi Arabia, the Gulf of Oman, and the Indian Ocean at this time. And I'll try to give you a little zoom here in on Saudi Arabia and India.
07 18 53 08	LMP	Tom's going to zoom the TV into the Gulf of Oman, now. See what you can see, there. Okay. That's full zoom into the Gulf of Oman.
07 18 53 31	LMP	The Gulf of Oman is in the center left part of your picture. How does it look down there?
07 18 53 36	CC	Okay, 10. The globe is about centering the screen at this time, and we can see the darker landmasses and the Gulf of Oman is not apparent to a novice I guess you might say. But it's a beautiful picture and it's coming through well.
07 18 53 55	LMP	Sure is a beautiful picture.
07 18 54 00	CC	I guess you might say that the artist that painted that one is a master.
07 18 54 12	CC	I know that looks real good to you guys, and the closer you get the better it looks.
07 18 54 19	LMP	Jack, one reflection that we felt very strong about is when we show you our last telecast here of the Earth, is that we felt very strong about sharing with you some of the adventure, the excitement, the challenges, and the rewards of these 8 days, and through this endeavor, we have hoped that we made you and millions of people of the world, more of a part of the history that's being made in our day and age.
07 18 54 47	CC	I know everybody around the world has appreciated the TV pictures and all the effort you went to to make them good. They've all been excellent and I know it's given everyone a better feeling for what we're actually doing and a better appreciation of the program in general.
07 18 55 05	CDR	Okay. Some final just color thoughts as we look in there. India appears to us to be a purplish tan over - I see that the - the Sun - the solar subpoint is right in the Gulf of Oman, now. It is nearly a

yellowish bronze. Beyond that we have Saudi Arabia. And Saudi Arabia to us looks a sandy orange. Up to the right, up to the very top of your screen is covered mostly with clouds and this has been the cloud-cover that has existed over the northern part of the world ever since we left Cape Kennedy nearly 8 days ago. Down below to the left, the long straight cloud is part of the ITC you can see it, or even down farther than that into the Indian Ocean. But throughout these telecasts, as you can see that the majority of the world is usually covered with clouds. Over.

07 18 56 03	CC	Roger, Tom. And I think the people around the world are kind of sad to see this to be the last TV shots from space for a while, and I know that they've been very interested and enthusiastic about the pictures and the total flight.
07 18 56 22	CDR	Roger. It's kind of a feeling of the same way for us not to see these beautiful views. Of course, we're certainly looking forward to being back on the good Earth in about 5 hours. And it's really been a fantastic overall flight for us, and some of the experiences that we've had all the way from liftoff on the Saturn V to seeing the Earth and Moon, the lunar orbit work, and the climb out from the Moon and all the way back. And why don't we take you inside the cockpit for one quick minute?
07 18 57 31	CC	Okay. We have it inside the cabin now, Tom, and we've got a pretty good look at a clean shaven command module pilot there.
07 18 57 42	CMP	This is your old retired philosopher speaking to you from outer space, and telling you that TV is on its way back.
07 18 57 54	CC	Roger. Thank you for those words from the old retired philosopher.
07 18 57 59	CMP	We have a little more work to do and then we'll be back with you and it will sure be great to be back. It's been utterly unbelievable, the mission has. We've really enjoyed every bit of it, so until we see you again, we'll say so long.
07 18 58 18	CDR	Okay. We'll pan over on the right side of the cockpit where Commander Gene Cernan - -
07 18 58 38	CC	Hello, Gene. How about saying a few words into the microphone?
07 18 58 42	LMP	Okay, Jack. I can't tell you what a rewarding and satisfying experience this has been. It's had its

moments, as I said. I'm just thankful that through the medium of television we've been able to share it with so many people in real time. I'm convinced, after this mission, none of them are going to be easy, but nothing is impossible, and I think that the future of manned space flight for now and for many generations to come is going to uncover many, many other new challenges and experiences that we're yet really incapable of even conceiving at this time. It's been a great 8 days, and of course, we're looking forward to get home, and I guess next time we'll be talking to you, seeing you and we'll be back on the ground. Thank you.

07 18 59 38 CC Hello there, Skipper.

07 18 59 40 CDR Good morning. On the final closeout telecast of Apollo 10, we just want to say that it has just been fantastic - the total views that we've seen on this total mission. Again, like Gene pointed out, no mission is easy, and it's been a lot of work. But we've enjoyed the whole thing greatly. And, also, the main thing is, we've been able to - in real time, on some of the major parts of the mission - to share this with you. Like we pointed out, that fantastic view when we left the Moon, Man has certainly progressed a long ways in such a short few years. And how much we're going to progress in the future is left to your imagination. But if we harness our energies and keep our perspective right, the goals are unlimited. And we want to take you back out to show you one last picture of the world - wait a minute - We want to show you a couple of other people that's been with us here. We can't here - we've got the spacecraft fairly well stored - In fact, we're running about an hour and a half ahead of schedule onboard the spacecraft.

07 19 00 54 CDR But, as you know, we had the lunar module with us, which we nicknamed "Snoopy." And Snoopy - the ascent part of Snoopy - is on its way around the Sun now. The descent part is still in an orbit around the Moon, and right now we're in our code nickname of "Charlie Brown." And here's again our little mascot, Charlie Brown, code name for the command module, and Charlie Brown has been a real good boy. He's been with us all the way. The spacecraft has been fantastic with respect to its systems and its reliability. It's done a beautiful job for the whole program.

07 19 01 36 CDR And how does the color look for Charlie Brown down there, Houston?

07 19 01 40	CC	The color is perfect, Tom. Good morning, Charlie.
07 19 01 44	CDR	And Charlie just wants to say "Good morning" to all you people and it's great to be on the mission. And here is our other friend that went along with us. And for a code name, and as we said, part of him is on the way around the Sun and the other part around the Moon, so he's got quite a split personality. Over.
07 19 02 02	CDR	And here's the code name of our lunar module, "Snoopy." And Snoopy was a fairly good dog for us. In fact, he's a fantastic vehicle to fly. But again one thing we want to point out about Snoopy, this is a symbol of a manned flight awareness program and represents the good work and efforts of the hundreds of thousands of people who have made the manned space flight program so successful. And from the crew of Apollo 10, we'd just like to give all those people a salute and acknowledgment, and this is one way of doing it, just by naming a spacecraft after their symbol. And so from the five of us, Gene Cernan, John Young, Tom Stafford, Snoopy, and Charlie Brown, we'd just like to say goodby. And here's out little symbol for the mission, and we'll see you back on the water in the South Pacific. In fact we should land about 300 miles east of Samoa in approximately 5 hours. So from the crew of Apollo 10, it's been great being with you and goodby.
07 19 03 14	CC	Roger. Thank you, Tom. Preparations are well underway for your return and recovery, and we're looking forward to seeing you real soon.
07 19 03 22	CC	Roger. Tell all the people around the world, Jack, and also in Houston, MCC, what a great job they've done, and we'll see them back there shortly. Over.
07 19 03 31	CC	Roger, Tom. Thank you and congratulations to you and your crew. Over.
07 19 03 36	CDR	Roger. We'll wait until we get onboard the carrier for that.
07 19 08 28	LMP	Hello, Houston. This is 10. Do you want me to maintain high gain for you until after the update?
07 19 08 41	CC	That is affirmative, 10. We prefer the high gain for the update.
07 10 08 46	LMP	Okay.

07 19 09 17	CC	And, Apollo 10, Houston. I have some attitudes for P52.
07 19 09 23	CDR	Stand by. We're still doing some stowing here. Go ahead and give me a rough one, Jack.
07 19 09 29	CC	Roger. The P52 - We have two attitudes. Probably the preferred is the one I'll read first and if you want another one, I'll give it to you.
07 19 09 40	CDR	Go ahead.
07 19 09 41	CC	Roll, pitch, and yaw are all balls, and your stars are Menkent, number 30, Atria, number 34, and Nunki, number 37.
07 19 09 57	CDR	Roger. Roll, pitch, and yaw all balls, stars 30, 34, and 37.
07 19 12 43	CDR	Houston, Apollo 10. I'll stay in this attitude until you give us the update, and then we'll go down to zero, zero, zero. Over.
07 19 12 50	CC	Roger. We copy, 10.
07 19 13 33	CC	Apollo 10, Houston. We're ready with your update. We've got a state vector and entry REFSMMAT and a midcourse 7 target load, and if you will go to ACCEPT. In addition, we're not reading anything on the VHF yet, and we'd like you to ensure that the VHF is cranked up. Over.
07 19 13 58	CDR	Okay, Houston. Apollo 10. We are in P00 and ACCEPT. I've got the VHF warming up and we'll give you a call in just a minute. Over.
07 19 14 07	CC	Roger, 10.
07 19 14 37	CDR	Hello, Houston. This is Apollo 10 on VHF A Simplex. How do you read? Over.
07 19 14 44	CC	Roger. I hear you loud and clear, 10, on VHF A.
07 19 14 47	CDR	Roger, Houston. This is 10 reading you loud and clear. Over.
07 19 14 58	CC	Belay my last, 10. I think I'm getting you on S-band. We'll check with the VHF people.
07 19 15 54	CC	Apollo 10, Houston. Carnarvon reads you loud and clear on VHF.
07 19 16 00	CDR	Roger, Houston. Apollo 10. I'm reading you about three-by-three on VHF. How me?

06 19 16 14	CC	Apollo 10, Houston. I'm reading you here on S-band, and we'll have to check with the sites to see how the VHF is coming in.
07 19 18 58	CC	Apollo 10, Houston. We're on VHF only. How do you read? Over.
07 19 19 10	CC	Apollo 10, Houston. How do you read on VHF? Over.
07 19 19 59	CC	Apollo 10, Houston. Back on the S-band. Apparently you weren't reading us on VHF. We'll give you another VHF check in about a half an hour.
07 19 20 08	LMP	Okay, Jack.
07 19 20 58	CC	Apollo 10, Houston. The uplink is complete. You can go to block.
07 19 21 17	CDR	Okay.
07 19 21 52	CDR	Houston, Apollo 10. I'll go ahead and pitch down to 000 when you have everything as far as the uplink is complete and verified. I guess it is verified now. Over.
07 19 22 07	CC	Roger. The uplink is complete, Tom, and you're clear to the new attitude.
07 19 22 12	CDR	Roger, 10. And, Houston, 10. This attitude of 0000 will be a good one to torque to the new REFSMMAT. Over.
07 19 22 24	CC	That's affirmative, 10.
07 19 31 56	CC	Apollo 10, Houston. We'd like you to go to wide beamwidth and high gain antenna and I have a maneuver pad and an entry pad for you.
07 19 32 06	CDR	Okay. We'll be with you in one second; I'm going to wide beamwidth right now.
07 19 32 18	CDR	You're in wide, Houston, and we'll give you a call when we're ready to copy. We're still doing a few little chores here. Over.
07 19 32 19	CC	Roger.
07 19 39 27	CDR	Hello, Houston, Houston. This is Apollo 10. We're ready to copy your P30 and your entry update.
07 19 39 35	CC	Roger, 10. Here's the maneuver pad. MCC 7, RCS/G&N: 25232, NOUN 48 is NA. NOUN 33 is 188 49 5675, plus three balls 16, minus all balls, minus four balls 1, three balls, 129, three balls, apogee is NA, perigee

is plus 00212, three balls, 16, two balls 7, three balls 16, 40, 2959, 383, 033. Uniform 159, Lima 12, the rest is NA; your set stars are Deneb, 43 and Vega 36, 067, 174, 343; your ullage is a two-quad burn. Use Bravo and Delta. Read back maneuver pad; let me know when you're ready with the entry pad. Over.

END OF TAPE

07 19 41 37	LMP	Okay. MCC 7, RCS G&N: 25232; 48's NA; 188 49 562 - 75, plus three balls, minus all balls, minus four balls. Roll is 000, 129, 000. Apogee is NA; perigee is plus 00212, three balls 16, two balls 7, three balls 16 40 2959 383 033; Uniform 159, Lima 12, Deneb 43, and Vega 36; 067, 174, 343. You need two quads, Bravo and Delta. And I'd like to read NOUN 33 back to you again. That's 188 49 5675.
07 19 43 04	CC	That's affirmative, 10. Entry pad when you're ready.
07 19 43 11	LMP	I'm ready, Jack.
07 19 43 13	CC	Okay. The entry pad is a Mid-Pac: three balls, 153 001 191 31 54 268, minus 1507, minus 16467 068 36315 652 12041 36395 191 48 54 0028; NOUN 69 is NA; D_0 is 400 028 - correction, 02 08 0018 0329 0817 40 2621 347 033; Dog 089, Lima 22. Lift vector is UP. Comment: Use a nonexit pattern. Your horizon is dark at reentry interface. Over.
07 19 45 29	LMP	Okay, Jack. Entry pad. Area is Mid-Pac: 000 153 001 191 31 54 268, minus 1507, minus 16467 068 36315 652, minus 12041 36395 191 48 54 0028; NOUN 69 is NA. Are you still with me?
07 19 46 33	CC	That's affirmative.
07 19 46 35	LMP	D_0 is 400; 0208 0018 0329 0817 40 2621 347 033; Delta 089, and Lima 22. The lift vector is UP; using a nonexit pattern and the horizon is dark at entry interface.
07 19 47 19	CC	Roger, 10. I have a late correction at the bottom. SPA is Dog 080, now. Over.
07 19 47 29	LMP	Roger. SPA is 080.
07 19 47 37	CC	And, 10. We'd like you to read the range field back, please.
07 19 47 47	LMP	Okay. The range to go is 12041.
07 19 47 54	CC	Roger. We copy. And that's affirmative.
07 20 00 03	CC	Apollo 10, Houston. We know the set - the DAP is now set up for four jets, and we think we ought to have two jets. That'd be B and D. Over.
07 20 00 15	CDR	Okay. Roger. You want - Since it's only a couple of feet per second here and everything, we've got plenty of fuel, but we'll go ahead and use two

07 20 00 31	CC	Roger, 10.
07 20 04 59	LMP	Houston, this is 10. We're going into the cold soak in our checklist, there.
07 20 05 06	CC	Roger, 10. Copy.
07 20 11 35	LMP	Houston, this is 10. What's your feeling about putting fuel cell 1 on for the burn?
07 20 11 40	CC	Stand by one.
07 20 11 59	CC	Apollo 10, Houston. We don't need fuel cell 1 for the burn and don't intend to use it for the burn. Over.
07 20 12 07	LMP	Okay.
07 20 19 08	CDR	Houston, Apollo 10. We're starting through our P33's now. Over.
07 20 19 14	CC	Roger, 10.
07 20 22 24	CC	Apollo 10, Houston. We suspect that your suit circuit heat exchanger may be in the bypass position and - well, for comfort, it ought to be on now, and go to BYPASS at EI minus 50. Over.
07 20 22 37	LMP	Roger.
07 20 33 46	CC	Apollo 10, Houston. When it's convenient, we'd like to get a GET time hack with you.
07 20 33 53	CDR	It's convenient. Over.
07 20 33 56	CC	Roger. Go ahead and give us a time and we'll set our clocks.
07 20 34 04	CDR	Okay. It's 188 34, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15. Over.
07 20 34 17	CC	Okay. Thank you very much. We're right on.
07 20 34 20	LMP	That's computer time and GET time, and our mission time is right on.
07 20 34 25	CC	Roger. We're following right along with you.
07 20 37 39	CDR	Houston, Apollo 10.
07 20 37 43	CC	Go ahead, 10.
07 20 37 46	CDR	Okay. We're going to go ahead and call up P41.

07 20 37 49	CC	Okay. We'll be watching you.
07 20 41 57	CDR	Houston, Apollo 10. Would you give us the hack at 5 minutes prior to the maneuver just so we can recheck our event timer? Over.
07 20 42 06	CC	Roger. Understand you want a time hack just prior to the burn. Is that affirmative?
07 20 42 11	CDR	Give us one at 5 minutes. This event timer occasionally has been jumping numbers. Over.
07 20 42 16	CC	Roger. We'll give you a hack at 5 minutes. That'll be about a minute and a half yet.
07 20 42 56	LMP	Okay, Houston. We're showing 7 minutes.
07 20 42 58	LMP	MARK.
07 20 42 59	LMP	How's that sound?
07 20 43 00	CC	Yes. We're showing the same. That's confirmed, 7 minutes.
07 20 43 03	LMP	Okay.
07 20 47 06	CDR	Okay. We're proceeding here for the final trim.
07 20 47 12	CC	Roger, 10.
07 20 47 38	CMP	Boy, this is absolutely fantastic. Come all the way back to the Moon and do this kind of midcourse.
07 20 47 47	CC	Yes. That's pretty good shooting, isn't it?
07 20 47 49	CMP	Man, I mean to tell you.
07 20 47 55	CDR	Tell Christopher C. and Company looks like they have a pretty good rifle scope there to shoot us back in this target. Over.
07 20 48 02	CC	Roger. I guess all that mathematics really works after all.
07 20 48 08	CDR	Roger.
07 20 48 51	CC	Apollo 10, Houston. We have a few configuration items we'd like to point out. Right - -
07 20 48 58	CDR	Okay. We'll wait.
07 20 49 00	CC	Rotational hand controller power, DIRECT; BMAGS, ATT 1 rate 2. Over.

07 20 49 07	LMP	Roger.
07 20 49 58	CDR	We're burning.
07 20 50 26	CDR	Okay. How we are on our residuals? You can read them? 0, minus 1, minus 1, and a PROCEED.
07 20 50 33	CC	Roger. We copy.
07 20 53 02	CDR	Houston, Apollo 10. It's starting to get real cool in here. We'd like to go bypass on the suit circuit heat exchanger. Over.
07 20 53 18	CDR	And we can turn it on if it gets warm again. Over.
07 20 53 24	CC	Roger, 10. Go ahead.
07 20 53 28	CDR	Bypass.
07 20 54 12	LMP	Hello, Houston. This is 10. Could you give me a short count, and I'll cut off my S-band and see whether I can pick you up on VHF?
07 20 54 21	CC	Stand by one, please.
07 20 55 04	CC	Apollo 10, Houston. We'll try a VHF voice check as soon as we get the sites configured and you can go to left antenna. Over.
07 20 55 16	LMP	Okay. Thank you, Jack.
07 20 56 47	CC	Apollo 10, Houston. Set up your VHF and S-band turned down. We're going to try the VHF check in a minute.
07 20 57 08	CC	Hello, Apollo 10. Houston on VHF through Guam. How do you copy? Over.
07 20 57 20	CC	Apollo 10, Houston. How do you read? Over.
07 20 58 11	CC	Apollo 10, we're back up on S-band. We weren't able to read you on VHF. Over.
07 20 58 18	CMP	Roger. We heard some kind of transmissions there in the background, but we never gave you a call on VHF. Over.
07 20 58 27	CC	Roger. I asked for a radio check on VHF. Apparently we're not quite in range yet.
07 21 00 06	CC	Apollo 10, Houston. All sites are monitoring VHF downlink. When you're ready, make a transmission and they'll see if we can pick you up.

07 21 00 15	CDR	Roger, Houston. This is Apollo 10 transmitting on VHF on the short count. 5, 4, 3, 2, 1. How do you read? Over.
07 21 01 57	CC	Apollo 10, Houston. Sites apparently aren't reading you yet on VHF. We recommend that you transmit simultaneous S-band and VHF; and, when the sites can read VHF, why, they'll let us know, and we'll conduct the radio check. Over.
07 21 02 10	LMP	Roger. That's what we're doing. Over.
07 21 02 19	CDR	Okay, Houston. Apollo 10. We're all squared away and way ahead on the checklist. The next thing we're waiting for is just to read out the command module RCS temps and service the primary EVAP and the logic check coming up. Over.
07 21 02 35	CC	Roger. And there's no significant change in the weather in the landing area. The altimeter is 2988, or plus 38 feet, and we have a splashdown computed time of 192 03, and sunrise will be 25 minutes later. Over.
07 21 02 58	CDR	Roger 192 03, sunrise 25 minutes later. Thank you.
07 21 03 04	CC	Roger. And you copy altimeter 2988.
07 21 03 08	CDR	Roger.
07 21 03 13	LMP	Hey, Jack, we don't have any place to set the altimeter. But thanks for the plus 38 feet.
07 21 03 19	CC	Roger. Plus 38.
07 21 03 37	CC	And, 10, we're ready for your RCS temps when you're ready to read them down.
07 21 04 37	LMP	Houston, here's our readings: 5 Charlie is 5.0; 5 Delta is 4.8; 6 Alfa is 5.1; 6 Bravo is 5.1; 6 Charlie is 4.2; 6 Delta is 4.9.
07 21 05 24	CC	Roger, 10. We copied the temperatures. Thank you.
07 21 07 12	CMP	Houston, at 45 minutes to EI - to RRT time - Could you give us a time hack? Over.
07 21 07 20	CC	Roger. You want a time hack at 45 minutes to EI.
07 21 07 24	CMP	That's affirmative.
07 21 07 25	CC	And your computer landing time precisely is now 192 03 57.

07 21 07 47	CMP	Houston, we're going back on with the suit circuit heat exchangers. It doesn't take very long.
07 21 07 53	CC	Roger. Go on.
07 21 08 39	CC	Apollo 10, Houston. Late correction on your landing time is 192 02 57.
07 21 08 52	LMP	Roger. 192 02 57.
07 21 08 59	CC	Buddy, you're going to get there. It doesn't really matter does it?
07 21 09 08	LMP	Yes. We'll get back.
07 21 09 09	CC	Yes. We could put you in a holding pattern for a minute there, maybe.
07 21 09 18	LMP	As long as our RET times are okay, we're in good shape.
07 21 09 28	CDR	Houston, Apollo 10. Over.
07 21 09 30	CC	Go ahead.
07 21 09 32	CDR	Roger. Wish you would relay on to Captain Cruse, the skipper of the Princeton, that at the time there, at 192 03, we expect to be right on top of the aim point and hope this big ship is close by. Over.
07 21 09 47	CC	Roger. We'll pass the word on, and you just holler "Meat Ball" when you see it.
07 21 09 53	CDR	Will do.
07 21 13 08	LMP	Okay, Houston. Our data up here shows no preheat.
07 21 13 19	CC	Roger. We confirm that, 10.

END OF TAPE

07 21 19 11	CMP	Houston, this is 10. The glycol EVAP water-flow valve will come on in 20 minutes.
07 21 19 20	CC	Roger. Twenty minutes.
07 21 19 22	CMP	I'll leave it ON for 3; then AUTO. Is that correct?
07 21 19 33	CC	That's affirmative, 10.
07 21 19 36	CMP	Okay. Thank you.
07 21 21 25	CC	Apollo 10, Houston. We would like to have all heaters and fans OFF in the CRYO tanks. Over.
07 21 21 33	CMP	Roger. Heaters and fans going off in the CRYO tanks.
07 21 21 44	CMP	They're all OFF.
07 21 21 46	CC	Roger.
07 21 23 05	LMP	Houston, the EVAP servicing is complete, and for the record, of course, we had been there before, but I had gone to MANUAL INCREASE again on the valve.
07 21 23 15	CC	Roger. We copy, and MANUAL INCREASE.
07 21 23 20	LMP	And I know I've got the water flow in AUTO.
07 21 23 24	CC	Roger, Gene.
07 21 23 35	LMP	Houston, this is 10.
07 21 23 38	CC	Go ahead, 10.
07 21 23 47	CC	Apollo 10. Houston. Go ahead.
07 21 23 50	LMP	Roger. We're requesting an in-route descent commencing 1200 GUT, and we'd also like expeditious handling CCA down near the Princeton. We'll be making a vertical descent from about 24 000. And request NO-GO around this pass.
07 21 24 08	CC	Roger. Report crossing 25 miles at 6 000. Over.
07 21 24 18	LMP	How about that? Houston approach hasn't changed a bit.
07 21 24 23	CDR	We hope on this one, Houston approach at 6 000 will be within about a half to a quarter of a mile. Over.

07 21 24 31	CC	Roger. You can write your deviation up when you're on the ground.
07 21 24 36	CDR	Roger.
07 21 38 27	LMP	Hello, Houston. 10. What's our range to Mother Earth?
07 21 38 34	CC	Okay, 10. We're reading 19 660 at this time.
07 21 38 42	LMP	Okay. And how fast we going?
07 21 38 45	CC	You're coming in about 14 100 feet per second right now. You're really picking it up.
07 21 38 52	LMP	Thank you, sir.
07 21 39 19	CMP	It's that last 10 000 miles that's more interesting anyway.
07 21 40 11	CDR	Hello, Houston. Apollo 10. Over.
07 21 40 13	CC	Go ahead, 10.
07 21 40 25	CC	Apollo 10, Houston. Go ahead.
07 21 40 28	CDR	Roger, Houston. We still have lots of propellant in our primary propellant tanks, but we wanted to know, for the service module jettison, if you want us to open the secondary propellants. Over.
07 21 40 39	CC	Stand by one, please.
07 21 40 41	CMP	Roger.
07 21 40 54	CC	Apollo 10, Houston. Proceed as per the checklist. Over.
07 21 40 59	CDR	Roger. As per checklist.
07 21 47 57	CMP	Okay, Houston. We're ready for the logic sequence check now.
07 21 48 07	CC	Stand by one, Apollo 10.
07 21 48 18	CC	Okay, Apollo 10. We're ready to go with the check. Over.
07 21 48 43	CMP	Okay. The ELS logic is coming on. ELS going to AUTO, SEP logic is coming on. Okay. We're all set up.

07 21 49 05	CC	Roger. 10. Stand by.
07 21 49 14	CC	Okay. Apollo 10, Houston. We'll give you a GO for PYRO ARM.
07 21 49 21	CMP	Roger. SEP logic coming back off.
07 21 53 53	CMP	Houston, this is 10. We completed the sextant star check and Altair was within about 6 minutes of being right in the middle of the optics.
07 21 54 06	CC	Roge· We copy, 10.
07 22 03 39	LMP	Hello, Houston. This is 10.
07 22 03 41	CC	Go ahead, 10.
07 22 03 44	LMP	Do you want to remain high gain here until just before SEP?
07 22 03 50	CC	Stand by one.
07 22 04 23	CC	Apollo 10, Houston. Let's stay in high gain until SEP, and then go to OMNI C. Over.
07 22 04 30	LMP	Okay. That's OMNI Charlie; is that right, Jack?
07 22 04 35	CC	OMNI Charlie at SEP. Let's stay in high gain until that time. Over.
07 22 04 39	LMP	Okay. Fine. Thank you.
07 22 11 24	CC	I think you're lucky there in a NOUN 05.
07 22 11 30	CDR	Wait until you see the next one.
07 22 13 29	CDR	How about that, Jack? Over.
07 22 13 33	CC	That's not bad for a young fellow.
07 22 13 37	CC	Okay. You proved a point.
07 22 13 40	CDR	I told you. Wait until the next one.
07 22 13 44	CC	You're just a showoff; that's all.
07 22 13 49	CDR	How about that, Doc?
07 22 13 52	CC	Those ain't bad.
07 22 13 53	CDR	- - work with those optics.
07 22 13 57	CC	Who's doing that, you or Jose?

07 22 14 01	CDR	No. That's Jose; I'm just narrating here.
07 22 14 03	CC	Oh. Okay.
07 22 16 24	CC	Apollo 10, Houston. Our tracking data now shows you right in the middle of the fairway with a 6.53-degree entry angle. Over.
07 22 16 34	CDR	Roger. Right in the middle of the corridor with 6.53. Roger.
07 22 23 32	CDR	Houston, we checked NOUN 61 and it looks loaded correctly now.
07 22 23 40	CC	Roger, 10. We're checking it.
07 22 23 40	CMP	Roger. Our sextant - our alignment check sextant star on Nunki - the AUTO optics put the stars within the center of the reticle.
07 22 23 58	CC	Roger. Copy, John.
07 22 25 10	CC	Hello, 10. NOUN 61 looks good to us.
07 22 25 15	CDR	Alrighty.
07 22 25 16	LMP	Roger.
07 22 28 42	CMP	Okay, Houston. EMS check passed successfully.
07 22 28 48	CC	Roger. EMS. Thank you.
07 22 29 30	CMP	Okay. Houston, as I was driving the scroll down to - down to the pattern, the thing stopped scribing.
07 22 29 41	CC	Roger. She stopped scribing.
07 22 29 44	CC	Say again, John.
07 22 29 47	CMP	I say, the EMS stopped scribing as I was driving it down to the test pattern to set it up on the edge range.
07 22 29 57	CC	Oh, you mean driving it down to 37 K?
07 22 30 01	CMP	Yes. I can't get this one. I say it stopped scribing.
07 22 30 08	CC	You say the needle's not scraping, or it's not driving in this tape?

07 22 30 14	CMP	It's not - The tape is driving, but the needle is not leaving any mark.
07 22 30 18	CC	Understand.
07 22 30 21	CMP	I believe I'll go ahead and run it on down here anyway.
07 22 30 26	CC	Roger. You might as well.
07 22 30 32	CMP	Get some g's on it; it might work okay.
07 22 30 36	CC	It's worth a try.
07 22 31 18	CMP	Okay. We're set up at 37 K.
07 22 31 22	CC	Roger. Maybe it'll come back in.
07 22 31 24	CMP	On a non ... pattern.
07 22 32 01	LMP	Houston, this is 10. Have I got a GO to activate the primary EVAPS?
07 22 32 07	CC	Stand by one.
07 22 32 13	CC	10, Houston. Activate the primary EVAPS.
07 22 32 17	LMP	Okay. Here goes.
07 22 37 56	LMP	Okay. Houston, we are going to maneuver to the SEP attitude now.
07 22 38 00	CC	Roger. Maneuvering to SEP attitude.
07 22 40 19	CC	Apollo 10, Houston. John, if you haven't already tried it, you might, on that EMS scroll, try running the tape back a half inch backwards and back and forth between the 37 K line, and if that doesn't work, why, you can try the next pattern, and maybe this will break up that emulsion a little bit.
07 22 40 56	CMP	Roger. Understand. Run the scroll back and forth between where and where? Over.
07 22 41 02	CC	Make sure you run it backwards first, backwards no more than half an inch, and then forwards no more than the 37 K line. Over.
07 22 41 11	CMP	Roger.

07 22 41 44	CMP	By golly, that fixed it. Good thought there. What I did was I had it on range set, I went back to test 5. Does that mean that I have to go all the way through the EMS counterclockwise anymore, or if I go to range set, will it still be initialized at 7 K. Over.
07 22 42 09	CC	Roger, John. Say again how far back you went please.
07 22 42 12	CMP	About three-eighths of an inch.
07 22 42 21	CC	Stand by one.
07 22 42 55	LMP	Hello, Houston. This is 10.
07 22 42 57	CC	Go ahead.
07 22 42 59	LMP	Roger. We're getting a lot of noise on the high gain in this SEP attitude. How about me going to OMNI at this time?
07 22 43 05	CC	Stand by.
07 22 43 15	CC	Apollo 10, Houston. Let's go to OMNI Charlie by the checklist. Over.
07 22 43 33	LMP	Okay. We'll hold off on it, then; but it's awful noisy up here.
07 22 43 50	CDR	Okay. Houston, we're going back to the initial entry interface attitude. This noise is about to drive us wild up here on that high gain.
07 22 43 58	CC	Roger, 10. It's okay to go OMNI Charlie, now, if you'd rather.
07 22 44 04	LMP	Okay. We can go there now, huh? Okay. Because we're a little bit ahead of the checklist in going into this attitude. That's why I asked. Okay. We'll go to OMNI Charlie at this time.
07 22 44 11	CC	Roger.
07 22 44 59	CC	Apollo 10, Houston. It's not clear to us exactly what you did with the EMS. Will you describe it one more time so we can give you an answer? Over.
07 22 45 07	CMP	Roger. I was on range set when you said wiggle it back and forth, so I went back to test 5 and brought it back approximately three-eighths of an inch toward 38 K, and it started scribing. So I quit and went back to 37, and I'm now on test 5.

07 22 45 26	CC	Roger.
07 22 45 27	CMP	My question is - -
07 22 45 32	CC	Go ahead with your question.
07 22 45 35	CMP	Do I have to go through another scroll pattern or go clean through the EMS test to get it reset at 37 K?
07 22 45 43	CC	Roger. We'll get an answer for you in just a minute.
07 22 45 49	CMP	I think the answer is "no."
07 22 45 58	CC	Apollo 10, while we're coming up with that answer, we're ready to uplink a state vector. Can we have the computer? Over.
07 22 46 13	CDR	We're in CMC and ACCEPT.
07 22 46 15	CC	Roger. Thank you.

END OF TAPE

07 22 47 30	CC	Apollo 10, Houston. We're a little delayed on our uplink. It'll be up momentarily. It's coming now.
07 22 49 05	CC	Apollo 10, Houston. I have an update to your entry pad. There are only five numbers that are different than the last pad. Over.
07 22 49 15	LMP	Okay, Jack. Take them one at a time, will you? And let me confirm them would you?
07 22 49 26	CC	Okay. Our gamma at 400 K is now 6.54. Over.
07 22 49 37	LMP	6.54 gamma at 400 K.
07 22 49 42	CC	That's affirmative, and our RET at 0.05g is 0027.
07 22 49 54	LMP	0027 at 4 - 0.05g, RET.
07 22 50 07	CC	Okay. That's affirmative. And the next three numbers are in the blackout block. Begin blackout at 0017, end at 0328, and drogues at 0816. Over.
07 22 50 32	LMP	Okay. I got begin blackout at 0017, end blackout at 328, and drogues at 816.
07 22 50 43	CC	That's affirmative.
07 22 50 46	LMP	Thank you.
07 22 50 56	CDR	Houston, Apollo 10. Are you finished with the uplink? Over.
07 22 51 01	CC	Apollo 10, we're finished with the uplink.
07 22 51 04	CDR	Roger. Back to BLOCK.
07 22 51 22	CDR	Shows we got a 22.2-mile vacuum purge. It looks good.
07 22 51 28	CC	Roger, 10. And on your EMS, you can go directly to range set and it'll work. Over.
07 22 51 35	LMP	Roger. Thank you. I thought it would. And, Houston, we're ready to activate the secondary EVAP's.
07 22 52 09	CC	Apollo 10, Houston. Let's hold off until EI minus 50, about 6-1/2 more minutes, for the secondary EVAP. Over.
07 22 52 17	LMP	Okay. We'll hold off.
07 22 53 08	CC	Apollo 10, Houston. We'd like to proceed with the VHF check now, and we're configured at the sites. If you'll transmit, we'll listen. Over.

07 22 53 18	LMP	Roger. We're reading you right now VHF and short count follows: 1, 2, 3, 4, 5, 5, 4, 3, 2, 1.
07 22 53 27	CC	Roger. You came in way down in the mud. You faded out, them came back in.
07 22 53 33	LMP	Roger. You're about three-by and down in the mud.
07 22 53 38	CC	Roger. And I've got one more number to change on your entry pad.
07 22 53 50	CMP	It's okay to get on the S-band, huh, Jack?
07 22 53 53	CC	Roger.
07 22 54 40	LMP	Hello, Houston. This is 10. How do you read?
07 22 54 42	CC	Read you loud and clear now, 10.
07 22 54 45	LMP	Okay. You're still down in the mud. Go ahead with that update.
07 22 54 51	CC	Okay. The next uhange is on EMS range to go, should read 12061. Over.
07 22 55 01	LMP	Roger. 12061.
07 22 55 05	CC	That's affirmative.
07 22 55 08	LMP	Okay. It sounds like you're transmitting on VHF and S-band, too, Jack. Could you go back to S-band only? Over.
07 22 55 14	CC	Roger. S-band only.
07 22 59 30	CC	Apollo 10, Houston. We have a change to your altimeter. Your DELTA-H will be a plus 57. The recovery ship's on station, the aircraft are enroute. Over.
07 22 59 44	LMP	Roger. Plus 57.
07 23 00 06	LMP	Okay, Houston. I'm going to activate the secondary EVAP.
07 23 00 13	CC	Roger, 10. Go ahead.
07 23 03 20	CC	Apollo 10, Houston. There's no change in the weather in the landing area; 2500, scattered, and 10. Winds are 1 through 0 at 10 knots, a 3-foot swell, and we're coming up on our 45-minute check momentarily.

07 23 03 33	LMP	Roger.
07 23 03 48	CC	Okay, John. Stand by for a 45-minute check; 4, 3, 2, 1.
07 23 03 55	CC	MARK.
07 23 03 59	CMP	Okay. Thank you.
07 23 04 00	CC	Roger.
07 23 04 02	CMP	We need a GO for PYRO ARM to check the RCS.
07 23 04 06	CC	Okay, John. We're GO for PYRO ARM.
07 23 04 09	CMP	Roger.
07 23 04 28	CDR	Stand by to fire the PYRO's; 3, 2, 1.
07 23 04 33	CDR	MARK.
07 23 04 58	CC	Apollo 10, Houston. Both rings look good here.
07 23 05 02	LMP	Roger. They look good to us, too.
07 23 07 48	CMP	Houston, how'd it look?
07 23 07 54	CC	You're looking real good there, John.
07 23 07 59	CMP	Boy, it feels real good. It's a real crisp fire.
07 23 19 47	CMP	Okay, Houston. The bus ties are on the line okay. Tape recorder is going to rewind. And the Sun is setting just like you said.
07 23 19 57	CDR	And here comes the Earth.
07 23 20 00	CC	Roger, 10. And the BATT's look good.
07 23 20 03	CDR	Roger. It's amazing to see an airglow on the horizon again. Over.
07 23 20 11	CC	Yes. You guys are a little out of your environment now, aren't you?
07 23 20 15	CDR	Yes. Didn't see that up there around the Moon.
07 23 20 21	LMP	It's a good round one; I'll tell you that.
07 23 24 44	CMP	Okay, Houston. We're halfway through the SEP checklist, and we're maneuvering to the separation attitude.
07 23 24 49	CC	Roger. We're watching you.

07 23 25 37	LMP	Houston, 10. Looks like we might have a primary EVAP.
07 23 25 46	CC	That's affirmative, 10. Primary EVAP is working.
07 23 27 08	CMP	Okay, Houston. We're in SEP attitude now. We've completed the SEP checklist.
07 23 27 12	CC	Roger, 10.
07 23 29 36	CDR	Okay, Houston. We're calling up PROGRAM 61.
07 23 29 40	CC	Roger, 10. PROGRAM 61.
07 23 30 06	CC	Apollo 10, Houston. We'd like to verify that the S-band power amp switch is in LOW. Over.
07 23 30 13	LMP	That's affirmative. It's been in LOW.
07 23 30 15	CC	Thank you.
07 23 30 50	CC	Apollo 10, Houston. We'd like to update your landing cue card. You pass 90 000 feet at 0626. Over.
07 23 31 09	CDR	Roger.
07 23 31 10	CMP	Roger. Thank you.
07 23 31 16	CMP	I guess we have a GO for PYRO ARM here - separate here, MSFN.
07 23 31 23	CC	That's affirmative, 10. You are GO for PYRO ARM.
07 23 31 27	CMP	Roger.
07 23 32 50	CMP	Okay. We're showing SEP time.
07 23 32 54	CC	Roger, 10. Go ahead.
07 23 33 00	CDR	Okay. We'll go on and separate it about 30 seconds early. At 44 30.
07 23 33 21	CDR	5, 4, 3, 2, 1.
07 23 33 25	CDR	SEP.
07 23 33 37	CDR	RCS transfer to command module.
07 23 33 42	CMP	I think separation was normal.
07 23 33 46	CC	Roger, 10. We copy.
07 23 35 02	LMP	Okay, Houston. That was a good SEP.

07 23 35 12	CC	Roger, 10. We confirm a good SEP.
07 23 35 16	LMP	What happened there was it had started out EMS, and I wonder how to reinitialize that. Do we run all the way through the test back?
07 23 35 25	CC	Stand by. We'll get an answer for you.
07 23 37 55	CC	Apollo 10, Houston. On the EMS situation, best thing to do is to go counterclockwise on your switch back around to test 5, then advance to the next nonexit skip pattern.
07 23 38 11	CMP	Roger.
07 23 38 12	CC	Reset your range and your V_0, and you're ready to go again. Over.
07 23 38 15	CMP	Roger. That's what I figured.
07 23 38 33	CMP	And it's scribing right now.
07 23 38 36	CC	Roger, 10. We copy.
07 23 41 08	CMP	Okay, Houston. We're approaching the entry attitude.
07 23 41 12	CC	Roger, 10.
07 23 42 22	LMP	What we're doing up here in entry attitude is just compensating for a little water boiling off.
07 23 43 00	CMP	Houston, could we have a Mark at 5 minutes to RRT? Over.
07 23 43 05	CC	Roger. Mark 5 minutes at RRT.
07 23 43 14	CMP	And we're all set up in EMS configuration, ready to go, and I believe it's going to work.
07 23 43 21	CC	Roger. We copy.
07 23 43 23	CDR	And we're in P63. I'm sure you can read it on your DSKY, and R to go is decreasing, and D_1 is increasing. Everything looks good. Over.
07 23 43 31	CC	Roger, 10.
07 23 43 59	CC	Apollo 10, we missed your Mark at 5 minutes. 4 minutes and 50 seconds coming up.
07 23 44 05	CC	MARK.
07 23 44 07	LMP	Okay.

07 23 46 19	CC	Apollo 10, Houston. Spacecraft and guidance looking real good from here. We'll be attempting to contact you again after blackout at 3 28. Over.
07 23 46 29	CMP	Roger. You working through an ARIA now?
07 23 46 35	CC	Negative. Not yet. We will be then, however.
07 23 46 38	CMP	Roger. Okay. The guidance is coming in. Looks good.
07 23 46 45	CC	Roger, 10.
07 23 47 56	CC	One minute, 10. You're looking good.
07 23 47 58	CMP	Roger.
07 23 54 41	CMP	Houston, we're showing 6 miles short right now, and we're coming on in. Showing about 4 g's. This machine is flying like crazy. Boy, it's really great.
07 23 54 53	CC	Roger, 10. We copy, and we've got you on TV.
07 23 54 57	CMP	I tell you, this thing is beautiful.
07 23 55 00	CDR	It shows a few miles overshoot, 1.7, 1.2 cross range.
07 23 55 04	CMP	And we're pulling about 3-1/2 g's now. We're rolling right 60 degrees, and we're practically on top of the target. EMS is reading 21 miles to go. Come down - looks like it's - We're about 150 K right now.
07 23 55 33	CMP	...
07 23 55 42	CDR	Apollo 10. If the Princeton's there, we're going to be there shortly.
07 23 55 51	CC	Roger, 10. We're waiting for you.
07 23 56 38	CC	Apollo 10, Houston. You're coming in broken, but we still have you visual. Over.
07 23 57 44	CMP	2000 right now.
07 23 59 38	R-2	This is Recovery 2 with the recovery ... 2252 ...
08 00 02 00	CDR	1507 at 16 467. We should be right on top of you if you're down there.
08 00 02 22	CDR	Roger. This is Apollo 10. ... We are in great shape. Over.

08 00 02 31	CC	Roger. ...
08 00 02 49	AB	.... Air Boss ... at 4 miles.
08 00 03 25	AB	SPLASHDOWN.
08 00 03 27	AB	Hello. Air Boss. SPLASHDOWN.
08 00 03 33	R-3	This is Recovery 3. Splashdown was Stable I. Repeat, Stable I.
08 00 03 38	AB	Roger.

END OF TAPE