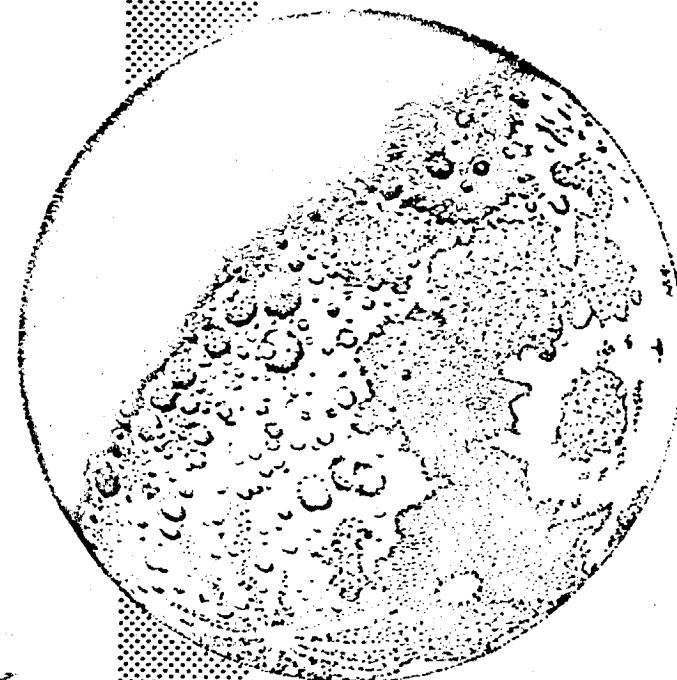


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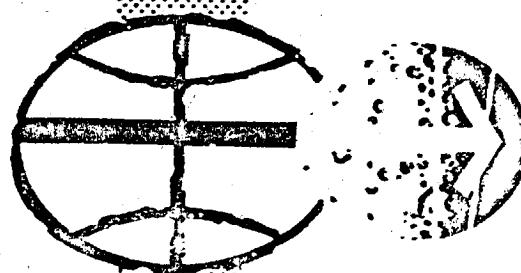
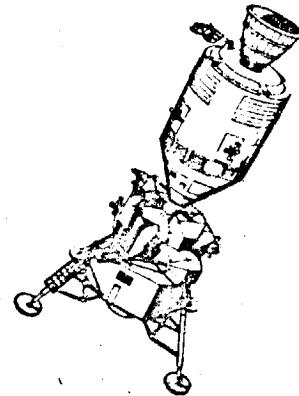
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION



APOLLO 9

Technical Air-to-Ground
Voice Transcription

(GOSS NET 1)



MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

March 1969

6608-07680

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SIGNATOR LOC

Introduction

This is the transcription of the Technical Air-to-Ground Voice Transmission (GOSS NET 1) from the Apollo 9 mission.

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

Command Module:

CDR	Commander	James A. McDivitt
CMP	Command module pilot	David R. Scott
LMP	Lunar module pilot	Russell Schweickart
SC	Unidentifiable crewmember	

Mission Control Center:

CC	Capsule Communicator (CAP COMM)
F	Flight

Remote Sites:

CT	Communications Technician (COMM TECH)
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Recovery Forces:

GUAD	USS Guadalcanal
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R	Recovery helicopter
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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 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(COSS NET 1)

Tape 1/1
Page 1

MILA (REV 1)

00 00 00 03 CC Roger. Clock's going.

00 00 00 13 CC Roger. There's our roll program, and now we're reading you loud and clear.

00 00 00 44 CC Roger. One Bravo.

00 00 01 58 CC Apollo 9, you are GO for staging. And you are mode 1 Charlie.

00 00 02 04 CDR EDS OFF.

00 00 02 48 SC ...

00 00 02 57 CC And, Apollo 9, Houston, your thrust looks good.

00 00 03 02 CC Apollo 9, you are GO for tower JETT.

00 00 03 04 CDR Roger.

00 00 03 16 CDR There's SEP.

00 00 03 18 CMP Tower JETT --

00 00 03 19 SC -- Looks good.

00 00 03 20 CMP We're looking good here, I've got the tower OFF.

00 00 03 32 CC And, Apollo 9, we're still in guidance INITIATE -- everything looks good.

00 00 03 40 CC Apollo 9, you are GO all the way. Everything looks good.

00 00 03 43 CDR Roger.

00 00 03 56 CDR Houston, did you read our comment that our SPS helium pressure went to zero, indicated zero at lift-off?

00 00 04 07 CC Apollo 9, this is Houston. I did not copy.

00 00 04 09 CDR Roger. Be advised our SPS helium pressure went to zero at lift-off.

00 00 04 15 CC Roger. Copy.

00 00 04 17 CDR Okay. You got any good words on that, why don't you give them to me when you can?

(COSS MET 1)

Tape 1/2
Page 2

00 00 04 22 CC Roger. It is GO here, Apollo 9.
00 00 04 24 CDR Very good.
00 00 05 01 CC And, Apollo 9, it's 5 minutes, and everybody is as happy as a clam here. Looking good.
00 00 05 05 CDR So are we.
00 00 05 11 CC Apollo 9, you have S-IVB to orbit capability.
00 00 06 15 SC Roger here. Roger here.
00 00 06 17 CC Your level sense arm time is 08 plus 21; predicted S-II cutoff 08 plus 56.
00 00 06 22 CDR 08:21 and 08:56. Roger. And we've got S-band omni to Delta.
00 00 06 27 CC Copy. Omni Delta. Thank you.
00 00 06 55 LMP And the rookie says that looks beautiful.

BEDUDA (REV 1)

00 00 07 01 CC And rookie, at 7 minutes, everything is going real great.
00 00 07 05 LMP Roger.
00 00 08 04 CC Apollo 9, at 8 minutes everything is GO.
00 00 08 08 CDR Roger. Everything looks fine here, too.
00 00 08 10 CC Very good. The COMM is beautiful, Jim. You are really coming through clear. I read you nice and -
00 00 08 15 CDR Roger. Your - nice and clear and loud, too, Smokey. We had no trouble with COMM on launch at all.
00 00 08 25 CC Roger. Copy that, Apollo 9, and you are GO for staging.
00 00 08 29 CDR Roger. Getting a little vibration. About eight -
00 00 09 03 CDR Staging complete, and S-IVB is running.

(GOSS NET 1)

Tape 1/3

Page 1

00 00 09 07 CC Roger. All copy staging complete. We're showing good thrust on S-IVB. Everything is GO.

00 00 09 18 CDR Okay. We're guiding now.

00 00 09 57 CC Apollo 9, you have mode 4 capability and everything is GO. You are real solid.

00 00 10 03 CDR Roger. What time do you think we can shut down?

00 00 10 05 CC We will have that for you in a flash, Apollo 9.

00 00 10 10 CDR Okay.

00 00 10 29 CDR My onboard FIDO here says we are doing okay.

00 00 10 33 CC Yes. Everything is looking good here, Apollo 9.

00 00 10 35 CDR Okay.

00 00 10 39 CC We'll try to have your cut-off time shortly.

00 00 10 42 CDR Better hurry. I'm going to cut off first.

00 00 10 43 CC Roger.

00 00 11 08 CDR Shutdown -

00 00 11 10 CC Roger. Shutdown.

00 00 11 12 CDR Okay.

00 00 11 17 CMP Houston, we've got 103 by 89.5.

00 00 11 22 CC Roger, Apollo 9. Copy.

00 00 11 39 CC And, Apollo 9, you are GO in the orbit.

00 00 11 43 CDR Roger.

00 00 11 47 CC And your CMC is GO; it is valid.

00 00 11 51 CDR Okay.

00 00 11 56 CC And, Apollo 9, the S-IVB has been safed.

00 00 11 59 CDR Roger. Safed. Do you have our apogee and perigee?

00 00 12 02 CC Not yet, Apollo 9. Stand by.

(COSS MET 1)

Tape 1/4
Page 4

00 00 12 06 CDR Okay.

VANGUARD (REV 1)

00 00 13 05 CC Apollo 9, the S-IVB has been configured for orbit.
It's looking real good, and your SPS helium is
solid as a rock.

00 00 13 14 CDR Roger. We copy. Thanks a lot.

00 00 13 16 CC Roger.

00 00 17 09 CC Apollo 9, Houston.

00 00 17 12 CDR Roger. Go ahead, Houston.

CANARY (REV 1)

00 00 17 14 CC Roger. We've got Canaries here. You can con-
figure SIMPLEX Alfa.

00 00 17 31 CC Apollo 9, Houston. Did you copy?

00 00 17 54 CC Apollo 9, Houston. Do you read?

00 00 17 57 CMP Roger, Houston. Five-by. How us?

00 00 18 00 CC Okay. You're coming in five-square. We switched
over all right, I guess, and everything looks
good.

00 00 18 06 LMP Roger. What kind of orbit did you get us in?

00 00 18 09 CC We don't have it yet, Apollo 9. We are still
running it through the computers.

00 00 18 15 SC Okay.

00 00 19 03 CC Apollo 9, Houston.

00 00 19 07 CDR Go, Houston. Apollo 9.

00 00 19 09 CC Roger. With our P-band radar we're showing you
107 by 98.9 as the first cut.

00 00 19 21 CMP Roger. 107, 98.9.

(COSS NET 1)

Tape 1/5

Page 5

00 00 19 26 CC And we are continuing to message this, Apollo 9,
and we will keep you updated.
00 00 19 33 CMP Roger. Understand.
00 00 22 37 CC Apollo 9, Houston. We've got 1 minute with you
at Canaries, and we will see you over Tananarive
at 37.
00 00 22 44 CDR Roger. Tananarive at 37. Thank you.
00 00 22 48 CC Roger. Out.

TANANARIVE (REV 1)

00 00 35 30 CC Hello, Apollo 9. This is Houston. Do you read?
00 00 36 58 CC Hello, Apollo 9. Houston through Tananarive.
00 00 37 09 CC Apollo 9, this is Houston through Tananarive.
00 00 37 12 CDR Go ahead, Houston.
00 00 37 15 CC Roger, Apollo 9. Our Canary data shows your or-
bit at 103.9 by 102.3.
00 00 37 31 CMP Roger. Understand 103.9 by 102.3.
00 00 37 37 CC That is affirmative, and that changes slightly
as the S-IWB vents, but that was a pretty good
hail at it on Canary.
00 00 37 53 CC And we'll have you here at Tananarive for about
another 5 minutes.
00 00 37 58 CMP Roger. Pressure looks good, huh?
00 00 39 08 CMP Houston, Apollo 9. Do you copy our parking angles?
00 00 39 10 CC We have no data here at Tananarive, Dave. You will
have to read them to me.
00 00 39 14 CMP Very well. GET was 39:00 plus 00116 minus 00032
minus 00108.
00 00 39 30 CC Roger. Apollo 9, this is Houston. I copied the
time and the angles. Thank you.
00 00 39 36 CMP Works like a charm.

(GOSS NET 1)

Tape 1/6
Page 6

00 00 39 58 CC Roger. Looks like the platform was right there.
And that was a nice speedy job on that 52.

00 00 39 52 CMP Good old AUTO optics.

00 00 39 55 CC I see. Copy.

00 00 41 48 CC And, Apollo 9, this is Houston. We are going to
lose you here at Tananarive in about 45 seconds,
and we'll see you over Carnarvon at 52.

00 00 41 58 CMP Roger. 52 at Carnarvon.

CARNAVON (REV 1)

00 00 53 25 LMP Hey, Houston. How do you ready Apollo 9.

00 00 53 28 CC Apollo 9, this is Houston. Reading you loud and
clear through Carnarvon.

00 00 53 32 LMP Okay. I'm presently in a backup COM check -
step five there on LMP 1 dash 2, and I'm on line
5. I got the initial contact, and I got my S-band
volume up.

00 00 53 46 CC Roger. Understand you are in step 5 and stand by
one here.

00 00 54 00 LMP Roger. And I'm standing by for a GO for the
backup voice check.

00 00 54 05 CC Roger. We will give you a GO on that in about
30 seconds here.

00 00 54 10 LMP Okey-dokey.

00 00 54 26 CC Okay. Apollo 9, this is Houston. We are standing
by for your voice check on the S-band. Let her
rip.

00 00 54 48 CC Okay. Apollo 9, this is Houston. I did not copy
anything. I got one blast in there sounded like
you keyed, and that was all.

00 00 55 48 CC Apollo 9, this is Houston on the VHF. Do you read?

00 00 56 03 CC Apollo 9, Apollo 9, this is Houston on - via the VHF.
Do you read?

(COSS NET 1)

Tape 1/1

Page 7

- 00 00 56 09 LMP Roger, Houston. We read you on VHF. I gave you a call on DOWNSPACE BACKUP, and evidently you are not reading on it. However, I'm reading you up on the S-band.
- 00 00 56 19 CC Okay, and we confirmed with the site that we did not get an S-band downlink on that one, Rusty.
- 00 00 56 28 LMP Roger. We will be standing by for suggestions. Let me just give you my configuration here, if you want to copy that.
- 00 00 56 35 CC Go.
- 00 00 56 38 LMP Okay. I'm on the primary transponder, and I'm reading you okay - up okay. Everything else is in NORMAL there. Going across, I've got the ranging switch OFF, I've got the S-band AUX TAPE in DOWNSPACE BACKUP. I've got the power BKP back up to NORMAL, and everything else is vanilla.
- 00 00 57 03 CC Roger. I copy that, Apollo 9. Let us pull that over. We are going to have you here about another minute at Carnarvon, and then we are going to pick up over Honeysuckle at about 50 - it'll be just about on the hour, so have your S-band volumes up at that time.
- 00 00 57 23 LMP Roger. And be advised, we are mushing on through all our checklist here, and we've got most everything done. The fuel cell purge check checked out okay.
- 00 00 57 32 CC Roger. Sounds great and, Apollo 9, you are GO for 6 dash 4.
- 00 00 57 38 LMP Roger. GO for 6 dash 4.
- 00 00 57 54 LMP And, Houston, be advised that I'm going to go out of this backup COMM check configuration here and go back to NORMAL.
- 00 00 58 01 CC Roger. Let's meet you over Honeysuckle in normal configuration just about on the hour.
- 00 00 58 10 LMP Roger.
- HONEY SUCKLE (REV 1)
- 00 01 00 12 CC Apollo 9, this is Houston through Honeysuckle.

(0008 REV 1)

Tape 1/8
Page 8

00 01 00 50 CC Apollo 9, this is Houston through Honeysuckle.
00 01 00 56 LMP You're 5-square on S-band, Apollo - or Houston.
00 01 01 00 CC Roger. You're - that's really great, Rusty. You're coming in, and if you want to try this backup COMM check again, we can support it. It's dealer's choice. And just as we were leaving Carnarvon, the downlink appeared to be coming through on the backup.
00 01 01 20 LMP Okay. May don't we forego it right now, and we'll try to check that at some quiet period.
00 01 01 25 CC Roger. We concur.
00 01 05 04 CC And, Apollo 9, this is Houston. We are going to lose you here at Honeysuckle in about 40 seconds, and we will see you over Huntsville in about 3 minutes.
00 01 05 14 LMP Roger.

HUNTSVILLE (REV 1)

00 01 08 25 CC And, Apollo 9, this is Houston through the Huntsville.
00 01 08 40 CT Huntsville cannot maintain valid two-way range, so we lost signal bearing in advancing.
00 01 09 08 CC Hello, Apollo 9, this is Houston. You read through the Huntsville?
00 01 09 40 CT Huntsville is valid in two way ...
00 01 10 03 CC And, Apollo 9, this is Houston through the Huntsville.
00 01 10 08 CMP Roger.
00 01 10 12 CMP Houston, Apollo 9. You're coming through garbled.
00 01 10 18 CC Okay, Apollo 9, this is Houston. You're breaking up pretty badly. We don't have much to pass you here - we're only going to have you for about another minute and a half, and we'll talk to you as you come across the States and pass the data to you then.

(GOS8 REV 1)

Tape 1/9
Page 9

00 01 10 35	CMP	Roger.
00 01 11 16	CC	And, Apollo 9, this is Houston if you can read me. We'll see you over the Redstone at about 24.
00 01 11 25	CMP	Roger.
00 01 13 00	CT	Huntsville LOS.

REDSTONE (REV 1)

00 01 23 57	CC	Apollo 9, this is Houston through the Redstone. Standing by.
00 01 24 25	CC	Apollo 9, this is Houston through the Redstone.
00 01 24 30	LMP	Roger, Houston. Apollo 9. How do you read?
00 01 24 32	CC	You're clear as a bell, Apollo 9; this is Houston.
00 01 24 38	LMP	Roger.
00 01 24 42	CC	And, Apollo 9, we'd like to confirm that you are in omni Baker and primary S-band transponder.
00 01 24 54	LMP	Let me do that for you.
00 01 26 48	CC	Apollo 9, Houston.
00 01 26 51	LMP	Go ahead.
00 01 26 53	CC	Roger. It may be a coincidence, but we lost data just about the time I gave you that transmission to clarify that omni Baker. Did you change configuration then?
00 01 27 05	LMP	That's affirmative. We are - we were on Delta and I just switched it to omni for you.
00 01 27 15	CC	I understand you did go from Delta to Baker and the primary transponder was ON. You didn't need to change that, did you?
00 01 27 23	LMP	That's a negative. The primary was ON.
00 01 27 31	CDR	How are you doing down there, Smokey?
00 01 27 33	CC	We're pressing along, Jim. And we're - you can anticipate we'll probably have a state vector

(GOSS REC 1)

Tape 1/10
Page 10

we want to uplink over Bermuda or Vanguard - in 5 or 10 minutes, and for Rusty's benefit, the backup COM check over Carnarvon was 5-square. It came in - we had a momentary dropout there, but we got it real good.

- 00 01 27 56 LMP Goody. We'll write that one off then.
- 00 01 27 58 CDR Okay. We have got all of the checklist done except the glycol and some things that we're going to do right now. And we haven't taken the PIPA bias check either. I guess you guys want to do that.
- 00 01 28 10 CC Roger. We'll try it. We have no data right now, 9.
- 00 01 29 12 CC And, Apollo 9, this is Houston. For your info we do have our data coming in now solid. And Jim - for the bias check - We really will get a good one on you after TD and E.

END OF TAPE

APOLLO 9 AIR-TO-GROUND TRANSCRIPTION

(COS3 NET 1)

Tape 2/1
Page 11

00 01 31 55 CMP And, Houston, Apollo 9.

00 01 31 57 CC Go, Apollo 9.

00 01 31 59 CMP Roger. We just got a MASTER ALARM cryo PRESS here on the number 1 H₂ tank. It's just off the lower limit here; you might want to take a look at that.

00 01 32 11 CC Roger, Apollo 9. We copy. We'll see what we can do for you.

00 01 32 26 CMP Okay, and the heater just came on, and it's going back up again. It looks like it's just tickling the MASTER ALARM there before it decides to heat up.

00 01 32 36 CC Roger, Apollo 9. Copy.

00 01 33 01 CC And, Apollo 9, Houston. That's probably SIM SUP just playing with the tolerances a little bit.

00 01 33 06 CMP Yes, could be.

BERMUDA (REV 2)

00 01 40 15 CC Apollo 9, this is Houston through Bermuda.

00 01 40 19 CDR Roger. Houston through Bermuda. Go ahead.

00 01 40 21 CC Roger. We'd like to uplink you a state vector there, Apollo 9. We - there is a discrepancy between your vectors and ours. We don't have a real good story for you at this time. It was sort of a slow diversion trend, but we would like to slip it in. There are some funnies about the lift-off time, and everything that we're working on, but at this time we'd like to give you a new vector.

00 01 40 43 CMP Okay. Understand you want to give us a new vector on the - Let me see - Stand by.

00 01 40 51 CMP Roger. P00 in ACCEPT. You got it.

00 01 40 53 CC Roger. We'll go to work on it. Thank you.

00 01 42 46 CMP Houston, Apollo 9.

00 01 42 48 CC Go, Apollo 9.

(GOSS EFT 1)

Tape 2/2
Page 12

- 00 01 42 49 CMP Roger. I checked the O_2 purge before I noticed I didn't check the H_2 , so I got the purge heater on for awhile, and I'm gonna check the H_2 purge. Might be seeing that.
- 00 01 43 05 CC Roger. You're going to be checking H_2 purge; and Apollo 9, I have a NAV check to go along with this state vector when you are ready to copy.
- 00 01 43 13 CDR Roger. Stand by on the purge, and stand by on the NAV check.
- 00 01 43 17 CC Roger. At your convenience.
- 00 01 43 44 CC And, Apollo 9, this is Houston. The computer is yours. The vector has been transferred, and it looks good.
- 00 01 43 52 CMP Roger. Thank you.
- 00 01 43 53 CDR And ready to copy on the NAV.
- 00 01 43 55 CC Roger. Reading the NAV check. Time: 00229 all zeros minus 3081 plus 11622 1067. End of update.
- 00 01 44 25 CDR Roger. Readback: 00229 all zips minus 3081 plus 11622 1067.
- 00 01 44 35 CC Roger. Houston confirms the update.
- 00 01 44 38 CDR Okay.
- 00 01 45 28 CC And, Apollo 9, Houston. We copy your DSKY on the ground.
- 00 01 48 01 CC Apollo 9, Houston.
- 00 01 48 04 CDR Go ahead, Houston.
- 00 01 48 06 CC Roger. Just for your info here, we'll be sending a command into the IU just to verify our response, and this will have no effect on you. We are just trying to troubleshoot our LVDC data, and we don't want you to move the IU ACCEPT switch; leave it in BLOCK.

(CONT SET 1)

Tape 2/3

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CANARY (REV 2)

00 01 48 20 CDR Roger.

00 01 50 39 CMP Houston, Apollo 9.

00 01 50 46 CMP Houston, Apollo 9.

00 01 50 48 CC Go, Apollo 9.

00 01 50 50 CMP Roger, Houston. Apollo 9. Do you - We're about ready to terminate our cabin purge. Is that okay with you?

00 01 50 56 CC Stand by one, Apollo 9.

00 01 51 08 CC Apollo 9, this is Houston. We concur. Go ahead and terminate.

00 01 51 13 CMP Okay.

00 01 51 16 CMP Didn't work.

00 01 51 18 CC Roger. Copy.

00 01 53 27 CMP Houston, this is Apollo 9.

00 01 53 29 CC Go, Apollo 9.

00 01 53 31 CMP We're ready to extend the docking probe. Are you ready?

00 01 53 34 CC Oh bcy, we are all ears down here. Please let us hear how that goes.

00 01 53 39 CMP Okay. Fine. It's in work.

00 01 53 42 CC Roger.

00 01 53 51 CDR We got a good one.

00 01 53 52 CC Roger. Copy. That makes us all happy.

00 01 54 00 CMP Roger. It was just like the chamber; we heard it go out, and it took a couple or 3/10 of a second.

00 01 54 07 CC Roger. Copy.

00 01 54 35 CC And, Apollo 9, this is Houston. We'll fall off at Canaries here in about another minute and we'll see you over Manansarive around 09.

(GOSS NET 1)

Tape 2/4
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00 01 54 46 CAP Roger. Tananarive at 09.

TANANARIVE (REV 2)

00 02 09 34 CC Apollo 9, this is Houston through Tananarive.
00 02 09 56 CC Apollo 9, Houston through Tananarive.
00 02 10 37 CT Tananarive, Houston. NET 1.
00 02 10 38 CT Houston, Tananarive.
00 02 10 39 CT Verify CAP COMM is uplinking properly.
00 02 10 41 CT That's affirmative.
00 02 10 42 CT Roger. Thank you.
00 02 11 03 CC And, Apollo 9, this is Houston. We'll have you over Tananarive for about the next 5 minutes; we are standing by. I have not heard any transmissions from you here.
00 02 11 14 SC Okay ...
00 02 11 30 CC Okay. Apollo 9, Houston. I heard just the first part of that; I'll just stand by here.
00 02 15 24 CC Apollo 9, this is Houston. We'll lose you in Tananarive here in about 1 minute. If you have tried to call me, I haven't received anything, but we'll see you over Carnarvon at 26.
00 02 15 42 CC And, Apollo 9, that will be Carnarvon at 26.

CARNARVON (REV 2)

00 02 25 31 CC Apollo 9, this is Houston through Carnarvon.
00 02 25 36 CDR Roger. Houston. We're here.
00 02 25 38 CC Roger. We read you loud and clear. We would like to have the up-telemetry IU switched to ACCEPT.
00 02 25 44 CDR Go for the pyro arm anytime you want to run through it.

(COSS NET 1)

Tape 2/5
Page 15

- 00 02 25 48 CC Roger. We want to take a look at you, and we will give you a GO on that shortly. We would like to have you go ahead and arm the logic at this time.
- 00 02 25 58 CDR Roger.
- 00 02 26 03 CC And would you confirm up-telemetry; are you ENABLED?
- 00 02 26 08 CDR Negative. Up-telemetry IU is in BLOCK. Do you want to go to up-telemetry IU in ACCEPT?
- 00 02 26 15 CC That is affirmative. We would like to have the up-telemetry IU to ACCEPT.
- 00 02 26 20 CDR In ACCEPT.
- 00 02 26 21 CC Understand.
- 00 02 26 23 CDR Roger.
- 00 02 26 45 CC And, Apollo 9, this is Houston. We would like to have you have the up-telemetry IU switched to BLOCK.
- 00 02 26 54 CDR Up-telemetry IU to BLOCK.
- 00 02 26 56 CC Very good. Thank you.
- 00 02 26 59 CDR And, Houston, the logic on my Mark, 3, 2, 1.
- 00 02 27 06 CDR MARK.
- 00 02 27 08 CDR Two logic.
- 00 02 27 09 CC Roger. We copy. Stand by one.
- 00 02 27 26 CC Apollo 9, this is Houston. You are GO for pyro arm.
- 00 02 27 30 CDR Roger. Understand, GO for pyro arm. Thank you.
- 00 02 27 33 CC That is affirmative.
- 00 02 28 04 CC Apollo 9, this is Houston. You are GO for TD and E.
- 00 02 28 08 CDR Roger. Understand, GO for TD and E.
- 00 02 28 38 CDR Houston, what time do we come into daylight?
- 00 02 28 40 CC Do you mean on this pass or for the ejection pass?

(0068 NET 1)

Tape 2/6
Page 16

00 02 28 45 CDR This pass.
00 02 28 47 CC Okay. Stand by.
00 02 29 34 CC Apollo 9, Houston.
00 02 29 38 CDR Go ahead.
00 02 29 39 CC Roger. You will come into daylight on this one at about 02 plus 39 plus 21.
00 02 29 48 CDR Roger. Thank you.
00 02 29 56 CC Here I was all primed for your ejection sunrise time. You faked me out on this one.
00 02 30 03 CDR Next time I'll ask.
00 02 30 05 CC Roger.
00 02 31 19 CDR Houston, Apollo 9.
00 02 31 21 CC Go, Apollo 9.
00 02 31 24 CDR We have a rather consistent behavior on this number 1 H₂ tank. It appears to light the cryo warning light every time it gets down there before the heater comes on. You might start thinking about how we're going to handle that for the sleep period because it keeps setting off the MASTER ALARM.
00 02 31 43 CC Roger, Apollo 9. Copy. And that is in work.
00 02 31 48 CDR Okay. Thank you.
00 02 31 57 CC And, Apollo 9, this is Houston. We will go right on through an ARIA as soon as we come up off of Carnarvon on this one in about 20 seconds.

ARIA (REV 2)

00 02 33 20 CC Apollo 9, this is Houston through an honest-to-goodness ARIA. How do you read?
00 02 33 27 CDR Awa-wa-wa-wa! I got it!
00 02 33 34 CC Roger on the wa-wa's, Apollo 9.

(GOSS NET 1)

Tape 2/7
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00 02 34 00 CDR We are going to come into parallel with the S-IVB in about 6 or 8 seconds.
00 02 35 28 CDR Houston, we're just about there.
00 02 39 16 CDR Hello.
00 02 39 17 CC Apollo 9, this is Houston. Did you call?

HUNTSVILLE (REV 2)

00 02 39 33 CT Huntsville AOS.
00 02 40 21 CT Huntsville valid two-way lock.
00 02 43 48 CMP Houston, Apollo 9.
00 02 43 51 CC Go, Apollo 9. This is Houston.
00 02 43 54 CMP Roger. It's out there, and we're turned around and proceeding with the stationkeeping and docking.
00 02 44 00 CC Tremendous, Apollo 9. Thank you.
00 02 44 20 CMP It's a big fellow.
00 02 44 23 CC Roger. Copy that.
00 02 46 14 CC Apollo 9, this is Houston. We're going to lose you here in about 45 seconds, and we'll see you over Hawaii in about 5 minutes at 51.
00 02 46 24 CMP Roger.
00 02 46 29 CC And we may have an ARIA in here, but if it is like the last one, we won't hear much out of you.
00 02 46 38 CMP Just a minute. As a matter of fact, we would be better without it.
00 02 46 39 CC Okay. We will see you at 51.

HAWAII (REV 2)

00 02 51 01 CC And, Apollo 9, this is Houston. We should have you through Hawaii. Standing by.

(GOES NET 1)

Tape 2/8
Page 18

00 02 51 07 CDR Roger.

REDSTONE (REV 2)

00 02 52 28 CC And, Apollo 9, Houston. We've got you through the Redstone. Standing by.

00 02 58 29 CDR Roger.

00 02 58 34 CMP Roger, Houston. We are about 25 feet now and ...

00 02 58 41 CC Copy.

00 03 01 13 SC That should do it.

00 03 02 07 SC Alright, Houston. We're hard docked.

00 03 02 11 CC Roger, Apollo 9. Understand hard dock.

00 03 02 15 CC Good show.

00 03 02 27 CDR Hello, Houston. Apollo 9. We had a MASTER ALARM when we did the docking when we made the contact there. And we had some problems with our RCS thrusters we'll tell you about later.

00 03 02 40 CC Apollo 9, this is Houston. Understand you got a MASTER ALARM just as you docked, and I didn't copy about the RCS.

00 03 02 46 CDR We'll tell it to you later, just a minute.

00 03 02 47 CC Roger.

00 03 04 30 CMP Apollo - Houston, Apollo 9.

00 03 04 31 CC Go, Apollo 9.

00 03 04 33 CMP Roger. We'll give you a quick rundown here. How much time do we have with you?

00 03 04 36 CC We've got you for a long time here. We're coming across the States here - just over California now.

00 03 04 43 CMP Okay. I've got it. We came out just right. The angles were all just right. We got turned off, turned around, and lined up, and didn't have any LEFT translation for some reason.

00 03 05 00 CC Roger. Copy. No LEFT translation.

(COSS MET 1)

Tape 2/9

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00 03 05 06 CDR Houston, check quad A service module ECS focus.

00 03 05 18 CC Stand by a second, Apollo 9.

00 03 05 24 CC Apollo 9, this is Houston. It looks okay to us. Do you have a question?

00 03 05 29 CDR Roger. We just had a light on it, and it's difficult to tell with the helmets on whether we have any adjustment on it or not. Didn't see any motion - just wanted you to check.

00 03 05 38 CC Roger, Apollo 9. Copy.

00 03 05 43 CDR Okay. The pressures all look good up here.

END OF TAPE

APOLLO 9 AIR-TO-GROUND TRANSCRIPTION

(QSSS NET 1)

Tape 3/1
Page 20

- 00 03 06 06 CDP Houston, our package temp on the quad A is running about 200. What do you have down there?
- 00 03 06 10 CC Stand by, Apollo 9, and let's check it.
- 00 03 07 02 CDR Houston, 9. Do you want to go on with the recap?
- 00 03 07 06 CC That's affirmative, Apollo 9. Let's press ahead, and your COMM sort of cycles in and out. You are a little weak at times. We do confirm the temperature here however, and we will have some more words on that in a minute. And we are standing by for the rest of your recap.
- 00 03 07 27 CDP Okay. When we got off, we were in pretty good shape and then for some reason we noticed that we didn't have any LEFT translation and tried to figure out why. Finally noticed that the primary quad C and secondary quad C isolation valves were closed, and the secondary Dog was closed, and by this time we had moved over somewhat to the side. It took us a while to get back after we got that sorted out and probably used up quite a bit of gas getting us squared away, but the docking was smooth. The capture latches worked just right, there were no oscillations after we captured. We lined it up and did the retract, and it took about 10 seconds, and it sounded like we got a good solid lock.
- 00 03 08 21 CC Roger, Apollo 9. Copied all that real good.
- 00 03 10 08 CC And, Apollo 9, this is Houston. We will have another state vector for you over Bermuda.
- 00 03 10 13 CDP Roger.
- 00 03 10 23 CC And you should be coming just about overhead, Apollo 9. You ought to be over Texas.
- 00 03 10 30 CDP Roger.
- 00 03 13 50 CC Apollo 9, Houston.
- 00 03 13 53 CDP Go ahead, Houston.
- 00 03 13 54 CC Roger. Could you give us POO in ACCEPT, please? We have a state vector for you, and I have a HAV

check when you are ready to copy. And we would also like to have your opinion on do you think you will have any problems continuing on the timeline through ejection with this situation.

- 00 03 14 13 CMP Okay. You have got P00 in ACCEPT.
00 03 14 16 CC Roger.
00 03 16 28 CC Apollo 9, this is Houston. The computer is yours, and that quad A temp has dropped about 8 degrees now coming across the States, and we're keeping an eye on it.
00 03 16 39 CMP Okay, Houston. Stand by. We're briefing.
00 03 20 45 CC Apollo 9, Houston. We've got you for about another minute. We'll see you over Ascension, around 28. We would like to have you to go BLOCK on your command module telemetry, and you don't have to slip a NAV check. We've checked your vector, and it's good.
00 03 21 26 CMP Houston, Apollo 9. Do you read us now?
00 03 21 30 CC Apollo 9, Houston. You're way down in the mud. Try again.

ASCENSION (REV 3)

- 00 03 28 57 CC Apollo 9, this is Houston through Ascension. Standing by.
00 03 29 03 CMP Roger.
00 03 29 04 CMP Roger. We are mating the umbilicals right now.
00 03 29 07 CC Roger. Understand you are connecting the umbilicals.
00 03 29 58 CC Apollo 9, this is Houston. We are going to have you for about another minute here at Ascension, and then we'll see you over Tananarive at about 44, and we would like to know the time of when you transfer to the CSM power, and I have a sunrise time any time you want it.
00 03 33 17 CMP Roger. We transferred to CSM power at 3 hours 33 minutes and 0 seconds.

(GOSS MET 1)

Tape 3/3
Page 22

00 03 32 25 CC Very good. Thank you.

00 03 33 36 CMP Houston, what oscillation reading on the systems test meter through the LM power to about a half a volt to sometimes up to 3 volts. It's in slow oscillation maybe every 10 seconds or so.

00 03 33 51 CC Roger. Copy. It's varying from a half to 3 volts slowly. Thank you.

00 03 34 00 CMP Roger. Pops open, and pops back down sometimes to two.

00 03 34 04 CDR There is some smaller oscillations that occur at a period about every second. It's been about 2 or 3/10 of a volt.

00 03 34 18 CC Roger. Copy small oscillations 2/10 to 3/10. Thank you. And we'll see you over Tananarive, 44.

00 03 34 31 CMP Roger. And what was the sunrise time, Houston?

00 03 34 35 CC Sunrise time is 04 plus 08.

00 03 34 39 CMP Roger. 04 plus 08.

TANANARIVE (REV 3)

00 03 44 00 CC Apollo 9, Houston through Tananarive.

00 03 44 28 CC Apollo 9, Houston through Tananarive. Standing by.

00 03 44 39 SC ...

00 03 44 50 CC Okay, Apollo 9. I heard you answer me, but it's unreadable at this time.

00 03 44 56 CDR Roger. The tunnel is closed out, the hatch is in, we are preparing for ejection.

00 03 45 03 CC Roger. Copy. The hatch is closed out, and you are pressurizing.

00 03 48 20 CC Apollo 9, this is Houston. We're losing you here at Tananarive. We'll see you over Carnarvon at about 59.

CARNARVON (REV 3)

00 03 57 48 CC Apollo 9, this is Houston through Carnarvon.

00 03 58 44 CC Apollo 9, Houston through Carnarvon.

00 03 58 48 CDR Go ahead, Houston. Apollo 9.

00 03 58 51 CC Roger. We have got you now in good voice contact. We will be giving you your GO here shortly and take a look at you.

00 03 58 59 CDR Okay. Very good.

00 03 59 03 CC And Apollo 9, we would like to have you arm the logic busses.

00 03 59 07 CDR Roger, Houston. You ready?

00 03 59 08 CC That's affirm.

00 03 59 12 CDR ... logic coming on now. Two logic ON.

00 03 59 16 CC Copy. Stand by one. And, Apollo 9, you are GO for pyro arm.

00 03 59 27 CMP Roger. Understood, and understand the ejection at 4 hours 11 minutes. Is that correct?

00 03 59 34 CC That's a - negative. We - I gave you the sunrise time here as 04 plus 08.

00 03 59 45 CMP Roger. You want us to go on sunrise or at 04:11?

00 03 59 53 CC Apollo 9, this is Houston. We would like to have you go at sunrise.

00 04 00 00 CMP Roger. Understand.

00 04 00 06 CC And, Apollo 9, Houston. That will put your evasive maneuver at 04 plus 11.

00 04 00 14 CMP Roger.

00 04 00 23 CDR Houston, 9.

00 04 00 26 CC Go, Apollo 9.

00 04 00 28 CDR Listen, if you concur, we would sort of like to wait until we have good sunlight before we come off of that.

(COSS MET 1)

Tape 3/5
Page 24

00 04 00 35 CC Roger. We concur with that. Use your judgment.
00 04 00 39 CDR Okay. Thank you.
00 04 00 41 CC And, Apollo 9, we're still showing your command module telemetry switch in ACCEPT. We would like to have you go BLOCK on that.
00 04 00 56 CDR Roger.
00 04 00 58 CC Roger. Thank you.
00 04 02 25 CC Apollo 9, this is Houston. You are GO for ejection.
00 04 02 29 CMP Roger. GO for ejection.
00 04 05 25 CC Apollo 9, this is Houston. You are coming off of Carnarvon here, but we will be monitoring your ejection through an ARIA.
00 04 05 37 CMP Roger. Those Alfa's make an awful lot of noise, Houston. We have trouble hearing each other.
00 04 05 42 CC Roger. Copy.
00 04 06 25 CMP ... very loud and making all kinds of noise and --
00 04 06 31 CC Apollo 9, Houston. Say again.
00 04 06 36 CDR Houston, Apollo 9. You are making very much noise in VHF, and it would be better if we do not do it this way.
00 04 06 45 CC Roger. Understand that you want the ARIA down. Is that affirmative?
00 04 06 50 CDR I think that would be better if the ARIA is out of it.
00 04 06 54 CC Okay. Copy.

HUNTSVILLE (REV 3)

00 04 14 30 CT Huntsville AOS.
00 04 14 54 CT Huntsville. Valid two-way.
00 04 15 18 CDR Houston, Apollo 9.

(0008 MET 1)

Tape 3/6
Page 25

- 00 04 15 21 CC Go, Apollo 9. This is Houston.
- 00 04 15 24 CDR Okay, Houston. You're coming in very weak, but be advised we had a successful ejection and we are presently separating very slowly from the S-IVB. We've got them in sight out of all of the windows.
- 00 04 15 36 CC Sounds beautiful. Could you give me your ejection time, please?
- 00 04 15 48 CDR Okay, Houston. If you can read - the ejection time was 4 hours 8 minutes and 5 seconds.
- 00 04 15 56 CC Say the minutes again, please, Apollo 9. Just the minutes.
- 00 04 16 52 CT Huntsville does not have valid two-way. Clearing signal.
- 00 04 17 02 CC And, Apollo 9, this is Houston. If you read - we did copy your transmission of a successful ejection. You are moving away. We did copy the time, but we would like for you to verify the minutes - if you can try it again.
- 00 04 17 20 CDR Houston, this is Apollo 9. Say again, please.
- 00 04 17 23 CC Roger. Would you give me your ejection time again, please?
- 00 04 17 28 CDR Roger. It was 08:05.
- 00 04 17 34 CC Roger. We copy. Thank you, and we'll see you over Hawaii at about 24.
- 00 04 17 41 CDR Roger.
- 00 04 17 49 CC And, Apollo 9, this is Houston. If you can read me, the S-IVB maneuver time is 25 plus 04.
- 00 04 17 58 CDR Roger. 25:04.
- 00 04 18 01 CC Very good. We're talking to each other again.
- 00 04 19 02 CT Huntsville LOS.

HAWAII (REV 3)

00 04 23 26 CC Apollo 9, this is Houston through Hawaii.

(GOS: MET 1)

Tape 3/7
Page 26

- 00 04 23 53 CC Apollo 9, this is Houston through Hawaii.
Standing by.
- 00 04 24 20 CC Apollo 9, Houston through Hawaii.
- 00 04 26 42 CC Apollo 9, Houston through Hawaii.
- 00 04 26 45 CDR Roger, Houston. We've been sitting here watching the S-IVB maneuver, and it's just about 90 degrees to our line of sight now.
- 00 04 26 54 CC Roger. The COMM is beautiful now, Apollo 9; we had dropped our GOSS Conference was the delay. And I would like to pass you the ignition time for the S-IVB.
- 00 04 27 09 CDR Roger. Go ahead.
- 00 04 27 12 CC Roger. Stand by one here. We might get a better one.
- 00 04 28 13 CC Apollo 9, Houston.
- 00 04 28 16 CDR Go ahead, Houston.
- 00 04 28 17 CC Roger. We are showing the S-IVB restart at 04 plus 45 plus 56.
- 00 04 28 25 CDR 04:45:56.
- 00 04 28 27 CC That's affirmative.
- 00 04 28 48 CC Apollo 9, this is Houston. The S-IVB has completed its maneuver, and we would like to have a GO from you to release the maneuver inhibit - the restart inhibit.
- 00 04 30 01 CDR Say that again, Houston. Apollo 9.
- 00 04 30 04 CC Roger. The S-IVB has completed its maneuver, and we are standing by for its ignition. We would like to have a GO from you to release the restart inhibit.
- 00 04 30 18 CMP Roger, Houston. Apollo 9, here. We've just announced that we are quartering to the rear and above, and you have a GO for restart inhibit.
- 00 04 30 26 CC Roger, Apollo 9. Houston. Copy.

(0088 NET 1)

Tape 3/8
Page 27

00 04 30 32 CDR Houston, Apollo 9.
00 04 30 37 CC Apollo 9, this is Houston. You're fading. Stand by about a minute and we'll pick you up better.

REDSTONE (REV 3)

00 04 31 57 LMP Houston, Apollo 9.
00 04 32 02 CC And, Apollo 9, this is Houston. We've got you now through the Redstone, and you were faded out on your last transmission there.
00 04 32 09 LMP Roger. You have a GO to release the restart inhibit.
00 04 32 12 CC Roger, Apollo 9. We copy that. Thank you.
00 04 32 16 CDR Houston, Apollo 9. Do you read me?
00 04 32 18 CC You are a little weaker than Rusty, Jim. Go ahead.
00 04 32 23 CDR Okay. I just was wondering; you weren't answering some of my transmissions. We are quartering behind and above at the present time, and you do have that GO.
00 04 32 34 CC Okay. Thank you, Jim. We got it. Your last transmission was an ARIA at LOS coming off Hawaii there; we had about a 40-second break here.
00 04 32 42 CDR Alright.
00 04 32 44 CC But, I've got you real good now.
00 04 34 44 CC And, Apollo 9, this is Houston. If you got the time, could you give me a guess at the range from the S-IVB?
00 04 34 54 CDR It's a pretty tough question.
00 04 34 59 CC Okay. I thought it might be. I was just curious for a guesstimate.
00 04 35 04 CDR We are about a couple thousand feet or so, I'd guess ...

(GOSS NET 1)

Tape 3/9
Page 28

00 04 35 10 CC Okay. Thank you.

00 04 35 15 CDR Looks like it's going to be right down the tailpipe.

00 04 35 23 CC That ought to be a good view.

00 04 36 24 CDR No smog in LA today.

00 04 36 30 CC Did you say that it was smoggy, Apollo 9?

00 04 36 34 CDR Doesn't look like it; looks pretty clear.

00 04 36 36 CC Very good.

00 04 36 40 CDR ...

00 04 36 42 CC I missed what Jim said there.

00 04 36 51 CDR Houston, we're down what looks like about 1000 feet or so.

00 04 36 58 CC Understand you are now at 1000 feet. Is that affirmative? Does it look like you are closing?

00 04 37 05 CDR Well, just climbing up above. He's just crossing the horizon with respect to us, so he's going to get up above us again and then come back around us.

00 04 37 53 CDR Houston, we're going to be just about down his tailpipe. It looks like about 1000 feet or so.

00 04 37 58 CC Roger. Copy. Right down to tailpipe and about 1000 feet.

00 04 38 03 CDR Does that look like a good place?

00 04 38 07 CC Stand by one. It's better than being right off the nose, but let's see what somebody says here.

00 04 38 23 CC Okay, Apollo 9, this is Houston. It's our understanding that the places not to be are directly above or below inside of 500 feet, so with that criteria, it sounds like you are doing okay.

00 04 38 36 CDR Alright.

END OF TAPE

Date Xoom

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 4/1
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REDSTONE (REV 3)

00 04 38 53 LMP Houston, against the black sky you can really see the APS firing away.

00 04 39 00 CC Roger. Copy.

00 04 39 05 CC And, Apollo 9, when your lead cuts in its afterburner you're expected to keep up.

00 04 39 12 CDR No thanks.

00 04 39 14 CC Okay.

00 04 39 17 LMP Give us about an hour.

00 04 43 33 LMP Houston, Apollo 9. It looks like we have slid down enough below them now so they are not going to be thrusting right at us with the engine.

00 04 43 41 CC Roger. Understand you are a little below, and I will wait until after this burn, of course, but I do have your SPS-1 PAD when you get squared away after this burn. Okay?

00 04 44 03 LMP Houston, what time should we begin to see the ullaging of the venting?

00 04 44 11 CC Stand by, Apollo 9.

00 04 44 20 CC Apollo 9, this is Houston. You should see it start in about 15 seconds from right now.

00 04 44 26 LMP Okay. Thank you.

00 04 44 28 CC Roger.

00 04 44 40 CC Ullage ON, Apollo 9.

00 04 44 45 LMP Roger. Understand. Ullage ON, and we don't see any change yet.

00 04 44 50 CC Roger.

00 04 45 01 CC MARK.

00 04 45 02 CC One minute to ignition.

00 04 46 03 CC We show ignition on the E-IVB.

00 04 46 06 LMP It's on the way.

(COSS NET 1)

Tape 4/
Page 30

- 00 04 46 15 CDR It's just like a bright star disappearing into the distance.
- 00 04 46 24 CC Is there quite a bit of debris kicked out there, Apollo 9?
- 00 04 46 28 CDR Looked like a real clean burn.
- 00 04 46 29 LMP You could see a lot of stuff coming out when he just started up, but then it just went into a nice bright light.
- 00 04 46 37 CC Beautiful!
- 00 04 46 39 LMP We got some movies, but I'm not sure they're going to be too good. He's pretty far out there.
- 00 04 47 10 CC And the S-IVB has shut down, Apollo 9?
- 00 04 47 15 CDR Roger. He's just a speck in the distance right now.
- 00 04 47 18 CC Okay. Now that we've got him out of the way, back with the business at hand. I'm ready to read SPS-1 PAD any time.
- 00 04 47 27 CDR Okay. Stand by just a minute.
- 00 04 47 52 CC Apollo 9, this is Houston. Could we have PCD and ACCEPT? We'd like to start you up a target load.
- 00 04 47 59 CMP Roger. You got it.
- 00 04 48 01 CC Understand. We got it.
- 00 04 48 02 CMP Roger.
- 00 04 48 10 CDR Okay, Houston. Ready to copy the P30.
- 00 04 48 13 CC Roger. Starting with the P30, and there will be about a minute delay on the target load. We're going to switch stations. Starting now on the maneuver PAD. SPS-1: 005 59 all zips, plus 00368 all zips all zips 00368 00324 0051 58 840, plus 100, minus 020 17 13.
- 00 04 49 23 CMP Houston, Apollo 9.
- 00 04 49 27 CC Go, Apollo 9.
- 00 04 49 30 CC Go, Apollo 9.

~~STIGUA (REV 4)~~

00 04 49 31 CMP Roger. You cut out very badly in that. I got TIG and I got DELTA-V_X and DELTA-V_H and DELTA-V_C and that's all I got.

00 04 49 41 CC Okay. We'll try you again. Now are you reading me okay?

00 04 49 48 CMP Roger. Reading you okay now. Stand by just a minute.

00 04 50 00 CMP Okay. Go ahead again.

00 04 50 03 CC Say again, Apollo 9.

00 04 50 05 CMP Roger. Go ahead with your PAD.

00 04 50 09 CC Okay. I won't read the TIG again. That's 55900, and reading the DELTA-V_X, plus 00368, and are you with me?

00 04 50 25 CMP Yes I am, and that's as far as we got last time.

00 04 50 28 CC Okay. All zeros for DELTA-V_Y, all zeros 00368 00324 0051 58 840, plus 100, minus 020 17 13 520 33 100.

00 04 51 16 CMP Houston, Apollo 9.

00 04 51 18 CC Go, Apollo 9.

00 04 51 20 CMP Roger. The last thing I got was 58 840; you got any more?

00 04 51 23 CC Roger. We'll try you again here. Stand by one here.

00 04 51 54 CC Okay. Apollo 9, Houston. Now do you read?

00 04 51 58 CMP Reading you five-square, Houston.

00 04 52 00 CC Okay. You're coming in a little weak. Understand you got up through CSM weight; is that affirmative?

00 04 52 07 CMP That's affirmative.

00 04 52 09 CC Okay. Reading PITCH TRIM: Plus 100, minus 020 17 13 520 33 100. End of the PAD.

(00SS MET 1)

Tape 4/4
Page 32

00 04 52 29	CDF	Roger. Readback: 00559 all zips, plus 00368 all zips all zips 00368 00324 0051 58 840, plus 100, minus 020 17 13 520 33 100.
00 04 53 03	CC	Houston confirms the PAD. I would also now like to give you your gimbal angles used in the PAD REFSMF for "PS-1.
00 04 53 14	CDR	Go.
00 04 53 16	CC	Roger. It's roll 00, pitch 359, yaw 001.
00 04 53 30	CDR	Roger. Understand, 000 359 001.
00 04 53 35	CC	And this is affirmative; Houston confirms.
00 04 53 40	CDR	Roger.
00 04 53 42	LMP	And is the computer ours? Did you get the P27 in?
00 04 53 47	CC	The computer is yours, Apollo 9.
00 04 53 50	LMP	Roger. Thank you.
00 04 54 00	CC	Okay.

ASCENSION (REV 4)

00 05 02 38	CC	Apollo 9, this is Houston through Ascension.
00 05 02 43	CMP	Roger, Houston. This is Apollo 9. Reading you loud and clear.
00 05 02 46	CC	Roger, Apollo 9. We'd like to update your state vector again, if you could give us POO and ACCEPT.
00 05 02 57	CMP	Roger. You have POO and ACCEPT.
00 05 03 00	CC	Roger. And a couple of items: There is a bias in your X-PIPA, and we are taking a look at this. The only steps we would like to do at this time would be to recommend that you stay in average G as little time as possible. We are estimating that during the SPE-1 burn, there will be an error of about a foot and a half, and so the only thing we will do at this time is you just come out of average G as soon as possible, and we will talk about this later after the burn.
00 05 03 37	CDF	Okay. And we have another problem here. Our A,

(0066 NET 1)

Tape 4/5
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to have a steady-state flow around 7-8/10 pounds per hour. We don't have the vent open yet - the waste management vent, but we do have the LM pressurization on, and I'm wondering if you could give us a clue as to whether you think we have a leaky LM or what.

- 00 05 04 07 CC Roger. We copied the transmission, Apollo 9. And stand by for some words of wisdom on that.
- 00 05 04 17 CMP We're getting the MASTER ALARM light on every few minutes here, either from the hydrogen-cryo or the O₂ FLOW HIGH. It is almost like the simulator.
- 00 05 04 30 CC Roger. That is a shame.
- 00 05 04 44 CC Apollo 9, Houston.
- 00 05 04 48 CMP Go ahead.
- 00 05 04 49 CC Roger. We'd like to have the fans in H₂ tank 1 turned on manually at this time, and just leave it on. We will leave it on for a while and take a look at it.
- 00 05 05 01 CMP Okay. Very good. We'll turn the fan on.
- 00 05 05 03 CC Okay. And we would like to know if you can see the docking angle index when you were up in the tunnel.
- 00 05 05 11 CMP Negative. I didn't look.
- 00 05 05 14 CC Okay.
- 00 05 05 35 CC Apollo 9, this is Houston. The computer is yours and I have a state vector - I mean a NAV check to go along with that state vector.
- 00 05 05 46 CDR Roger. Stand by.
- 00 05 06 10 CMP Okay, Houston. Ready to copy your NAV check.
- 00 05 06 13 CC Roger. Disregard, Apollo 9. We have checked it here on the ground. Unless you want it, I won't read it to you.
- 00 05 06 29 CC Apollo 9, did you copy?
- 00 05 06 33 CMP ... Houston. We won't need it.

(GOSS NET 1)

Tape 4/6
Page 34

00 05 06 35 CC Okay. We won't read it. We are going to have you for about another minute at Ascension and then we will see you over Tananarive at 19.

00 05 06 45 CDR Roger.

00 05 07 14 CC Apollo 9, Houston.

00 05 07 17 CDR Go ahead, Houston.

00 05 07 19 CC Roger. We would like to have you turn off the LM pressurization valve to see if that takes care of the O₂ HIGH FLOW.

00 05 07 27 LMP Roger. We will catch that in a few minutes and advise you.

00 05 07 31 CC Okay.

00 05 07 40 CC Apollo 9, Houston.

00 05 07 48 LMP Go ahead, Houston.

00 05 07 49 CC Roger. We want you to go back to P30 - P40 again to recompute that REFSMMAT after this uplink.

TANANARIVE (REV 4)

00 05 20 00 CC Hello, Apollo 9, this is Houston through Tananarive.

00 05 20 35 CC Apollo 9, this is Houston. If you read me, we'll see you over Carnarvon at around 32.

CARNARVON (REV 4)

00 05 32 52 CC Apollo 9, Houston through Carnarvon.

00 05 32 55 CDR Roger, Houston.

00 05 32 58 CC We're reading you loud and clear.

00 05 33 00 CDR ... angles if you are ready to copy.

00 05 33 01 CC Go ahead.

00 05 33 03 CDR ... GET of 15, 1830, plus 00153, plus 00333, minus 00638.

(GOSS MET 1)

Tape 4/7
Page 35

00 05 33 21 CC Roger, Apollo 9. I copy that.
00 05 33 26 CDR Roger.
00 05 33 52 CC Apollo 9, this is Houston. You are GO SPS-1.
00 05 35 57 LMP Roger, Houston. ... GO for SPS-1.
00 05 37 03 CC And, Apollo 9, Houston.
00 05 37 08 CDR Houston, Apollo 9. Go ahead.
00 05 37 10 CC Roger. Just a word of info to close out that item
on the power going into the LM. That duty cycle
has now settled down and is exactly the same as
the duty cycle was prior to launch. So everything
is good on the LM power. And it's 5 on and 28 off.
00 05 37 31 CDA Real fine. Thank you.
00 05 37 33 CC Roger.

GUAM (REV 4)

00 05 44 11 CC Apollo 9, this is Houston through Guam. Standing
by.
00 05 44 17 LMP Roger, Houston. We're mushing through a checklist
here.
00 05 48 03 CC Apollo 9, Houston. I will have you here for about
another 2-1/2 minutes, and I have got a couple of
words of wisdom on your attitude on this burn -
why you are going to be off a couple of degrees in
pitch and a couple of degrees in yaw if you want
me to give them to you.
00 05 48 18 LMP Go ahead.
00 05 48 20 CC Okay. Your REFSIMAT is off slightly and we think
this may have come about by the order in which you
loaded the DAP in relation to the P52. However, we
have taken a look at this and we are saying at burn
attitude you are going to have zero roll, a pitch of
358, and a yaw of about 002, and this will give you
the right burn. It's just you won't be at 000 on
the ball.
00 05 49 05 CDR Roger, Houston. Thank you very much.

(COSS NET 1)

Tape 4/8
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00 05 49 08 CC Roger.

00 05 49 56 CMP Houston, this is Apollo 9.

00 05 49 58 CC Go, Apollo 9.

00 05 50 01 LMP We seem to have our O₂ thing in hand now. We have closed the tunnel thing and we also ... suit ... valve, and one of us had our helmet off for just a moment there and that was contributing to it, too. So it looks like we have the O₂ problem in hand.

00 05 50 26 CC Roger. We copy that. Some of it was dropped out. I am about to lose you here. We will see you over Hawaii at 57.

HAWAII (REV 4)

00 05 57 43 CC And, Apollo 9, this is Houston. Standing by for you burn.

00 05 57 48 CMP Roger, Houston. Apollo 9. A minute 10 seconds, ready to go.

00 05 57 53 CC Roger.

00 05 59 16 CMP Burn complete.

00 05 59 18 CC Roger. Copy. Burn complete.

00 05 59 42 CC And, Apollo 9, Houston. I copy your residuals: plus 1.8, plus 0.5, minus 0.2.

00 05 59 48 CMP Roger. That's affirmative. And the EMS was minus 4.2.

00 05 59 53 CC Roger. Minus 4.2.

00 06 02 32 CC Apollo 9, Houston. In about 30 seconds we'll lose you off Hawaii and have you back at Redstone about a minute later. There will be a break in there, and then we'll pick you up for a long pass.

(GOBS NET 1)

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REDSTONE (REV 4)

00 06 05 18	CC	Apollo 9, this is Houston through Redstone. We ought to have you now on a long stateside pass.
00 06 06 17	CC	Apollo 9, Houston through Redstone. How do you read?
00 06 06 28	CMP	Houston, Apollo 9. How do you read?
00 06 06 31	CC	You're down a little bit, Dave, but I'm reading you okay. We've got you through the Redstone now, and it should be a nice long pass.
00 06 06 43	CMP	Houston, Apollo 9. You are unreadable.
00 06 06 46	CC	Roger. You're about the same. Stand by one here. I think we'll get better here in a couple of minutes.
00 06 10 04	CC	Apollo 9, this is Houston. How do you read now?
00 06 10 38	CC	Apollo 9, this is Houston. Trying again; how do you read?
00 06 12 16	CC	Apollo 9, Houston. Do you read?

END OF TAPE

APOLLO 9 AIR-TO-GROUND TRANSCRIPTION

(GOSS FET 1)

Tape 5/1
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TEXAS (REV 5)

- 00 06 13 22 CC Apollo 9, Houston through Texas. How do you read?
- 00 06 13 25 CDR Roger. Houston, Apollo 9. We read you loud and clear. How about us?
- 00 06 13 28 CC We're reading you five-square. We just sent the S-IVB hyperbolic and got it out of your way.
- 00 06 13 31 CDR Very good. We were reading you all along there. I guess you just weren't reading us.
- 00 06 13 35 CC Roger. Guess we had some of our receivers tuned in on the S-IVB there, that I didn't know they had taken away from me.
- 00 06 13 47 CDR Okay.
- 00 06 13 48 CC When you get squared away after the burn, I've got your star count update for you.
- 00 06 14 13 CDR Okay.
- 00 06 14 17 CDR Okay, Houston. Go ahead with the update.
- 00 06 14 21 CC Roger. Star count update: 006 49 4500 068 - 0680 if you want the decimal there - 2911 3302. End of update.
- 00 06 14 44 CDR Roger. Understand. 006 49 4500 0680 2911 3302.
- 00 06 14 54 CC That's affirmative. Houston confirms the update and would like to have you go ahead and open up the LI pressurization valve, if you concur.
- 00 06 15 04 CDR Roger. We tried to get ahold of you before to tell you we're going to do it, so we'll open it up at this time.
- 00 06 15 10 CC Okay.
- 00 06 15 25 CDR Houston, Apollo 9.
- 00 06 15 28 CC Go, Apollo 9.
- 00 06 15 31 CDR How are we making out on RCS as opposed to MANUAL? What I'm wondering about is whether or not we should do the star count.

(GOES MET 1)

Tape 5/2
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00 06 15 47 CC Roger. Stand by one.
00 06 16 30 CC Apollo 9, Houston.
00 06 16 32 CDR Go ahead.
00 06 16 34 CC Roger. We're down a little bit, but we've got an excellent margin, and nobody is sweating it at all, Jim. We recommend that you go ahead and do this star check.
00 06 16 46 CDR Okay.

ANTIGUA (REV 5)

00 06 17 32 CMP Houston, Apollo 9.
00 06 17 34 CC Go, Houston.
00 06 17 37 CMP Let me give you an UP on the SPS PU system there. Following the burn, I'm reading 89.2 percent in oxidizer and 93.7 in fuel and an unbalanced pegged on the decreased side.
00 06 18 02 CC Roger. Copy 89.2, 93.7, and the unbalanced pegged on the decreased side.
00 06 18 10 CMP Roger. And for your information, the fuel vent, SPS injector valve A-1 opens slower than A-2.
00 06 18 22 CC Roger. Copy. A-1 is slower than A-2.
00 06 24 57 CC Apollo 9, this is Houston. We are about to lose you here. We will pick you up over Tananarive at 51.
00 06 25 05 CMP Roger. Tananarive at 51.

TANANARIVE (REV 5)

00 06 52 09 CC Hello, Apollo 9. This is Houston through Tananarive. Do you read?
00 06 52 22 SC ...

(00SS MET 1)

Tepe 5/3
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- 00 06 55 01 CC Okay, Apollo 9, this is Houston through Tananarive. We're probably not getting you here. We got about another minute and a half, and if you can read me, we'll see you over Guam at about 17.
- 00 06 55 14 CDR Roger, Houston. This is Apollo 9, and we're reading you loud and clear through Tananarive. We'll look for you over Guam. How do you read me?
- 00 06 55 21 CC Oh, we're getting you in here now. I didn't read you at all the first time or two around.
- 00 06 55 27 CDR Okay, I heard your call a couple of times, but I guess we just weren't getting down to you.
- 00 06 55 33 CC Roger. It hasn't been too stern here off Tananarive today.
- 00 06 55 38 CDR Okay. We're just taking a little time out to eat here right now. We haven't had anything to eat yet ...
- 00 06 55 48 CC Okay, our plan is that as we come over Guam and back across the States, why, we'll discuss all our systems problems and so forth before you go to sleep tonight.
- 00 06 56 04 CDR Roger.
- 00 06 56 38 CC And we speak Sayonara at Tananarive. See you over Guam.
- 00 06 56 43 CDR Roger.
- GUAN (REV 5)
- 00 07 18 09 CC Apollo 9, this is Houston through Guam.
- 00 07 18 14 CDR Hello, Houston. Apollo 9, here.
- 00 07 18 16 CC Roger. We would like to have POO and ACCEPT, please. We are going to give you a state vector.
- 00 07 18 24 CDR Roger. You have POO and ACCEPT.
- 00 07 18 26 CC Roger.

(GOSS NET 1)

Tape 5/F
Page 41

- 00 07 18 32 CC And, Apollo 9, this is Houston. Can you talk a few minutes here? We are going to have you over Guam for about 5 minutes.
- 00 07 18 39 CDR Sure, go ahead. What shall we talk about?
- 00 07 18 41 CC Okay, stand by one just a second.
- 00 07 18 48 CDR What I want to talk about is that X-PIPA bias.
- 00 07 18 52 CC Okay, we will take that one first. We are showing an error in that X-PIPA of about 0.04 feet per second squared. The plan is to not do anything with that tonight, and we will update that tomorrow prior to the first burn.
- 00 07 19 11 SC Okay. Is it within the tolerance of what you can update?
- 00 07 19 13 CC Yes it is. That is affirmative.
- 00 07 19 18 CDR Okay, very good.
- 00 07 19 20 CC Okay, that takes care of that. I would just like to ask a fast question. You haven't mentioned it. I assume that you have no reading on that SCS helium pressure that's still gone.
- 00 07 19 34 CDR That is affirmative, and still reading FULL SCALE LOW.
- 00 07 19 37 CC Okay, very good. Another item on this MASTER ALARM on the hard docking. We don't have you a good explanation; however, we do have some info in from the Caps that this was found on spacecraft 106 when they docked, and they hasn't found out why. But they did get an unexplained MASTER ALARM when they docked down there with 106.
- 00 07 20 05 CDR Okay.
- 00 07 20 07 CC And we are going to replay the date when you dock to see if we can get anything out of it, but we can not close the loop on that one at this time.
- 00 07 20 18 CDR Okay. Do you have any idea what could have caused our primary and secondary propellant valves to go closed?

(GOSS MET 1)

Tape 5/5
Page 42

- 00 07 20 25 CC I think you must be looking at my sheet here, Jim, because that was my exact item coming up next I would like to ask you. We feel that two explanations, one was a stray electrical current there that actually did it, or do you feel that you could have bumped the switches when you were changing seats?
- 00 07 20 50 CDR No, I don't think so because, I don't think we could have bumped them because we did an RCS check after that, and it was dark in here but I looked through all of the quads and I looked at all the talkbacks. The talkbacks looked okay. It is possible but not very probable that I missed all three of those talkbacks. I was wondering if we couldn't have had the jolt from the separation between the service module and the SLA caused them to go closed. I can't imagine that we would only have one of the talkbacks on the D-quad go closed for any other reason.
- 00 07 21 28 CC Okay, that was something we wanted to verify - that the talkback that was closed on quad Delta was the secondary propellant.
- 00 07 21 39 CDR Roger. C had primary and secondary closed, D or Delta had just the secondary closed.
- 00 07 21 47 CC Okay, we copy that, and we agree with you. We are really at a loss how the secondary propellant only talkback could have gotten in that condition.
- 00 07 21 59 CDR Okay.
- 00 07 22 00 CC So that is something that we will have to think about here over the night.
- 00 07 22 05 CDR All right. Be advised of one other thing. Sort of keep track of the venting - cabin vent. We didn't go back to waste the vent overboard until 07:15. We didn't get that open again until then.
- 00 07 22 21 CC Roger. Copy.
- 00 07 22 23 CDR And you know when we closed it, it was just prior to the docking.

(GOSS MET 1)

Tape 5/6
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00 07 22 28 CC Roger. Okay, and that is okay. Next item is, I would just like to - We are closing this one out about that LM power cycling. That is running, as I mentioned before, just exactly on the cycle that we would expect and the way it was doing on the PAD.

00 07 22 49 CDR Okay, fine.

00 07 22 50 CC Okay, we have got some other things. We will pick them up here over Hawaii at about 32. I have a minute left, and I have a NAV check to go with this state vector we just passed you.

00 07 23 04 CDR Stand by one. We are going to have to sort through the food bags for a piece of paper.

00 07 23 09 CC Okay. Understand. And the computer is yours.

00 07 23 28 CDR Okay, Houston. Go ahead with the NAV check.

00 07 23 30 CC Okay. Time: 00810 all zeros, minus 2719, plus 02980 1256. End of update.

00 07 23 52 CDR Roger. Understand. 00810 all zips 92719, plus 02980.

00 07 24 02 CC Okay, Apollo 9. You went over the hill with everything confirmed except the altitude, and we will see you over Hawaii.

HAWAII (REV 5)

00 07 32 25 CC Greetings, Apollo 9. This is Houston through Hawaii.

00 07 32 29 CMP Roger. Houston, Apollo 9.

00 07 32 34 CC Roger. I didn't get to confirm all your NAV checkout. If you run it, you have probably discovered the sign was wrong on the Longitude.

00 07 32 43 CMP Oh, we're glad you knew that.

00 07 32 48 CC Say again, Apollo 9.

00 07 32 51 CMP Roger. We discovered that.

00 07 32 53 CC Roger. And I guess the - Did the rest of it go okay?

00 07 32 56 CMP That's affirmative. Right on the money.

00 07 32 59 CC All right. And are you free to talk now?

00 07 33 06 CMP Roger. Go ahead.

00 07 33 08 CC First, is this cryo tank. What we would like to have you do at this time is turn off fans - the fans and heaters in both H₂ tanks. And want to let the pressure drop down to 200 and then have you manually maintain that at 200 until you power down. And after you're powered down, just before sacking out, we are going to turn on the fan in H₂ tank 1, and the estimates on this one is that it will slowly build up the pressure and when you wake up in the morning it will have built back up to 235 and it will keep the MASTER ALARM from coming on through the night.

00 07 33 58 IMP Okay.

00 07 34 05 CC Okay. Are we squared away on that, Apollo 9?

00 07 34 09 CMP Okay, you want us to turn the heaters and fans off on both the H₂ tanks, and when do you want us to do that, now?

00 07 34 15 CC You can do that right now.

00 07 34 17 CMP Okay. Fine.

00 07 34 21 CC Okay. Very good. We would also - Have you started a charge on battery B?

00 07 34 30 CMP Negative, we weren't going to start the charge until we went to sleep. ... charge on battery B.

00 07 34 43 CC Okay. We will go ahead and agree with that, Apollo 9.

00 07 34 49 CMP Okay. We're going - You're going to call us and tell us to turn it on just before we go to sleep. Is that right?

00 07 34 54 CC Okay.

(GOSS NET 1)

Tape 5/8
Page 45

- 00 07 35 21 CC And Apollo 9, this is Houston. You are GO for 19 dash 1.
- 00 07 35 27 CMP Roger. Understand we are GO for 19 dash 1.
- 00 07 35 30 CC Okay, and this O₂ FLOW HIGH readings you were getting - We consider that a closed item. How do you feel on this one, Apollo 9?
- 00 07 35 39 CMP I think it is a closed item also.
- 00 07 35 41 CC Okay, and on Rusty's comment on SPS-1, our data shows that both ball valves opened right on the money - opened together.
- 00 07 35 53 CMP Okay, fine. We may have just had a sticky gage in the cockpit. How about PICON valves that we have on the quantity gage?
- 00 07 36 06 CC Okay. This one we will have to look at some more. We don't believe that it is a valid reading at this time, Apollo 9. That - On that short of a burn, we feel that the PUGS worked for such a short time that it probably didn't get a valid reading, and we don't believe that.
- 00 07 36 21 CMP Yes. That sounds pretty logical.
- 00 07 36 25 CC Okay. And on SPS-1 everything - It was a nominal burn. GNC is real happy; the PC and everything else looks real good, so that - Looks like we are in fine shape on it.
- 00 07 36 37 CMP Okay. Very good.
- 00 07 36 41 CC Okay, we are about to lose you here for about a couple of minutes and we will see you over the Redstone about 38.

REDSTONE (REV 5)

- 00 07 38 41 CC Okay. Apollo 9, this is Houston. We should have you through to Redstone now.
- 00 07 39 43 CC Apollo 9, this is Houston through the Redstone. How do you read?

(0088 SET 1)

Tape 5/9
Page 46

- 00 07 38 47 CMP You are weak but clear, Houston. Go ahead.
- 00 07 38 50 CC You are coming in clear, Pre. Okay. We would like to have you go back to BLOCK on your CM telemetry.
- 00 07 40 02 CMP Roger. BLOCK. Let me ask you a question about the other H₂ tank. If we run them both down to 200, and we turn the fan on in H₂ tank number 1, what are we going to do with tank number 2?
- 00 07 40 15 CC We expect it will --
- 00 07 40 25 CMP I didn't get that answer.
- 00 07 40 29 CC Apollo 9, this is Houston. I copied that; would you stand by one?
- 00 07 40 31 CMP Roger.
- 00 07 41 11 CC Apollo 9, Houston.
- 00 07 41 14 IMP Go ahead.
- 00 07 41 15 CC Okay. Copy your question, and what we're - What we're saying is that the pressure will stay equal in tank 2 just due to the heat leak, even though we are feeding primarily out of tank 1, but that pressure should come up right along with tank 1.
- 00 07 41 35 IMP Okay.
- 00 07 41 42 CC And also we would like - Could you verify that the surge tank is on the line?
- 00 07 41 51 IMP Roger. The surge tank is.
- 00 07 42 54 CC Okay. Very good, we just noticed that coming up a little slow.
- 00 07 41 58 IMP Yes. It sure is coming up slow, isn't it?
- 00 07 42 04 CC Stand by.
- 00 07 42 16 CC And, Apollo 9, we are showing you about 60 degree yaw now; just wanted to mention that.
- 00 07 42 26 IMP Roger.

(GOSS NET 1)

Tape 5/10
Page 41

00 07 42 58 CC And, Apollo 9, this is Houston. That just about closes out my list here, I hit it briefly back there, unless you have any questions about my comments on that 2-degree pitch and yaw on the attitude for SPS-1.

00 07 43 15 CC We have nothing. What was your comment about ...

00 07 43 18 X Say again, Apollo 9.

00 07 43 21 CMP Were you saying you were going to take the gimbal ... off?

00 07 43 28 CC Boy, you are really coming in scratchy here on this one, Apollo.

00 07 43 35 CMP Okay, I think we have it - I think we understand what you said.

00 07 43 ? CC Okay. And that cleans up here, Apollo 9. Have you got anything you would like to toss in here across this PAD? This is about the last time we plan on doing much talking to you.

00 07 43 55 CMP No. I don't - I guess it is just the general comment we were pretty well crowded today to get all of these things in, so we sort of missed lunch.

00 07 44 09 CC Roger. I could tell you were really humping up there. Pretty busy day.

00 07 44 31 CC And Apollo 9, Houston. We'd like to verify the canister change at 6:30.

00 07 44 38 CMP It's in the process of being changed right now.

00 07 44 41 CC Roger. Copy.

00 07 45 46 CC Apollo 9, Houston.

00 07 46 11 CC Apollo 9, Houston.

00 07 46 24 CC Apollo 9, Houston. How do you read?

(GOES NET 1)

Tape 5/11
Page 48

PRETORIA (REV 6)

- 00 07 46 26 CDR Go ahead, Houston. Apollo 9. We are reading you loud and clear.
- 00 07 46 32 CC Okay. We have got you in here now. Two other items; we would like to get an E memory dump from you to give us some homework here tonight if you can give us a Mark and take that.
- 00 07 46 43 CDR ... E memory dump ...
- 00 07 46 47 CC Wait. Stand by, Apollo 9; our telemetry just dropped out.
- 00 07 46 51 CDR Okay. We would like to know when you would like us to start charging the battery.
- 00 07 46 57 CC Okay. You can start it - You can start it any time prior to sacking out. We are going to lose you here in about another minute and the only other time we will talk with you before sack time will be over Tananarive which will hit there at 24. So, you can - You can start any-time you want.
- 00 07 47 16 CDR Okay, fine. Do you want that E memory dump now or do you want to just skip it?
- 00 07 47 20 CC No, we are standing by now. Go ahead and let her run.
- 00 07 47 23 CDR Okay. Stand by.
- 00 07 47 44 CMP It's - Houston it's ... memory dump is on the way.
- 00 07 47 48 CC Okay. Roger. Copy. And one other item, over Tananarive, if you can, we would like to have a PRD readout from each one of you.
- 00 07 48 31 CC And we will see you over Tananarive at about 24 or 25.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 6/
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TEXAS (REV 6)

- 00 07 48 35 CDR Roger. Thank you, and we will get a PRD report as soon as we figure out what it is. And we're charging battery D right now for you.
- 00 07 48 49 CC Okay. And that's a dosimeter reading over Tananarive.

TANANARIVE (REV 6)

- 00 08 25 02 CC Apollo 9, this is Houston through Tananarive.
- 00 08 25 07 CDR Roger. This is Apollo 9. Go ahead.
- 00 08 25 10 CC Roger. I am not reading you very good at all, but are you reading me well enough to take your block data. I am ready to send that if you can read it.
- 00 08 25 20 CDR Roger. Stand by just one.
- 00 08 25 24 CC Okay.
- 00 08 25 44 CDR Okay, Houston. Go ahead.
- 00 08 25 47 CC Roger. Reading block data number 2: 009 Bravo, plus 256, plus 1450 013 1431 29 28 010. Okay, Charlie Charlie, minus 195, minus 1617 015 0251 29 28 011 Alfa Charlie, plus 008, minus 0730 015 4024 29 28. And am I coming through all right, Apollo 9?
- 00 08 27 37 CDR Roger. What was the first area?
- 00 08 27 42 CC Okay. I've still got some more for you, but my first area was 009 3 Bravo.
- 00 08 27 56 CDR Roger. Ready to continue.
- 00 08 27 59 CC Okay, continuing on: 012 Alfa Charlie, plus 101, minus 0321 017 1349 29 28 0132 Alfa, plus 250, minus 0264 018 5057 29 28, and the last one 014 Alfa Charlie, plus 308, minus 0279 020 2440 29 28. That is the end of the block data, and your SPS trim angles for this: pitch minus 133, yaw plus 135, and that is the end of the block data. Before you start the readback, there are a couple of other comments for you.

(COSS MET 1)

Tape 6/2
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00 08 30 00 CDR Okay. Go ahead.

00 08 30 03 CC Roger. We'd like to have you verify that you will do a waste water dump down to 25 percent prior to the rest period.

00 08 30 13 LMP Roger. Waste water dump down to 25 percent prior to rest period.

00 08 30 19 CC That is affirmative, and we'd like to have a dosimeter reading, if you've got it.

00 08 30 30 LMP Roger. Stand by.

00 08 30 55 LMP Okay. The LMP dosimeter is 8001.

00 08 31 03 CC Roger. 80 - go ahead.

00 08 31 09 LMP ... 001.

00 08 31 12 CC Roger. I copy LMP 8001. Say the next one.

00 08 31 16 LMP CDR is 3102.

00 08 31 22 CC Roger. And the CMP?

00 08 31 24 LMP We'll have to do ... is all packed up.

00 08 31 32 CC Roger. Copy. No reading for the CMP. Thank you. And we've only got about 20 seconds here before we leave. On this surge tank coming up, we say if you would bring the KEPRESS pack on the line and give us a reading on that, it might help us troubleshoot that.

00 08 32 01 CC And we're going to lose you here, Apollo 9, at the end of the pass. The next pass is scheduled over Hawaii at 05, which is right at the beginning of your rest period.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 7/1
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C
REDSTONE (REV 6)

00 09 18 07 CC Apollo 7, Houston. About 1 minute to LOS. Looks like the last time we'll be talking to you this evening.

00 09 18 13 CDR Roger. That's Apollo 9.

00 09 18 15 CC Sorry about that.

00 09 18 17 CDR That's all right. New guys are that way.

00 09 18 19 CC Okay. And - -

00 09 18 21 CMP Roger. And, Houston, we are purging. Is that what you want?

00 09 18 27 CC That's affirmative.

00 09 18 29 CMP We're presently in the process of purging O₂ fuel cells.

00 09 18 33 CC Affirmative.

00 09 18 39 CC And is your H₂ tank 1 fan on at this time?

00 09 18 45 CMP We'll bring it on now. We noticed it's 200.

00 09 18 47 CC Okay.

END OF TAPE

APOLLO 9 AIR-TO-GROUNDED VOICE TRANSCRIPTION

(COSS NET 1)

Tape 8/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(COSS NET 1)

Tape 9/1
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REST PERIOD - NO COMMUNICATIONS

(GOSS NET 1)

Tape 10/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUDED TRANSCRIPTION

(GOSS NET 1)

**Tape 11/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND TRANSCRIPTION

(GUSS SET 1)

Tape 12/1
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MERCURY (REV 12)

00 18 36 12	CC	Good morning. Apollo 9, Houston.
00 18 36 17	LMP	Good morning, Houston. This is Apollo 9.
00 18 36 20	CC	Roger. Loud and clear. Looks like the night was in good shape. We didn't notice any anomalies.
00 18 36 27	LMP	Very good. I guess we have to wake up now, right?
00 18 36 34	CC	Yes. It's about that time.
00 18 37 36	CC	9, Houston. We've got about 2 minutes left here of Mercury, and then we'll pick you up at Antigua at 02. If you feel like talking, I've got a couple of comments for you.
00 18 37 47	CDR	Okay. You say we'll be at Antigua at 02? Did you have anything you wanted to tell us, Ron?
00 18 37 51	CC	No. I was just going to remind you in your powerup there in the cryo stratification, when you cycle your fans just to note the pressures on them.
00 18 38 00	CDR	Okay. You want us to break the fans out one at a time, is that right?
00 18 38 05	CC	That's affirmative. And to note the pressures as you bring them up.
00 18 38 08	CDR	Roger.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(0088 MET 1)

Tape 13/1
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ANTIGUA (REV 13)

- 00 19 02 35 CC Apollo 9, Houston through Antigua.
- 00 19 02 39 CMP Roger. Houston, Apollo 9.
- 00 19 02 42 CC Roger. I read you loud and clear. I've got a bunch of updates if you're ready to copy some of them. I've got a flight plan, a consumables, and a block data.
- 00 19 02 52 CMP Roger. Stand by.
- 00 19 03 24 CMP Houston, Apollo 9. Go over the flight plan.
- 00 19 03 27 CC Roger. Time: 24 plus 44, page 3 dash 15, delete MCC GO/NO-GO for 33 dash 1.
- 00 19 03 52 CMP Roger. 24:44, 315, delete MCC GO/NO-GO for 33 dash 1.
- 00 19 04 00 CC Affirmative. At time 23 plus 34, page 3 dash 14, add MCC GO/NO-GO for 33 dash 1.
- 00 19 04 22 CMP Roger. 23:34, page 314, add the MCC GO/NO-GO for 33 dash 1.
- 00 19 04 30 CC Affirmative. And that's the flight plan update.
- 00 19 04 33 CMP Roger. What's your next?
- 00 19 04 37 CC Roger. Your consumables.
- 00 19 04 44 CMP Okay. Go ahead with the consumables.
- 00 19 04 48 CC GET is 018 8130 8440 8840 8636 564 4831 36 39, now. Houston over.
- 00 19 05 28 CMP Roger. Copy 018 8130 8440 8840 8636 564 4831 36 39.
- 00 19 05 49 CC Apollo 9, Houston. Headback correct.
- 00 19 05 54 CMP Roger. And ready for your block data.
- 00 19 05 58 CC Roger. Area is 0151 Bravo, plus 267, minus 0670 021 5249 3671 0161 Bravo, plus 324, minus 0670 023 2803 3670 0171 Bravo, plus 335, minus 0670 025 0225 3568 0181 Bravo, plus 318, minus 0663 026 3758 3627.

(COSS MET 1)

Tape 13/2
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VANGUARD (REV 13)

00 19 09 40 CC Apollo 9, Houston through Vanguard. It's a real low elevation here. I'll pass the rest of block data at 12, over Canary.

00 19 09 52 CMP Lost you at 0181 B ...

CANARY (REV 13)

00 19 12 35 CC Apollo 9, Houston through Canaries.

00 19 12 43 CMP On the 018 dash 1 Bravo block data, I got down through the TIG and then lost you - if you want to go from there.

00 19 12 54 CC Roger. The TIG is 026 3758, the DELTA-V_C is 3627, area 0191 Bravo, plus 258, minus 0692 028 11 50 3627 020 4 Alfa, plus 332, minus 1655 031 07 17 3620, and I have some trim angles if you want them.

00 19 14 09 CMP Roger. Stand by. Go ahead with the trim angles.

00 19 14 18 CC Roger. Area 15: pitch minus 134, yaw plus 135, the next four - the next four areas: pitch minus 080, yaw plus 130. For area 20: pitch minus 090, yaw minus 071.

00 19 15 07 CMP Roger. Copy that. Drop one bit on the 017 dash 1 Bravo TIG, the last digit.

00 19 15 17 CC Roger. 25 seconds.

00 19 15 24 CMP Okay. You ready for the readback?

00 19 15 26 CC Affirmative. Go.

00 19 16 28 CMP Okay. 015 dash 1 Bravo, plus 267, minus 0670 021 5249 3671 0161 Bravo, plus 324, minus 0670 023 2803 3670 0171 Bravo, plus 335, minus 0670 025 0225 3668 018 1 Bravo, plus 318, minus 0663 026 3758 3627 019 1 Bravo, plus 258, minus 0692 028 1150 3627 020 1 Alfa, plus 332, minus 1655 031 0717 3620. And for the trim angles vary of 15: pitch minus 134, yaw plus 135. Area 16 through 19: pitch minus 080, yaw plus 130. For area 20: pitch minus 090, yaw minus 071.

(GOSS MET 1)

Tape 13/3
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- 00 19 17 05 CC Apollo 9, Houston. Your readback is correct. I got about 2 minutes left here; we're missing a little data from the powerdown last night.
- 00 19 17 15 C/P Roger. What would you like? We got that.
- 00 19 17 19 CC ...
- 00 19 17 24 C/P Say again, Houston.
- 00 19 17 25 CC Okay. What we need is your command module RCS injector temperatures and your pyro A and B batteries and BATT C voltage. Before you give that, though, we'd like to configure your H₂ tanks here.
- 00 19 17 38 C/P Roger. How would you like them?
- 00 19 17 40 CC Okay. H₂ tank 2 heater in AUTO, H₂ tank 1 heater OFF, and both fans OFF.
- 00 19 17 52 C/P Roger. H₂ tank 1 fan OFF, tank 2 fan to AUTO, H₂ fans both OFF.
- 00 19 18 01 CC Negative. That's H₂ tank 2 heater in AUTO, both fans OFF, and tank 1 heater OFF.
- 00 19 18 11 C/P Roger. I just read it backwards to you. H₂ heater number 2 in AUTO and number 1 OFF and the fans are both OFF.
- 00 19 18 18 CC Roger.
- 00 19 18 23 C/P And - -
- 00 19 18 24 CC Apollo 9, Houston. S-band up.
- 00 19 18 27 C/P I have the injector temperature if you want it.
- 00 19 18 29 CC Roger. Go.

MADRID (REV 13)

- 00 19 19 07 CC Apollo 9, Houston through Madrid. S-band.
- 00 19 20 00 CC Apollo 9, Houston through Madrid. S-band volume up.

(GOSS NET 1)

Tape 13/4
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00 19 20 11 CXP Roger. Houston, 9. Looks like we have a good lock now. Did you get the battery readings?

00 19 20 16 CC Negative.

00 19 20 18 LMP Okay. BATT C was 37, pyro A was 37, pyro B was 37, and that was on the powerdown last night.

00 19 20 27 CC Roger. And I didn't get your injector temp, command module temp either.

00 19 20 31 LMP Okay. The injector temps - I'll give you systems test meter readout.

00 19 20 36 CC Affirmative.

00 19 20 38 LMP All of them were FULL SCALE HIGH except C, and that was reading 5 volts.

00 19 20 44 CC Roger. Six Charlie with 5 volts.

00 19 20 45 LMP That's correct.

00 19 20 48 CC Okay. Next thing is, on your cryo surge tank pressure, you noticed it took a long time to come up and then all of a sudden it came on up. Did you jiggle any valves or anything?

00 19 21 00 LMP Yes ...

CARNARVON (REV 13)

00 19 50 43 CCR Apollo 9, Houston through Carnarvon.

00 19 50 47 CDR Roger. Houston, Apollo 9. Stand by one.

00 19 51 03 CDR Houston, 9. Go.

00 19 51 06 CCR Roger. We listened to your OJT during P52 last night but didn't copy any gyro torquing angles. We could use those if you would copy them down.

00 19 51 18 CDR Very well. Stand by.

00 19 51 37 CDR Okay. Houston, 9. Are you ready to copy?

00 19 51 40 CC 9, go - Or Houston, go.

00 19 51 43 CDR Roger. GST of 00 24 30, plus 00110, plus 00002, minus 00108.

(COSS MET 1)

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00 19 52 02 CC Houston. Copy.

00 19 52 06 CDR And I'll give you a rundown on the H₂ and O₂ cryo pressures when we ran the fans if you've got a pencil.

00 19 52 16 CC Houston. Go.

00 19 52 19 CDR Okay. H₂ 1: when we turned the fan off, it was 228 for the pressure, and right now it's about 228.

00 19 52 31 CC Roger.

00 19 52 33 CDR H₂ 2: when we turned the fan on, it was 242. After 3 minutes of fans it was 242.

00 19 52 44 CC Roger. Sounds good.

00 19 52 47 CDR O₂ 1: when we started out with the H₂, it was 816 by the time we got to the O₂, and it was 890 when the fans were turned on; it was 880 when the fans were turned off.

00 19 53 03 CC Roger. Copy. 890 to 880.

00 19 53 07 CDR That's correct. And O₂ 2: when the fans were turned on it was 880, and when they were turned off it was 870.

00 19 53 17 CC Roger. 880 to 870. And S-band volume up at 56.

00 19 53 23 CDR Roger. It's up now.

00 19 53 33 CDR And, Houston, 9. We're down through the CMC subtests and getting ready for a P51. Do you want those CMC subtests numbers? They're on the DSKY.

00 19 53 48 CC Roger. We have them.

HONEY SUCKLE (REV 13)

00 19 57 48 CC Apollo 9, Houston through Honeysuckle.

00 19 57 55 CDR Roger. Houston, Apollo 9. Loud and clear.

00 19 57 58 CC Roger. Same. We never did get what you did on those cryo valves. I tried to get that surge tank up.

(GOMS NET 1)

Tape 13/6
Page 62

00 19 58 06 LMP All I did was move the surge tank knob back and forth a little bit on the console, here, and then I went to bed. And I think that may have done it.

00 19 58 18 CC Roger. That did it.

00 19 58 20 LMP And did it come up pretty fast after that, Ron?

00 19 58 22 CC Affirmative.

00 19 58 24 LMP Okay. Well, we never did get our PLSS tank filled, so we're going to be filling that here along the - along the way today. It only has about 200 or 300 psi in it.

00 19 58 34 CC Roger. We understand.

00 19 58 53 SC Houston, Apollo 9.

00 19 58 55 CC Houston. Go.

00 19 58 56 LMP Roger. We're still charging battery B. What's the status of that? Do you want us to continue or stop or what have you?

00 19 59 03 CC Affirmative. Go ahead and continue on it. We estimate it will probably be up to charge at about 22 hours or just before SFS number 2 burns, and we'll tell you at that time to turn it off.

00 19 59 16 LMP Okay. Very good.

00 20 02 28 CC Apollo 9, Houston. Thirty seconds LQS; Mercury at 08.

00 20 02 32 CDR Roger.

MERCURY (REV 13)

00 20 12 09 CC Apollo 9, Houston through Mercury. Standing by.

00 20 12 12 CDR Roger, Houston.

00 20 12 14 CC Roger.

00 20 13 44 CC Apollo 9, Houston. We indicate you're right close to gimbal lock.

00 20 13 51 CDR That's affirmative.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 14/1
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ANTIGUA (EEV 14)

- 00 20 36 17 CC Apollo 9, Houston through Antigua.
- 00 20 36 40 CC Apollo 9, this is Houston through Antigua.
- 00 20 36 43 CMP Roger. Houston, Apollo 9. How do you read?
- 00 20 36 45 CC I read you loud and clear. Good morning.
- 00 20 36 50 CMP Good morning. We were wondering whether maybe you want to give us the updates first, or whether you want an E-memory dump first?
- 00 20 37 03 CC We do not need an E-memory dump.
- 00 20 37 07 CMP Okay.
- 00 20 37 13 CMP Okay. We're ready to accept your update, then, any time, Houston.
- 00 20 37 19 CC Roger. Stand by one on that. I have an SPS-2 PAD here for you any time you're ready to copy, and we'll have the loads ready for you in a minute.
- 00 20 37 33 LMP Stand by. He's getting it.
- 00 20 37 36 CMP Okay. Go ahead. Ready to copy.
- 00 20 37 39 CC Roger. SPS-2: 022 12 03 00, plus 00993, minus 08 446, plus 00 176 08 506 08 457 1512, and stand by one.
- 00 20 38 37 CC Apollo 9, we're ready to uplink at this time, and then I'll finish the PAD while they're doing that.
- 00 20 38 43 CMP The computer is yours.
- 00 20 38 45 CC Okay. We have the computer. And starting again, I finished up on the burn time which was: 15 12 58 504, plus 1 00, minus 0 20 21 20 640 13 200, plus 01 23, plus 05 514 16 45. End of update.
- 00 20 39 38 CMP Okay, Houston ...
- 00 20 40 00 CMP ... 08506 08457 ... 3 58504, plus 100, minus 020 21 2084 0 13200, plus 1 - rather - plus 0013, plus 0554 0 ... I beg your pardon - 1645.

(GOSS MET 1)

Tape 14/2
Page 64

00 20 40 40 CC Apollo 9 ... The COMM on that was extremely bad. I only got about three lines of the whole blooming smear. Let's stand by one. I think we are going to hand off here, and maybe we can try it again.

VANGUARD (REV 14)

00 20 41 16 SC Houston, Apollo 9.
00 20 41 29 SC Houston, Apollo 9.
00 20 41 44 CC Apollo 9, this is Houston. Do you read?
00 20 41 49 SC Roger. This is Apollo 9 here, Houston.
00 20 42 02 SC Houston, this is Apollo 9.
00 20 42 23 SC Houston, Apollo 9.
00 20 42 30 CC Okay. Apollo 9, this is Houston. If you read me, I cannot get you. I can hear that you are transmitting; you are way, way down. The site is reporting no VHF downlink. You might check that, but I don't understand why our S-band isn't any better either.
00 20 42 53 SC Okay. Can you read now?
00 20 42 57 CC Apollo 9, this is Houston. I can barely read you. I just barely copied it.
00 20 43 05 SC Roger ... S-band ...
00 20 44 03 CDR Houston, Apollo 9. Now now?
00 20 44 06 CC Apollo 9, you are very, very weak. I can't get your readbacks, but I'd like to give you the NAV check again. The NAV check I gave you was wrong. We're starting off good today, and I'd like to - If you can copy, I'd like to read you the NAV check again. It should be: minus 2891, minus 16997 1228.
00 20 44 55 CDR Okay. Now can you read me?
00 20 44 58 CC I can just hear you transmitting, and that's about all.

(COSS NET 1)

Tape 14/3
Page 65

CANARY (REV 14)

00 20 46 21 CFP Houston, Apollo 9. How do you read now?

00 20 46 26 CC Hello. Apollo 9, Houston. Do you read now?

00 20 46 37 CFP Houston, 9. Read you five-by.

00 20 46 39 CC Great! We've got you through Canaries now. Evidently, we couldn't get Vanguard and Antigua back through Goddard. Did you copy my correction on the NAV check?

00 20 46 48 CFP Roger. If you read, I got a minus 2891, minus 16997 122.8.

00 20 46 58 CC Roger. That ought to check a lot better, and I'm reading you five-square now. We've got good COMM through Canaries here for about the next 5 minutes.

00 20 47 08 CFP Roger. Did you read the readback on the SPS-2 PAD?

00 20 47 15 CC Okay. Go ahead.

00 20 47 17 CFP Okay. 02212 03 00, plus 00993, minus 08446, plus 00176 08506 08457 1512 58502, plus 100, minus 020, 2120840 13200 - And you've already got the NAV check.

00 20 47 58 CC Roger. I confirm the update. One small correction. The last number in the CSM weight is 4, vice 2 as you read, but that really doesn't matter.

00 20 48 09 CFP Yes. I guess I wrote it right and read it wrong.

00 20 48 13 CC Okay.

00 20 48 14 CFP 58504.

00 20 48 16 CC That's affirmative.

00 20 48 27 CC And, Apollo 9, the computer is yours. We have given you a target load, a state vector, and a VERB 66.

00 20 48 41 CFP Roger. Copy.

00 20 49 19 CC Apollo 9, Houston.

00 20 49 21 CFP Go.

(0003 NET 1)

Tape 14/4
Page 66

00 20 49 24 CDR Roger, Houston. Go.

00 20 49 25 CC Okay. We've got about 3 minutes here. We would like to update that PIPA bias if we can have the computer again.

00 20 49 35 CMP Okay. The computer is yours, and while you're doing that, I'd like to know what you would like us to do with battery B. We are still charging it, and it's now down to about 0.4.

00 20 49 48 CC Roger. Last word I had was we wanted to run the battery charge; it'll probably run up to almost the time of SPS-2.

00 20 49 58 CMP Okay. Thank you.

00 20 50 08 CC And we're indicating about 0.43 or so, and we'd like to let it run awhile and cut it off on our indication.

00 20 50 18 CMP Okay.

00 20 52 54 CC And, Apollo 9, we'll be handing over to Madrid, so have your S-band volume up.

00 20 53 10 CC Apollo 9, Houston. The computer is yours. The PIPA bias is in.

00 20 53 16 CMP Roger. Thank you.

MADRID (REV 14)

00 20 54 23 CC And, Apollo 9, this is Houston. We're about 30 seconds from LOS Madrid, and we'll see you over Carnarvon at 21.

00 20 54 32 CMP Roger. Carnarvon at 21.

CARNSARVON (REV 14)

00 21 21 27 CC Apollo 9, Houston through Carnarvon.

00 21 21 31 CDR Hello, Houston. Apollo 9.

00 21 21 33 CC I read you five-square.

(GOSS NET 1)

Tape 11/5
Page 67

- 00 21 21 36 CDR Roger.
- 00 21 21 47 CDR Just had an interesting sidelight here, Houston. Whenever we give the command module/IMU combination a pulse of DIRECT ACCELERATION COMMAND to attitude control system, we get a lot of coupling from pitch to yaw and back to pitch. I suspect this stroker test may be fairly exciting.
- 00 21 22 08 CC Roger. I guess it must be a lot more noticeable than on the simulator, then.
- 00 21 22 16 CDR Sure is!
- 00 21 22 18 CC (Laughter) Stand by for a ride.
- 00 21 22 33 CDR And, Houston, another little interesting sidelight; when we woke up this morning and got the RMACS ready - and after drifting all night - Our highest drift rate was approximately 1/10 of a degree per second.
- 00 21 22 49 CC Roger, Apollo 9. Copy.
- 00 21 24 47 CMP Houston, Apollo 9.
- 00 21 24 49 CC Go, Apollo 9.
- 00 21 24 51 CMP Do you still want us to cycle our H₂ and O₂ tanks prior to the burn, or do you want to just leave them alone?
- 00 21 25 03 CC Apollo 9, Houston. We do not want them cycled prior to the burn. Just let them go as is.
- 00 21 25 10 CMP Okay. Very good.
- 00 21 27 18 CC Apollo 8, Houston.
- 00 21 27 22 CDR Go ahead.
- 00 21 27 23 CC Roger. You can terminate the charge on battery B. And for your info, we took 10 AMP-hours out and put seven back in.
- 00 21 27 34 CDR Roger.
- 00 21 27 59 CC Apollo 9, Houston. Like to make sure you have your S-band volume up. We will be picking up Honeysuckle in about a minute.

(GOSS NET 1)

Tape 14/6
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00 21 28 10 CDR Roger.

HONEYSUCKLE (REV 14)

00 21 35 44 CC And, Apollo 9, this is Houston. We are 1 minute to LOS Honeysuckle. We'll see you over Mercury at 41.

MERCURY (REV 14)

00 21 36 36 CC Apollo 9, Houston.

00 21 42 26 CC Apollo 9, Houston through Mercury.

00 21 42 33 CDR Roger. Houston, Apollo 9.

00 21 42 35 CC Sterling! You are loud and clear.

00 21 42 39 CDR Roger. We're in process of donning our helmets and gloves here for the burn.

00 21 42 45 CC Roger. Understand.

00 21 43 20 CC And, Apollo 9, this is Houston. I believe you went over the hill at Honeysuckle, there, before I got you, but you are GO for SPS-2.

00 21 43 24 CMP Roger. Understand we are GO for SPS-2. Thank you.

00 21 43 26 CC Roger.

00 21 47 40 CC Apollo 9, Houston. One minute LOS Mercury, and we'll see you over Texas at 04.

00 21 47 47 SC Roger. Texas at 04.

END OF TAPE

APOLLO 9 AIR-TO-GROUNDED TRANSCRIPTION

(GOSS NET 1)

Tape 15/1
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TEXAS (REV 15)

00 22 04 41 CC Apollo 9, this is Houston through Texas. Standing by for your burn.

00 22 04 45 CMP Roger.

00 22 10 20 CC Apollo 9, Houston.

00 22 10 22 CDR Houston, go.

00 22 10 23 CC Roger. We are showing your scale in five, five.

00 22 10 26 CDR Roger. Understand five, five will shift to five and one when we get ready for ESTROKER.

00 22 10 31 CC Roger. Thank you.

00 22 14 35 CMP Houston, we have your residuals.

00 22 14 37 CC Apollo 9, I've got minus 0001, plus 0007, and plus 00003.

00 22 14 48 CMP Okay. That's pretty good, and the DELTA-V counter was minus 5.0.

00 22 14 52 CC Say it again. Minus 5.0.

00 22 14 56 CMP Minus 5.1.

00 22 14 58 CC Minus 5.1.

00 22 15 09 CC And it looked pretty smooth, Apollo 9.

00 22 15 17 CC And, Apollo 9, Houston. Our first catch shows you 189 by 108.

00 22 15 37 CC And I copy your onboard noun at 44, Apollo 9.

VANGUARD (REV 15)

00 22 17 21 CC Apollo 9, Houston through the Vanguard. How do you read?

00 22 17 26 CDR Loud and clear, Houston. How do you read us?

(GOSS NET 1)

Tape 15/2
Page 70

- 00 22 17 28 CC That's about a thousand percent improvement over the last pass. Reading you loud and clear. Our earthband track now shows you 192 by 107. Looks like we are about to agree with you.
- 00 22 17 39 CDR Roger. How's our PIPA bias?
- 00 22 17 45 CC Stand by.
- 00 22 18 19 CDR Houston, Apollo 9.
- 00 22 18 21 CC Go, Apollo 9.
- 00 22 18 24 CDR Roger. ESTROKER looks pretty smooth. We had a 40 percent ... about 30 percent of 1 degree, and the MAX rate in pitch was about a tenth of a degree, and there didn't appear to be any coupling in the yaw. It all damped out probably about 5 seconds after the ESTROKER stopped.
- 00 22 18 45 CC Roger, Apollo 9. Copied. Sounds great.
- 00 22 18 53 CDR Okay. Houston, Apollo 9 here. SPS PU sensor light came on during the burn because of the large unbalance we had. However, it immediately jumped back down, and we are presently reading 69.25 percent oxidizer and 69.4 percent fuel, and the unbalance is reading decrease about 30 pounds.
- 00 22 19 22 CC Roger, Apollo 9. Copied. Sounds like things are shaping up.
- 00 22 19 29 CDR We still don't have an indicated helium pressure, though.
- 00 22 19 34 CC Well, maybe if you kick that transducer again, you'll get that back.
- 00 22 19 39 CDR If you'll tell us where to kick, we'll try it.
- 00 22 19 43 CC Roger. In work.
- 00 22 19 49 CC And at your convenience I have your gimbal angles for SPS-3 using your SPS-2 REFSIMAT.
- 00 22 19 58 CDR Roger. Stand by.
- 00 22 20 04 CDR Okay. Ready to copy.
- 00 22 20 05 CC Roger. Reading: roll 024, pitch 001, yaw 353.
- 00 22 20 21 CDR 024, 001, 3 ...

(GOES NET 1)

Tape 15/3
Page 71

00 22 20 25 CC Roger. 353 on the yaw, and I'd like to make sure your S-band volume is up. We'll be handing over to Koneysukle in about 3 minutes - 3 or 4 minutes. I meant Madrid - sorry about that.

00 22 23 09 CC Apollo 9, Houston.

00 22 23 10 CDR Go ahead, Houston.

00 22 23 12 CC Roger. We're showing PIPA bias as minus 0.02 feet-per-second squared.

00 22 23 21 CDR Roger. It looks like we counted up about - almost a foot per second there in that 30 seconds we were waiting for the burn to start.

00 22 23 31 CC Roger. Copy. And, Apollo 9, Houston. That looks like it's within tolerance, so we accept that.

00 22 23 46 LMP Roger, Houston. And he advised the count in R-3 was positive. Also there prior to the burn, not negative.

00 22 23 58 CC Roger. Copy.

00 22 24 20 CC And, Apollo 9, this is Houston. Fido is real happy with that burn; says it's completely nominal. Looks like he won't even have to retarget for SPS-3. You do good work.

00 22 24 35 CDR Roger. And I assume you'll give us a GO for the structural demonstration before we get there. Right?

00 22 24 42 CC That's affirmative.

00 22 24 44 CDR Okay.

MADRID (REV 15)

00 22 25 04 QRP Houston, Apollo 9.

00 22 25 06 CC Go.

00 22 25 07 CMP Roger. For your information on the clock, the burn shut off about 8/10 of a second early.

00 22 25 16 CC Roger. Copy.

(COSS NET 1)

Tape 15/4
Page 72

00 22 26 39 LDP Hey, Smokey.
00 22 26 41 CC Roger. Smokey here.
00 22 26 44 LMP I'll call you again in a minute.
00 22 26 47 CC Say again.
00 22 26 56 LMP Hey, Smokey.
00 22 26 57 CC Go.
00 22 26 58 LMP Have you ever been attacked by a band of wild elephants?
00 22 27 02 CC Negative.
00 22 27 04 LMP You ought to see what it looks like in here with these six big black hoses.
00 22 27 09 CC (Laughter) Roger. Copy.
00 22 27 16 LMP Did you ever dream about octopuses?
00 22 27 20 CC Speaking of dreaming, how did the night go?
00 22 27 25 LMP I guess we did okay for a first cut.
00 22 27 28 CC Okay. Sounds real good. I'm going to lose you here at Madrid in about 30 seconds, and we'll see you over Carnarvon at 54.
00 22 27 35 LMP Stu, one thing we were having a problem with was a lot of radio chatter coming up from the ground.
00 22 27 40 CC Okay. We'll see if we can stop that tonight.
00 22 27 48 CDR What did you do ... pass.

CARNARVON (REV 15)

00 22 54 17 CC Apollo 9, this is Houston through Carnarvon.
00 22 54 21 LMP Go ahead, Houston.
00 22 54 23 CC Roger. You're making it five-square. Standing by.
00 22 54 27 LMP Okay. We're chlorinating our water.

(COSS NET 1)

Lape 15/5
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00 22 54 31 CC Very good. You are chlorinating your water.
00 22 54 35 LMP That's a little behind schedule on that, but that's what we're doing.
00 23 00 46 CC And, Apollo 9, Houston. Remind you on your S-band volume, we'll be going over to Honeysuckle in about 2 minutes.
00 23 00 55 CMP Roger.
00 23 04 09 CC Apollo 9, Houston. I've got a question for you when you've got time, at your convenience.

HONEY SUCKLE (REV 15)

00 23 04 45 CC Apollo 9, Houston. Do you read?
00 23 05 47 CC Apollo 9, Houston. How do you read through Honey-suckle?
00 23 05 54 CMP Houston, say again.
00 23 05 55 CC Roger. I've got a question for you when you get time.
00 23 06 00 CMP Yes. Go ahead.
00 23 06 01 CC Okay. Just to ease our mind here to make sure we're working on the same procedures, we're curious about loading the DAP. We'd like to verify that you are doing that prior to the P30, P40 program.
00 23 06 18 CMP The last time we did it after P30, but prior to P40.
00 23 06 25 CC Okay. We would like to have you load the DAP prior to both P30, and P40 prior to your P52.
00 23 06 36 CMP Okay. We'll do that.
00 23 06 37 CC Okay. Very good.
00 23 06 41 CMP I guess we also have a question on whether you want us to load the PITCH TRIM and YAW TRIM you send us up next time, which looks like it will be somewhat different from what the DAP ended up with on the SP8-2.

(GOSS MET 1)

Tape 15/6
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00 23 06 58 CC Okay. Would you say the first part of your question again, Dave?

00 23 07 04 CMP Roger. We've looked at the nominal SPS-3 PITCH TRIM and YAW TRIM for the gimbals, and they look somewhat different from what we ended up with after SPS-2. I guess the question is, do you want us to load your numbers or our numbers?

00 23 07 19 CC Okay. Copy. We'll give you that info, and I have the PAD.

00 23 07 25 CMP Okay. Stand by.

00 23 07 40 LMP Houston, do you have a PAD at this time?

00 23 07 43 CC That's negative, Apollo 9.

00 23 07 46 LMP Okay.

00 23 10 34 CC And, Apollo 9, this is Houston. We're about a minute to LOS at Honeysuckle, and we'll see you over Mercury about 15.

00 23 10 43 LMP Roger.

MERCURY (REV 15)

00 23 15 55 CC Apollo 9, this is Houston through the Mercury. Standing by.

00 23 16 00 CMP Roger. Go ahead.

00 23 16 02 CC Roger. Just checking in. You are coming in five-square. Sounds like the Mercury is working good.

00 23 16 08 CMP That's a very pleasant surprise.

00 23 16 11 CC Roger.

00 23 16 13 CMP How's the weather in Houston, Smokey?

00 23 16 15 CC Would you believe that there was ice on the wind-shield this morning?

00 23 16 19 CMP No, I wouldn't.

00 23 16 20 CC Well, I speak with a straight tongue.

00 23 16 28 CMP Is the place washed away yet?

00 23 16 30 CC No, we are keeping all the water out, and everything's pretty good. It's just a little chilly.

00 23 16 38 CMP Very good.

00 23 16 40 CDR I wish we could say the same.

00 23 16 46 CC What - Does that mean you are running hot, or you're not dry?

00 23 16 52 CMP We're a tad damp on occasion.

00 23 16 57 CC Ah-so. Copy.

00 23 17 00 LMP There's nothing wrong. Those are human errors.

00 23 17 07 CC Roger. Smokey understands.

00 23 17 17 CMP You've never made one; you've just heard about them. Is that right?

00 23 17 23 CC That's a negative.

00 23 17 40 CC Sounds like you all are too relaxed today. We'll have to put you to work tomorrow. You better save it up.

00 23 17 49 LMP This is bad enough today just trying to figure out how we eat and sleep.

00 23 19 41 CMP Houston, Apollo 9.

00 23 19 44 CC Go, Apollo 9.

00 23 19 46 CMP I get some data here on our little interruptions last night. Seems like we were going over some station that was transmitting VHF from a tower clearing people to land, and it was daylight when we went over, and I have got some times. I doubt if it will do any good, but you can have them anyway.

(GOSS NET 1)

Tape 15/8
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- 00 23 20 06 CC Okay. Go ahead.
- 00 23 20 08 CMP We picked up some at 10:18, 10 hours and 18 minutes. Again at 11:57; again 16:35; again at 16:12. And the first couple sounded somewhat like Chinese.
- 00 23 20 31 CC Roger. Understand the first couple was a Navy tower.
- 00 23 20 35 CMP Something like that. I'm not an expert in that particular branch, but it was strange.
- 00 23 20 40 CDR I'll give you a clue. They've got a runway that's 112, and they have a taxiway 112. They fly a whole bunch of different kinds of airplanes - Mohawks, and C-47 and OI's.
- 00 23 20 54 CMP And if you really wanted, you could call Green Hornet 35 or Black Hawk 15.
- 00 23 21 03 CC Roger. Copy all that. You know I thought you were jesting awhile ago when you said about the transmissions interrupting you.
- 00 23 21 12 CMP Negative. Every hour and a half. We had about a two 6 or 7 minute passes. Chris ought to incorporate these guys in the network.
- 00 23 21 24 IMP Actually, it was one of the better tower operators I've heard. The guy really had a lot of traffic, and he was doing pretty good.
- 00 23 21 56 CC Okay - Okay, Apollo 9. This is Houston. We'll do a little work on this to see what's going on. Yes, I didn't realize you had this, and it is on the DSE. We'll take a look at it.
- 00 23 22 12 CDR Okay. Good.
- 00 23 22 25 CC I guess it's all right just as long as you don't have to get clearance through the - through that tower. And I am going to lose you in Mercury in about a minute and we'll see you over Guaymas around 3 $\frac{1}{2}$.
- 00 23 22 37 CDR Okay.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS MET 1)

Tape 16/1
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GUAYMAS (REV 15)

00 23 35 14 CC Roger. I haven't heard anything.

00 23 35 23 LMP Okay. Stand by. Houston, how do you read Apollo 9?

00 23 35 27 CC Apollo 9, this is Houston. Reading you loud and clear.

00 23 35 37 CC Apollo 9, this is Houston. I read you loud and clear.

00 23 35 41 LMP ... you copy fast.

00 23 35 51 LMP Houston, Apollo 9.

00 23 35 53 CC Apollo 9, I'm reading you loud and clear. How me?

00 23 35 56 LMP Same. Ready to copy.

00 23 35 58 CC Roger. You'll have to stand by here; don't have yet. Let me give you an estimate of when it's going to come out of the trench.

00 23 36 05 LMP Okay.

00 23 36 35 CC Okay. Apollo 9, Houston. We've got the PAD all ready with the exception of the star data, and we ought to have it for you in another 4 or 5 minutes. We've got you now on a nice long stateside pass here.

MILA (REV 16)

00 23 43 20 CC Apollo 9, Houston.

00 23 43 23 C/P Go ahead, Houston.

00 23 43 24 CC Roger. We would like to give you a state vector and a target load, if you will go P00 in ACCEPT.

00 23 43 30 C/P Roger. It's yours.

00 23 43 33 CC Understand it is ours.

00 23 43 35 C/P That's affirmative.

(GOSS NET 1)

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00 23 44 35 CC Apollo 9, Houston. I have your SPS-3 PAD.
00 23 44 41 CMP Roger, Houston. Ready to copy.
00 23 44 44 CC Roger. Reading SPS-3: 025 17 38 00, plus 00
151, minus 25 707, minus 00 00 2 25 707 25 640 4
419 51 207, plus 118, minus 017 21 12 010 21 600,
minus 21 45, plus 16 867 16 10. End of update.
00 23 46 23 CMP Okay. You ready for the readback?
00 23 46 26 CC Go.
00 23 46 27 LMP Roger. 05 17 38 00, plus 00 151, minus 5 707, minus
00 25 707 5 60 4419 51 207, plus 118, minus 017 21
120 10 21600, minus 2145, plus 16867 1610.
00 23 47 10 CC Roger. I think you got it all there, Rusty, but
I want to confirm a couple of them. Seemed like
you were cutting out on the twos on the time.
It's 025 DELTA-V_y is a minus 25707, and DELTA-V_Z
minus 00 002, and DELTA-V_C 25 640.
00 23 47 41 LMP Roger. We've got that.
00 23 47 43 CC Okay. Second.
00 23 47 50 CC And, Apollo 9, the computer is yours. You have
your target load and the state vector in both
slots.

VANGUARD (REV 16)

00 23 47 57 LMP Roger. Did you happen to notice the PITCH and
YAW TRIM that we have in the DAP at this time,
after the last burn?
00 23 48 03 CC Roger. It looked like we were running pretty
close.
00 23 48 40 CC Apollo 9, Houston.
00 23 48 42 CMP Go ahead.
00 23 48 51 CC Roger. Just for your info, we did take your
values and use them. That's why they checked
so well.
00 23 48 52 CMP Okay.

(GOSS MET 1)

Tape 16/3
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00 23 48 53 CC We're shaping up.
00 23 48 56 CDR DAP wine again.
00 23 49 38 CC Apollo 9, Houston.
00 23 49 42 CDR Go ahead, Houston.
00 23 49 44 CC Roger. The data from the SPS-2 burn on the ESTROKED looks real nominal with rigid body results. MAX rate and pitch was about 2 seconds after initiation and peaked out about a minus 0.15. The yaw was real low, and everything was essentially nominal, and you are GO for a full amplitude on SPS-3.
00 23 50 17 CDR Okay. And we'll give you a full structural demonstration.
00 23 50 21 CC Roger. Copy.
00 23 50 23 CDR It's sort of interesting. The RCS quads, when they fire, even in the middle of impulse, and particularly when we are moving around in ADAPT, you can feel the whole thing shake and vibrate. It really feels just like a ... When the SPS burns, it's pretty solid.
00 23 50 42 CC Roger. Copying.
00 23 51 09 CDR Houston, Apollo 9.
00 23 51 10 CC Go, Apollo 9.
00 23 51 15 CC Apollo 9, Houston here. Go ahead.
00 23 52 07 CC Apollo 9, this is Houston. I didn't copy your last transmission. If you will just hang loose for just a couple of minutes we will be over the Canaries, and I'll be able to read you then.
00 23 52 18 CDR Roger.

CANARY (REV 16)

00 23 54 45 CC Apollo 9, Houston through Canaries. How do you read?
00 23 54 58 CDR Read you five-by.

(GOSS NET 1)

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- 00 23 55 00 CC Roger. Apollo 9, you have a GO for 33 dash 1.
- 00 23 55 04 CDR Roger. Understand GO for 33 dash 1.
- 00 23 55 08 CC And I'm reading you five-square, and I missed your last transmission when we were mixed up on the Vanguard there.
- 00 23 55 16 CMP Roger. I was just commenting that the machinery here is very interesting because with the RCS quads, you can feel the whole structure bend and vibrate, just one or two propulsions; yet with the SPS, it seems pretty solid. You can hardly feel any bending at all.
- 00 23 55 34 CC Roger. Copy. Thank you.
- 00 23 55 36 CDR Houston, Apollo 9.
- 00 23 55 38 CC Go, Apollo 9.
- 00 23 55 40 CDR What the time for this burn? We have 25:17:38:20 in our computer, and I just have 25:17:38 here.
- 00 23 55 56 CC Apollo 9, this is Houston. Go with the time in the computer.
- 00 23 56 02 CDR Okay.
- 00 23 58 07 CC Apollo 9, Houston.
- 00 23 58 08 LMP Go ahead, Houston.
- 00 23 58 09 CC Roger. We would like to have you confirm this onboard. It appears here that the evaporator appears to be drying out. If this is true, we would recommend just shutting it down, not to reservice it at this time.
- 00 23 58 22 LMP Okay. We can confirm that onboard, and I'll go ahead and shut it down.
- 00 23 58 28 CC Roger. Understand.
- 01 00 00 22 CC Apollo 9, Houston.
- 01 00 00 25 LMP Go ahead.
- 01 00 00 26 CC We're about a minute and a half NOS Canaries, and Tananarive is down this pass. We'll see you over Carnarvon at 30.

(GOSS NET 1)

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01 00 00 36 LMP Roger. Carnarvon at 30.
01 00 00 55 LMP Houston, do you still read Apollo 9? If you do, we would like to advise you that we did get the secondary water flow control OFF yesterday.
01 00 01 05 CC Roger. Copy that. And I should be able to copy you for about another 45 seconds or so.
01 00 01 12 LMP Okay.

CARNARVON (REV 16)

01 00 28 30 CC Apollo 9, Houston through Carnarvon. Standing by.
01 00 28 34 LMP Roger.
01 00 30 12 CDR Houston, are you ready for torquing angle?
01 00 30 15 CC Go ahead.
01 00 30 18 CDR Roger. Plus 232, minus 473, minus 841. 24:28:00.
01 00 31 48 CC And, Apollo 9, Houston. We copy that. The time 24:28:00.
01 00 31 56 CDR Roger.
01 00 36 28 CC And, Apollo 9, Houston. Like to have you bring up your S-band volume. We'll be going over the Honeysuckle in about a minute and a half.
01 00 36 37 LMP Roger. S-band is up.
01 00 36 40 CC Copy.

HONEYSUCKLE (REV 16)

01 00 41 35 CC Apollo 9, Houston.
01 00 41 37 LMP Go ahead, Houston.
01 00 41 38 CC Roger. You are GO for SP8-3.
01 00 41 41 LMP Roger. Understand. GO for SP8-3.
01 00 45 45 CC And, Apollo 9, this is Houston. We are going to lose you here at Honeysuckle in about 30 seconds.

(COSS NET 1)

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The COMM through the Huntsville is reported to be a little bad here. If we don't make contact there, we'll see you at the Redstone at 02.

HUNTSVILLE (REV 16)

01 00 47 14	CT	Huntsville. Valid two-way.
01 00 47 17	CC	Say again, Apollo 9.
01 00 47 58	CC	And, Apollo 9, this is Houston. We'll have you through the Huntsville here for about 5 minutes. If the noise gets to blasting you, try to let us know. We'll just turn it off.
01 00 48 14	CDR	Roger, Houston. How do you read?
01 00 48 17	CC	You're down in the mud a little bit; I can copy.
01 00 51 40	CC	And, Apollo 9, Houston. Coming off the Huntsville in about 1 minute. We'll see you over Redstone about 02.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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REDSTONE (REV 16)

- 01 01 03 50 CC And, Apollo 9, this is Houston through the Redstone. Standing by for your burn.
- 01 01 03 55 CDR Roger.

MILA (REV 17)

- 01 01 22 56 CDP Houston, Apollo 9.
- 01 01 22 57 CC Roger, Apollo 9. I copy the residuals at plus 26, minus 21, and minus 25.
- 01 01 23 04 CDP Roger. That's pretty close, and we have a minus 6.6 on the DELTA-V counter. And the burn was nominal, stroker was mild.
- 01 01 23 14 CC Roger. Copy minus 6.6 on the DELTA-V, and we were monitoring here - It looked real smooth, and everything looked great.
- 01 01 23 56 CDR Here's our orbit, Houston: 274.5 by 109.6.
- 01 01 24 01 CC Roger. Copy that, and it - The burn looks real good here. We will have you the onboard reading, but it's going to be real nominal. And we will have the ground orbit for you shortly.
- 01 01 24 20 CC Dave, did you have to do much flying on that MTVC?
- 01 01 24 25 CMP Roger. We had a pretty good transient in roll, but when I switched over I believe because the EMAGS were caging zero, and we were sitting in the edge, the DAP did bend about 5 degrees over. We were ... by the time we got to the switchover, our GIMBAL TRIM was almost two, and we trimmed a little over one in pitch, which gave a little transient at pitch. And we had about a half a degree in trim and yaw, which gave a little transient in yaw, but pretty easy to damp out all of A and move just about like the simulator.
- 01 01 24 57 CC Roger. Thank you.

(GOSS NET 1)

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BERMUDA (REV 17)

- 01 01 25 00 LMP And, Houston, we've got a couple of other system things we're going to have to tell you about here before you go over the hill.
- 01 01 25 04 CC Roger. Go ahead. We have got several minutes.
- 01 01 25 08 LMP Okay. We would like you to take a look at fuel cell 3. At the present time, the fuel cell 3 O₂ flow is high. I'm reading 0.78 in it, and the H₂ flow at the same time is 0.072, so we may have a leaky fuel cell 2 purge valve or something.
- 01 01 25 31 CC Roger. Copy.
- 01 01 25 34 CMP Kind of rambles all over during a burn, and we are presently 500 pounds on the increase side. The light must have come on at least 6 or 7 times. I went to AUXILIARY on it, and the light came on and off there also. I switched back to NORMAL, and we are presently reading 23.1 and 21.1, AUX and fuel, respectively.
- 01 01 26 02 CC Roger. Copy that. And 23.1 and 21.1.

CANARY (REV 17)

- 01 01 27 12 CC And, Apollo 9, Houston. I have your gimbal angles for SPS-4 using this REFSMMAT.
- 01 01 27 20 CMP Go ahead.
- 01 01 27 25 CC Roger. Roll 017, pitch 001, yaw 355.
- 01 01 27 37 CMP Roger. 017, 001, 355.
- 01 01 27 42 CC That's affirmative, Apollo 9.
- 01 01 36 02 CC And, Apollo 9, Houston. We are about a minute from LC3 on Canaries, and we'll see you over Tananarive about 48.
- 01 01 36 09 LMP Okay. Houston, Apollo 9 here.
- 01 01 36 16 CP What's our average, Houston?

(GOSS MET 1)

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01 01 36 20 CC Roger. Stand by. We haven't got that out of FIDO yet.

01 01 36 26 CMP Okay. And also, Houston, you might have some words to say after you look at the data there on the SPSP sensor. Both normal and AUX have a pretty nigh increase. I'd like to know if you want to go DECREASE on the next burn.

01 01 36 40 CC Roger, Apollo 9. We are going to have some work on the PUGS for the SPS-4.

01 01 36 48 CMP Okay.

01 01 37 18 CC And, Apollo 9, Houston. We're losing you here. We'll see you over Tananarive with a preliminary orbit - I hope.

01 01 37 25 LMP Roger.

TANANARIVE (REV 17)

01 01 49 00 CC Apollo 9, Houston through Tananarive.

01 01 49 06 SC ...

01 01 49 21 CC Okay. Apollo 9, Houston. I think you are trying to answer me, but you are unreadable. Our orbit is showing you in a 271.8 by 109.5.

01 01 49 40 CMP Roger. How do you read ...

01 01 49 45 CC You are essentially unreadable, Apollo 9; I can detect you are transmitting.

01 01 49 52 SC ...

01 01 58 11 CC Apollo 9, Houston. We are going to lose you at Tananarive in about a minute, and we'll see you over Carnarvon at 05.

01 01 58 19 CMP Roger, Houston. How do you read us now?

01 01 58 25 CC I missed that, Apollo 9. Say again.

01 01 58 28 CMP Are you able to read us now?

01 01 58 31 CC I can make you out now - barely. Before, I couldn't read you at all.

(GOSS NET 1)

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01 01 58 39 CG Okay. We'll see you at 05 at Carnarvon.
01 01 58 44 CC Roger.

CARNARVON (REV 17)

01 02 05 52 CC Apollo 9, Houston through Carnarvon.
01 02 05 56 LMP Roger. Houston, Apollo 9.
01 02 05 59 CC Roger. You are loud and clear, and we've got you here at Carnarvon for about 10 minutes.
01 02 06 04 LMP Beautiful. This must be one of those long passes.
01 02 06 07 CC Roger. I guess you copied the orbit we're showing you in over Tananarive.
01 02 06 18 LMP Roger. We did, and I'd like to update you on the malfunction procedure. Stand by just one.
01 02 06 24 CC Roger.
01 02 06 36 LMP Okay. We've gone through malfunction 1-Golf, and we've worked our way through steps 1, 5, and 6, and we're presently standing by to see if the cryo quantity decreases abnormally. And be advised, if you are ready to copy, I've got some data on the purge flow.
01 02 07 08 CC Roger. I copied malfunction 1-Golf, your steps, and I'm standing by to copy.
01 02 07 14 LMP Okay. In step 5 there, when I purged fuel cell 3, the O₂ flow increase was much greater than normal. In fact, it went OFF SCALE HIGH, so I don't know how much of an increase I got, but the increase went from 0.65 to OFF SCALE HIGH.
01 02 07 40 CC Roger. Copy. From 0.65 to OFF SCALE HIGH on the O₂ flow, purged fuel cell 3.
01 02 07 48 LMP Roger.
01 02 08 38 CC Apollo 9, Houston.
01 02 08 42 CG Go ahead, Houston.

(COSS NET 1)

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- 01 02 08 45 CC Roger. Just a couple items on the flight plan. In regards to this subject, at about 29:45 there is an O₂ purge on the fuel cells shown, and we would like to have you do that over a ground station so we could watch it.
- 01 02 09 02 CMP Okay. You want us to purge over a ground station on that 29:45 purge.
- 01 02 09 07 CC That is affirmative.
- 01 02 09 10 CC And -
- 01 02 09 13 SC ...
- 01 02 09 14 CC Go, Apollo 9.
- 01 02 09 16 CMP Roger. I beg your pardon. Would you like that over Hawaii?
- 01 02 09 20 CC Hawaii will be fine.
- 01 02 09 23 CMP Okay.
- 01 02 09 25 CC And one other item on the flight plan.
- 01 02 09 28 CMP Why don't we do that over Carnarvon, and that way if you have any good news for us or any instructions, you can give them to us at Hawaii and not interrupt our rest period.
- 01 02 09 41 CC Roger. That's a sterling idea, Apollo 9.
- 01 02 09 47 CMP Okay.
- 01 02 10 22 CC Apollo 9, Houston.
- 01 02 10 26 CDR Go ahead.
- 01 02 10 27 CC Roger. One other item on the flight plan. Along in here any time, we would like to have you re-service the waterboiler.
- 01 02 10 39 LMP Okay.
- 01 02 10 50 CC Okay. And that is to just leave it off, Apollo 9. Just reservice it and leave it off.
- 01 02 10 55 LMP Okay. I understand you want to reservice it and leave it off.

(GOSS MET 1)

Tape 17/6
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01 02 10 59 CC That is affirmative, and we are also picking up trouble with the DSE voice. We are showing about four discrete tones wiping out the voice on it, and we would like to have you verify your VHF configuration there; just as a first cut at it. We have got a handle on the problem.

01 02 11 21 LMP Okay. We are in SYNTAX Alfa and everything else is off.

01 02 11 29 CC Roger. Copy.

01 02 12 36 CC Apollo 9, Houston. Would you bring up your S-band volume. We are going to go over to Honeysuckle in a couple of minutes.

01 02 12 44 LMP Roger.

01 02 12 46 CC And for your info, FIDO tells us that we are within seconds of the proper setup on the rendezvous right now.

01 02 12 56 LMP Roger. Good news. ...

01 02 13 01 CDR We want to fix it before we get there.

01 02 13 06 CC (Laughter) Roger.

HONEYSUCKLE (REV 17)

01 02 17 25 CC Apollo 9, Houston.

01 02 17 37 CDR Houston, Apollo 9.

01 02 17 40 CC Roger. Could you trip your surge tank for us, please?

01 02 17 46 LMP Roger. We're just filling the PLSS tank there.

01 02 17 51 CC Roger. Understand. Thank you.

01 02 18 01 LMP Houston, we just filled the PLSS tank up to 600, and we've let the surge tank build back up again. We want to work that up this time.

01 02 18 10 CC Roger. Copy. We concur; we just wanted to verify our reading here on the surge tank.

01 02 18 16 LMP Roger.

(GOSS NET 1)

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01 02 18 18 CC Just peering over your shoulder.
01 02 18 20 LMP Yes. We didn't think you were watching.
01 02 18 23 CC Big brother is ever watching.
01 02 18 27 CDR Good.
01 02 18 29 CMP How about big sister?
01 02 18 31 CC Negative. Just old Smokey.
01 02 18 38 LMP Hey, has old Golden Throat made it back yet?
01 02 18 41 CC I haven't seen or heard from him.
01 02 18 49 CMP How about Sonny? Is he there?
01 02 18 51 CC I understand he is in the local area, but I haven't seen him over here yet.
01 02 18 57 CMP Tell him we send our love.
01 02 18 59 CC All right. Sure will.
01 02 21 25 CC Apollo 9, Houston. We are about to come off with Honeysuckle, and we're going to try the Huntsville again this time through a satellite, so we'll see how, if the COMM has improved any.
01 02 22 58 CT Two-way lock.

HUNTSVILLE (REV 17)

01 02 23 27 CC Apollo 9, this is Houston through the Huntsville. How do you read?
01 02 24 49 CC Apollo 9, this is Houston through the Huntsville ... transmitting now ... trying to evaluate the COMMAND. Pretty noisy to me. Can you read me at all?
01 02 25 19 CC Apollo 9, this is Houston. If you can read me and you've got the time, could you give me a short count, Houston.
01 02 25 35 LMP 3, 2, 1; Apollo 9 out.
01 02 25 40 CC Roger, Apollo 9. I copied the 3, 2, 1.

(GOSS NET 1)

Tape 17/8
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01 02 26 11 CC And, Apollo 9, this is Houston. ... giving you a short count - maybe try to help set up their equipment. 1, 2, 3, 4, 5; 5, 4, 3, 2, 1. Houston out.

01 02 27 16 CC Apollo 9, Houston. Do you read?

01 02 27 21 LMP I read you weak, but clear.

01 02 27 25 CC Okay. Understand. Weak, but clear, and I copied you about the same on that one.

01 02 27 40 CC And, Apollo 9, Houston. Just for your info - We're trying these tests - trying to get some COMM set up here looking ahead to rendezvous day.

01 02 27 51 LMP How do you read now?

01 02 27 53 CC Okay. You are coming through real weak; I can make it out, however.

01 02 27 58 LMP That's the same for you. You are coming through clear but very weak.

01 02 28 06 CC Okay. Understand. Clear but weak. Are you getting this background static?

01 02 28 14 LMP There is some background static, but not tremendous.

01 02 28 20 CC Roger. Copy.

01 02 28 35 CC And, Apollo 9, this is Houston. We'll have you over Hawaii at about 34, and at that time, we would like to get a long count from you from about 15 seconds while we work some ground COMM equipment at that time. I'll give you a GO on your count.

01 02 28 58 LMP Roger. Apollo 9.

END OF TAPE

Data Room
APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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HAWAII (REV 17)

- 01 02 35 07 CC Apollo 9, Houston through Hawaii. How do you read?
- 01 02 35 13 LMP You're coming in about four-by-five, Houston.
- 01 02 35 18 CC Apollo 9, say again.
- 01 02 35 22 LMP Roger. You are coming in five-square now.
- 01 02 35 25 CC Real good. Stand by one here; let me check - see if we are ready for your long count.
- 01 02 35 38 CC Okay. Apollo 9, this is Houston. We would like to start in about 30 seconds. And what we need is - We are trying to get this equipment set up for rendezvous day, and we need a long, slow count, up to about 15 seconds. Bring it on pretty slow here for us, because we will be changing some ground antenna configurations during your count.
- 01 02 36 01 LMP Roger.
- 01 02 36 09 CC Okay. Apollo 9, Houston. You can begin the count any time.
- 01 02 36 16 LMP Okay. Long ... starting: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 9, 8, 7, 6, 5, 4, 3, 2. Did I miss any?
- 01 02 36 50 CC Roger. We copied all that except for 1, but we really - It was really enlightening down here. We switched some configuration right about 5 and you went down at a fairly low level; you popped right up to five-square, and we'd like to repeat this test again in about a minute - minute-and-a-half.
- 01 02 37 18 LMP Okay. We'll choose that five-square configuration for rendezvous.
- 01 02 37 22 CC That's affirmative.
- 01 02 37 30 CC In fact, we might just do you one better; we might just use that from now on, as well as the rendezvous.
- 01 02 37 39 LMP What did you all do, turn on the receiver?

(GOSS NET 1)

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01 02 37 42 CC That's about it.
01 02 38 13 CC Apollo 9, Houston. We would like to have you repeat that test, please.
01 02 38 18 LMP Okay. Long count coming: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1. How was that?
01 02 38 48 CC That was real good, appreciate that, think we got some good data there.
01 02 38 54 CDR Good little performance, didn't he?

TEXAS (REV 18)

01 02 51 10 CC Apollo 9, Houston.
01 02 51 11 LMP Go ahead, Houston.
01 02 51 14 CC Roger. We'd like to uplink you a state vector in the target load if you'll give us FOO in ACCEPT.
01 02 51 21 LMP Okay. You've got it.
01 02 51 23 CC Okay. And if you'd drag out your pads, I'll have an SPS-4 PAD for you in about 1 minute.
01 02 51 30 LMP They're cut; just say when.
01 02 51 32 CC Okay.
01 02 53 17 CC Apollo 9, Houston. I have SPS-4 PAD.
01 02 53 39 CC Apollo 9, Houston. I have SPS-4 PAD ready to read.
01 02 53 42 LMP Roger. Houston, Apollo 9. How do you read? We are ready to copy.
01 02 53 46 CC Roger. Reading you five-square. Reading: 028 244030, minus 00012, minus 03 009 all zips 03 009 029 45 0283 32743, plus 150, minus 069 26 245 60 25 100, minus 17 37, plus 139 70 2092. End of update.
01 02 55 24 CDP Houston, Apollo 9. Do we have time for the readback?

(GOSS NET 1)

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- 01 02 55 28 CC That's affirmative; we've got time here. We may have a handoff here to Bermuda, but go ahead; it shouldn't break us up.
- 01 02 55 38 CMP Okay. Reading back: 028 244030, minus 00012, minus 03 009 all zips 03 009 029 45 0283 32743, plus 150, minus 069 26 245 60 25 100, minus 17 37, plus 139 70 2092. Over.

BERMUDA (REV 18)

- 01 02 56 25 CC Roger. Houston confirms that, and we went right through that handoff without losing a digit.
- 01 02 56 31 LMP Fantastical. Hey Smokie, got a minute?
- 01 02 56 34 CC Press.
- 01 02 56 37 LMP Hey, when we flew across Texas a minute ago I looked down and I thought I saw a whole bunch of flags flying in Nassau Bay. And if I did, would you thank all those people down there for us?
- 01 02 56 48 CC All right; sure will. They probably heard you here over our friendly radio station.
- 01 02 56 55 LMP Alrighty; tell them we all think it's pretty neat.
- 01 02 56 58 CC All right. And Apollo 9, the computer is yours; we have sent you a state vector and a target load.
- 01 02 57 10 CMP Roger. Understand. We got the computer state vector and a target load.
- 01 02 57 19 CDR Houston, this is Apollo 9. We did another realign before SPS-3 before we got the torqueing angles and the times; we'll give it to you when we get the other ones that we haven't already. Houston, you still with us?
- 01 02 57 36 CC Roger. I copy that. Apollo 9, I'm trying to look back at - the last time we got them from you was 24 plus 28 plus 00.

(COSS NET 1)

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- 01 02 57 45 C/P Yes, we have some later ones here, Houston.
You ready to copy?
- 01 02 57 49 CC Roger. Go ahead.
- 01 02 57 52 C/P Okay. Plus 00006, plus 00010, minus 00022,
and the time was 24 51 00.
- 01 02 58 10 CC Roger. Copy. Thank you.
- 01 02 58 14 C/P That was the second alignment before that burn.
- 01 02 58 17 CC Roger. Understand.
- 01 02 58 21 CDR Figure that one and make sure.
- 01 03 00 23 CC Hey, we're getting better.
- 01 03 00 27 IMP Last time you were perfect.
- 01 03 00 30 CC Okay.
- 01 03 00 32 CDR If you keep this up you will figure out where
we are.
- 01 03 00 37 CC Hey, I was just looking at the difference in
the - in your vectors on the tube here, and
it is almost all zeros. You've really got a
winner on board there.
- 01 03 00 49 IMP You mean our computer?
- 01 03 00 53 CC That's affirmative. Yes, in a comparison
between your onboard vector and the ground
vector is almost no error between the two.
C/P has really been tracking good.
- 01 03 01 05 C/P Say, one thing I'm still a little concerned
about is, every time average G comes on at T
minus 30 there, we're picking up almost a foot
per second in that 30 seconds waiting for the
burn to start.
- 01 03 01 19 CC Roger. We copied your query on that before,
and everybody says that that is well within
the tolerance. I looked through the check-
list here and it says as long as it is less
than 2 feet per second in 5 seconds, it's GO.
- 01 03 01 37 C/P Yes, but we want to be perfect.

(GOSS NET 1)

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- 01 03 01 39 CC I see. You want to trim those --
- 01 03 01 40 CDR I guess we've just never seen this much before in SIMS.
- 01 03 01 42 LMP It is sort of unusual to see anything, really.
- 01 03 01 49 CC Yes. We agree with that. I guess that's probably a good thing; we ought to load some in the simulator.
- 01 03 01 57 CMP Probably be a good idea.
- 01 03 01 58 CC Hey, if you got a minute for a question, I'm curious about your windows. Are they fogged up? How is your visibility?
- 01 03 02 08 LMP I just took a picture of the left hand rendezvous window and it's starting to fog up around the sides. It looks like some sort of film on the outside of the outer pane - or the inside of the outer pane; it's hard to tell. It has moved in from the edge about a half an inch, now, on the far right side and all the way down and about 4 inches down from the top on the left side from the top of the apex. And the hatch window has got a big circle in the middle of it. It's beginning to fog up.
- 01 03 02 46 CC Roger. Copy that. Sounds like the problem's still with us, then.
- 01 03 02 53 LMP And windows 4 and 5 are clear. I don't see any trouble with them at all. And be advised that hatch window - It's a pretty light coating, still.
- 01 03 03 06 CC Roger. Understand.
- 01 03 03 07 CMP It almost looks like it goes away when the sun shines on that - that and window number 1.
- 01 03 03 14 CC Roger. Copy. And --
- 01 03 03 19 CDR Window number 1 seems to fog up periodically, but I'd say for the most part really they are pretty good.
- 01 03 03 30 CC Roger. Understand. And I got a few words of wisdom on the cryo tanks for tonight.

(GOSS NET 1)

Tape 18/6
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01 03 03 40 CDP Okay. Go ahead.

01 03 03 43 CC Roger. You are starting to fade out on me a little bit. We still got some time here with you, but tonight we'd like to just about repeat the plan that we did last night. At this time go ahead and turn off the heaters in both H₂ tanks. Allow the pressure to drop to 175 psi, and use the heaters to keep the pressure from going below 175, and then prior to the sleep period we'll turn on the fans and H₂ tank number 2. We hope that it will keep the pressure up during the night.

01 03 04 28 CDP Okay. We've got the heaters off now and you want us to let it go down 175 - keep it to 175 using the heaters, and then tonight use H₂ fan number 2 rather than 1.

01 03 04 44 CC That's affirmative.

01 03 04 48 CDP Roger.

CANARY (REV 18)

01 03 09 00 CC Apollo 9, Houston. We are showing a pretty big middle gimbal angle there.

01 03 09 06 CDP Roger. We got a ...

01 03 09 36 CDP Houston, Apollo 9. What's your temperatures on the quads for the burn here - on the roll quad?

01 03 09 44 CC Roger, Apollo 9. Copy. Stand by.

01 03 09 47 CDP Okay. We've been using B and D because they show highest up here, but if you have any other preferences, let us know.

01 03 09 55 CC All right. Understand. You are going to plan on using Baker and Delta unless we advise you otherwise.

01 03 10 00 CDP That's affirm.

01 03 10 02 CC Okay.

(COGS NET 1)

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01 03 11 46

CC

And, Apollo 9, Houston. We are losing you at Canaries. We will see you at Tananarive about 25. Excuse me - Ascension here coming up real soon. Sorry about that.

ASCENSION (REV 18)

01 03 14 32

CC

Apollo 9, Houston. Do you read?

01 03 15 21

CMP

Houston, Apollo 9.

01 03 15 24

CC

Go ahead, Apollo 9.

01 03 15 27

CMP

Roger. You called?

01 03 15 29

CC

Yes. We've got one other question for you on the PUGS system. Rusty commented that he switched from PRIME or NORMAL to AUX. We would like to know if the meter changed when you switched, and if it did, the readings before and after.

01 03 15 51

LMP

Okay. The answer is yes. It did change. The unbalance tended to decrease but then it came back up again, and it also caused the MASTER ALARM to go on and off and so I switched back to NORMAL. Both NORMAL and AUX indicate an increase in the oxidizer unbalance. I can't give you a quantity reading on the auxiliary system because it was moving. For your information, during the burn the oxidizer unbalance jumped all around.

01 03 16 30

CC

Okay, Apollo 9. We copied that. Thank you very much.

01 03 16 36

LMP

Okay. And if you can't think of anything better to do with it, we might consider shutting it off on some of these later burns, because it's taking a lot of time to reset the MASTER ALARMS in the middle of a burn.

01 03 16 50

CC

Roger, Apollo 9. We've been considering that and unless we can come with something better, that is probably going to be our recommendation. We are still trying to troubleshoot it; that is the purpose for this question.

01 03 17 02

LMP

Okay. Besides that, it changes the pulse rate, too.

(00SS MET 1)

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01 03 17 12 CC I'm sorry, Apollo 9. Change of what? I didn't catch your last statement.
01 03 17 17 LMP I say the MASTER ALARM changes the heart rate.
01 03 17 21 CC (Laughter) Roger. Understand. We didn't notice that down here. You looked cool as a cucumber.
01 03 17 31 LMP Sweaty palms.

TANANARIVE (REV 18)

01 03 27 00 CC Apollo 9, this is Houston through Tananarive.
01 03 27 16 LMP Houston, Apollo 9.
01 03 27 19 CC Okay. I'm reading you okay - just standing by here. We'll have you for about 8 minutes across Tananarive.
01 03 27 28 LMP Roger. Do you want to copy the targeting angles?
01 03 27 34 CC Roger. Go ahead.
01 03 27 36 SC Okay. Plus 00298, minus 00374, minus 00649.
01 03 27 50 CC Roger. I copy.
01 03 27 52 LMP Beginning of the time will be 27 28 00.
01 03 27 59 CC Roger. Copy time 27 28 00, and I copied angles.
01 03 28 03 SC Roger.
01 03 36 05 CC And, Apollo 9, we'll see you over Carnarvon in about 42.

CARMARVON (REV 18)

01 03 41 58 CC And, Apollo 9, Houston through Carnarvon.
01 03 42 03 COR Roger.

(GOSS NET 1)

Tape 18/9
Page 99

- 01 03 42 05 CC And you're loud and clear. And, Apollo 9, I would like to close a loop on an item I mentioned a while back about the DSE voice interference. Evidently that was a ground playback problem; we've run your last dump through and it's real good, so that DSE voice is okay.
- 01 03 42 28 CDR Okay, fine.
- 01 03 43 50 CC And, Apollo 9, Houston. Another item: fuel cell 3 O₂ flow looks normal to us. It's settled back down.
- 01 03 43 59 CMP Yes, it does look like it is coming down again.
- 01 03 44 22 LMP And, Houston, Apollo 9. Do you plan to have us charge BATT A tonight?
- 01 03 44 30 CC Copy, Apollo 9. Stand by.
- 01 03 44 38 CC And, Apollo 9, that is affirmative.
- 01 03 44 42 LMP Roger. Thank you.
- 01 03 46 16 CC Apollo 9, Houston.
- 01 03 46 20 LMP Go ahead.
- 01 03 46 21 CC Roger. Another question on our PUGS problem. Have you tried the test switch on this?
- 01 03 46 32 LMP That's a negative.
- 01 03 46 36 CC Roger. Understand. Have you got time to run that for us now, Rusty? If we so request it?
- 01 03 46 46 LMP Sure do.
- 01 03 46 48 CC Okay. Stand by one. Okay, Rusty. We would like to have you do that. I'm sure you are familiar with this procedure, but we would like to have you know your values now so you can return to those. And a caution on this is to not stay in position 1 or position 2 longer than 10 seconds. And we would like it run in both NORMAL and AUX.
- 01 03 47 15 LMP Okay. Understand you want to do it in both NORMAL and AUX, and let me know when you are ready. You want test 1 and test 2 in both of them.

(GOSS NET 1)

Tape 18/10
Page 100

- 01 03 47 34 CC That is affirmative. And as I say, note here that you will have to note your values so you can bring it back to your present values now.
- 01 03 47 47 LMP Okay. I'll give you about 8 seconds. We are starting and - you ready to go?
- 01 03 47 54 CC Roger, Apollo 9. We can't .. We can't monitor this; we would just like to have you do it on board and we would like to have you go up and down, back to the present values and NORMAL and PRIMARY, and then the same thing in AUX. And give us a few words of wisdom as you proceed through it.
- 01 03 48 15 LMP Okay. In work.
- 01 03 48 16 CC Okay.
- 01 03 48 38 LMP Okay, Houston. I just ran test 1 in PRIMARY, rather in NORMAL, and in 10 seconds I got no motion at all. The MASTER ALARM light did come on after about 5 seconds, but no motion at all on the counters and for that reason I don't think I will go down to test 2. I may not be able to get it back up where it belongs.
- 01 03 49 09 CC Roger. We copy that. Stand by one. That's a pretty definite test of some sort, so stand by one, Apollo 9.
- 01 03 49 19 LMP Roger. And any time you want to give me a GO, I'll go ahead and run the same test in AUX.
- 01 03 49 24 CC Okay. Stand by.
- 01 03 52 55 CC And Apollo 9, this is Houston. We're about to lose you here at Carnarvon. We'll see you at Huntsville at about 59.
- 01 03 53 04 LMP Roger. Do you want me to try and test it in AUX or are you still thinking about it?
- 01 03 53 07 CC Well, our plan is that we're going to have you disable these - the PUGS for this burn and we'll talk about that over the Huntsville or Hawaii; we're coming up on 30 minutes of the burn, and we figure we should just go ahead and chuck it for this one.
- 01 03 53 24 LMP Okay.

(GOSS NET 1)

Tape 18/11
Page 101

HUNTSVILLE (REV 18)

01 03 59 20 CC Apollo 9, this is Houston through the Huntsville.
01 03 59 55 CC Huntsville M&O, Houston CAP COMM. How do you read?
01 04 00 00 CT Houston CAP COMM, Huntsville M&O. Read you loud and clear. We have not established valid two-way lock yet with the spacecraft.
01 04 00 07 CC Roger. Understand. Would you give me a call when you do?
01 04 00 13 CT Roger. Wilco.
01 04 00 18 LMP Hello. Houston, Apollo 9.
01 04 00 21 CC Apollo 9, Houston. You are loud and clear.
01 04 00 29 LMP Weak, but --
01 04 00 34 CC Apollo 9, this is Houston. I read you loud and clear. How me?
01 04 00 48 CC Okay, Apollo 9, this is Houston. I think you are reading me. We are recommending that we turn the PUGS off for this burn. We would like to have you turn the SPS gaging switch off. We would like to have you pull 2 circuit breakers on panel 8; they are the heater gaging circuit breakers MAIN A, MAIN B.
01 04 01 18 LMP ...
01 04 01 32 CC And, Apollo 9, this is Houston. I am not reading you at all.
01 04 01 51 CT Houston CAP COMM, this is the Huntsville M&O. At the time we were talking to the spacecraft we had valid two-way lock, and we've lost it presently.
01 04 02 00 CC Roger. You say I did have two-way lock at the time of my transmission?
01 04 02 06 CT Roger. During the brief transmission you had two-way lock; presently you do not have it. The signal is very weak.

(GOSS NET 1)

Tape 18/12
Page 102

01 04 02 12 CC Roger. Understand. Thank you.
01 04 03 09 LMP Houston, Apollo 9. How do you read now?
01 04 03 12 CC Apollo 9, this is Houston. I read you loud
and clear. Did you copy my last transmission?
01 04 03 17 LMP That's a negative. You were way down in the
mud.
01 04 03 20 CC Okay. We're recommending that you disable the
PUGS for this burn. We would like to have you
turn the SPS gaging switch off, and pull the
two circuit breakers on panel 8, labeled SPS
HEATER GAGING, MAIN A, MAIN B.
01 04 03 40 LMP Roger. SPS gaging OFF, and the breakers are
OPEN.
01 04 03 44 CC Okay. Very good. Thank you, Apollo 9.
01 04 03 48 LMP Roger.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(COSS NET 1)

Tape 19/1
Page 103

HUNTSVILLE (REV 18)

----- CDR Roger.

----- CC And, Apollo 9, this is Houston. We are losing you over the Huntsville; we'll see you over Hawaii at 10.

----- CDR Houston, this is Apollo 9. You are breaking up very badly, lots of noise, and the S-band's cutting you out there.

----- CC Roger. We'll see you over Hawaii at 10.

----- CDR Roger. Hawaii at 10. You came through pretty good that time if you want to try again.

----- CC No, I was just telling you we were LOS.

HAWAII (REV 18)

01 04 10 25 CC Apollo 9, this is Houston through Hawaii. Standing by.

01 04 10 30 CDR Roger. Houston, Apollo 9. Coming up on the burn here.

01 04 10 35 CC Roger. You are loud and clear, and we'll have your GO/NO-GO shortly. Let everybody take a look at your data.

01 04 10 42 CDR Okay.

01 04 13 12 CC Apollo 9, this is Houston. You are GO for SPS-4.

01 04 13 17 CDR Apollo 9. Roger.

01 04 25 40 CC And, Apollo 9, Houston. I copy your residuals as plus 00003, plus 00035, plus 00032.

01 04 25 58 QP Roger. That's correct for the DELTA-V curve, that's a minus 6.2.

01 04 26 04 CC Roger. Minus 6.2.

01 04 26 21 CC And, Apollo 9, Houston. I copy the order.

01 04 26 26 CMP Roger.

(GOSS NET 1)

Tape 19/2
Page 104

01 04 26 27 LMP Roger.
01 04 26 30 CMP That was a good burn.
01 04 26 32 CC Roger. Understand. Looked good here.
01 04 26 35 CMP You're really ...
01 04 27 11 LMP And, Houston, do you want us to begin charging BATT A?
01 04 27 19 CC That's affirmative, Apollo 9. Let's start charging battery A.
01 04 27 24 LMP Okay.
01 04 28 41 CDR Houston, this is Apollo 9.
01 04 28 45 CC Go, Apollo 9.
01 04 28 47 CDR We just want to advise you that the command and service module now weighs less than the LM.
01 04 28 52 CC Roger. Copy.
01 04 29 01 CC Hey, Jim, I think you must like the heavy jobs. Soon as you got this one lighter - Now tomorrow you are going to crawl into the heavy one.
01 04 29 08 CDR Yes. I always have been in favor of heavies.
01 04 29 11 CC (Laughter) Roger.
01 04 29 16 CMP You notice the way we end up, though, at the end of the run.
01 04 29 19 CC Okay.

TEXAS (REV 19)

01 04 32 58 CC Apollo 9, Houston.
01 04 33 00 LMP Go ahead.
01 04 33 01 CC Roger. Our CGC1 dropped down there a little bit right when you were commenting on your MASTER ALARM during the burn. Would you repeat that?
01 04 33 07 LMP Roger. The comment was that it was a real good burn and we didn't have any MASTER ALARMS that time.

(COSS NET 1)

Tape 19/3
Page 105

01 04 33 13 CC Roger. Well, the white hats picked up one on that.
01 04 33 17 LMP We had one caution light, but it was on before
the burn, so I guess that's okay.
01 04 33 21 CC That's right.
01 04 33 23 LMP SIM SUP must be falling down on his job.
01 04 33 30 CC We'll talk to him about that; see what he can do
for you tomorrow.
01 04 33 34 SC ...
01 04 33 35 LMP No thanks - okay?
01 04 33 36 CC Okay.

BERMUDA (REV 19)

01 04 35 19 LMP Houston, did you call?
01 04 36 18 CC Apollo 9, Houston.
01 04 36 20 LMP Go ahead, Houston. Apollo 9.
01 04 36 22 CC Roger. Just for your info, that Y-residual on
that burn took out those few seconds that we were
off on the rendezvous and now we are trying to
measure it in centiseconds.
01 04 36 35 CMP Good. We've got just the computer that can take
centiseconds.
01 04 36 39 CC Okay.
01 04 36 43 LMP I have something to tell you; he's going to have to
If that doesn't work, you can just make the numbers
smaller and smaller.
01 04 36 49 CC Okay.
01 04 37 39 CMP Houston, Apollo 9.
01 04 37 43 CC Apollo 9, go.
01 04 37 45 CMP Are you going to leave the SPS gaging circuit down
for the rest of the flight?

(GOSS NET 1)

Tape 19/4
Page 105

01 04 37 53 CC We haven't really decided on that yet, Apollo 9.
I guess it depends on how our troubleshooting goes.

01 04 37 59 CMP Okay. We will just stand by for whatever you want
to do, then.

ANTIGUA (REV 19)

01 04 38 02 CC Roger. If we can come up with some good ideas,
we will work on it.

01 04 38 07 CMP Roger.

01 04 38 19 LMP Houston, Apollo 9.

01 04 38 23 CC Apollo 9, go ahead.

01 04 38 25 LMP Roger. We would like to know what your plans are
for purging of the fuel cells, if any.

01 04 38 30 CC Roger. We would like to have that O₂ purge as
we talked about before over Carnarvon. And stand
by here; we will see if we got any other on that.
And we would like to have an E memory dump at this
time. We're standing by now on your Mark.

01 04 38 50 LMP Okay. 3, 2, 1.

01 04 38 52 LMP MARK.

01 04 38 53 LMP E memory dump.

01 04 39 25 LMP Houston, we are going to fill the PISS tank again
so the surge will be coming down.

01 04 39 30 CC Roger. Understand.

01 04 40 30 CC And, Apollo 9, this is Houston. We've got about
1 more minute at Antigua, and then we will see
you over Ascension at 46.

01 04 40 42 LMP Roger. Ascension 46.

ASCENSION (REV 19)

01 04 46 55 CC Apollo 9, Houston.

01 04 47 07 CC Apollo 9, Houston through Ascension.

(GOSS NET 1)

Tape 19/5
Page 107

01 04 47 12 CDR Roger. Houston, Apollo 9.
01 04 47 14 CC Hello. Tremendous COMM this pass. We'd like to have POO in ACCEPT. We'd like to give you a state vector.
01 04 47 21 CDR Roger. You've got it.
01 04 47 23 CC Understand.
01 04 47 50 CC And, Apollo 9, Houston. I have a NAV check to go along with the state vector ...
01 04 48 01 CMP Roger. Go ahead with your NAV check.
01 04 48 03 CC Roger. Reading NAV check: 029 40 all zips, plus 12 27, plus 16 044 135 8.
01 04 48 35 CMP Roger. Reading back: 029 49 all zips, plus 12 27, plus 16 044 135 8.
01 04 48 46 CC Roger. Confirm the update.
01 04 49 23 CC Apollo 9, Houston. You have both the state vector clocks loaded. The computer is yours.
01 04 49 30 CMP Roger. Computer's ours; thank you.
01 04 50 10 LMP You guys were perfect again.
01 04 50 15 CC Roger. I see it on there now. With a little practice, by gosh, we may make it yet.
01 04 50 27 LMP Roger. And we're ready for block data any time you got it.
01 04 50 31 CC I'm sorry about that, Rusty. We don't have that yet. We'll try to catch that - I know it's through your eat period here, but we're going to have to catch it over Carnarvon, some spot over there, during the next hour.
01 04 50 44 LMP Okay. Fine.
01 04 50 54 LMP And, Houston, we're going to be powering down the O&H here.
01 04 50 59 CC Roger. Understand. Any time.
01 04 51 03 LMP Okay.

(CONT INT 1)

Tape 19/6
Page 1C8

- 01 04 51 13 CC And, Apollo 9, if you would like to do that O₂ purge now that would be one less thing you would have to do next hour. We've still got you here at Ascension for almost 6 minutes.
- 01 04 51 26 LMP Okay. We'll run through that O₂ purge right now.
- 01 04 51 30 CC Roger. Understand you are starting an O₂ purge. Very good.
- 01 04 52 15 CC And, Apollo 9, Houston. Just for your info - why we're late on the block data is the weather has turned pretty bad in some areas and we had to shift the areas.
- 01 04 52 29 LMP Roger.
- 01 04 52 33 CC In fact, it looks like we are going to have to keep you flying or either land you out here in - off Redfish Isle in Galveston Bay.
- 01 04 52 44 LMP Why don't we just stay up for a few days?
- 01 04 52 46 CC Okay. That sounds like a good idea.
- 01 04 52 57 LMP The food and bubbly are holding out all right.
- 01 04 53 01 CC Tremendous. And Apollo 9, another thing I would like to get from you would be your RCS quads - your cabbard readout, quantity, and your thruster temp.
- 01 04 53 17 LMP Roger. I'll be right down with them.
- 01 04 53 19 CC Okay.
- 01 04 54 02 LMP Okay. Purge is complete.
- 01 04 54 05 CC Roger. Copy purge complete.
- 01 04 54 36 CDR Houston, here is the RCS quantity if you want to copy.
- 01 04 54 39 CC Roger. Go ahead.
- 01 04 54 42 CDR A quad is 79 percent, B is 64, C is 79, D is 79.
- 01 04 55 01 CC Roger. I copy 79, 64, 79, 79.
- 01 04 55 06 CDR That is affirm.

(00088 MET 1)

Tape 19/7
Page 109

01 04 55 20 CDR And, Houston, stand by on the injector temps for just a second.

01 04 55 24 CC Roger. Understand.

01 04 56 46 LMP Houston, Apollo 9. We'll get you with the injector temps on next station.

01 04 56 51 CC Roger. We're about to lose you here at Ascension and the next station is Tananarive at about 04, but our COMM has been pretty bad. I won't even try to talk with you unless you contact us, and I'll contact you next over Carnarvon at 19.

01 04 57 09 LMP Roger.

CARNARVON (REV 19)

01 05 21 17 CC Apollo 9, this is Houston through Carnarvon. Standing by.

01 05 21 23 LMP Okay, Houston. You're coming in five-square. Now us?

01 05 21 26 CC Oh, it's sterling. Five-square.

01 05 21 31 LMP Okay. And we've got some readouts for you. Did you copy the RCS?

01 05 21 36 CC We copied the RCS quantities.

01 05 21 41 LMP Okay. Here come the BATT voltages: BATT C, 37.0; pyro A, 37.1; pyro B, 37.1; and I've got the injector temperatures for you.

01 05 21 57 CC Roger. I copy the battery voltages; go with the injector temperatures.

01 05 22 02 LMP Roger. 5C and D, OFF SCALE HIGH; 6A and B, OFF SCALE HIGH; 6 Charlie and Delta are, respectively, 4.0 and 4.6.

01 05 22 24 CC Roger. Copy 5 Charlie and Delta, OFF SCALE HIGH; 6 Alfa and Bravo, OFF SCALE HIGH; and Charlie and Delta, 4.0 and 4.6.

01 05 22 34 LMP That's Charlie.

01 05 22 37 CC Okay. And we'd like to confirm with you that before you sack out you'll turn the fan on in E₂ tank 2.

(0088 NET 1)

Tape 19/8
Page 110

- 01 05 22 48 LMP Roger. We will, and be advised that it doesn't look like we're going to get down to 175.
- 01 05 22 53 CC Roger. We confirm that. And another thing, we'd like to recommend that tonight you turn your VHF B receiver off. We will be guarding that frequency on the ground, and we will be monitoring the spacecraft, and if we can't get through to you on A - VHF A - we'll use the CSM ALERT.
- 01 05 23 21 LMP Okay. We'll turn Bravo off. You want us to stay just in SIMPLEX A.
- 01 05 23 26 CC That is affirmative. SIMPLEX Alfa and turn off your VHF B.
- 01 05 23 35 LMP Okay. We're SIMPLEX Alfa at this time, and we're ready with the block data then.
- 01 05 23 47 CC Roger. It'll still be a little bit - the weather is shifting those sites around. I do not have the block data for you yet; and I would like to confirm that we will be monitoring B-frequency if you need to bring it up in transmit.
- 01 05 24 03 LMP Roger. Understand you'll be listening on B also. Thank you.
- 01 05 24 06 CC Roger.
- 01 05 27 30 CC Apollo 9, Houston.
- 01 05 27 33 LMP Go ahead. Houston, Apollo 9.
- 01 05 27 35 CC Roger. I've only got about 2 minutes here at Carnarvon. I'd like to start the block data, though, and finish it up over Guana.
- 01 05 27 44 LMP Okay. Ready to copy.
- 01 05 27 45 CC Roger. Reading block data: 021 4 Alfa, plus 325, minus 1610 032 44 34 3859; 022 4 Charlie, plus 259, minus 1610 034 19 01 3859; 023 4 Charlie, plus 145, minus 1575 035 56 03 4856; 024 Alfa Charlie, minus 216, minus 0070 036 24 11 5397. I believe I've lost you.

GUAM (REV 19)

- 01 05 33 35 CC Apollo 9, Houston. Do you read through Guam?
- 01 05 33 40 LMP Houston, Apollo 9. Roger. We read you; how us?
- 01 05 33 43 CC Roger. I read you five-square. How far did I get?
- 01 05 33 47 LMP Okay. I got to the last line in 24 Alfa Charlie, and I got a 53 there, and that is all.
- 01 05 33 54 CC Okay. The last line in Alfa Charlie is 5397, and reading on the next ones: 025 4 Charlie, minus 178, minus 1620 039 13 13 8020. The last one: 026 Alfa Charlie, minus 042, minus 0260 039 33 59 4000. That's the end of the update. I would like to go back to the third line and 4 Char - 023 4 Charlie, the third one I read. The third line in that should be minus 1625. And the - your SPS trim angles: pitch, minus 0.9, yaw, minus 0.7.
- 01 05 35 36 LMP Okay. A readback on them all. Do we have enough time to read them all back?
- 01 05 35 40 CC Apollo 9, before you start the readback, we would like to have you turn on the H₂ purge heaters; and what we are working up to is just before your rest period, it looks like we are going to have to purge to get the pressure in H₂ cryo tanks down to 175.
- 01 05 36 03 LMP Roger. We've got the H₂ purge heater on.
- 01 05 36 07 CC Understand. And I am ready for the readback.
- 01 05 36 14 LMP Roger. 021 dash 4 Alfa, plus 325, minus 1610 032 44 34 3859; 022 4 Charlie, plus 259, minus 1610 034 19 01 3859; 023 4 Charlie, plus 145, minus 1625 035 56 03 4856. Are you still with us?
- 01 05 36 59 CC Roger. We've got 3 minutes left.
- 01 05 37 02 LMP Okay. 024 Alfa Charlie, minus 216, minus 0070 036 24 11 5397; 025 4 Charlie, minus 178, minus 1620 039 13 13 8020; 026 Alfa Charlie, minus 042, minus 0260 039 33 59 4000. Pitch 0.9, yaw 0.7. That is a minus and a minus.

(GOSS NET 1)

Tape 19/10
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- 01 05 37 53 CC That is affirmative. Houston confirms that update. We still have about 2-1/2 minutes left in this pass and we will see what our words of wisdom are on the tanks, and that should be the last time we will have to talk to you tonight, I believe.
- 01 05 38 07 CDR Okay.
- 01 05 38 10 CDR Can we talk to you if we want to?
- 01 05 38 26 CC Okay, Apollo 9. The way we would like for you to do it is, after your time is up on the heater, to go ahead and do a purge as required to get it down to 175; and discontinue the purge, turn the heaters off and turn the fan on in tank 2.
- 01 05 38 44 LMP Roger. Understand when the 20 minutes are up, you want us to purge H₂ on all three fuel cells until the cryo gets down to 175. Discontinue the purge, turn the fan on in tank 2, and sack out.
- 01 05 39 02 CC That is affirmative. One other item I would like to get, if you can give it to us, is a dosimeter reading.
- 01 05 39 09 LMP Roger. Stand by; I'll give you mine. ...
- 01 05 39 40 CC Apollo 9, if that was a transmission, I didn't get it.
- 01 05 39 52 CC Apollo 9. Do you read Houston?

END OF TAPE

APOLLO 9 AIR-TO-GROUDED VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 20/1
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HAWAII (REV 19)

- 01 05 47 27 CC Apollo 9, Houston through Hawaii.
- 01 05 47 32 CDR Go ahead. Houston, Apollo 9.
- 01 05 47 34 CC Roger. If you'll give me a dosimeter reading, I'll be quiet for the rest of the night.
- 01 05 47 42 CDR Roger. The dosimeter for Dave, 6102. My dosimeter is packed down in the bottom of my seat. If you really want it, I'll unpack it. If you don't need it, I'll delay it until tomorrow and give it to you.
- 01 05 47 56 CC That's negative. We don't want you to unpack it and the first one was for Dave, is that right?
- 01 05 48 03 CDR 6102 is Dave's.
- 01 05 48 06 CC Okay. I got that.
- 01 05 48 08 CDR You already got Rusty's, didn't you?
- 01 05 48 11 CC And I did not get Rusty's. Could you give me that one?
- 01 05 48 15 CDR Oh, okay. Just a minute.
- 01 05 48 20 CDR That's 8002.
- 01 05 48 23 CC Roger. 8002. And with that we'll close out. What we'd like to have you do in the morning would be to give us an evaluation of your sleep in hours, if you could, for tonight and the first night. We don't want to bother you with that now, and unless you have something else, why, Smokey bids you a fond night's sleep.
- 01 05 48 49 CDR Okay. Thanks very much. Would you tell my family I said, "Hello."
- 01 05 48 56 CC Roger. Will do that.
- 01 06 16 28 CC Apollo 9, this is Houston. You don't even have to answer me, but if you don't get that filter changed as shown on the 30 hours, you're going to have a MASTER ALARM before your rest period ends.

(GOSS MET 1)

Tape 20/2
Page 114

01 06 16 48 IMP Roger, Houston. Understand. If we don't get the L10H canister changed before 30 hours we'll have a MASTER ALARM before the end of our rest period!

01 06 16 58 CC That's affirmative. It's shown in the flight plan and I just wanted to remind you before we got too far into the rest period.

01 06 17 04 CDR That's all right. You know what I told you about little reminds.

01 06 17 10 CDR Anytime your little heart desires to remind us, you do that.

01 06 17 27 CDR How are things in Houston, there, Smokey?

01 06 17 30 CC Say again.

01 06 17 31 CDR How are things in Houston? Now that we're not working I want to talk to you.

01 06 17 35 CC Negative. We refuse to talk to you; it's a rest period. The only thing we want is you to answer one question. Did you happen to move the B3 thruster switch - B1 thruster switch?

01 06 17 44 CDR Roger. I did.

01 06 17 46 CC Okay. Very good. That solves that problem and we've reminded you of the canister and that will keep you from getting a MASTER ALARM and we're not going to answer you anymore.

01 06 17 55 CDR What are you, a smart guy?

01 06 17 58 CC No, sir.

01 06 17 59 CDR Which one of those good teams is on right now, Gold or White or Orange?

01 06 18 03 CC It's the G-squared team, good Gold.

01 06 18 08 CDR Good Gold.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 21/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOES NET 1)

Tape 22/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS MET 1)

Tape 23/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 24/1
Page 118

REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 25/1
Page 119

REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND TRANSCRIPTION

(GOSS NET 1)

Tape 26/1
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GUAM (REV 25)

01 15 20 24 CC Good morning, Apollo 9. Houston calling.
01 15 20 45 CDR Good morning, Houston. Apollo 9.
01 15 20 48 CC Roger. I'm a long ways away, so you can't hit me for waking you up.
01 15 20 53 CDR Say again.
01 15 20 54 CC I'm a long ways away, so you can't swing and hit me on waking up.
01 15 20 59 CDR Okay. How's everything looking down there?
01 15 21 07 CC It's looked beautiful all night; kept it so quiet here that we didn't have too much to do.
01 15 21 13 CDR Oh. Very good.
01 15 21 20 CC I have a lot of good information here: flight plan update, consumables, and some block data when you get around to copying some of it.
01 15 21 30 CDR Okay. Stand by one.
01 15 22 49 CDR Okay, Houston. Go with your flight plan update.
01 15 22 57 CC Roger. At time about 39 plus 55, primary glycol accumulator refill. Fill to 50 to 55 percent, IMP 2 dash 7 step 4. Over.

HUNTSVILLE (REV 25)

01 15 23 53 CDR ... 39, plus 55 primary glycol accumulator refill; fill to 50 to 55 percent ...
01 15 24 12 CMP Houston, 9. Did you get the readback?
01 15 24 15 CC Houston. Roger. Came through kind of weak, but it was okay. Change. Move S-band conference MSFN relay up to 44 plus 18 over Honeysuckle. Systems page 27. Over.
01 15 25 00 CDR Okay. Move S-band conference MSFN S-band relay up to 44 plus 18 over Honeysuckle. Systems page 27

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01 15 25 12 CC Roger. Next one: move CSM one-way relay up to 45 plus 38 over Carnarvon. Systems page 31. Over.

01 15 25 45 CDR Roger. Move CSM one-way relay up to 45 plus 38 over Carnarvon. Systems page 31.

01 15 25 56 CC Roger. That's all of the general things. We're going to try to give your state vector and your reference - REFSMMATS; we'll send it over Guam at 40 plus 51.

01 15 26 13 CDR Roger. 40 plus 51 for the state vector REFSMMATS.

01 15 26 19 CC Roger. And I have your consumables.

01 15 26 25 CDR Roger. And the consumables. Okay.

01 15 26 28 CC GET 039 75 17 76 22 81 22 76 22 528 44 36 31 39. Over.

01 15 27 11 CDR Okay. 039 75 17 76 22 81 22 76 22 528 44 36 31 39

01 15 27 35 CC 9, Houston. Your readback is correct.

01 15 27 38 CDR Roger.

01 15 28 39 CMP Houston, 9. Did you want to go through the block-data, too?

01 15 28 42 CC Roger. I have it if you're ready.

01 15 28 45 CMP Okay. Go.

01 15 28 47 CC Roger. 027 Alfa Charlie, plus 090, minus 0310 041 16 03 3529; 028 2 Alfa, plus 249, minus 0264 043 02 57 3001; 029 Alfa Charlie, plus 317, minus 0285 044 46 10 3569; 030 2 Charlie, plus 340, minus 0290 046 24 14 3859; 031 2 Charlie, plus 321, minus 0320 047 58 31 3859; 032 2 Bravo, plus 253, minus 0330 049 34 33 4358. Your SPS trim: pitch minus 0.9; yaw, minus 0.7. Over.

ASCENSION (REV 26)

01 16 12 19 CC Apollo 9, Houston through Ascension.

01 16 12 39 CC Apollo 9, Houston through Ascension.

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01 16 13 00 CC Apollo 9, Houston.
01 16 13 21 CC Apollo 9, Houston.
01 16 13 26 LMP Go ahead.
01 16 13 28 CC Roger. If you haven't already done it, we'll set up our hydrogen tank 1 and 2 heaters to AUTO and the fans OFF for the day.
01 16 13 42 LMP Okay. Heaters 1 and 2 to AUTO and the fans OFF.
01 16 13 45 CC Roger. And I have your block data if you're ready to copy.
01 16 13 50 CMP Okay. Stand by one, please.
01 16 13 52 CC Roger.
01 16 13 56 CMP Houston, how long's this pass?
01 16 13 59 CC They got a keyhole; we only have about a minute and a half here yet.
01 16 14 04 CMP Okay. Stand by.
01 16 14 23 CMP Okay. Go ahead, Houston. How about starting with 28 dash 2A?
01 16 14 28 CC Roger. 028 dash 2A Alfa, plus 249, minus 0264 043 02 57 3001; 029 Alfa Charlie, plus 317, minus 0285 044 46 10 3569; 030 2 Charlie, plus 340, minus 0290 046 24 14 3859. And, 9, Houston. You still with me?
01 16 16 13 CC Apollo 9, Houston.

END OF TAPE

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GUAM (REV 27)

01 16 52 39 CC Apollo 9, Houston through Guam.

01 16 52 43 CDR Roger. Houston, Apollo 9. Go.

01 16 52 45 CC Roger. We see you have P00. Request ACCEPT.

01 16 52 49 CDR Roger. You got ACCEPT.

01 16 52 53 CC Roger. We'll send your state vector and your REFSMMAT up to you.

01 16 52 58 CDR Okay.

01 16 53 01 CC We might continue with block data when you get a chance there.

01 16 53 04 CDR Okay. Stand by one, please.

01 16 54 55 LMP Houston, Apollo 9.

01 16 54 57 CC Houston. Go.

01 16 54 59 LMP Okay. I copied up through the DELTA-V_C on 030 dash 2 Charlie. Do you want to go from there?

01 16 55 07 CC Roger. DELTA-V_C on 030 dash 2 Charlie 3859 031 dash 2 Charlie, plus 321, minus 0320 047 58 31 3859; 032 2 Bravo, plus 253, minus 0330 049 34 33 4358. And your SPS trim: pitch minus 0.9, yaw minus 0.7. Over.

01 16 55 21 LMP Roger. Understand. I'll read them all back to you if you ready.

01 16 55 24 CC Roger. Go.

HUNTSVILLE (REV 27)

01 16 55 28 LMP How do you read now; you fading on me?

01 16 55 30 CC Roger. Loud and clear.

01 16 55 34 LMP Okay. 027 Alfa Charlie, plus 090, minus 0310 041 16 03 3529; 028 dash 2 Alfa, plus 249, minus 0264 043 02 57 3001; 029 Alfa Charlie, plus 317,

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minus 0285 044 45 10 3569; 030 dash 2 Charlie,
plus 340, minus 0290 046 24 14 3859; 031 dash
2 Charlie, plus 321, minus 0320 047 58 31 3859;
032 dash 2 Bravo, plus 253, minus 0330 049 34 33
4358. And I have for a pitch trim minus 0.9,
and yaw trim minus 0.7.

01 16 57 52 CC Apollo 9, Houston. Your readback correct.
01 16 58 04 CC Apollo 9, Houston. The computer is yours.
01 16 58 08 LMP Okay. I understand. And did you copy all
that?
01 16 58 11 CC Affirmative. Your readback was correct, and
I have a NAV check for you.
01 16 58 17 LMP NAV check. Okay. Go ahead.
01 16 58 20 CC Roger. 042 00 0000, plus 2858, plus 00646 1126.
And this is 30 minutes prior to NAV update.
01 16 58 49 LMP Roger. 042 0000, plus 2858, plus 0646 1126.
01 16 58 59 CC Apollo 9, Houston. You readback correct.
01 16 59 02 LMP Roger.

MERCURY (REV 27)

01 17 01 11 CC Apollo 9, Houston.
01 17 01 50 CC Apollo 9, Houston.
01 17 01 53 CDR Houston, Apollo 9. Go ahead.
01 17 01 57 CC Roger. I have a new CSM weight for your DAP
data load.
01 17 02 01 CDR Okay. Go.
01 17 02 03 CC Roger. CSM weight 30571.
01 17 02 15 CDR Apollo. Roger. 30571 for CSM weight.
01 17 02 19 CC Affirmative.
01 17 09 34 CC Apollo 9, Houston. I have your AOT star
observation PAD.

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01 17 09 41 CDR Okay. Stand by, please.
01 17 09 43 CC Wilco.
01 17 10 21 SC Okay. Houston, Apollo 9. Go with the AOT PAD.
01 17 10 24 CC Roger. GET 043 plus 55 plus 00; AOT detent 2; EAV star, 15 Sirius. CSM gimbal angles: roll 079, pitch 358, yaw 309. Comments: earth in field of view until 43 plus 55. Over.
01 17 11 17 CDR Okay. Copy that. At 043:55:00; AOT detent 2; EAV star, Sirius 15. Roll 079, pitch 358, yaw 309. Earth in field of view until 43 plus 55.
01 17 11 37 CC Apollo 9, Houston. Correct.
01 17 11 40 CDR Okay.
01 17 16 49 CDR Houston, Apollo 9.
01 17 16 51 CC Houston. Go.
01 17 16 53 CDR Hey, when you sent us a REFSMMAT, did you put it in the preferred location?
01 17 17 00 CC Affirmative.
01 17 17 02 CDR Okay. Thanks; just wanted to make sure.
01 17 17 04 CC Roger.
01 17 18 47 CC Apollo 9, Houston. About 1 minute to LOS. I've got some S-band antenna checks, gimbal angles, and times, if you want them.
01 17 18 57 LMP Okay. I guess as good a time as any.
01 17 19 00 CC Okay. The first one, GET: 44 plus 06 plus 00; pitch 188, yaw 070. GET: 44 plus 08 plus 00; pitch 169, yaw 044. GET: 44 plus 10 plus 00; pitch 159, yaw 017.
01 17 19 45 LMP Okay. S-band 44:06, pitch 188, yaw 070; 44:08, pitch 169, yaw 044; 44:10, pitch 159, yaw 017.
01 17 20 00 CC Roger. Correct. And Canaries at 52.

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CANARY (REV 27)

01 17 52 08 CC Apollo 9, Houston through Canaries.

01 17 52 11 CDR Roger. Houston, Apollo 9. Go.

01 17 52 16 CC I read you loud and clear. Everything looks good down here. You have a GO for IVT.

01 17 52 22 CDR Roger. I understand a GO for IVT. Thank you. We're mushing along.

01 17 52 27 CC Roger.

01 17 57 47 CC Apollo 9, Houston. One minute to LOS. S-band up for Honeysuckle at 37; will try ARIA at 29.

01 17 57 57 CDR Roger. Honeysuckle at 37 and ARIA at 29, and S-band up at Honeysuckle.

01 17 58 02 CC Roger.

01 17 58 11 CC Have a good day. Will see you this evening.

01 17 58 14 CDR Okay. Thank you, Ron.

01 17 58 16 CC Roger.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

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ARIA (REV 27)

01 18 31 49 CC Roger. Apollo 9, this is Houston through ARIA 1.
How do you read?

HONEYSUCKLE (REV 27)

01 18 38 31 CC Apollo 9, this is Houston through Honeysuckle.
Standing by.

01 18 38 45 CDR Roger. Houston, this is Apollo 9 here. Go ahead.

01 18 38 50 CC Roger. Copy. We're just standing by.

01 18 38 53 FDR Okay. We're still trying to do a P51 here. We
haven't started clearing the tunnel, so we're
running quite a bit late.

01 18 44 19 CC And, Apollo 9, Houston. We'll see you over Mercury
in about 3 minutes.

01 18 44 25 CDR Roger.

MERCURY (REV 27)

01 18 48 03 CC Apollo 9, Houston. We've got you through Mercury.

01 18 48 05 CMP Houston, Apollo 9. Say again.

01 18 48 06 CC Roger. We've got you through the Mercury solid;
have you for about another 8-1/2 minutes.

01 18 48 12 CMP Roger. We've just completed a P51 and 52, and
we'll be mushing on.

01 18 48 16 CC Roger.

01 18 53 15 CMP Houston, Apollo 9.

01 18 53 18 CC Go, Apollo 9.

01 18 53 21 CMP Roger. We're going to be pretty busy here for
the next few minutes. If you see us getting
toward gimbal lock, let us know.

01 18 53 28 CC Roger. We'll only have contact with you for the
next 3 minutes, and then our next station is
Antigua at 17.

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01 18 53 37 CMP Okay.

ANTIGUA (REV 28)

01 19 18 36 CC Apollo 9, this is Houston through Antigua. Standing by.

01 19 18 39 CDR Okay, Houston. We have the tunnel clear now, and we're starting the transfer.

01 19 18 44 CC Roger. Copy.

01 19 2^ 12 CDR Houston, the docking tunnel index angle is plus 2.1.

01 19 20 18 CC Roger. Copy plus 2.1. Thank you.

01 19 21 37 CDR Houston, Apollo 9.

01 19 21 39 CC Go, Apollo 9.

01 19 21 41 CDR Since we're running so far late here, you might take a look at the flight plan and see what needs to be changed. I haven't had time to do that.

01 19 21 51 CC Roger. We're working on that now. We can give you some recommendations later on.

01 19 21 57 CDR Roger.

01 19 22 28 CDR Houston, just for your info, tunnel clearing went pretty much according to plan.

01 19 22 34 CC Roger. I understand that tunnel clearing went real well and just for info, we're looking ahead. We're just saying press right on down the line right now, Jim, and we may just slip the docked DPS the REV.

01 19 22 51 CC But I think with your activity in there, you may just make up a good bit of this time.

01 19 23 51 CDR Houston, Apollo 9.

01 19 23 53 CC Go, Apollo 9.

01 19 23 59 CC Apollo 9, Houston. Go ahead.

01 19 24 05 CDR Houston, Apollo 9.

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01 19 24 09 CC Go ahead, Apollo 9. Houston is reading you loud and clear.

01 19 24 13 CDR Roger. Another little piece of info for you. The drogue looks as good as new. There was a very small pencil line about 4 inches long, and that's about all we could see on it.

01 19 24 28 CC Roger, Apollo 9. Copy.

CANARY (REV 28)

01 19 28 28 CMP This is Apollo, Houston. Apollo 9.

01 19 28 29 CC Go, Apollo 9.

01 19 28 32 CMP One little problem we might advise you of here, you might think about it. On the optics on the drive - The manual drive of the optics, the shaft seems to hang up around 64 degrees when you try to drive it manually. Seems to drive okay automatically. The feedback, the readout on the LEB, the mechanical readout is frozen at 64 degrees. The numbers read 64.0, and we haven't been able to get that to move since yesterday. Once you get past the 64-degree mark, it seems to work okay.

01 19 29 13 CC Roger, Apollo 9. Houston copies.

01 19 29 20 CMP Okay.

01 19 31 59 CC And, Apollo 9, Houston. We'd like to have you bring up your S-band volume; we'll be working Madrid.

01 19 32 04 CMP Roger. S-band up.

MADRID (REV 28)

01 19 34 50 CMP Houston, Apollo 9.

01 19 34 51 CC Go, Apollo 9.

01 19 34 55 CMP Okay. I've got the gyro torquing angles for the P52 if you're ready to copy.

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01 19 35 00 CC Go ahead.
01 19 35 02 C/P GFT: 42:48:00, minus 01172, minus 00 099, plus 00413.
01 19 35 20 CC Roger, Apollo 9. I copied those. Thank you.
01 19 35 24 C/P Okay.
01 19 37 21 CC Okay. Apollo 9, Houston. We're going to lose you at Madrid in about a minute, and we'll see you over Carnarvon at 04.

END OF TAPE

APOLLO 9 AIR-TO-GROUND TRANSCRIPTION

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CARMANOW (REV 28)

- 01 20 03 25 LMP Okay, how do you read on SIMPLEX A?
 (SPIDER)
- 01 20 03 27 CMP Five-square.
 (GUMDROP)
- 01 20 03 33 LMP VHF B transmitter has come - I mean VHF B trans-
 (SPIDER) mitter is sensational.
- 01 20 03 40 CMP Your - Spider, this is Gumdrop. Do you read?
 (GUMDROP)
- 01 20 03 54 LMP Gumdrop, Spider.
 (SPIDER)
- 01 20 03 57 CDR Go ahead, Spider. Gumdrop here.
 (GUMDROP)
- 01 20 03 59 LMP Roger. Do you want the tape off now, also?
 (SPIDER)
- 01 20 04 00 CMP It doesn't say so. Seems like a good idea, though.
 (GUMDROP)
- 01 20 04 06 LMP Yes. Tape coming off.
 (SPIDER)
- 01 20 04 10 CC And, Spider, Gumdrop --
- 01 20 04 12 CDR Okay. We're configuring the CSM now for the --
- 01 20 04 15 LMP Go ahead, Jim.
 (SPIDER)
- 01 20 04 17 CDR -- IM data, and we want you to go to TELEMETRY
 (GUMDROP) LOW.
- 01 20 04 20 LMP Roger. We're TELEMETRY LOW.
 (SPIDER)
- 01 20 04 22 CDR VHF B transmitter to DATA and VHF B receiver OFF.
 (GUMDROP)
- 01 20 04 25 LMP Roger. Got it.
 (SPIDER)
- 01 20 04 28 CMP Okay. We've already done the antenna checks.
 (GUMDROP)

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- 01 20 04 31 IMP (SPIDER) Just a second.
- 01 20 04 35 CC Spider, this is Houston. Could you give us high bit rate, please?
- 01 20 04 40 IMP (SPIDER) Roger, Houston, Spider. High bit rate. How do you read, Houston?
- 01 20 04 44 CC I read you five-square. And, Gumdrop, I'm copying you five-by-five.
- 01 20 04 48 IMP (SPIDER) Roger.
- 01 20 04 52 CDR (GUMDROP) Okay. I've got the tape off here now. Was there any noticeable difference between the antennas?
- 01 20 04 56 IMP (SPIDER) Oh, a little bit, but I had a lot of noise in the S-band when I tried it.
- 01 20 05 00 CDR (GUMDROP) Okay. Let's just stay where we are; this is good over here.
- 01 20 05 03 IMP (SPIDER) Roger. Good here, too.
- 01 20 05 06 CDR (GUMDROP) Okay. I'm going to be coming over now, so I'll see you in a minute.
- 01 20 05 09 IMP (SPIDER) Okay. Now wait a minute. I've got to get my hose hooked up here, Jim.
- 01 20 05 13 CDR (GUMDROP) Roger.
- 01 20 05 17 IMP (SPIDER) Gumdrop?
- 01 20 05 18 CDR (GUMDROP) Go ahead.
- 01 20 05 19 IMP (SPIDER) Roger. We're going to have to transfer me onto the ECS first. First few steps there are mine, I think.
- 01 20 05 25 CDR (GUMDROP) Okay. Let me go back here and get these.
- 01 20 05 40 CDR (GUMDROP) Yes. When you get ready to transfer over, let us know; we'll turn your suit flow off.

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- 01 20 05 46 LMP Okay. Stand by. Let me advise.
(SPIDER)
- 01 20 05 48 CDR Okay.
(GUMDROP)
- 01 20 05 52 CC Gumdrop, Houston.
- 01 20 05 54 CDR Go ahead.
(GUMDROP)
- 01 20 05 56 CC Roger. We're trying to do a little planning here. We'd like to have your opinion on how you're doing on the timeline. And we're looking, trying to size up whether or not you're more than an hour behind it
- 01 20 06 10 CDR Just a minute, and let me see. We're just about ready to start the CDR transfer, which is supposed to take place at 43:08, and we're at 44:06.
(GUMDROP)
- 01 20 06 21 LMP ... to my suit, there, ... Gumdrop.
(SPIDER)
- 01 20 06 24 CDR Okay. Just a minute. We'll get if off. So we're running just about an hour behind.
(GUMDROP)
- 01 20 06 31 CC Okay. Copied.
- 01 20 06 34 CDR We haven't run into any glitches yet, so we're going right along here. Maybe we can pick up some time here in a minute.
(GUMDROP)
- 01 20 06 41 CC Roger. Copy.
- 01 20 06 45 CDR It's okay, Rusty; suit flow coming off now.
(GUMDROP)
- 01 20 06 47 LMP Okay.
(SPIDER)
- 01 20 06 58 CMP Okay. Then the LMP's supposed to take his suit isolation valve and let his suit flow when you get plugged in?
- 01 20 07 16 LMP Okay ... I'm in suit flow.
(SPIDER)

(GOSS NET 1)

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- 01 20 07 19 CDR You're in suit flow. Okay we'll ... the umbilical (GUMDROP) here.
- 01 20 07 25 CDR Okay, we're going to pass the ISO over to you in (GUMDROP) just a minute, soon as we get the --
- 01 20 07 31 LMP All right. (SPIDER)
- 01 20 07 32 CC Spider, Houston. We'd like to have DFI ON when able.
- 01 20 07 39 CDR And did you get that, Rusty? They want the (GUMDROP) DFI ON. And, Spider, configure the cabin with the straps, utility lights, ..., and restraints.
- 01 20 07 52 LMP Okay, Houston. We got the DFI ON, and be advised (SPIDER) we had a MASTER ALARM with DFI ON, and I don't have any other lights on.
- 01 20 08 01 CC Roger. Copy.
- 01 20 08 06 CDR Okay. And I'm going to disconnect here. I'll (GUMDROP) be on my way over in a minute, Rusty.
- 01 20 08 11 LMP Okay. Stand by. Okay. I'm ready. (SPIDER)
- 01 20 08 15 CDR Okay. I'll put the checklist away, and I'll (GUMDROP) take my helmet off and be over in a minute.
- 01 20 10 45 CC Spider, Houston. When you get a chance, we'd like to have the DFI OFF; we're heating up the glycol a little bit.
- 01 20 10 55 LMP Roger. I'll be with you in just a second. (SPIDER)
- 01 20 10 50 CC Roger. And, Gumdrop and Spider, like to ensure S-band volume up. We're going over to Honeysuckle shortly.
- 01 20 11 08 CDR ... Gumdrop. (GUMDROP)
- 01 20 11 18 LMP And, Houston, this is Spider. (SPIDER)
- 01 20 11 19 CC Go.
- 01 20 11 21 LMP Roger. For your information, the SUPERCRIT pressure is reading zero at the moment. (SPIDER)

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01 20 11 28 CC Roger. Copy. We're reading 686, Spider.

01 20 11 35 LMP Okay.
(SPIDER)

HONEYSUCKLE (REV 28)

01 20 12 00 CMP Houston, Gumdrop.
(GUMDROP)

01 20 12 02 CC Go, Gumdrop.

01 20 12 06 CC Go ahead, Gumdrop. Houston here.

01 20 12 23 CMP Houston, Gumirop.
(GUMDROP)

01 20 12 25 CC Gumdrop, Houston. I'm reading you loud and clear. Go ahead.

01 20 12 28 CMP Okay. The noise is gone now. Would you keep an eye on the gimbal angles, please?

01 20 12 34 CC That's affirmative. We'll watch them for you. And we'll have you over Honeysuckle here for 10 minutes.

01 20 12 39 CMP Very well. Thank you.
(GUMDROP)

01 20 13 32 LMP Houston, Spider.
(SPIDER)

01 20 13 33 CC Go, Spider.

01 20 13 37 CC Spider, Houston. I'm reading you loud and clear.

01 20 13 47 CMP Spider, Gumdrop. He's reading you.
(GUMDROP)

01 20 13 55 CC Spider, this is Houston. I'm reading you loud and clear.

01 20 14 07 CMP Spider, Gumdrop.
(GUMDROP)

01 20 14 14 C P He reads you five-by.
(GUMDROP)

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- 01 20 14 32 CMP Houston, Gumdrop. Did you copy to Spider?
(GUMDROP)
- 01 20 14 35 CC That's negative, Gumdrop. Maybe you'd better relay it.
- 01 20 14 39 CMP DFI is OFF, and the R and D is OPEN.
(GUMDROP)
- 01 20 14 44 CC Roger. Copy.
- 01 20 14 52 CC And, Gumdrop, you're 30 degrees yaw. We're watching it for you.
- 01 20 14 55 CMP Okay. Thanks.
(GUMDROP)
- 01 20 15 55 CC And, Spider, Houston. We'd like to have R and D instrumentation circuit breaker Baker IN as soon as you can.
- 01 20 16 08 CMP Spider, Gumdrop. R and D instrumentation circuit breaker Baker IN when you have a chance.
(GUMDROP)
- 01 20 16 22 CMP You say it is IN?
(GUMDROP)
- 01 20 16 24 CC Okay. Thank you, Gumdrop.
- 01 20 16 29 CC And, Gumdrop, you're 40 degrees yaw. We're watching it.
- 01 20 16 32 CMP Okay. Thank you.
(GUMDROP)
- 01 20 19 37 IMP Houston, this is Spider. If you read, be advised that we got good signal strength on S-band, but we're getting some static and a steady tone.
(SPIDER)
- 01 20 19 47 CC Roger, Spider. And we're reading you loud and clear now. Honeysuckle had you on a side lobe. We've got you in good voice, and we're getting data.
- 01 20 20 13 CDR Hello, Gumdrop. This is Spider. How do you read?
(SPIDER)
- 01 20 20 16 CMP Five-square. How me?
(GUMDROP)
- 01 20 20 17 CDR Loud and clear. Let me check a couple of the other buttons here.
(SPIDER)

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01 20 20 19 CMP Okay.
 (GUMDROP)

01 20 20 21 CDR How do you read me on this one?
 (SPIDER)

01 20 20 22 CMP Five-square.
 (GUMDROP)

01 20 20 23 CDR Okay. Let me try ... check the VOX.
 (SPIDER)

01 20 20 43 CDR Hello, Gumdop. This is Spider. How do you
 (SPIDER) read?

01 20 20 47 CMP Sounds good.
 (GUMDROP)

01 20 20 48 CDR Do you read me now, all right?
 (SPIDER)

01 20 20 49 CMP Five-square.
 (GUMDROP)

01 20 20 52 CDR That's good.
 (SPIDER)

01 20 20 53 CC And, Gumdop, Houston. Copied all three of those.
 You're coming through loud and clear, Jim.

01 20 21 07 CC And, Gumdop, this is Houston.

01 20 21 08 CMP Go.
 (GUMDROP)

01 20 21 09 CC We're going to drop off with Honeysuckle, here.
 You've got 60 degrees, and you've got about a
 tenth of a second rate.

01 20 21 26 CC Gumdop, Houston. You've got about 60 degrees
 of yaw.

MERCURY (REV 28)

01 20 23 05 CMP Who's in the tunnel now?
 (GUMDROP)

01 20 23 09 CDR Stand by. We're going to check ...
 (SPIDER)

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01 20 23 12 CMP Okay.
(GUMDROP)

01 20 23 17 CMP ... Spider ...
(GUMDROP)

01 20 23 40 CC Spider and Gumdrop, we've got you through Mercury now.

01 20 23 50 CDR Roger, Houston. Spider here. How do you read?
(SPIDER)

01 20 23 54 CC I'm reading you okay, Spider.

01 20 23 58 CTA Okay. We sure had a lot of static and noise coming up on the s-band there over Carnarvon.
(SPIDER)

01 20 24 06 CDR Or make that Honeysuckle.
(SPIDER)

01 20 24 09 CC Roger, Spider. We'll try to solve that. You were coming through here loud and clear after we got a main lobe lock on.

01 20 24 19 CDR ... all. I had a keyhole static and a steady high tone on it.
(SPIDER)

01 20 24 26 CC Roger. Understand you had a high tone.

01 20 24 37 CC And, Gumdrop, we're showing you at 60 degrees.

01 20 24 40 CMP Roger. Thanks. I've got a hold of it now, and I think the trend looks like we'll clear it fine.
(GUMDROP) Thank you.

01 20 24 47 CC Roger. Thanks.

01 20 26 29 CDR And, Gumdrop to Spider.
(SPIDER)

01 20 26 31 CMP Go ahead.
(GUMDROP)

01 20 26 32 CDR Roger. We're ready to start reinstalling.
(SPIDER)

01 20 26 35 CMP Okay. Drogue's in.
(GUMDROP)

01 20 27 25 LMP Dave, I guess you don't need me for anything more in the tunnel here. I'll go ahead and close up our hatch.
(SPIDER)

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01 20 27 29 CMP I'd like for you to check the capture latches.
(GUMDROP)

01 20 27 31 IMP Okay.
(SPIDER)

01 20 27 32 IMP I'm up here waiting for you.
(SPIDER)

01 20 27 35 CMP Be right up.
(GUMDROP)

01 20 27 38 IMP Yes. I see your problem.)
(SPIDER)

01 20 27 40 CMP Boy, I tell you these hoses are really something.
(GUMDROP)

01 20 28 44 CDR Houston, Spider.
(SPIDER)

01 20 28 46 CC Go, Spider.

01 20 28 48 CDR Roger. We're picking up an awful lot of noise
(SPIDER) and static on the S-band again here.

01 20 28 54 CC Roger. Understand. Gumdrop, are you getting
it also?

01 20 29 00 CMP Roger. Not bad.
(GUMDROP)

01 20 29 06 CC Did you say you were not getting it bad there?

01 20 29 08 CMP No, I'm not getting it bad; Gumdop sounds clear.
(GUMDROP) Sounds like your standard S-band pass, Houston.

01 20 29 14 CC Okay. Copy that. Did you copy, Spider?

01 20 29 18 CDR Yes ... I copied.
(SPIDER)

01 20 29 23 IMP Okay, Davy. I'm right here.
(SPIDER)

01 20 29 28 CMP Okay.
(GUMDROP)

01 20 30 00 IMP Okay. That looks like it did it.
(SPIDER)

(COSS SET 1)

Tape 29/10
Page 140

- 01 20 30 02 CMP Okay. I give a pull, and it feels solid.
(GUMDROP)
- 01 20 30 04 IMP Yes. On all three ...
(SPIDER)
- 01 20 30 07 CMP Okay.
(GUMDROP)
- 01 20 30 08 IMP Fine. See you later; I'm going to close the door.
(SPIDER)
- 01 20 30 11 CMP All righty. Have a nice time.
(GUMDROP)
- 01 20 30 13 IMP We will.
(SPIDER)
- 01 20 30 14 CMP I'll get dinner ready when you're ready.
(GUMDROP)
- 01 20 30 16 IMP Man, am I hungry!
(SPIDER)
- 01 20 30 52 CMP Houston, Gumdrop.
(GUMDROP)
- 01 20 30 53 CC Go, Gumdrop.
- 01 20 30 55 CMP How much longer do we have you here?
(GUMDROP)
- 01 20 30 57 CC Okay. We're going to have you here for about another 3 minutes, and then we're coming up over Antigua at about 53. And I would like to pass to Spider, also, that we would like to try to pick up a nominal flight plan at Antigua with the secondary S-band check. We are recommending eliminating the COMM checks and whatever you have to do to pick up the flight plan at that time.
- 01 20 31 29 CDR Okay, Houston. We read you. This is Spider.
(SPIDER)
- 01 20 31 33 CC Okay.
- 01 20 31 34 CMP What time is that pass at Antigua?
(GUMDROP)
- 01 20 31 35 CC Okay. Antigua will be at 53.

(GOSS NET 1)

Tape 29/11
Page 141

01 20 31 39 CDR Roger. We'll be ready for you.
(SPIDER)

01 20 31 40 CC Okay.

01 20 31 41 CMP Gumdrop copies.
(GUMDROP)

01 20 31 42 CC And, Spider, we have no good data for that AOT star visibility check. We'll have to eliminate that, and so you could leave your rendezvous radar stowed if you want to.

01 20 32 00 CDR Roger. Understand.
(SPIDER)

01 20 32 02 CC And we'll see you over Antigua, docking on ready.

01 20 32 09 CDR Roger.
(SPIDER)

01 20 32 12 CC And, Gumdrop, I know with all the activity I'd like to remind you of your CO₂ cartridge change that's due at 44:10.

01 20 32 21 CMP Roger. I'll have to get the tunnel closed up first, but I'll get it first chance.
(GUMDROP)

01 20 32 25 CC Roger. No sweat. I just wanted to pass it to you.

01 20 32 29 CMP Okay. Thank you.
(GUMDROP)

01 20 32 36 CC Spider, this is Houston. Would you go low bit rate?

01 20 32 40 CDR Roger. Go on low bit rate.
(SPIDER)

ANTIGUA (REV 29)

01 20 53 51 CC Hello, Spider. This is Houston. How do you read?

01 20 53 54 LMP You're five-square, Houston. How me?

(SPIDER)

01 20 53 56 CC Oh, you're coming in great, Spider. How are you doing?

(COSS MET 1)

Tape 29/12
Page 142

- 01 20 54 04 CC And, Spider, we're standing by for the secondary S-band check at your convenience.
- 01 20 54 09 IMP (SPIDER) Roger. Power AMP going off now.
- 01 20 54 12 CC Roger.
- 01 20 54 25 CMP (GUMDROP) And, Houston, Gumdrop here. The tunnel is closed off, and everything works just like it should.
- 01 20 54 31 CC Roger, Gumdrop. Thank you.
- 01 20 54 41 CDR (SPIDER) And, Houston, this is Spider. How do you read?
- 01 20 54 45 CC We're reading you loud and clear, Spider. We've had a data drop out here; let's hang loose and see if we can get our data check.
- 01 20 54 54 CDR (SPIDER) Roger.
- 01 20 55 02 CMP (GUMDROP) I could hear your data drop out.
- 01 20 55 03 CC Very good.
- 01 20 55 14 CC And, Spider, this is Houston. Could you give us high bit rate?
- 01 20 55 18 CDR Roger. Going high.
- 01 20 55 36 CC Okay, Spider. We'll have to hang loose here for a minute. I'm getting your VHF down. We don't have a good lock on S-band.
- 01 20 55 43 IMP (SPIDER) Roger.
- 01 20 55 48 CC And while we are waiting, could you comment on if you accomplished the - With the exception of the COMM check, are you up on the flight plan now?
- 01 20 56 00 CDR (SPIDER) We got the glycol check done and a suit integrity check done. We have not accomplished a regulator check or the rest of the COMM or the daylight star visibility.
- 01 20 56 12 CC Okay. We are scrubbing the daylight star visibility and the COMM check. How about your ascent batteries?

(GOSS NET 1)

Tape 29/13
Page 143

01 20 56 18 LMP Roger. The ascent batteries checked out okay,
(SPIDER) and the pyros. You ready to copy?

01 20 56 23 CC Go ahead.

01 20 56 24 LMP Roger. 36.8, 37.5 - A and B.
(SPIDER)

01 20 56 28 CC Roger. Copy. 36.8 and 37.5. Thank you.

01 20 56 33 CDR Roger.
(SPIDER)

01 20 56 40 CDR And for your information, the ascent batteries
(SPIDER) were sharing just about equally.

01 20 56 46 CC Roger. Understand.

01 20 56 56 CC And, Spider. We have got our data check. Let's
go on with the secondary S-band check, step 2.

01 20 57 03 CDR Roger. Power AMP going to SECONDARY.

01 20 57 10 CC Roger.

01 20 57 21 CDR Okay. And we are on secondary transmitter/receiver.
(SPIDER) How do you read?

01 20 57 25 CC Roger. I'm reading you loud and clear. Let me
verify that it is S-band, Spider.

01 20 57 30 CDR Okay.
(SPIDER)

01 20 58 14 CC And, Spider, this is Houston. Let's go on to
step 3.

01 20 58 19 CDR Roger.
(SPIDER)

01 20 58 46 CDR And Houston. We are back in primary primary,
(SPIDER) and be advised on the primary transmitter/receiver,
I've got a squeal.

01 20 58 56 CC Roger. Understand you're primary primary, and
there is a squeal. You're coming through loud and
clear here without any static at all. Let's stand
by for a data. I will give you a call.

01 20 59 07 CDR Roger.
(SPIDER)

(GOSS NET 1)

Tape 29/14
Page 144

01 20 59 08 CC And Spider. Also, we'd like to - at your convenience get an E memory dump in here. It's a little ahead of schedule, but we'd like to get it now if you can give us a VERB 74 sometime on your Mark.

01 20 59 20 CDR (SPIDER) Roger. Stand by.

01 20 59 30 CDR (SPIDER) Okay. 3, 2, 1.

01 20 59 32 CDR (SPIDER) MARK.

01 20 59 39 CC Roger. We got your - we got your Mark. We'll stand by and see if we got it. We might have you repeat it again shortly; and let me see if we are through with this check.

01 20 59 59 CC Spider, this is Houston. We have completed the secondary S-band check.

01 21 00 04 CDR (SPIDER) Roger.

01 21 00 15 CC And, Spider. If you have still got the squeal on primary, let's go secondary on your transmitter/receiver.

01 21 00 23 CDR (SPIDER) Roger. It has gone away now. We'll see how it works.

01 21 00 27 CC Okay. Thank you.

01 21 02 07 CC Spider and Gumdrop, this is Houston. We'll have you now for about another 12 minutes.

01 21 02 15 CMP (GUMDROP) Gumdrop. Roger.

01 21 02 18 CDR (SPIDER) Spider. Roger

01 21 04 46 CC Spider, Houston. We'd like to know when you are going to deploy the landing gear. We'd like to have a Mark on it and would like to get it before we lose you at Madrid in about 8 minutes, if possible.

01 21 04 59 CDR (SPIDER) Right away.

(GOSS NET 1)

Tape 29/15
Page 145

01 21 05 01 CDR It will be pretty close to the end.
(SPIDER)

01 21 05 04 CC Okay. Understand.

CABARY (REV 29)

01 21 08 22 CDR Hey, Gumdrop, this is Spider. We're going to
(SPIDER) deploy the landing gear in a few minutes here, so
you'll probably feel a big bang.

01 21 08 28 CMP Sounds good.
(GUMDROP)

01 21 08 31 CDR Roger.
(SPIDER)

01 21 08 41 CMP You might stand back and give me a minute, will
(GUMDROP) you?

01 21 08 52 CC Gumdrop and Spider. Insure S-band volume up.
We'll be going over to Madrid shortly.

01 21 08 58 CDR Okay. How long do we have before you want the
(SPIDER) gear down?

01 21 09 00 CC We're ready any time.

01 21 09 05 CDR How long do we have?
(GUMDROP)

01 21 09 06 CC Okay. You've got about another 5 minutes before
we'll lose you at Madrid.

01 21 09 12 CMP Okay.
(GUMDROP)

01 21 10 22 CC And, Spider. For your info we - DPI, we cannot
read at Madrid, so we've only got about another
minute here on Canaries to monitor that gear.

01 21 10 36 CDR Okay, Dave. We'll do it very quickly.
(SPIDER)

01 21 10 37 CMP Okay.
(GUMDROP)

01 21 10 38 CDR Okay.
(SPIDER)

(GOSS NET 1)

Tape 29/16
Page 146

01 21 10 53 CDR Okay. Houston, this is Spider. You ready?
(SPIDER)

01 21 11 03 CC We're ready.

01 21 11 06 CDR Houston, Spider. Do you read?
(SPIDER)

01 21 11 09 CC Spider, this is Houston. Read you loud and clear.
We are ready. Go ahead and deploy the gear.

01 21 11 16 CDR 3, 2, 1.
(SPIDER)

01 21 11 18 CDR MARK.
(SPIDER)

01 21 11 26 CMP Spider, Gumdrop.
(GUMDROP)

MADRID (REV 29)

01 21 11 27 CDR Dave, ... I've got ...
(SPIDER)

01 21 11 44 CMP Spider, Gumdrop. Okay. I think they copied you.
(GUMDROP) They were listening when you said 3, 2, 1; then I
got a break lock ...

01 21 11 53 CC Gumdrop -

01 21 11 54 CMP We've got one out here too, boy ...
(GUMDROP)

01 21 11 56 CC Gumdrop and Spider, we copied you. We heard talk
back gray, and you got a visual on the gear.

01 21 12 31 CMP By the way, can you see me out your overhead
(GUMDROP) window? Go ahead, don't let me bother you.

01 21 12 54 CC Spider, this is Houston. Could you give us low
bit rate?

01 21 12 56 LMP Roger. Going low bit rate, and we are going to
(SPIDER) CAL right now.

01 21 12 59 CC Roger. Understand. We will see you over
Carnarvon at 39.

(GOSS NET 1)

Tape 29/17
Page 147

01 21 13 04 CDR Okay. Did you get that gear extension, Houston?
(SPIDER)

01 21 13 07 CC That's affirmative, Spider. It came through loud
and clear. We are showing the relay closed, and
I copied all your transmissions.

01 21 13 14 CDR Thanks, Dave.
(SPIDER)

01 21 13 15 CMP Roger.
(GUMDROP)

01 21 13 24 CC Gumdrop, this is Houston. Could you give us your
up-telemetry switch, your command to RESET and
back to NORMAL?

01 21 13 42 CC Gumdrop, Houston. Could you give us RESET,
back to NORMAL on your command reset?

01 21 14 16 CC And we will see you at Carnarvon at 39, Gumdrop
and Spider.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(COSS REV 1)

Tape 30/1
Page 143

CARNARVON (REV 29)

01 21 38 58 CC Hello, Gumdrop and Spider. This is Houston through Carnarvon.

01 21 39 04 CMP (GUMDROP) Roger. Go.

01 21 39 05 CDR (SPIDER) ... I would like to go private with you.

01 21 39 08 CC You cut each other out there. Say again, please.

01 21 39 15 CDR (SPIDER) I'll get it, Dave. Houston, this is Spider. I would like to go private with you, please.

01 21 39 22 CC Roger. Understand. Will do.

01 21 39 45 CC Okay, Spider. It will be a couple of minutes here.

01 21 39 49 CDR (SPIDER) Okay.

01 21 41 51 CC Spider, this is Houston. Do you read?

01 21 41 55 CDR (SPIDER) Roger. I read you.

01 21 41 56 CC Okay. We're all configured for a private talk, Jim.

HONEYSUCKLE (REV 29)

01 21 52 51 CMP (GUMDROP) Hello, Houston. This is ...

01 21 53 07 CC Hello, Spider. Did you call? This is Houston.

01 21 53 23 CC Gumdrop, this is Houston. How do you read through Honeysuckle?

01 21 53 27 CMP (GUMDROP) Roger, Houston. You're five-by.

01 21 53 30 CC Roger. I believe Spider called. We may be having S-band troubles with him again. Can you read me, Spider?

(GOSS NET 1)

Tape 30/2
Page 149

- 01 21 53 40 CMP Spider, Gumdrop. Could you try and call Houston?
(GUMDROP) They're reading you.
- 01 21 53 44 CDR No, I'm not reading Houston at all. Roger. I
(SPIDER) just wanted to tell them that we're going to try
to complete that TV pass over Houston with the
PLSS. And at that time, we're going to try taking
the PLSS apart, and that will be the end of
the COMM check.
- 01 21 53 59 CC Spider, this is Houston. I copy that, and what
I'm recommending is that we configure for that
mode 10 over Mercury. We will have about an
11-minute pass over Mercury, and we will get all
set up then, and then we will be ready to go when
we come into the States.
- 01 21 54 25 CMP Okay. Spider, Gumdrop. What he wants you do is -
(GUMDROP) He understood what you said. He would like for
you to configure for the mode 10 over Mercury so
you can get all set up to get about an 11-minute
pass here.
- 01 21 54 41 CC Gumdrop, this is Houston. If they will not be
ready for that, it's no problem. We've still got
you here at Honeysuckle for about 5 minutes. We
will have you at Mercury for 11.
- 01 21 54 52 CMP Okay. He got it, Houston. He said "Roger," and
(GUMDROP) I assume they'll be able to do that for you.
- 01 21 54 56 CC Okay. Very good.

MERCURY (REV 29)

- 01 22 01 58 CC Hello, Spider. This is Houston. Could you give a
high bit rate, please?
- 01 22 02 07 CMP Spider, Houston wants high bit rate.
(GUMDROP)
- 01 22 02 26 CC Gumdrop, Houston. Did he copy you?
- 01 22 02 29 CMP Roger. He said he'd get it in just a minute.
(GUMDROP)
- 01 22 02 31 CC Okay. Evidently, I'm not getting anything out
of him. I'll check the site.

(GOSS NET 1)

Tape 30/3
Page 150

- 01 22 02 36 CDR Okay.
(GUMDROP)
- 01 22 02 39 CDR This is Spider.
(SPIDER)
- 01 22 02 46 CDR Houston, Gumdrop. Spider says he's reading you
(GUMDROP) five-by now.
- 01 22 02 50 CC Roger. Understand. Spider, can you give me a transmission? How do you read me?
- 01 22 02 55 CDR I'm reading you loud and clear. 1, 2, 3, 4, 5;
(SPIDER) 5, 4, 3, 2, 1.
- 01 22 02 59 CC Okay. I'm reading you real good. We've got 8 minutes in this pass, and if you'd like to get set up for the LM two-way relay and adjust your VOX and so forth, I can give you a count any time you want it and get yours. Let me know when you are going to that configuration.
- 01 22 03 30 CDR Roger, Houston. We'll be with you in a minute.
(SPIDER) Stand by.
- 01 22 03 34 CC Roger. Standing by.
- 01 22 04 14 CDR And, Houston, we're going FM now.
(SPIDER)
- 01 22 04 16 CC Roger. Go on FM.
- 01 22 04 28 CC And, Gumdrop and Spider, be advised I'm going to go to our test configuration, which will be LM S-band only back to Houston. And, Mercury M and O, this is Houston CAP COMM. Would you inhibit my VHF uplink and remote LM S-band only.
- 01 22 05 07 CC And, Spider, this is Houston. If you read, could you give me antenna number 2, S-band antenna number 2?
- 01 22 05 19 CDR Roger. You've got 2. Do you want 1?
(SPIDER)
- 01 22 05 22 CC Negative. Leave it in 2 right now, and I'm reading you okay.
- 01 22 05 26 CDR Okay. Roger. That's what you had all along.
(SPIDER)

(GOSS MET 1)

Tape 30/4
Page 151

- 01 22 05 29 CC Okay.
- 01 22 05 49 CMP Why don't you go ahead and do it?
(GUMDROP)
- 01 22 05 59 CDR ...
(SPIDER)
- 01 22 06 03 CMP Take it off; what the hell.
(GUMDROP)
- 01 22 06 17 LMP How'd you hear me?
(SPIDER)
- 01 22 06 18 CC Okay, Spider. I got just the last part of that.
How about a short count?
- 01 22 06 25 LMP Were we active there?
(SPIDER)
- 01 22 06 30 CC Okay, Spider. It's breaking --
- 01 22 06 33 LMP It's in one?
(SPIDER)
- 01 22 06 44 CDR ... COMM SC audio close.
(SPIDER)
- 01 22 06 47 CDR Roger. Just a minute.
(SPIDER)
- 01 22 06 58 CDR Unstowed.
(SPIDER)
- 01 22 07 04 CDR Audio for the LMP side. S-band and TI. ICS OFF.
(SPIDER) Relay ON. ... outside RCS transmitter.
- 01 22 07 19 CMP RCS transmitter.
(GUMDROP)
- 01 22 07 20 CDR Just VOX to about 8.
(SPIDER)
- 01 22 07 21 CMP VOX to about 8.
(GUMDROP)
- 01 22 07 26 CDR HF 8 a TR.
(SPIDER)
- 01 22 07 27 CMP A to TR.
(GUMDROP)

(COSS NET 1)

Tape 30/5
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01 22 07 30 CDR B OFF.
(SPIDER)

01 22 07 32 CMP B OFF.
(GUMDROP)

01 22 07 35 CDR HF 8 scratched. Adjusted at CDR to hear CSM.
(SPIDER)

01 22 07 41 CDR Gumdrop, Spider here. Give me a short count.
(SPIDER)

01 22 07 44 CMP Roger, Gumdrop. 1, 2, 3, 4, 5; 5, 4, 3, 2, 1.
(GUMDROP) Gumdrop out.

01 22 07 51 CDR Roger. Fine. That was good. Thank you.
(SPIDER)

01 22 07 52 CMP Say it again; you're broken to me.
(GUMDROP)

01 22 07 55 CDR Roger. I'm on VOX now. I said that was good.
(SPIDER) And, Gumdrop, we're configuring for the TV mode,
which is mode 10.

01 22 08 16 CMP I'm not hearing you at all, Jim.
(GUMDROP)

01 22 08 22 CDR Gumdrop, this is Spider. Do you read me?
(SPIDER)

01 22 08 26 CMP Do you have your audio on?
(GUMDROP)

01 22 08 35 CC Gumdrop, did you hear Spider? He's calling.

01 22 08 36 CDR Gumdrop, Spider. Do you read?
(SPIDER)

01 22 08 45 CC Spider, this is Houston. How do you read?

01 22 08 57 CDR Roger, Gumdrop. This is Spider. How do you read?
(SPIDER)

01 22 09 01 CMP Okay ...
(GUMDROP)

01 22 09 03 CDR Roger. We're configuring mode 10 COMM, which is
(SPIDER) the TV EMU relay.

01 22 09 09 CMP Roger. ...
(GUMDROP)

(GOSS NET 1)

Type 30/6
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01 22 09 10 CDR Okay. Very good.
(SPIDER)

01 22 09 35 CC Okay, Spider and Gumdrop. It's about a minute
and a half to LOS here at Mercury. Your acquisition
time at Texas is 25.

01 22 09 56 CDR There's our trouble.
(SPIDER)

01 22 10 01 CC Spider, this is Houston. Do you read? If you
do, we are going to lose you in about a minute.
Your acquisition time at Texas is 25.

01 22 10 13 LMP ... 25.
(SPIDER)

01 22 10 15 CC Okay. It will be 25, and then we'll have about
2 minutes at the MIN before the TV pass starts.

01 22 10 26 CDR Roger.
(SPIDER)

01 22 10 28 CC And, Spider, could you give us low bit rate?

01 22 10 56 CC And, Spider, this is Houston. We'd like - We'd
like to have low bit rate and data on VHF R until
we get you.

TEXAS (REV 30)

01 22 24 42 CC Apollo 9, Houston. Excuse me - Spider and Gum-
drop, this is Houston. How do you read through
Texas?

01 22 25 00 CC Spider, this is Houston through Texas. How do
you read?

01 22 25 30 CC Okay, Spider. This is Houston. Do I have you?

01 22 25 56 CC Spider, this is Houston. Do you read?

01 22 26 25 CDR ... acquisition by now, shouldn't we?
(SPIDER)

01 22 26 29 CC Hello, Spider. This is Houston. Do you read me?

01 22 26 37 CC Spider, this is Houston. If you read, you can go
ahead and put in your TV circuit breaker. We are
going to be handing over to Mila in about 20 sec-
onds.

(GOSS NET 1)

Tape 30/7
Page 154

01 22 26 49 CC And, Spider, if you read, we'd like high bit rate.

MILA (REV 30)

01 22 27 20 CC Hello, Spider. This is Houston. How do you read?

01 22 27 24 CDR (SPIDER) Roger, Houston. This is Spider. Loud and clear.

01 22 27 26 CC Roger. You are loud and clear here. Now we have you in Mila AOS. You can start your TV pass.

01 22 28 18 CC Beautiful, Spider. We've got a picture now.

01 22 28 26 CC And, Spider, this is Houston. If you read me, could you give us high bit rate?

01 22 28 49 CC And you - And the picture is coming through good, Spider. We are copying it. We've got a good view of Rusty and the PLSS.

01 22 29 10 CC Okay. Rusty, if you read me, how about raising your left arm there? Very good. We can see you; coming in real good.

01 22 29 39 CC Well, we just went through a little snow storm there, Spider, but it looks like it might come back in.

01 22 29 48 CC Okay, the blizzard is gone, and you are back real sharp now. We've got good detail.

01 22 30 00 CC And, Spider, like I say, we are getting a good picture; we're getting no voice at all.

01 22 30 12 CC And I can see you talking there, Jim. Too bad I can't read your lips.

01 22 30 35 CC Okay. Why don't you just go VHF if you can, Spide

01 22 30 41 CDR (SPIDER) Roger. How do you read me right now?

01 22 30 42 CC We're reading you loud and clear, Spider.

01 22 30 45 CDR (SPIDER) Okay. I guess we're just not getting out, like a VOX or something. Gumdrop is reading me all right, but you aren't.

(GOSS NET 1)

Tape 30/8
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- 01 22 30 52 CC Okay. I'm not reading Gumdrop at all, and I am reading you loud and clear now. And the TV picture has been real good.
- 01 22 30 59 CDR (SPIDER) Okay. We are going to have the LMP talking into the PLSS COMM.
- 01 22 31 04 LMP (SPIDER) Okay. How do you read now, Houston?
- 01 22 31 07 CC PLSS? You are coming through loud and clear, Rusty. It's real good.
- 01 22 31 12 LMP (SPIDER) Okay. We have to go to PTC on the hand controller to do it. Evidently, ICS won't do it.
- 01 22 31 20 CC Roger. Copy. It's coming through real good now. We've got just a little under 3 minutes in the pass.
- 01 22 31 37 CC And, Rusty, if you --
- 01 22 31 46 CDR (SPIDER) Houston, this is Spider. Say again.
- 01 22 31 50 CC Roger. If it's real convenient, we would like to have position 5 on the PLSS. But don't sweat it if you can't give us that.
- 01 22 32 00 CDR (SPIDER) ...
- 01 22 32 09 CC Okay. We had a loud squeal in there. I've got you back again now. The request was - If it's real convenient, we would like to have position 5 on the PLSS.
- 01 22 32 49 CC Okay. Jim, could we have a couple of words on - of wisdom to go along with the TV show?
- 01 22 33 16 CC Okay. We are not receiving you. Rusty, how about you trying it again? Maybe we can pick you up.
- 01 22 34 03 CC Okay, Spider. This is Houston. That's the end of the Mila pass. If you read me, you can go back to COMM basic at your convenience and press ahead with the flight plan.
- 01 22 34 21 CDR (SPIDER) We're reconfiguring the PLSS right now and its COMM, and we're going to end the COMM checks here. And we will get them some other time.

(COSS NET 1)

Tape 30/9
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01 22 34 27 CC Roger. Understand. And that transmission came through loud and clear, and we will be standing by.

BERMUDA (REV 30)

01 22 35 25 CDR Houston, Spider.
(SPIDER)

01 22 35 28 CC Go ahead, Spider. Houston reading you loud and clear.

01 22 35 31 CDR Roger, Houston. We're reconfiguring to basic COMM, and we're going to mush on and prepare for all the systems here.
(SPIDER)

01 22 35 38 CC Roger. We will be standing by.

01 22 35 40 CDR Roger.
(SPIDER)

01 22 35 52 CDR And, Gumdrop, did you read that?
(SPIDER)

01 22 35 55 CMP Negative. I'm not copying Houston at all.
(GUMDROP)

01 22 35 58 CDR Roger. We're configuring, and we are going to press on with the systems.
(SPIDER)

01 22 36 02 CMP Okay. Understand.
(GUMDROP)

01 22 36 07 CC And, Gumdrop, this is Houston. I've got you now.

01 22 36 10 CMP Roger. Houston, Gumdrop. You are five-by.
(GUMDROP)

01 22 36 12 CC Very good.

01 22 38 07 CC Gumdrop, Houston.

01 22 38 09 CMP Houston, Gumdrop.
(GUMDROP)

01 22 38 11 CC Roger. We would like to terminate the charge on battery A.

01 22 38 15 CMP Roger. Understand. Battery A, terminate charge.
(GUMDROP)

(00SS MET 1)

Tape 30/10
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01 22 38 48 CC And, Gumdrop, Houston. We put in 13 AMP-hours.
You are right back up at 40.

01 22 38 54 CDR Roger. Thank you. Very nice.
(GUMDROP)

MADRID (REV 30)

01 22 47 16 CC Okay. Gumdrop and Spider. We're going to lose
you in about a minute and a half here, and we'll
see you over Carnarvon at 16.

01 22 47 54 CC Spider, this is Houston. If you read, give us
low bit rate.

01 22 48 00 CDR Roger. Low bit rate.
(SPIDER)

01 22 48 03 CC Okay. We'll see you at 16 over Carnarvon.

01 22 48 07 CDR Roger.
(SPIDER)

END OF TAPE

CARNARVON (REV 30)

01 23 14 18 CDR Ready.
(SPIDER)

01 23 14 24 CMP 64 00308.
(GUMDROP)

01 23 14 30 CDR All right. That was a little fast, but 35128
(SPIDER) 06864 00308.

01 23 14 41 CMP Roger. You got it.
(GUMDROP)

01 23 14 42 CDR Thank you.
(SPIDER)

01 23 14 46 CDR Dave, are your rates slow?
(SPIDER)

01 23 14 50 CMP Holy Christmas! What a bunch of gyros I've got
(GUMDROP) over here!

01 23 15 00 CC And, Spider, this is Houston. We'd like to have
high bit rate.

01 23 15 05 CDR Houston, this is Spider. Go again.
(SPIDER)

01 23 15 08 CC Roger. We'd like to have high bit rate.

01 23 15 11 CDR High bit rate. Roger.
(SPIDER)

01 23 15 25 CDR Gumdrop, Spider. Every one of my gyros is
(SPIDER) indicating about 3/10 of a degree per second.

01 23 15 32 CMP Is that right? My roll is 0, pitch 0, yaw 0.
(GUMDROP)

01 23 15 36 LMP Great!
(SPIDER)

01 23 17 11 CC And, Gumdrop, I haven't heard from you on this
one. And, Spider, I've got a couple of items to
pass to you when you have a chance.

01 23 17 22 CDR Spider here. Go ahead.
(SPIDER)

01 23 17 24 CC Roger. I've got a couple of addresses that's got to be changed as a result of the 3-day slip in the launch date, and when you are ready to copy, I'll give them to you.

01 23 17 39 CDR (SPIDER) Okay. Before you give us those, be advised that we have got a cockpit error here and we loaded - in starting up the FNCs, we loaded location 30 000 with 2176 and we would like to know what we should put back into 30 000.

01 23 18 00 CC Roger. Stand by. In work.

01 23 18 04 CDR (SPIDER) If you want a reference on that, it's system 36, step 1.

01 23 18 11 CC Roger. Copy.

01 23 18 14 CMP (GUMDROP) And the Gumdrop's with you, Houston.

01 23 18 17 CC Roger, Gumdrop.

01 23 18 53 CC And, Gumdrop, this is Houston. At your convenience, you might drag out your block data pad. I have block data 6 to give you as we get along here. I have the PAD now.

01 23 19 06 CMP (GUMDROP) ...

01 23 19 10 CDR (SPIDER) And, Gumdrop, this is Spider. So you can get out of your narrow deadband hold there, we will take an 0620 on your Mark.

01 23 19 19 CMP (GUMDROP) Okay. Stand by.

01 23 19 26 CMP (GUMDROP) Roger. Spider, Gumdrop. 3, 2, 1.

01 23 19 30 CMP (GUMDROP) MARK.

01 23 19 35 CDR (SPIDER) Okay. Ready to copy your angles, and you can go to DRIFT.

01 23 19 38 CMP (GUMDROP) Thank you. 35168 06888 00282.

01 23 19 56 CDR (SPIDER) Roger. Houston and Gumdrop, readback here from the Spider: 35168 06888 00282.

(GOSS NET 1)

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01 23 20 10 CC Roger, Spider. I have that. I'm reading back Gumdrop's as plus 35168 06888 00282; I'm reading yours as 31148 24879 35590.

01 23 20 35 CDR (SPIDER) That's a verify, and the docking ring angle was plus 2.10 degrees.

01 23 20 41 CC Roger. Plus 2.1.

01 23 20 46 CDR (SPIDER) Roger. And Spider ready to copy your updates.

01 23 20 52 CC Okay. These addresses, if you are - if this unit were the North Pole's - and your first address is 1714. What we want to load in there is 11143. The next address is 1716. We would like to load 30341. Now there were a couple of updates needed in the TFM, but you will pick those up as you go through that step. These are the only two that we would like to have you load.

01 23 21 31 CDR (SPIDER) Roger. Be advised we already loaded TFM. Do you want us to read that down to you?

01 23 21 38 CC Yes. Let's have it to verify.

01 23 21 42 CDR (SPIDER) Okay. Ready to copy?

01 23 21 43 CC Go ahead.

01 23 21 45 CDR (SPIDER) Okay. Four balls 7 35016 31153.

01 23 21 52 CC Roger. That's verified.

01 23 21 55 CDR (SPIDER) Okay. And we will be using these right now.

01 23 21 57 CC Okay. Very good.

01 23 22 20 CMP (GUMDROP) Houston, Gumdrop. I'm all ready for the block update.

01 23 22 24 CC Roger. Stand by just one if you can, Gumdrop.

01 23 22 29 CMP (GUMDROP) All righty.

01 23 22 40 CC Spider, Houston.

01 23 22 43 CDR Go.
(SPIDER)

01 23 22 44 CC Roger. We would like to know if you got an operator error when you hit ENTER on that 30 000 address.

01 23 22 51 CDR That's a negative.
(SPIDER)

01 23 22 54 CC Roger. Copy. No operator error.

01 23 22 57 CDR Not that I noticed, anyway.
(SPIDER)

01 23 22 59 CC Okay.

01 23 23 04 CDR Let me put it this way. If there was an operator error, it disappeared by itself when I loaded the date, because I did not key a RESET.
(SPIDER)

01 23 23 13 CC Roger. Copy.

01 23 23 34 CDR Gumdrop, Spider. We would like to insure that the rates are less than 1/10 of a degree per second, and you won't be firing any jets for the next minute or so.
(SPIDER)

01 23 23 43 CMP Okay. You are all set.
(GUMDROP)

01 23 23 44 CDR Roger. Thank you.
(SPIDER)

01 23 24 40 CC Okay. Gumdrop, this is Houston. I would like to get started on this block data.

01 23 24 45 CMP Roger. Go.
(GUMDROP)

01 23 24 47 CC Roger. 033 1 Alfa, plus 297, minus 0621 051 04 32 3870, and I would like to have both vehicles insure S-band volume up. 034 4 Alfa, plus 325, minus 1579 053 58 09 3858; 035 4 Alfa, plus 337, minus 1579 055 29 08 3857; 036 3 Alfa, plus 292, plus 1450 056 53 16 4638. Like to verify you are with me, Gumdrop. We didn't lose you over in the handover?

HONEYSUCKLE (REV 3ⁿ)

- 01 23 26 30 CMP I'm with you. I dropped about four bits, there, but go ahead.
(GUMDROP)
- 01 23 26 34 CC Okay. 037 4 Alfa, plus 244, plus 1619 058 39 31 4574; 038 3 Baker, plus 320, plus 1500 060 02 28 4618, and for your SPS trim angles, through your first three - through 34 dash 4 Alfa: your pitch is minus 0.88, yaw is minus 0.60. Through the rest of them: your pitch is minus 0.93, yaw is minus 1.21. End of update.
- 01 23 27 52 CMP Roger. Okay. I dropped one bit on the seconds of 34 4 Alfa. And the next area, I dropped the first three lines, and the rest of it I've got. So how about giving me those that I dropped?
(GUMDROP)
- 01 23 28 08 CC Okay. The second line in 34 4 Alfa is plus 325, the first three lines in the next one, 035 4 Alfa, plus 337, minus 1570; and I'd like for you to hold the readback for a little bit. And Spider, I have your LM torquing angles.
- 01 23 28 35 CDR Roger. Stand by just one.
(SPIDER)
- 01 23 28 37 CC Roger.
- 01 23 28 38 CMP Roger. This is Gumdrop. Give me the seconds on the time of 34 4 Alfa.
(GUMDROP)
- 01 23 28 43 CC Oh, I'm sorry. I thought you said the second line Okay. The second: 09; the time: 053:58:09.
- 01 23 28 54 CMP Roger. 09. And I'll read it back whenever you're ready.
(GUMDROP)
- 01 23 28 57 CC Okay.
- 01 23 29 01 IMP Houston, this is Spider. Ready to copy the angles.
(SPIDER)
- 01 23 29 04 CC Okay. Reading the torquing angles: plus 00 910, minus 00 150, plus 01 210.
- 01 23 29 24 IMP Roger. Reading back: plus 00 910, minus 00 150, plus 01 210.
(SPIDER)
- 01 23 29 34 CC That's affirmative. We've got you.

01 23 29 37 LMP Thank you.
(SPIDER)

01 23 29 46 CC Spider, Houston.

01 23 29 49 LMP Roger. Go ahead.
(SPIDER)

01 23 29 50 CC Roger. And on this 30 000 bit, evidently the computer dropped a 3 and loaded addresses all zeros, and there is no action required on your part.

01 23 30 03 LMP That's fortunate. Thank you.
(SPIDER)

01 23 30 05 CC Roger.

01 23 30 51 CC Spider and Gumdrop, on the last two dumps of the DSE we have received no LM data. Would like to have you check your cockpit configurations to receive the LM data, and also for Spider to send it.

01 23 31 10 CMP Roger. Gumdrop's configured.
(GUMDROP)

01 23 31 26 LMP Gumdrop, Spider. What was that last call? We've got a lot of noise on the S-band.
(SPIDER)

01 23 31 31 CMP Roger. On the last two passes on the DSE they have not received any LM data on the dump.
(GUMDROP)

01 23 31 42 LMP Roger. We're configured for data here.
(SPIDER)

01 23 31 47 CMP Okay. ...
(GUMDROP)

01 23 32 12 CMP Houston, Gumdrop.
(GUMDROP)

01 23 32 18 CC Go, Gumdrop.

01 23 32 20 CMP Roger. I don't see the tape recorder running at this time.
(GUMDROP)

01 23 32 29 CC Stand by, Gumdrop.

01 23 32 37 CC Gumdrop, this is Houston. Could you verify your tape recorder switch is in the RECORD position?

01 23 32 43 CMP (GUMDROP) That's verified.

01 23 32 45 CC Okay. Thank you.

01 23 33 03 LMP (SPIDER) Houston, this is Spider.

01 23 33 05 CC Go, Spider.

01 23 33 08 CC Spider, this is Houston. Go ahead.

01 23 33 11 LMP (SPIDER) Gumdrop, is he reading us?

01 23 33 13 CMP (GUMDROP) Roger. He's reading you. Go ahead.

01 23 33 15 LMP (SPIDER) Okay. I'll have to transmit in the blind. Be advised we're beginning the RCS pressurization on system A, and on the second step we have an interesting result there. When I recycled system A, ascent feed 2 to CLOSE, both barber poles jumped to J, ascent feed 1 went back to barber pole immediately, and ascent feed 2 waited for about 20 seconds and then went back to barber pole; and that's happened twice in a row.

01 23 33 54 CC Roger. Copy. Stand by on that one.

01 23 34 00 CMP (GUMDROP) He got you, Spider.

01 23 34 04 LMP (SPIDER) Okay. If you have any recommendation - I'm going to try in system B. If he has any recommendations let me know.

01 23 34 09 CMP (GUMDROP) Okay.

01 23 34 10 CC All right. We sure will; we're massaging that now, Spider.

01 23 34 15 CMP (GUMDROP) Spider, Gumdrop. They are working it over.

01 23 34 30 CC Spider, Houston.

01 23 34 36 CMP (GUMDROP) Houston, Gumdrop. I don't believe he's reading. I can relay for you.

(GOSS NET 1)

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01 23 34 38 CC Okay. We're about to lose you here at Honeysuck we'll see you over Mercury about 37, in about 3 minutes, and we'll clean it up there.

01 23 34 47 CMP Very well; Mercury at 37.
(GUMDROP)

01 23 34 55 CC Gumdrop, if you still read me, why don't you start the readback of that block data here until we go over the hill.

01 23 35 02 CMP Roger. Let's give it a go.
(GUMDROP)

01 23 35 05 CMP 033 1 Alfa - Oh, I'm losing you now, Houston.
(GUMDROP)

01 23 35 29 CDR Okay. Roger. And you might advise him that system A ... appear to be normal now. It looks like we might have had a sticky barber pole on ascent feed 2.
(SPIDER)

01 23 35 40 CC We copied that, Spider. We concur.

01 23 35 46 CDR Okay.
(SPIDER)

MERCURY (REV 30)

01 23 37 39 CC Okay, Spider and Gumdrop. We should have you through Mercury.

01 23 37 45 CMP Roger, Houston. Here's the Gumdrop.
(GUMDROP)

01 23 37 48 CDR You have Spider here, Houston.
(SPIDER)

01 23 37 50 CC Roger. We're showing your RCS pressurized, and we're also requesting you check the address 145 and verify that it is 62045, and the reason why I'm calling you on this is, back on systems 41 when you loaded 1456, we believe it also change 1457.

01 23 38 23 CDR Okay. Lets - The address is 1457. What is the number supposed to be now?
(SPIDER)

01 23 38 28 CC Should be 62045.

01 23 38 35 CDR (SPIDER) Roger. 1457 should be 62045.

01 23 38 38 CC That's affirmative.

01 23 38 42 CDR (SPIDER) Roger. Houston, You might check 1453 and 1455, also. My understanding was that those are double precisions for the FIPA bias, and that's why we loaded zeros in all three of those.

01 23 39 00 CC Roger. Copy, Spider. In work.

01 23 39 04 CDR (SPIDER) Okay.

01 23 39 45 CDR (SPIDER) Houston, this is Spider.

01 23 39 47 CC Go, Spider.

01 23 39 49 CDR (SPIDER) 1457 is all balls.

01 23 39 52 CC Okay. We'd like to have you load 62045.

01 23 39 57 CDR (SPIDER) Okay. Then probably 3 and 5 will also be wrong. I'll load this one up right now.

01 23 40 03 CC Okay. We'll get back with you on that. We're going to have you over the Mercury here for about 7-1/2 minutes left, and I'd like to pass you your gimbal angles so we'll be all rocking on ready for your gimbal drive check when we hit Guaymas.

01 23 40 23 CDR (SPIDER) Roger. Stand by just one.

01 23 40 33 CDR (SPIDER) Roger. Go ahead.

01 23 40 35 CC Roger. Your GUA angles: R1, plus 00588; and R2, plus 00679.

01 23 40 53 CDR (SPIDER) Roger. Plus 00588, plus 00679.

01 23 40 58 CC That's affirmative; and stand by. I'll have you what you need in address 1453 and 55.

01 23 41 07 CDR (SPIDER) Roger. Do you have LM and CSM weights, by the way?

(GOSS NET 1)

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01 23 41 13 CC Stand by one, Spider.
01 23 41 49 CC Spider, Houston.
01 23 41 51 CDR (SPIDER) Roger. Go.
01 23 41 52 CC All right. Your LM weight: 32 418, and that's also for Gumdrop if he wants it. CSM 30 127.
01 23 42 07 CDR (SPIDER) Roger. 32 418 and 30 127.
01 23 42 14 CC That's affirmative, Spider.
01 23 42 17 CDR (SPIDER) Roger. How much time do we have in this pass?
01 23 42 24 CC Roger, Spider. We've still got about 5 minutes left in this pass.
01 23 42 29 CDR (SPIDER) Okay. I'd like - Some of the systems guys might have noticed a little anomaly there at the end of the RCS pressurization on step 6.
01 23 42 41 CC Okay.
01 23 42 44 CDR (SPIDER) Make it step 5, I beg your pardon. I inadvertently placed system A ascent feed 2 momentarily to OPE instead of CLOSE, thereby opening the interconnection. I closed it immediately, and I see no change in system pressures; however, it's probably an anomaly and in the data there you might note, and I'd like to know if there is any further action required.
01 23 43 16 CC Roger, Spider. Houston copies. And we anticipate no problems. And I have your loads for 1453 and
01 23 43 30 CDR (SPIDER) Roger. Ready to copy.
01 23 43 33 CC 1453: 60066. 1455: 60462.
01 23 43 47 CDR (SPIDER) Roger. Let me read all of those. 53, 55, and 5 equal 60066, 60462, 62045.
01 23 44 01 CC That is affirmative, Spider; Houston confirms.
01 23 44 06 CDR (SPIDER) Roger. We'll load them now.

(GOSS NET 1)

Tape 31/11
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01 23 44 08 CC Okay. And, Gumdrop, let's go ahead with your read-back, starting right from the first line.

01 23 44 35 CC Gumdrop, Houston. Standing by for your readback.

01 23 44 48 CMP Houston, Gumdrop.
(GUMDROP)

01 23 44 50 CC Roger. I'm ready for your readback.

01 23 44 53 CMP Okay. Sorry, I must have lost you there for a minute. Okay, here we go: 033 1 Alfa, plus 297, minus 0621 051 04 32 3870; 034 4 Alfa, plus 325, minus 1579 053 58 09 3858; 035 4 Alfa, plus 337, minus 1579 055 29 08 3857; 036 3 Alfa, plus 292, plus 1450 056 53 16 4638; 037 4 Alfa, plus 244, minus 1619 058 39 31 4574; 038 3 Bravo, plus 320, plus 1500 060 02 28 4618. You with me that far?

01 23 46 09 CC I've got it all, and everything's good.

01 23 46 12 CMP Okay. And the pitch trim and yaw trim for 33 1 Alfa through 35 4 Alfa: pitch is minus 0.88, yaw minus 0.60. For 36 3 Alfa through 38 3 Bravo: pitch minus 0.93, yaw minus 1.21.
(GUMDROP)

01 23 46 34 CC Roger. Good show, Gumdrop. And we're gonna lose both of you in about 1 minute. We'll see you over Guaymas at about 57, and we'll be rocking on ready for you, Spider.

01 23 46 46 CDR Roger. What time will we be at Guaymas?
(SPIDER)

01 23 46 48 CC Roger. It'll be Guaymas at 57, and we'd like to have low bit rate at this time.

01 23 46 54 CDR Roger.
(SPIDER)

REDSTONE (REV 30)

01 23 53 20 CC Hello, Spider and Gumdrop. This is Houston through the Redstone.

01 23 53 25 CMP Loud and clear, Houston. Gumdrop.
(GUMDROP)

(GOSS NET 1)

Tape 31/12
Page 169

01 23 53 27 CC Roger. And to get a leg up on this Guaymas pass, I have a NAV check I'd like to give to you now, and we'll be uplinking state vectors to both vehicles over Guaymas, sometime in the States pass.

01 23 54 08 CC Okay, Spider. Are you ready, Gumdrop? I'll be ready to send you a NAV check when you're ready to copy.

01 23 54 22 CMP Ready for NAV check.
(GUMDROP)

01 23 54 39 CMP Gumdrop's ready.
(GUMDROP)

01 23 54 41 CC Roger, Gumdrop. I'll give it to you. Are you ready, Spider?

01 23 54 46 CDR Roger. Spider ready.
(SPIDER)

01 23 54 47 CC All right. Reading the NAV check: 049 11 3340, minus 2216, plus 16516 2309. End of NAV check.

01 23 55 17 CMP Roger. Say the time again, please.
(GUMDROP)

01 23 55 19 CC Roger. Reading the time: 049 11 3340.

01 23 55 33 CDR Say, Gumdrop. I got 3340; is that right, Gumdrop?
(SPIDER)

01 23 55 39 CC That's affirmative, Spider; this is Houston.

01 23 55 42 CDR Okay. I'll read it back to you: 049 11 3340, minus 2216, plus 16516 2309.
(SPIDER)

01 23 55 54 CC Your readback is correct, Spider; and Gumdrop, did you verify?

01 23 56 02 CMP Gumdrop verifies.
(GUMDROP)

01 23 56 04 CC Roger. And while I've got you in a writing mood - I've got about a minute and a half; I'd like to give you the dock DPS PAD.

01 23 56 13 CDR Roger. You should be advised that you are not coming through too good here to Spider; I'm not sure why, but you are breaking up pretty badly.
(SPIDER)

(GOSS NET 1)

Tape 31/13
Page 170

01 23 56 22 CC Roger. We're going to lose you in about a minute, and then we'll just catch you over Guaymas.

01 23 56 30 CMP (GUMDROP) Roger. Gumdrop copied you. You'll get us over Guaymas. You get that, Spider?

01 23 56 37 CDR (SPIDER) Roger. I heard you. Understand he's going to get us over Guaymas.

01 23 56 41 CMP (GUMDROP) That's affirm.

01 23 56 55 CC And, Gumdrop and Spider, if you read, we are GO for a 48 dash 1.

01 23 57 02 CMP (GUMDROP) Roger. Understand. GO for a 48 dash 1.

01 23 57 06 CC That is affirmative.

01 23 57 10 CMP (GUMDROP) Did you get that, Spider?

01 23 57 12 LMP (SPIDER) Got it.

01 23 57 14 CMP (GUMDROP) Okay.

01 23 57 16 LMP (SPIDER) We'll stay docked with you.

01 23 57 19 CMP (GUMDROP) Oh, very well.

GUAYMAS (REV 30)

01 23 57 32 CC And, Gumdrop, we've got you now at Guaymas. We'd like to have POO in ACCEPT for your uplink.

01 23 57 40 CMP (GUMDROP) Roger. Gumdrop. You've got POO and ACCEPT.

01 23 57 42 CC Roger. Copy.

01 23 57 53 CC And, Gumdrop, you'll be receiving a vector in both slots.

01 23 57 57 CMP (GUMDROP) Roger. Understand.

(GOSS NET 1)

Tape 31/14
Page 171

01 23 58 48 CC Spider, could you give us high bit rate, please?

01 23 58 55 CDR (SPIDER) Roger. You got high bit rate?

01 23 59 00 CC Roger. Copy.

01 23 59 30 LMP (SPIDER) And, Houston, this is Spider.

01 23 59 34 CC Go ahead, Spider.

01 23 59 36 LMP (SPIDER) Roger. We are ready to go on the gimbal drive any time.

01 23 59 38 CC Roger. We are standing by to support you. You can let her rip.

01 23 59 41 LMP (SPIDER) Roger. Here we go - 3, 2, 1.

01 23 59 45 LMP (SPIDER) MARK.

01 23 59 55 LMP (SPIDER) And are you ready?

01 23 59 58 CC You faded out, Spider. Say again.

02 00 00 03 LMP (SPIDER) Roger. The gimbal is driving.

02 00 00 11 CMP (GUMDROP) Houston, Gumdrop. Spider says the gimbal is driving.

02 00 00 13 CC Roger. Copy. And, Gumdrop, the computer is yours.

02 00 00 17 CMP (GUMDROP) Roger. Understand you copy, and I got the computer.

02 00 00 26 LMP (SPIDER) Houston, do you read Gumdrop or Spider?

02 00 00 29 CC Reading you loud and clear, Spider.

02 00 00 31 LMP (SPIDER) Here we have the GGA PCGA light on at this time, and are you ready to support the throttle test?

02 00 00 38 CC Spider, you are GO for the throttle test.

02 00 00 42 LMP (SPIDER) Roger. LMP throttle is idle. We are now at the soft-stop.

(GOSS NET 1)

Tape 31/10
Page 172

02 00 00 51 CC Roger. Copy.

02 00 00 52 LMP (SPIDER) Okay. Full throttle point and back to IDLE.

02 00 01 05 CDR (SPIDER) Okay, Houston. Commander's throttle is in IDLE. Now soft-stop - maximum - back down to the soft-stop and IDLE.

02 00 01 18 CC Roger, Spider.

02 00 01 51 LMP (SPIDER) Okay. Houston, this is Spider. We are standing by for your verification on the GDA angle.

02 00 01 58 CC Roger. I believe they look good. Stand by one, Spider.

02 00 02 10 CC Spider, this is Houston. You are GO on the gimbal drive angles.

02 00 02 14 LMP (SPIDER) Roger. Stand by for hot fire.

02 00 02 17 CC Roger. We are standing by.

02 00 02 22 CC We are standing by to support your hot fire, Spider. We are ready.

02 00 02 25 LMP (SPIDER) Houston, we are ready to go.

02 00 02 28 CC Let her rip, Spider.

02 00 02 29 LMP (SPIDER) Okay. A couple more switches.

02 00 03 16 LMP (SPIDER) Okay, Houston. Spider here. We will start the proportionalized check, both fire.

02 00 03 22 CC Roger. Understand. And we are ready to go.

02 00 03 25 LMP (SPIDER) Roger.

02 00 03 50 LMP (SPIDER) Okay. That's complete.

02 00 03 54 CC Roger.

02 00 04 04 CDR (SPIDER) Gumdrop, we are about to fire our jets here so you want to be in FREE.

(GOES REV 1)

Tape 31/16
Page 173

- 02 00 04 08 CMP Roger. FREE standing by.
(GUMDROP)
- 02 00 04 10 CDR Roger.
(SPIDER)
- 02 00 04 12 CMP How are you with respect to gimbal lock?
(GUMDROP)
- 02 00 04 15 CDR Oh, about 15 - 20 degrees.
(SPIDER)
- 02 00 04 18 CMP Okay. Keep an eyeball on it.
(GUMDROP)
- 02 00 04 19 CDR Okay. I will be right with you.
(SPIDER)
- 02 00 04 31 LMP You told us to take the hot fire now.
(SPIDER)
- 02 00 04 32 CC We're ready to go. PRESS.
- 02 00 04 35 LMP Roger.
(SPIDER)
- 02 00 04 55 LMP Okay, Houston. It's complete.
(SPIDER)
- 02 00 04 48 CC Roger. Copy.
- 02 00 05 01 CMP Good job; rate is almost normal.
(GUMDROP)
- 02 00 05 03 LMP I still have some more to go.
(SPIDER)
- 02 00 05 24 LMP Okay, Houston. Here comes a little hot fire on
(SPIDER) a TTCA.
- 02 00 05 28 CC Roger. Spider, this is Houston. Would you go
through it slower, please? You are going to have
to go slower.
- 02 00 05 35 LMP Okay. We'll go TTCA.
(SPIDER)
- 02 00 05 40 CC Roger.
- 02 00 05 43 LMP We are not going to hold them ... long. We'll just
(SPIDER) wait longer between pulses.

02 00 05 47 CC Roger. That will really help us out, Spider.

02 00 05 50 LMP (SPIDER) You don't want them held down longer. You just want them longer between pulses. Is that right?

02 00 05 54 CC That is affirmative, Spider.

02 00 05 56 LMP (SPIDER) Okay. We'll try it again.

02 00 06 02 LMP (SPIDER) That was up.

02 00 06 07 LMP (SPIDER) Down.

02 00 06 13 LMP (SPIDER) Right.

02 00 06 18 LMP (SPIDER) Left.

02 00 06 28 LMP (SPIDER) Aft.

02 00 06 30 LMP (SPIDER) How was that, Houston?

02 00 06 35 CC That looked real good, Spider.

02 00 06 48 LMP (SPIDER) Okay. Here comes the FNGS STGA check.

02 00 06 52 CC Roger, Spider.

02 00 07 01 LMP (SPIDER) Up.

02 00 07 07 LMP (SPIDER) Down.

02 00 07 14 LMP (SPIDER) Right.

02 00 07 20 LMP (SPIDER) Left.

02 00 07 29 LMP (SPIDER) Forward.

02 00 07 29 LMP (SPIDER) Aft.

(GOSS NET 1)

Tape 31/18
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02 00 07 30 LMF Now was that?
(SPIDER)

02 00 07 32 CC That looked real good, Spider. Everything looks good.

02 00 07 38 LMP Okay, Dave. That's all of the hot fire.
(SPIDER)

02 00 07 40. CMP Okay. Good job. You moved us away from it.
(GUMDROP)

02 00 07 57 LMP And, Houston, you got to give us the update at
(SPIDER) this time?

02 00 08 02 CC Roger. I have the PAD ready to go, and can you take an uplink now?

02 00 08 09 LMP Roger. The computer is yours; and ready to copy
(SPIDER) the docked DPS. This is Spider.

02 00 08 14 CC Roger, Spider. Stand by one.

02 00 08 16 CMP Gumdrop is ready.
(GUMDROP)

02 00 08 18 CC Okay. Copied you, Gumdrop. And Spider, the uplink is on its way. I'm reading docked DPS: 049 41 3340, minus 00603, minus 17430, minus 00007 17440 all zips all zips, minus 00587, minus 17430, minus 00139. End of update.

02 00 09 24 LMP Roger, Houston. Spider reading back: 049 41 3340, minus 00603, minus 17430, minus 00007 17440 all zips all zips, minus 00587, minus 17430, minus 00139.

02 00 09 57 CC Roger. Very good. The readback was correct.

VANGUARD (REV 31)

02 00 10 02 CMP Gumdrop copied.
(GUMDROP)

02 00 10 21 CC And, Spider and Gumdrop, it looks like we are making good work on this pass. We've still got about 15 minutes here.

02 00 10 36 LMP Houston, Spider here. You broke up.
(SPIDER)

(COSS NET 1)

Tape 31/19
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- 02 00 11 43 LMP Houston, this is Spider.
(SPIDER)
- 02 00 11 45 CC Go, Spider.
- 02 00 11 47 LMP Roger. We are going to start the landing radar self-test here if you are ready.
(SPIDER)
- 02 00 11 58 CC Spider, this is Houston. The computer is yours. We are standing by for the landing radar self-test. Press ahead.
- 02 00 12 05 LMP Okay. The DFI is coming on now.
(SPIDER)
- 02 00 12 07 CC Roger.
- 02 00 16 37 CC Gumdrop, Houston.
- 02 00 16 40 CMP Houston, Gumdrop.
(GUMDROP)
- 02 00 16 42 CC Roger. We would like to have you bring quad C back on the line when you disable Baker 3.
- 02 00 16 50 CMP Wilco.
(GUMDROP)
- 02 00 16 57 LMP Gumdrop and Houston, be advised that Spider did not unstow the radar antenna today.
(SPIDER)
- 02 00 17 09 CC Roger. We understood that. Will you be unstowing it for the rendezvous radar self-test?
- 02 00 17 19 LMP I don't believe so. I think we can run the self-test without unstowing it. Since we're not going to do the EVA tomorrow, there is no sense in unstowing it. We've already skipped the star check in the daylight, so we have no reason to get it out of the way.
(SPIDER)
- 02 00 17 37 CC Roger. Copy.
- 02 00 17 41 LMP If you have any other comment, please let us know.
(SPIDER)
- 02 00 17 44 CC All right. Sure will.
- 02 00 17 47 CMP And Gumdrop copied.
(GUMDROP)

(GOSS NET 1)

Tape 31/20
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02 00 17 53 LMP And, Houston, here comes the landing radar spurious
(SPIDER) noise test.

02 00 17 58 CC Roger. Copy, Spider.

02 00 18 11 LMP Houston, do you read? Spider.
(SPIDER)

02 00 18 13 CC Go, Spider.

02 00 18 15 LMP Roger. How long do you want us to run this
(SPIDER) spurious noise test here?

02 00 18 18 CC Stand by one.

02 00 18 23 LMP Roger. Step 16, system 49. We are ready to stop
(SPIDER) it any time you are ready.

02 00 18 29 CC Roger. Understand. We are taking a look at it,
Spider. And, Spider, you can terminate the test
now. And, Gumdrop, we would like to have quad C
on whether you disable Backer 3 or not.

02 00 18 43 CMP Roger. Charlie coming up.
(GUMDROP)

CANARY (REV 31)

02 00 19 02 CC And, Gumdrop, we are showing your quad balance
as excellent. It's looking real great, Gumdrop.

02 00 19 11 LMP Houston, Spider.
(SPIDER)

02 00 19 13 CC Go ahead, Spider. This is Houston.

02 00 19 15 LMP Your R and D telemetry CALIBRATE coming on now.
(SPIDER)

02 00 19 18 CC Roger. Copy.

02 00 19 37 CC And, Gumdrop and Spider, this is Houston. We have
finished up that famous pass with 6 minutes to
spare.

02 00 19 48 CDR Smokey, you are so smooth I just can't believe it.
(SPIDER) You are just directing us magnificently.

02 00 19 54 CC I'm getting mad with power down here, Spider.

() 02 00 20 17 LMP Say, Gumdrop, this is Spider.
(SPIDER)

02 00 20 19 CMP Go ahead.
(GUMDROP)

02 00 20 20 LMP You are still going to have to disable B3 for
(SPIDER) a while so we don't get any corona on our radar.

02 00 20 25 CMP Okay. Say when.
(GUMDROP)

02 00 20 26 LMP How about right now.
(SPIDER)

02 00 20 27 CMP Okay. It's disabled.
(GUMDROP)

02 00 20 37 CC Gumdrop, Houston.

02 00 20 39 CMP Houston, Gmdrop. Go ahead.
(GUMDROP)

02 00 20 41 CC Roger. we're still recommending two-jet roll
authority - we're recommending Able Charlie roll
off.

02 00 20 48 CMP Houston, Gumdrop. Say again.
(GUMDROP)

02 00 20 50 CC Roger. We are recommending that two-jet roll
authority, roll AC - we'd like to leave it off.

02 00 20 58 CMP Houston, Gumdrop. You get knocked down with static
(GUMDROP) every time. Try it again.

02 00 21 02 CC Okay. We would like to stay with two-jet roll
authority - recommend in AC stay off.

02 00 21 11 CMP Okay. Very well. AC coming back off.
(GUMDROP)

02 00 24 00 CC Say, Spider and Gumdrop. We are going to lose you
here in about 1 minute. We'll see you over Tanana at
37, and that was a good show on both vehicles
there.

02 00 25 12 LMP Okey-dokey.
(SPIDER)

02 00 25 13 CMP Roger. Gumdrop.
(GUMDROP)

(GOSS KEY 1)

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02 00 24 33 CDR (SPIDER) Houston, this is Gumdrop - Spider. Before you go - if you are still reading us - We are not reading any range and range rate on the DSKY for the radar.

02 00 24 41 CC Roger. Understand. No range and range rates. And, Spider, we'd like to have low bit rate, please.

02 00 24 53 CDR (SPIDER) Roger.

02 00 24 58 CC And we are looking at that problem on your range and range rate right now, Jim. We think the stowing of the radar might affect that.

02 00 25 09 CDR (SPIDER) Okay.

02 00 25 13 CDR (SPIDER) Okay. We get the range rate to read this time. ... back again. It's really 497.

02 00 25 25 CC Roger. I believe I got that, 497.

02 00 25 31 CDR (SPIDER) Roger.

END OF TAPE

TANANARIVE (REV 31)

02 00 36 52 CC Spider and Gumdrop, Houston through Tananarive.
Standing by.

02 00 38 08 CC Spider and Gumdrop, this is Houston through Tananarive. Standing by.

02 00 38 35 CC Tananarive M&O, this is Houston CAPCOMM. Do you read?

02 00 38 48 CC Tananarive M&O, Houston CAPCOMM. Voice check.

02 00 39 59 CT CAPCOMM, Tananarive.

02 00 40 00 CC Tananarive M&O, this is Houston CAPCOMM. Am I coming through to you? Am I going up?

02 00 40 06 CT The first transmission was very low down in the mud. You called back, asked for the M&O; I received it clear, and then we were switched over to Melbourne circuit.

02 00 40 20 CC Okay. Am I going up to the spacecraft at this time?

02 00 40 27 CT ...

02 00 40 28 CC All right. This is Houston CAP ...

02 00 40 29 CT Affirmative.

02 00 40 30 CC All right, Spider and Gumdrop. This is Houston through Tananarive.

02 00 40 42 CC Tananarive M&O, Houston CAPCOMM. Am I receiving a downlink from the spacecraft?

02 00 40 48 CT ... I'll copy.

02 00 45 02 CC Okay, Spider and Gumdrop. Houston in the blind. If you read me, we will see you over Carnarvon at 53.

CARNARVON (REV 31)

02 00 53 17 CC Spider and Gumdrop, this is Houston through Carnar. And, Spider, we would like to have high bit rate.

02 00 53 26 CDR Got you, Houston. Going to high bit rate.
(SPIDER)

02 00 53 30 CMP Gumdrop is with you.
(GUMDROP)

02 00 53 31 CC Roger. And just maybe till we shoot our COMM,
did either of you read me over Tananarive?

02 00 53 38 CDR Spider. I read you.
(SPIDER)

02 00 53 39 CMP And Gumdrop did too.
(GUMDROP)

02 00 53 43 CC Very good. Thank you.

02 00 53 45 CDR Say, Houston, Spider. I've got your stuff for
you.
(SPIDER)

02 00 53 49 CC Go ahead, I'm ready to copy.

02 00 53 51 CDR Okay. Number 1, our helium SUPERCRIT pressure
is reading again at 750.
(SPIDER)

02 00 54 02 CC Roger. Copy, Spider. We're showing 735.

02 00 54 06 CDR That's okay. My helium ambient pressure is
down to 210. I think that's a little lower than
it's supposed to be.
(SPIDER)

02 00 54 15 CC Roger. We confirm that. We're showing 208,
and it's okay.

02 00 54 20 CDR Okay. Be advised we can not initialize the AGS
from the PGNCS. We can not initialize the AGS
from the PGNCS.
(SPIDER)

02 00 54 30 CC Roger. Copy. You can not initialize AGS from
the PGNCS.

02 00 54 38 CDR Update part of it from the PGNCS to the AGS. The
downlink part of PGNCS will not get into the AGS.
When we put 10 000 up, it just stays there at
10 000.
(SPIDER)

02 00 54 50 CC Roger. Understand that the AGS will not accept
the PGNCS downlink.

02 00 54 56 CDR Roger.
(SPIDER)

02 00 55 02 CDR Oh, and did you get our message on the rendezvous
radar?
(SPIDER)

02 00 55 07 CC Roger. I und - you were going - you were - just about to lose you - You said you had no range rate on the DSKY, and then you did something, and I didn't copy that.

02 00 55 18 CDR (SPIDER) Okay, we got the range to come in to the DSKY one time and the range rate a couple of times, but it's not consistent at all.

02 00 55 28 CC Roger. Copy.

02 00 55 40 CDR (SPIDER) Say, Houston, did you get our gimbal angles and that other stuff?

02 00 55 48 CC That is a negative. We have not received anything from you over Tananarive.

02 00 55 55 CDR (SPIDER) Okay, Gumdrop. You want to send them down those?

02 00 56 00 LMP (SPIDER) I'll get them.

02 00 56 01 CDR (SPIDER) Okay. Never mind. I guess we have them all. Gumdrop, why don't you send them the torquing angles first?

02 00 56 04 CMP (GUMDROP) Okay. Houston, Gumdrop. Are you ready to copy?

02 00 56 07 CC Go ahead.

02 00 56 10 CMP (GUMDROP) Okay. The P52 torquing angles: GET 48:44:00, plus 00213, plus 00042, minus 00147.

02 00 56 26 CC Roger. Copy those, Gumdrop.

02 00 56 34 CMP (GUMDROP) Roger.

02 00 56 37 LMP (SPIDER) Okay, Houston. And I've got IMU realignment angles for you.

02 00 56 41 CC I'm standing by to copy.

02 00 56 45 LMP (SPIDER) Roger. Command module angles: 02029 02856 33357. LM angles: 28202 20876 02659.

02 00 57 08 CC Roger, Spider. I copy. For command module: 02029 02856 33357. For the IM: 28202 20876 02659. And we'll go to work on them.

(GOSS NET 1)

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02 00 57 31 CDR Roger. And when you're ready, I've got some
 (SPIDER) AGS calibration data.

02 00 57 35 CC Roger. I'm ready to copy.

02 00 57 37 CC I'm ready to copy your data, Spider.

02 00 57 45 CDR Roger. Stand by.
 (SPIDER)

02 00 57 52 CDR Okay. The bias coefficients before the CAL:
 (SPIDER) minus 77777, plus all zips, minus all 7's. The
 gyro drift: we're plus 00027, plus 00047, plus
 00006. Did you copy those?

02 00 58 20 CC Roger. I copied those.

02 00 58 24 CDR Okay. And following the CAL: plus all zips, plus
 (SPIDER) all zips, minus all 7's. And the gyro drift after
 the CAL: plus 00021, plus 00036, minus 00020.

02 00 58 48 CC Roger, Spider. I copy those.

02 00 58 54 CDR Okay. And the only other thing I need right now
 (SPIDER) is the procedure from one of the AGS guys on
 how to get 414 back to zero. As I recall, you can
 not simply set it to zero; you have to go through
 a little procedure, there. I wonder if you would
 get that for us.

02 00 59 12 CC Roger, Spider. I copy. 414 back to zero, and that's
 in work.

02 00 59 26 CC And, Gumdrop and Spider, I'd like to have both
 vehicles with S-band up. We'll be going over to
 Honeysuckle in a couple of minutes.

02 00 59 34 CMP Gumdrop.
 (GUMDROP)

02 00 59 37 CDR Spider.
 (GUMDROP)

02 00 59 49 CC Spider, Houston.

02 00 59 52 CDR Go.
 (SPIDER)

02 00 59 54 CC Roger. We're suspecting a leak in the LPS helium
 manifold, and, stand by one. And we'd like to have
 you take a look at LPS malfunction procedure number 1.

(COSS RET 1)

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02 01 00 15 CDR Roger.
(SPIDER)

02 01 00 53 CC Spider, Houston.

02 01 00 55 CDR Go.
(SPIDER)

02 01 00 57 CC Roger. We just noticed you doing a VERB 47 there,
and we'd like to have you try the initialization
again.

02 01 01 07 CDR Roger. Understand. You want us to do it again?
(SPIDER)

02 01 01 11 CC Stand by one.

02 01 01 14 CDR Roger. Be advised we tried to VERB 47 two times,
(SPIDER) and it seems to come out of the PGNCS okay, but the
AGS 414 never goes back to zero.

02 01 01 37 CC Roger. I copy that, Spider, and I have your
torquing angles while we work on that.

02 01 01 45 CDR Roger. Just stand by just one.
(SPIDER)

02 01 01 46 CC Roger.

02 01 01 50 CDR Ready to copy.
(SPIDER)

02 01 01 52 CC Roger. Reading your torquing angles: minus
00040, plus 00180, minus 00160.

02 01 02 14 CDR Roger. Copy minus 00040, plus 00180, minus
(SPIDER) 00160.

02 01 02 25 CC That's affirmative. We confirm those.

02 01 02 29 CMP Roger. Thank you.
(SPIDER)

02 01 02 31 CDR Houston, do you want us to close the descent
(SPIDER) helium REG 1?

02 01 02 34 IMP And if ... what do you want us to do on this
(SPIDER) procedure?

02 01 02 39 CC Roger. We copy that, Spider. Stand by one.

HONEYSUCKLE (REV 31)

02 01 03 05 CC Spider, Houston.

02 01 03 08 CDR (SPIDER) Go.

02 01 03 10 CC Roger. We would like to have you try that initialization again while we've got some data here on you.

02 01 03 18 CDR (SPIDER) Roger. Will do.

02 01 03 27 LMP (SPIDER) Gumdrop, are you sort of angling toward the burn attitude here?

02 01 03 31 CMP (GUMDROP) Roger. That's affirm.

02 01 03 37 CDR (SPIDER) Okay.

02 01 03 39 CC Spider, this is Houston.

02 01 03 41 CDR (SPIDER) Go ahead, Houston.

02 01 03 42 LMP (SPIDER) ... Spider.

02 01 03 43 CC Roger. We misinterpreted your question here. We would like to have you press ahead with MAL 1, and just press right ahead.

02 01 03 53 CDR (SPIDER) Okay. What - -

02 01 03 54 CC Go ahead, Spider.

02 01 03 55 CDR (SPIDER) You want 10 and 12?

02 01 03 56 CC That is affirmative. Go ahead and press through blocks 10 and 12.

02 01 04 00 CDR (SPIDER) Okay.

02 01 04 08 CDR (SPIDER) The downlink is in process with the ACS, Houston.

02 01 04 18 CC Spider, Houston. Say that again.

02 01 04 20 CDR (SPIDER) Roger. We threw in a VERB 47, and doggone if it didn't go in that time.

02 01 04 27 CC Roger. We waved our magic wand over it through Honeysuckle, there, Spider.

02 01 04 33 CDR (SPIDER) You guys got what it takes with SIM SUP.

02 01 04 36 CC That's affirmative.

02 01 07 00 CC Spider, Houston. I have a little bit of info when you are ready to listen. No need to copy.

02 01 07 06 CDR (SPIDER) Okay, good. I'm a good listener. Be advised that our regulator pressure doesn't seem to be dropping. It's holding at about 232; that's for the DPS.

02 01 07 19 CC Roger. What is your regulator pressure, Spider?

02 01 07 23 CDR (SPIDER) That's right. We were reading off the fuel and oxidizer pressures. They are both reading 232, and have been since I closed the REG. Also, my ambient tank has been holding at about 210.

02 01 07 42 CC Roger. Copy 210.

02 01 07 49 CC And, Spider, my little tidbit here is that during our hot-fire test, we do have a thrust chamber pressure switch failed CLOSED on thruster B4 UP. It failed on the first firing. It will have no effect to you at all with the exception that the caution and warning will not detect an OFF failure of that thruster. That is Baker 4 UP.

02 01 08 23 CDR (SPIDER) Okay, will it detect an UP - stuck ON thruster?

02 01 08 34 CC Stand by. That is affirmative.

02 01 09 14 CC Spider, Houston. This sensor is not used in the thruster ON logic, it's strictly thruster OFF, so the answer to your question is affirmative. Caution and warning will detect a thruster ON failure.

02 01 09 29 CDR (SPIDER) Okay.

02 01 09 41 CDR (SPIDER) And, Houston, do you want me to press on any further with this malfunction procedure, or do you just want me to open up that REG again?

(GOSS NET 1)

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02 01 09 48 CC Stand by, Spider.

02 01 10 04 CC Spider, Houston. We would like to have you go back to normal configuration. Open regulator 1.

02 01 10 10 CDR (SPIDER) Roger. It's open on COMM TECH's three, and be advised that we're just about in a posture to perform the DPS burn at this time and get some last minute checks.

02 01 10 24 CC Roger. Understand. I'm about to lose you at Honeysuckle. We can have you through the Huntsville with no loss.

02 01 10 35 CDR (SPIDER) Roger.

HUNTSVILLE (REV 31)

02 01 13 23 CMP (GUMDROP) Spider, Gumdrop.

02 01 13 26 CDR (SPIDER) Go ahead.

02 01 13 28 CMP (GUMDROP) When we start a maneuver to burn attitude ...

02 01 13 32 CDR (SPIDER) Say again?

02 01 13 33 CMP (GUMDROP) Roger. When we maneuver, it will be to the burn attitude ...

02 01 13 42 CDR (SPIDER) It will ...

02 01 13 45 CMP (GUMDROP) Okay.

02 01 17 39 CC Spider and Gumdrop, if you read me, we will see you over the Redstone at 28.

02 01 17 53 CDR (SPIDER) Roger. Spider reads you.

MERCURY (REV 31)

02 01 18 13 CDR Gumdrop, did you read them at all that time?
 (SPIDER)

02 01 18 15 CMP I think he said he would see us somewhere, sometime.
 (GUMDROP)

02 01 18 19 LMP Yes, ...
 (SPIDER)

02 01 18 21 CC Okay, Gumdrop, Spider. That's Redstone at 28.

02 01 18 25 CDR Now we read you loud and clear.
 (SPIDER)

02 01 18 26 CMP Gumdrop the same.
 (GUMDROP)

02 01 18 30 CC Okay. Well, we couldn't get you through the Huntsville with an elevation angle of 9 degrees, and we can go through the Mercury with an elevation of 0.8.

02 01 18 41 CDR Something wrong there.
 (SPIDER)

REDSTONE (REV 31)

02 01 28 31 CC Spider and Gumdrop, this is Houston through the Redstone.

02 01 29 01 CDR How does the direction look to you out there?
 (SPIDER)

02 01 29 10 CC Spider and Gumdrop, Houston through the Redstone.

02 01 29 14 LMP Yes, it looks like I am facing south.
 (SPIDER)

02 01 29 20 LMP I assume they gave us the docked DPS REFSMMAT, didn't they?
 (SPIDER)

02 01 29 26 CMP He's checking.
 (GUMDROP)

02 01 29 37 CC Spider and Gumdrop. Do you read? Houston.

(02 01 29 44 CEP Gumdrop is with you.
(GUMDROP)

02 01 29 48 CC Okay, Gumdrop, I'm copying you. Would you pass on to Spider that when he arms the DPS he may get a descent REG warning light due to the low manifold pressure.

02 01 30 02 CMP Roger. Understand he may get a descent warning low light due to the low manifold pressure, right?
(GUMDROP)

02 01 30 11 CC That is descent REG warning light, and he may get that when he arms the DPS.

02 01 30 19 CMP Roger. Got you there. Descent REG warning on when he arms the DPS. You copy that, Spider?
(GUMDROP)

02 01 30 23 CDR Roger. REG warning when arm DPS.
(SPIDER)

02 01 30 28 CMP Okay. That is what he said.
(GUMDROP)

02 01 30 31 CC Okay. Thank you, Gumdrop. And we are standing by for your burn.

02 01 30 35 CMP Roger.
(GUMDROP)

02 01 30 38 CDR And, Houston, do you want high bit rate here?
(SPIDER)

02 01 30 43 CMP Houston, Gumdrop. Do you want high bit rate out of the Spider?
(GUMDROP)

02 01 30 45 CC I copy, Spider then Gumdrop. Yes, we do want high bit rate.

02 01 30 51 CMP Roger. Affirmative on high bit rates, Spider.
(GUMDROP)

02 01 31 37 CC Spider and Gumdrop, this is Houston. You are GO for the docked DPS burn.

02 01 31 40 CDR Roger. We're GO.
(SPIDER)

02 01 31 42 CMP Gumdrop understands GO.
(GUMDROP)

02 01 31 45 CC And, Spider, we are copying you loud and clear now.

(02 01 31 49 CDR Gumdrop, why don't you go to FREE, and we will take control here.
(SPIDER)

(COSS NET 1)

Tape 32/11
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02 01 31 53 CMP Roger. Gumdrop is in FREE.
(GUMDROP)

GOLDSTONE (REV 32)

02 01 34 16 CDR Roger. Looks about right over here too.
(SPIDER)

02 01 34 23 CDR Yes, that's ... ballpark.
(SPIDER)

02 01 36 40 CC Spider, Houston.

02 01 36 45 CDR Houston, Spider.
(SPIDER)

02 01 36 48 CC Roger. We are showing the AGS address 407 as
10 000, vice the checklist as 0000.

02 01 37 05 CDR Roger. Thank you.
(SPIDER)

02 01 37 07 CC You're welcome.

02 01 38 25 CC Spider, Houston.

02 01 38 27 LMP Go.
(SPIDER)

02 01 38 29 CC Okay, Rusty. That 407 flipped to 10 000 again;
we are recommending that you set zero and enter
right around ignition.

02 01 38 46 LMP Houston, you cut off there. Say again.
(SPIDER)

02 01 38 48 CC Roger. Your address 407 in the AGS has now gone
back to 10 000; we are recommending you set up
0000 and enter right around ignition time.

02 01 39 02 LMP Roger.
(SPIDER)

02 01 39 51 LMP A minute, 45 seconds, Gumdrop.
(SPIDER)

02 01 39 54 CMP Roger. I'm with you.
(GUMDROP)

(COSS NET 1)

Tape 32/12
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- 02 01 40 24 CDR Boy, Houston. We are right over a white deck
(SPIDER) of clouds, and is it ever bright!
- 02 01 40 28 CC Roger. Copy.
- 02 01 40 36 CDR One minute.
(SPIDER)
- 02 01 40 38 CC Roger. Copy. One minute. Everything looks
good.
- 02 01 41 07 CDR Okay. 28 seconds.
(SPIDER)
- 02 01 41 20 CDR 15 seconds, Gumdrop.
(SPIDER)
- 02 01 41 25 CMP Ullage on.
(GUMDROP)
- 02 01 41 26 CDR Ullage is on.
(SPIDER)
- 02 01 41 32 CMP ...
(GUMDROP)
- 02 01 41 39 CDR Okay. Ignition.
(SPIDER)
- 02 01 41 41 CDR I'm throttling up to 40 percent, Dave.
(SPIDER)
- 02 01 41 45 CDR It's 40 percent.
(SPIDER)
- 02 01 41 50 CMP Stand by for the autopilot.
(GUMDROP)
- 02 01 41 53 CDR Okay. Stand by for the autopilot. Descent REG
(SPIDER) flight now.
- 02 01 42 00 CMP It's gone down --
(GUMDROP)
- 02 01 42 01 CDR The pressure's gone down. Here comes the throttle
(SPIDER) up.
- 02 01 42 09 CDR Okay, the pressure dropped down to about 190,
(SPIDER) there, Houston.

(QSS NET 1)

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- 02 01 42 13 CC Roger. We copied it, Spider.
- 02 01 42 15 CDR (SPIDER) We're full throttle, and the attitude errors are practically nil, Davy.
- 02 01 42 19 CMP (GUMDROP) Okay. Looks pretty good over here too.
- 02 01 42 22 CDR (SPIDER) Yes, ditto. Flying this thing ...
- 02 01 42 24 CMP (GUMDROP) Okay. Your HP is 109 and holding.
- 02 01 42 27 CDR (SPIDER) Thank you. Got 440 to go.
- 02 01 42 29 CMP (GUMDROP) I've got 443.
- 02 01 42 36 CDR (SPIDER) I'm pulling 8/10 of a lunar g in case you're interested. We're starting to get a little excursion in high yaw.
- 02 01 42 43 CC Roger. Copy.
- 02 01 42 44 CMP (GUMDROP) You surely can't see much out the tail end here.
- 02 01 42 49 CDR (SPIDER) We just threw a big hunk down on the ground there. There goes another hunk.
- 02 01 42 52 CMP (GUMDROP) Yes, I saw a few pieces go, too.
- 02 01 43 02 CMP (GUMDROP) Gee, I got 405.
- 02 01 43 05 CDR (SPIDER) Roger. So do we.
- 02 01 43 07 LMP (SPIDER) And the PGNCS and AGS are count down right together.
- 02 01 43 10 CMP (GUMDROP) Okay. 109.3 on the HP.
- 02 01 43 12 CDR (SPIDER) Roger.
- 02 01 43 19 CDR (SPIDER) Man, am I hungry!

02 01 43 24 CMP Looks pretty smooth.
(GUMDROP)

02 01 43 25 CDR Yes, it really is. It's going along like a dream.
(SPIDER)

02 01 43 28 CMP Sure, losing pieces back there; some of the foil's
(GUMDROP) coming off.

02 01 43 32 CDR Yes. Now, we're going over Texas right now, I
(SPIDER) think. We ought to be over Houston pretty soon.

02 01 43 40 CMP 03:30.
(GUMDROP)

02 01 43 42 CDR Okay. 03:30 here. Attitude errors are staying
(SPIDER) down to less than 1 degree.

02 01 43 47 CMP Roger. 109.3 RP.
(GUMDROP)

02 01 43 49 CDR Okay.
(SPIDER)

02 01 43 53 CDR We have 1100 feet per second to go.
(SPIDER)

02 01 43 55 CMP Right with you.
(GUMDROP)

02 01 43 57 LMP Man, the AGS and the PGNSC are right together.
(SPIDER)

02 01 44 00 LMP And for the information of the ground and the
(SPIDER) tape, the quantity is reading 76 and 74, and we
don't seem to have any spurious lockups at this
time.

02 01 44 12 CC Roger, Spider. Houston copies.

02 01 44 15 CDR REG pressure is holding pretty steady; it's about
(SPIDER) 232.

02 01 44 20 LMP And the landing radar temperature is reading 95
(SPIDER) at the present and started out at 81.

02 01 44 28 CMP Okay. RP is 109.3, and everything's clean over
(GUMDROP) here.

02 01 44 31 CDR Okay, same here. Looks like it's done a real
(SPIDER) good job of steering.

02 01 44 37 LMP We've only got 850 feet per second left to go.
(SPIDER)

02 01 44 40 CMP I'm 885 when you called in.
(GUMDROP)

02 01 44 42 CDR Okay.
(SPIDER)

02 01 44 43 CMP 229.
(GUMDROP)

02 01 44 44 CDR Roger. 225 here.
(SPIDER)

02 01 44 51 CDR Okay. Roger. I'm going to start my throttle profile at 124.
(SPIDER)

02 01 44 55 LMP Roger.
(SPIDER)

02 01 45 08 CMP I've got 2 minutes.
(GUMDROP)

02 01 45 10 CDR Two minutes here. I have 704.
(SPIDER)

02 01 45 13 CMP 109.2
(GUMDROP)

02 01 45 15 CDR Roger.
(SPIDER)

02 01 45 21 CMP Your rates on all axes are less than a tenth of a degree per second.
(GUMDROP)

02 01 45 25 CDR Is that right? I'm going to go to attitude hold.
(SPIDER)

02 01 45 26 LMP -- rates look solid here.
(SPIDER)

02 01 45 30 CDR 600 feet per second to go.
(SPIDER)

02 01 45 33 CMP Right with you.
(GUMDROP)

02 01 45 42 CDR Okay. I've got about a minute, 25.
(SPIDER)

02 01 45 45 CMP Right with you.
(GUMDROP)

(GOSS NET 1)

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- 02 01 45 47 CDR Okay, when I start throttle, we're going to
(SPIDER) add a lot of seconds on to that.
- 02 01 45 51 CMP Roger.
(GUMDROP)
- 02 01 45 56 CDR 450.
(SPIDER)
- 02 01 46 00 CDR 420 to go.
(SPIDER)
- 02 01 46 08 CMP One minute.
(GUMDROP)
- 02 01 46 09 CDR One minute now.
(SPIDER)
- 02 01 46 12 CMP 109.2.
(GUMDROP)
- 02 01 46 14 CDR Roger. Hanging right in there, isn't it?
(SPIDER)
- 02 01 46 16 CMP Yes, really slick.
(GUMDROP)
- 02 01 46 17 CMP We are getting a roll, or some sort of an
(SPIDER) oscillation now. It's got --
- 02 01 46 24 CDR Hell, yes! We're getting slosh!
(SPIDER)
- 02 01 46 32 CDR I've got 228 to go, and the camera coming back on.
(SPIDER)
- 02 01 46 34 LMP Get ready for throttle profile.
(SPIDER)
- 02 01 46 37 CMP Roger.
(GUMDROP)
- 02 01 46 39 CMP Thirty.
(GUMDROP)
- 02 01 46 42 CDR Okay, 170, 157, 145.
(SPIDER)
- 02 01 46 50 CDR Firing the throttle, 40 percent. Going down to
(SPIDER) 10 percent. Coming back up to 40 percent. Back down to 25 percent.
- 02 01 47 15 LMP Back up again.
(SPIDER)

02 01 47 16 CDR (SPIDER) Okay. Coming up to 40 percent. Throttle profile complete, and just let it sit there.

02 01 47 21 CMP (GUMDROP) ... point one.

02 01 47 22 CDR (SPIDER) Roger. 24 seconds to go.

02 01 47 28 CDR (SPIDER) I'm going to shut down the area at 3 seconds to go. I've got 18, 16, 15, 14, 13 - -

02 01 47 35 LMP (SPIDER) No sweat.

02 01 47 36 CDR (SPIDER) 12, 10, 9, 8 - get your hand out of - 6, 5, 4, 3, shutdown!

02 01 47 46 CMP (GUMDROP) ...

02 01 47 47 CDR (SPIDER) ... attitude hold, here.

02 01 47 49 CMP (GUMDROP) Right with you, all the way.

02 01 47 50 CDR (SPIDER) Okay.

02 01 48 00 CC And, Spider, that was a beautiful burn. Man, you were right down the tube.

02 01 48 04 CDR (SPIDER) Looked pretty neat from here, too.

02 01 48 14 CDR (SPIDER) You want our residuals, Houston?

02 01 48 16 CC I can copy them on your DSKY now, Spider.

02 01 48 19 CDR (SPIDER) Okay, very good.

02 01 48 25 CDR (SPIDER) Say, you know what? You really feel that stuff sloshing around here at the end.

02 01 48 41 CMP (GUMDROP) I thought the MAX rate you got was about 3/10 of a degree per second.

02 01 48 47 CDR (SPIDER) Yes, with the offset that I had on my rate scale over here, I can't tell where zero is, but it didn't deviate hardly at all.

(GOSS NET 1)

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02 01 49 07 CC That was mighty beautiful all the way, Spider.
02 01 49 12 CDR (SPIDER) Okay.
02 01 49 19 CMP (GUMDROP) Roger. Landing radar temperature is 100 degrees right now.
02 01 49 22 CC Roger. Copy. 100 degrees, end of burn.
02 01 40 41 CDR (SPIDER) Roger.
02 01 40 54 CDR (SPIDER) When you're in the groove, man, you got to do that!
02 01 50 05 LMP (GUMDROP) Even the AGS were good; the AGS 500 degrees, plus 3 ...
02 01 50 25 CMP (GUMDROP) Okay.
02 01 50 51 CC And, Spider, Houston. I copy 500 501 502, plus 3, minus 5, minus 0.
02 01 51 11 CMP (GUMDROP) And I got - the Gumdrop's got 271.7 by 109.1.
02 01 51 18 CC Roger, Gumdrop. Houston, copy.
02 01 51 28 CDR (SPIDER) Exciting the way the fuel and oxide pressures dropped off, there, during the sputter.
02 01 51 40 CDR (SPIDER) Houston, you are going to get a DFI CAL.
02 01 51 46 CC Roger. Understand you're getting DFI CAL.
02 01 52 14 CDR (SPIDER) Houston, how long do we have to that burn 5?
02 01 52 18 CC Stand by one, Spider.
02 01 52 23 CDR (SPIDER) Okay, I'm going to get something to eat. All I've had so far today is a little bag of fruit salad. I'm about to starve to death, and I'm going to try to get something to eat right after we finish this burn.
02 01 52 37 CDR (SPIDER) DFI CAL complete.

(GOSS NET 1)

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02 01 52 41 CC Spider, Houston.
02 01 52 44 CDR DFI power is off.
(SPIDER)
02 01 52 49 CC Spider, Houston.
02 01 52 53 CDR Houston, Spider.
(SPIDER)
02 01 52 54 CC All right, we're going to do SPS-5 at the nominal time, and that's $\frac{1}{4}$ hours and a half from now.
02 01 53 01 CDR Okay. Very good. Thank you.
(SPIDER)
02 01 53 03 CC Roger.
02 01 53 13 LMP Gumdrop, Spider.
(SPIDER)
02 01 53 15 CMP Go.
(GUMDROP)
02 01 53 16 LMP Roger. We'd like to stop at an AGS CAL attitude here somewhere.
(SPIDER)
02 01 53 20 CMP Very well.
(GUMDROP)

CANARY (REV 32)

02 01 56 00 CMP Okay, Spider. I'll have it over to you in about 3 minutes.
(GUMDROP)
02 01 58 47 CMP Okay, Spider, Gumdrop. That ought to be pretty close.
(GUMDROP)
02 01 58 55 CDR ...
(SPIDER)
02 01 59 22 CL Spider, Houston.
02 01 59 31 LMP This is Spider. Go ahead.
(SPIDER)

(COSS NET 1)

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02 01 59 32 CC Roger. Spider, we would like to ask you if, after you finish eating there, before you transfer back, if there would be any chance of getting the regulator check, checklist systems page 17.

02 01 59 52 CDR (SPIDER) Yes. Okay.

02 01 59 56 LMP (SPIDER) Roger. We'll get it.

02 01 59 59 CC Okay. Thank you.

02 02 00 00 LMP (SPIDER) ...

02 02 00 01 CDR (SPIDER) I'm going to eat first, though, before I just drop over up here.

02 02 00 04 CC Roger. I just wanted to pass that on, before you dismantled something. We would really like to see you go ahead and eat, and we'll see you over Tananarive about 13.

02 02 00 18 CDR (SPIDER) Roger.

02 02 00 21 CC And, Spider, we would like to have low bit rate.

02 02 00 28 LMP (SPIDER) Roger. Low.

END OF TAPE

TANANARIVE (REV 32)

02 02 13 50 CC Apollo 9 - excuse me. Spider and Gumdrop, this is Houston through Tananarive. Standing by.

CARNARVON (REV 32)

02 02 29 53 CC Spider and Gumdrop, this is Houston. Spider, we would like to have high bit rate.

02 02 30 03 CDR (SPIDER) Roger. High bit rate, Houston.

02 02 30 06 CC Roger. Copy. And I've got you through Carnarvon. You are five-square.

02 02 30 13 LMP (SPIDER) Roger. Understand. Five-square, and we've already started the waterboiler dryout. We will do the REG check tomorrow.

02 02 30 21 CC Roger. Understand. You will do the REG check tomorrow.

02 02 30 34 CC And Spider - we would like - if you agree - to do a VHF B check here and secondary S-band check.

02 02 30 49 CDR (SPIDER) Okay. Go ahead.

02 02 30 52 CC Roger, Spider. We would like to do a VHF B check here, if you agree.

02 02 31 00 CDR (SPIDER) Roger. We agree. Go ahead with your instructions.

02 02 31 03 CC Roger. Stand by one.

02 02 31 32 CC Spider, Houston. Roger. Could we get some AGS calibration data?

02 02 31 41 LMP (SPIDER) Roger. Stand by.

02 02 31 43 CC Roger.

02 02 31 48 LMP (SPIDER) Okay. You ready to copy?

02 02 31 52 CC Spider, let's configure your spacecraft for ... B operation and I will copy your calibration data as a COMM check.

02 02 32 04 LMP (SPIDER) Okay. We are on B. Do you read?

02 02 32 07 CC Okay. Carnarvon M&O, this is the Houston CAP COMM. I want you to REMOTE VHF B only.

02 02 32 18 CC Carnarvon M&O, did you read? Houston CAP COMM.

02 02 32 28 LMP (SPIDER) Houston, Apol - Spider. How do you read?

02 02 32 31 CC I'm reading you five-square. Let's go with the AGS calibration data.

02 02 32 35 LMP (SPIDER) Roger. The initial readings are the same as final readings before, right?

02 02 32 41 CC Okay.

02 02 32 43 LMP (SPIDER) Plus all zips, plus all zips, minus all 7's, plus 21, plus 36, and minus 20.

02 02 32 55 CC Okay. We've got that on the tape. That was a little fast.

02 02 33 00 LMP (SPIDER) Okay. Here is the final data after the CAL. It was plus all zips, plus all zips, minus all 7's.

02 02 33 12 CC Copy.

02 02 33 15 LMP (SPIDER) And stand by here.

02 02 33 18 CC Roger.

02 02 33 19 LMP (SPIDER) Hey, I beg your pardon. I powered down before I read them out.

02 02 33 24 CC Roger. Understand.

02 02 33 27 LMP (SPIDER) Stand by just one. I'll power back up and read them out.

02 02 34 23 LMP (SPIDER) Okay, Houston. Are you still with us?

02 02 34 26 CC That is affirmative. We've got you here for another 6 minutes or so across Carnarvon.

02 02 34 31 LMP (SPIDER) Okay. 54445 and 46 read: plus 7, plus 28, and plus 0.

02 02 34 42 CC Roger. Copy plus 7, plus 28, plus 0. Thank you very much, and we do have a good VHF B system. Could you give us a secondary S-band check as per system 28 at this time?

02 02 35 03 LMP (SPIDER) Roger. Stand by.

02 02 35 10 CC And Carnarvon M40, this is Houston CAP COMM. would like for you to REMOTE S-band back to Houston.

02 02 35 30 LMP (SPIDER) Okay, Houston. How do you read now?

02 02 35 34 CC I'm reading you loud and clear, Spider.

02 02 35 37 LMP (SPIDER) Okay. That's step 1. I'm ready to go to step 2.

02 02 35 40 CC All right. Let's go to step 2.

02 02 36 00 LMP (SPIDER) Okay, Houston.

02 02 36 04 CC Spider, this is Houston. Do you read?

02 02 36 07 LMP (SPIDER) Roger, Houston. How do you read Spider?

02 02 36 10 CC That's beautiful. That's loud and clear, Spider.

02 02 36 14 LMP (SPIDER) Roger. Same here.

02 02 36 16 CC Okay. That takes care of that. We are ready for step 3.

02 02 36 19 LMP (SPIDER) Roger. Going to step 3.

02 02 36 41 LMP (SPIDER) Okay, Houston. How do you read Spider now?

02 02 36 43 CC You are five-square, Rusty. That is real nice. Everything sounds great on that check. And while we've got you in the mood, would you care to do an S-band backup voice check? That's on page --

02 02 37 04 LMP (SPIDER) Houston, Spider. Try that once again.

02 02 37 08 CC While we've got you in the mood, would you care to try an S-band backup voice check as per systems 27?

02 02 37 16 LMP (SPIDER) Roger. I just got the last two words of that. Say again.

02 02 37 21 CC An S-band backup voice check, as the checklist system 27.

02 02 37 30 LMP (SPIDER) Roger.

02 02 38 21 LMP (SPIDER) Houston, this is Spider. How do you read on backup voice?

02 02 38 24 CC Spider, this is Houston. Loud and clear. How me?

02 02 38 34 CC Spider, this is Houston. How do you read me on the backup voice?

02 02 38 43 CC Spider, this is Houston. I'm reading you loud and clear. How do you read me?

02 02 39 02 LMP (SPIDER) ... is better now.

02 02 39 05 CC Spider, you're loud and clear. How me?

02 02 39 09 LMP (SPIDER) Okay, you are five-square. I'm supposed to be able to talk to you without pushing PTT. I'm not sure I'm getting backup voice down to you. Tell me if you read up through 5 and back down. 1, 2, 3, 3, 2, 1.

02 02 39 26 CC Okay. Spider, Houston. You blanked out at 3 on the way up and came in with 3 on the way down.

02 02 39 35 LMP Okay. I was using PTT up to 3 and from 3 on (SPIDER) down, and I understood the backup voice was supposed to go right off the intercom.

02 02 39 49 CC Spider, check BIOMED OFF, and give me another fast check.

02 02 40 01 LMP Roger. The BIOMED is OFF. (SPIDER)

02 02 40 06 CC Roger. Verify BIOMED OFF.

HONEYSUCKLE (REV 32)

02 02 40 17 CC Okay, Spider. We've got you through Honeysuckle now. How are you reading me?

02 02 40 58 CC Spider, this is Houston through Honeysuckle. How do you read me?

02 02 41 04 LMP ... (SPIDER)

02 02 41 08 CC Okay, Spider. I could hear you transmitting there. You were way down and breaking up. How about giving me a short count here? We are supposed to be locked up on you.

02 02 41 20 LMP One, 2, 3, 4, 5, 5, 4, 3, 2, ... Spider out. (SPIDER)

02 02 41 25 CC Okay, Spider. You are relatively clear, but way, way down.

02 02 41 31 LMP ... BIOMED. (SPIDER)

02 02 42 22 CC Spider, this is Houston. We'd like to have you return to COMM basic.

02 02 42 58 CC Spider, this is Houston. I'd like to have you return to COMM basic and give me a check.

02 02 43 03 LMP Roger, Houston. We are COMM basic. How now? (SPIDER)

02 02 43 07 CC Okay. You're coming through clear now, Rusty. And we did get the backup voice check in. It was just way down low.

(COSS NET 1)

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02 02 43 17 LMP Roger.
(SPIDER)

02 02 43 20 CC And we'd like to have the BIOMED switch on the LMP for the rest of the time, Spider.

02 02 43 33 CMP Spider, Gumdrop. The tunnel is clear.
(GUMDROP)

02 02 43 40 CDR Roger. It is on the LMP, Houston.
(SPIDER)

02 02 43 43 CC Roger. Understand. Thank you, Spider.

02 02 43 48 CDR Be advised we are presently 28 minutes into (SPIDER) the sublimator dryout.

02 02 44 01 CC Roger, Spider. I copy that. 28 minutes into the dryout.

02 02 44 05 CDR Roger, and ...
(SPIDER)

02 02 44 12 CC Okay, Spider. You are breaking up. You will have to repeat that for me, please.

02 02 44 29 CC No VHF -

02 02 44 32 CC Okay, Spider and Gumdrop. I think we are about to drop you here at Honeysuckle. We'll be over Huntsville in a couple of minutes if you want to talk there, and Hawaii at 59.

HUNTSVILLE (REV 32)

02 02 58 03 LMP Gumdrop, Spider.
(SPIDER)

02 02 58 06 CMP Go ahead ...
(GUMDROP)

02 02 58 08 LMP Roger. Stand by. Not yet.
(SPIDER)

02 02 58 12 CMP What do you need?
(GUMDROP)

02 02 58 15 LMP Just checking the COMM.
(SPIDER)

(GOSS REC 1)

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HAWAII (REV 32)

- 02 02 58 41 CC And Gumdrop, this is Houston. We've got you through Hawaii now.
- 02 02 59 45 CMP (GUMDROP) Gumdrop. Roger.
- 02 02 59 20 CC Gumldrop, Houston. We'd like to turn the heaters and H₂ tanks 1 and 2 off.
- 02 02 59 27 CMP (GUMDROP) Okay. Have to stand by for that one.
- 02 02 59 29 CC Roger. Understand. No sweat.
- 02 02 59 38 LMP (SPIDER) Okay. I'd like to give flow to you.
- 02 02 59 53 LMP (SPIDER) Gumldrop, can you give me call?
- 02 03 00 08 CMP (GUMDROP) You've gct full flow, haven't you?
- 02 03 00 10 LMP (SPIDER) I don't know; I can't tell.
- 02 03 00 12 CMP (GUMDROP) Yes, I gave it to you when you first called it.
- 02 03 00 40 LMP (SPIDER) Okay. I'm going to switch COMMS so give me a few seconds and then turn my suit power off.
- 02 03 00 46 CMP (GUMDROP) Okay.
- 02 03 02 30 CMP (GUMDROP) Houston, say again the heaters and fans.
- 02 03 02 35 CC Roger, Gumldrop. We would like to turn off the heaters in both H₂ tanks.
- 02 03 02 41 CMP (GUMDROP) Roger. Both H₂ heaters OFF.
- 02 03 02 44 CC Roger. Thank you.
- 02 03 07 57 CC Gumldrop, Houston. You might watch your middle gimbal.

(GOSS NET 1)

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02 03 08 02 CMP Roger. Thanks, Houston; got an eye on it.
(GUMDROP)

02 03 08 19 CMP We got two eyes on it.
(GUMDROP)

02 03 08 28 LMP Houston, this is the Spider.
(SPIDER)

02 03 08 30 CC Go, Spider.

02 03 08 33 LMP Roger. We've been running the dry-on now for
(SPIDER) 52 minutes and we are just starting the circu-
lator pull out and the glycol temperature is
right now 70 degrees. We are ... through it.

02 03 08 44 CC Roger. Copy.

GOLDSTONE (REV 32)

02 03 11 00 CC And Gumdrop, this is Houston. Just to remind
you again about the gimbal lock. You are just
making us nervous.

02 03 11 08 CDR Roger. We've got somebody in the couch watch-
(GUMDROP) ing it at all time now.

02 03 11 12 CC All right. Okay. Thank you.

02 03 13 19 CMP Houston, this is Gumdrop. How do you read?
(GUMDROP)

02 03 13 24 CC Gumdrop, we read you loud and clear.

02 03 13 26 LMP Okay, this is Spider. I figure our water boiler
(SPIDER) is dry at 57 minutes, and we have a lot of power
on, and I want to give you a CAL here.

02 03 13 35 CC Roger. You must be a mind reader; that's just
what we were thinking.

TEXAS (REV 33)

02 03 17 57 CMP Houston, this is Apollo 9.
(GUMDROP)

(GOSS NET 1)

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02 03 18 02	CC	Calling Houston. Say again, please; I didn't get it, Gumdrop.
02 03 18 29	CC	Gumdrop, this is Houston. I did not copy your last transmission.
02 03 18 48	CC	Gumdrop, this is Houston. I did not copy your last transmission.

BAHAMAS (REV 33)

02 03 20 00	CC	Gumdrop, this is Houston. How do you read?
02 03 20 05	CDR	Five-by, Houston. Go.
02 03 20 06	CC	Roger, I'm reading you real good now. I couldn't copy off Texas there. You made a transmission; I did not get it.
02 03 20 13	LMP	Roger, Houston. This is Apollo 9. We would like to know what the position of our translunar bus tie circuit breakers are supposed to be. They are both circuit breaker panel 11 and 16.
02 03 20 25	CC	Roger, Apollo 9. Copy. Stand by.
02 03 20 28	LMP	Just for when we're leaving the spacecraft.
02 03 20 32	CC	Roger. Understand.
02 03 20 51	CC	Okay, Apollo 9. Those translunar bus tie circuit breakers are to be OPEN, I say OPEN.
02 03 20 58	LMP	Both of them will be OPEN. Roger.

VANGUARD (REV 33)

02 03 30 17	CC	Apollo 9, Houston. About 1 minute LOS Vanguard. We will see you over Ascension at 36..
02 03 30 26	CMP	Roger.

ASCENSION (REV 33)

02 03 36 37 CDR Apollo 9, this is Houston through Ascension.
Standing by.

02 03 36 42 CMP Roger, Houston. Apollo 9.

02 03 39 36 CC Apollo 9, Houston. No need to acknowledge, but
we are showing you with - you'll probably get
a MASTER ALARM in about a minute on the H₂
pressure.

02 03 39 48 CDR Houston, you are off by about 59 seconds on
that one. It came on while you were talking.
Very good.

02 03 39 54 CC Okay. Thank you.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(0088 REV 1)

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ASCENSION (REV 33)

--- CC Apollo 9, Houston. We're going to lose you at Ascension in about a minute. We'll see you over Teesearive at around 51.

--- IMP (SPIDERS) Roger.

CARNARVON (REV 33)

02 04 07 30 CC Apollo 9, Houston through Carnarvon. Standing by.

02 04 07 36 CDR Roger. Houston, Apollo 9.

02 04 07 38 CC Roger. We're going to have you here for about 11 minutes at Carnarvon, and if you can handle it we would like to initiate a waste water dump at this time and dump it down to 25 percent.

02 04 07 51 CC Okay. Waste water down to 25. We're all back in the Cambroy, the tunnel is closed out, and everything looks okay.

02 04 07 59 CC Okay, sounds great, Apollo 9.

02 04 08 30 CC And, Apollo 9, this is Houston. Just at your convenience, when you have a couple or three minutes to talk I've got several questions that can be handled at any time. I'd just like to start working down the list before we get to close in to the burn.

02 04 09 07 CDR Okay. Stand by.

02 04 09 09 CDR Roger.

02 04 10 00 CDR Go ahead. Houston, Apollo 9.

02 04 10 03 CC Roger. There are a couple of questions we have, and one is on the adjustment of this VOX sensitivity during our GAMI test. We're trying our best to troubleshoot some of our difficulties, and we would like to have any comments that you could give us in that regard.

02 04 10 24 CDR Well, we finally ended up with the VOX sensitivity up about 8 and a half or 9. We still

(COSS NET 1)

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weren't getting the PLES to the ground, though.
We could read him from - -

- 02 04 10 45 CC I'm sorry, you broke out there, Apollo 9. Said you could read and then say again all after.
- 02 04 10 51 CDR I'm thinking.
- 02 04 10 53 CC Oh, okay. I'm sorry.
- 02 04 11 10 CDR Houston, we were reading - We had communications from the PLES to the CSM, from the CSM back to the PLES. I guess we were just having trouble getting to the ground, and even though I had the VOX sensitivity up to about 8 and a half or 9, which is about as high as it goes, we still weren't able to get him to trigger the VOX, I guess.
- 02 04 11 39 CC Roger. Copy. And you know I wasn't getting the CSM at all, in the Texas-Mexico pass, and down over the Mercury you come in loud and clear. It looked like, at one time there during the Mercury, we were going to have real good CSM, and then it got ratty again. Okay, that's enough on that one, then, unless TELL-COM will come up with some more questions. If you have anything else to add on it they would like to take it at this time.
- 02 04 12 08 CDR No, I don't believe so.
- 02 04 12 09 CC Okay. And I'm curious about the foil coming off of the Spider during the burn. Were they, you know, large chunks, small, is there any thing you would like to elaborate on that?
- 02 04 12 29 CDR I couldn't say. The stuff I saw I couldn't say for sure was foil. I think Dave said that - just a minute.
- 02 04 12 34 CDR Yes, looked like there were some pieces, maybe 2 to 3 inches square in area, but not square in dimension. They weren't clean pieces like something that was supposed to be there left. It looked it might have been scraps or something that had been hanging loose, but I did see some that were black and some that were partially black and silver, and they came off pretty fast, so it was hard to track them.

(0088 REV 1)

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- 02 04 13 04 CDR That's kind of - They stayed with us. They didn't look like they were being shot out of the engine or anything. They stayed with us and we sort of left them, but not too rapidly, and they were sort of down between from us toward the ground, and I couldn't tell exactly where they originated.
- 02 04 13 22 CDR Yes, I couldn't tell where they came from, either.
- 02 04 13 27 CC Okay, Apollo 9, copied that. That was a real good description, and the other question, I was wondering if you would care to comment if in all that bubbub if you had a chance to try out the LM drinking fountain.
- 02 04 13 46 CDR Roger. I did, and there seemed to be appreciably less water in the LM system than there was - I mean in the LM system than there is in the command module. It's much better over there.
- 02 04 14 00 CC Okay. How was the temperature of the water?
- 02 04 14 11 CDR It was pretty good; it was cool. It was very tolerable.
- 02 04 14 16 CC Okay. Sounds great, and I would like, if you haven't buried them, the battery voltages and so forth that was on the clearance checklist, they're system 74, at your convenience.
- 02 04 14 55 CDR Battery check voltages, Houston?
- 02 04 14 59 CC I'm ready to copy, Apollo 9.
- 02 04 15 02 CDR Roger. Batteries 1 through 4 with 31 volts. Battery 5 and 6 were 37. Commander's ECU and System Engineer's EUS were 31 and 31. ED BATT A was 36.5. ED BATT B was 37.2.
- 02 04 15 21 CC Roger. Very good, Apollo 9. We got those.
- 02 04 15 37 CDR Tonight, probably after this next burn, I'd like to go over with you what we are going to do tomorrow.
- 02 04 15 43 CC Okay. Very good; we agree to that.

(0088 NET 1)

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- 02 04 15 48 SC Do you have a plan for us, or are you open for suggestions, or what?
- 02 04 15 54 CC Roger. We would rather wait until after the burn and then we can get together and have a meeting of the minds.
- 02 04 16 02 CDR Okay.
- 02 04 16 06 CC That pretty well takes care of my list. One other question: I take it from your comments that the rendezvous self test, we never did get any good, valid data from that, is that affirmative?
- 02 04 16 19 CDR Not consistent, no. Occasionally, one time we got the range to come into the computer and three or fours times, maybe, for range rate; but from the computer ten times we got nothing.
- 02 04 16 34 CDR It wasn't anything we could pin it down to.
- 02 04 16 37 CC Okay. Copy that, and just as a last item, I would like to alert you I'll be calling you again right after EPS fire that we want to initiate a charge on battery B.
- 02 04 16 51 SC Okay.
- 02 04 16 52 CC And that's all I have. We are going to have you here for about another minute and a half and then we will see you - We can talk through the Huntsville about 25; if not, Hawaii at 35.
- 02 04 17 46 CC Okay. We speak synchrona at Cinnarvon, Apollo 9, and we would just like to have you take a look at the middle gimbals.
- 02 04 17 55 CDR We'll watch it.
- 02 04 17 56 CC Okay. We are too.
- 02 04 18 00 CDR Seems like we are getting some disturbance torque as we go around.
- 02 04 18 05 CC Roger. Copy.

(0088 REV 1)

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HAWAII (REV 33)

- 02 04 35 56 CC Apollo 9, this is Houston. We've got you through Hawaii. Standing by, eying the old gimbal.
- 02 04 36 04 C/P Roger. We're dumping the water.
- 02 04 36 07 CC Roger.
- 02 04 36 13 C/P You know, we've been sitting watching this gimbal, too, and I've been chasing the thing all day long. It seems to seek the red bullet - the red dot in the center of this thing, and I wonder if we are not trimming along the flight path angle. What would you say to that?
- 02 04 36 34 CC By jove, I believe that requires some heavy concentration on our part.
- 02 04 36 39 C/P Well, it will give you something to do tonight.
- 02 04 36 47 CC What you are trying to say is, you are being stabilized with the gravity gradient, then?
- 02 04 36 54 C/P I guess I don't really know what I'm saying, is the reason why. I don't really understand it, but it seems to seek the in-planeness, even when you get it sort of moving away from the gimbal lock area, it stops and starts to move back unless you have enough rate. If you have enough rate to move away from it permanently, it will swing around to the other side.
- 02 04 37 20 CC By jove, that's a real good observation. How about vertically? Is it trying to align itself vertically too, along the gravity gradient?
- 02 04 37 29 C/P No, I don't think so. I haven't noticed that so much, just seems in my roll orientation, it seems to want to go to the in-planeness. I guess maybe we can watch the vertical alignment tomorrow to see if it is gravity gradient.
- 02 04 37 46 CC Okay. I've got another question for you, Dave. Did you get any alarms during the day from the cryo tanks?
- 02 04 37 53 C/P No, not a one. Not until you called. That was the first one.

(0088 MET 1)

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02 04 37 56 CC Okay. Thank you.
02 04 38 23 CDP Hey, Smoky?
02 04 38 26 CC Go ahead.
02 04 38 28 CDP You know, now that I think about it, I guess maybe 70 - 80 percent of the time today, I've been able to see the horizon out of the hatch window.
02 04 38 44 CC Roger.
02 04 38 46 CDP Which sort of means maybe it is pulled by grav.
02 04 38 54 CC My goodness. Maybe we've come up with something here that will become an international law or something, you know, like F = MA.
02 04 39 04 CDP Say, now. Wouldn't that be something?
02 04 39 06 CC Tremendous.

GOLDSSTONE (REV 33)

02 04 51 28 CC Gumiroy, Houston.
02 04 51 30 CDP Go ahead Houston.
02 04 51 32 CC Roger. We'd like to have POO and ACCEPT, please. We have a state vector and a target load for you, and you might start fumbling for a maneuver PAD; I'll have one for you when you're ready to copy on SP3-5.
02 04 51 48 CDP Roger. You have POO and ACCEPT, and we are ready to copy.
02 04 51 54 CC Okay. I'll be ready in about one minute.
02 04 52 20 CC Okay, Gumiroy, this is Houston with the PAD.
02 04 52 27 CDP Go.
02 04 52 28 CC Roger. Reading SP3-5: 054 26 1120, minus 02109, minus 03775, plus 03796 05754 05673 0432 30545, plus 110, minus 030 25 17610 23

(CONT'D)

Tape 34/7
Page 216

800, minus 0388, plus 13076 1769. And I'd like to pass the LM weight - is 21660.

02 04 54 22

CMP

Roger. Can you give me the shaft angle again, please?

02 04 54 26

CC

Roger. Reading the shaft angle: 17610. And under remarks, I have your global angles that will give you 90 degrees out of plane in case of the early skirt down. Reading: roll, all nips; pitch, 040; yaw, 030. End of update.

02 04 55 11

CMP

Roger. Stand by just one on the readback.

02 04 55 15

CC

Roger. Standing by for the readback, and the computer is yours. You have been loaded a state vector and a target loci.

02 04 55 36

CMP

Okay, Smoky. Do you have a preferred time on those angles? I realize that they are out of plane all the time, but do you have a preferred time or anything on them?

02 04 55 48

CC

That's negative; just under the ... in all the ground rules that we had; just as soon as possible, once you determined the cause and feel like kicking it off again.

02 04 56 02

CMP

Okay. Here comes the readback: 054 26 1120, minus 02109, minus 03775, plus 03796 03794 03673 0432 3034 - copy, excuse me - 30345, plus 110, minus 000 23 17610 20 600, minus 0388, plus 13076 1769. And understand rol. 0, pitch 40, yaw 30; we're 90 out of plane, LM weight 21660.

02 04 57 04

CC

Roger. Houston confirms the update. It looks good.

02 04 57 08

CMP

Thank you.

ASCENSION (REV 34)

02 05 12 41

CC

Quadrop, this is Houston through Ascension. Standing by.

02 05 12 45

CMP

(CONT'D) Roger, Houston. This is Apollo 9 here.

(0088 MET 1)

Tape 34/8
Page 217

02 05 12 50 CC Roger, Apollo 9.
02 05 12 56 SC We're just getting ready to start the P52.
02 05 12 59 CC Roger. Copy.

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(0038 REV 1)

Tape 35/1
Page 218

ASCENSION (REV 34)

02 05 17 51 CC And we followed that, Apollo 9.
02 05 17 59 CDR Oh, very well. Thank you.
02 05 18 00 CC Roger.

TANZANIA (REV 34)

02 05 35 05 CC Apollo 9, Houston through Tanzania.
02 05 36 23 CDR And, Apollo 9, Houston. We'll see you over Carnarvon at 44.

CARNARVON (REV 34)

02 05 48 30 CC Apollo 9, Houston. We have you through Carnarvon.
02 05 48 34 CDR Hello, there. Houston, Apollo 9.
02 05 48 37 CC Roger. Loud and clear.
02 05 48 40 CDR Roger. Same with you. We are over Hawaii drifting slowly over towards deep burn attitude.
02 05 48 51 CC Houston, Roger.
02 05 48 59 CC Apollo 9, Houston. You are GO for EVA-5.
02 05 49 02 CDR Roger. GO for EVA-5.

GUAM (REV 34)

02 05 59 49 CC Apollo 9, Houston through Guam. Standing by.
02 05 59 53 CDR Hello there, Houston through Guam. How are you today?
02 05 59 56 CC Roger. Good shape.
02 06 00 00 CDR It is nice to talk to you in the day time. You keep waking me up in the morning.

(0058 NET 1)

Tape 35/2
Page 219

02 06 00 05 CC It's better for me, too.
02 06 00 12 CDR I guess somebody must be getting easy down there, right?
02 06 00 17 CC 9, Houston. Say again.
02 06 00 20 CDR Roger. Whoever is doing the scheduling must be getting easy on you.
02 06 00 27 CC Yes. Concur.
02 06 01 51 CDR Houston, Apollo 9. We just completed our day-light star check, and lo and behold, a star was there!
02 06 01 58 CC Hey, great!
02 06 04 38 CC Apollo 9, Houston. One minute LOS, Hawaii at 12.
02 06 04 44 CDR Roger. Hawaii at 12. Okay, say.
02 06 05 03 CDR Hey, Ron, is Sonny there with you?
02 06 05 08 CC Is who with me?
02 06 05 10 CDR Oh, never mind. I'll get you over Hawaii.
02 06 05 12 CC Roger.
02 06 05 15 CC Sonny is still here.
02 06 05 19 CDR No; Sonny. Sonny Morton.
02 06 05 23 CC Yes. He's here, too.
02 06 05 23 CDR Okay.
02 06 05 30 CC Hello, Jimmy.

HAWAII (REV 34)

02 06 13 49 CC Apollo 9, Houston through Hawaii. Standing by.
02 06 13 53 CDR Roger.
02 06 13 54 CC Roger.

(0088 MET 1)

Tape 35/3
Page 220

02 06 15 54 CC Apollo 9, Houston. I'll give you a MARK on 10 minutes.
02 06 15 57 CDR Roger.
02 06 16 12 CC MARK.
02 06 16 13 CC 10 minutes.
02 06 16 14 CDR Roger. We're right together.

Houston (REV 34)

02 06 27 20 CDP Houston, Apollo 9.
02 06 27 21 CC Houston. Roger. We copy your residuals. Request DELTA-V_C.
02 06 27 25 CDP Roger. DELTA-V_C is 9.9.
02 06 27 30 CC Roger.
02 06 28 20 CDP Houston, Apollo 9. Did you copy our E1 and EP1?
02 06 28 27 CC Roger. We copy. 129.6; 127.7.
02 06 28 31 LSP Okay.
02 06 28 33 CDR Hey, that was a pretty burn.
02 06 28 36 CC Roger.
02 06 29 03 CC Apollo 9, Houston. Request the BATT B charging, as soon as you get to it.
02 06 29 08 CDP Roger. In work.
02 06 29 09 CC Roger.
02 06 29 45 CDP Okay. BATT B on the charge, Houston, and we're drawing two and one-quarter amps on it.
02 06 29 52 CC 9, Houston. Roger. We copy.
02 06 30 33 CC Apollo 9, Houston.
02 06 30 35 CDR Go ahead.

(COSS EXT 1)

Tape 35/4
Page 221

02 06 30 36	CC	Roger. We'll be going private over Antigua in about 39.
02 06 30 41	CDR	Okay ...
02 06 32 42	CC	Apollo 9, Houston.
02 06 32 44	CDR	Go. Houston, Apollo 9.
02 06 32 45	CC	Roger. We see you are in program 6 right now. Just be advised we want to give you a state vector before you power down.
02 06 32 52	CDR	Oh, gracious.
02 06 32 56	CAP	Roger. We'll bring the CSC back on the line.
02 06 32 59	CC	Roger.
02 06 33 04	CDR	You're pretty fast.
02 06 33 11	CDR	When it gets close to time to rest, we're really in motion.
02 06 33 17	CC	Say again.
02 06 33 19	CDR	I said when it gets close for - for the time for us to start resting, we really get in motion.
02 06 33 24	CC	I noticed that.

APOLLO 9 AIR-TO-GROUNDED VOICE TRANSCRIPTION

(0008 REV 1)

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ASCENSION (REV 35)

— — — — CDR Houston, Apollo 9.
 — — — — CC Houston. Go.
 — — — — CDR Roger. We've got consumable status for you here.
 — — — — CC Roger. Ready to copy.
 — — — — CDR Okay. Service module RCS A, B, C, D - Ready to copy?
 02 06 51 55 CC Go.
 02 06 51 56 CDR 75, 76, 7 $\frac{1}{2}$, 7 $\frac{1}{2}$.
 02 06 52 03 CC 75, 76, 7 $\frac{1}{2}$, 7 $\frac{1}{2}$.
 02 06 52 07 CDR Roger. BATT C, 37.0; pyro A, 37.1; B, 37.1.
 02 06 52 21 CC Roger.
 02 06 52 23 CDR We've got the injector temperatures for you:
 5 OFF SCALe HIGH, 5 Delta 4.65, 6 Alfa, Bravo,
 Charlie, and Delta all OFF SCALe HIGH.
 02 06 52 41 CC Roger. All OFF SCALe HIGH except 5 Delta, and
 it's 4.65.
 02 06 52 48 CDR That's Charlie - I mean that's affirmative.
 02 06 52 52 CC Okay. We show you 129.1 by 123.6. We're refining
 it but it looks okay.
 02 06 53 04 CDR Roger. Do you have any words on purge tonight?
 02 06 53 10 CC Say again. Words on a purge?
 02 06 53 13 CDR Roger. Do you want us to purge the fuel cells
 tonight?
 02 06 53 19 CC Roger. Stand by.

GUAM (REV 35)

02 07 32 42 CC Apollo 9, Houston through Guam.
 02 07 32 46 CDR Roger. Houston, Apollo 9. Go ahead.

(0088 REV 1)

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Page 223

02 07 32 51 CC Roger. We're kind of standing by for S-band lockup here to get an E memory dump from you.

02 07 32 53 CDR Oh, very well.

02 07 33 01 CDR And we never saw a state vector go in.

02 07 33 04 CC Roger. It'll be coming in here shortly, soon as they get the lockup.

02 07 33 09 CDR Okay.

02 07 33 39 CC Okay, Apollo 9. Looks like we got it. Request a VERB 74, and give us a MARK when you do it.

02 07 33 46 CDR Roger. Okay, here we go: 3, 2, 1.

02 07 33 54 CDR MARK.

02 07 34 34 CC Apollo 9, Houston. While we're waiting here, we'd like to have an oral temperature from Rusty, and we recommend that he take one Maresine about an hour before his suiting tomorrow morning.

02 07 34 49 IMP Roger. Understand.

02 07 35 24 CC Apollo 9, Houston. Request POO and ACCEPT.

02 07 35 27 CDR Roger. You have POO and ACCEPT.

02 07 35 30 CC Okay. Should be coming up. We need a decimeter readout, too, if you have those handy.

02 07 35 38 CDR Okay. Stand by. We can give you two out of three.

02 07 35 42 CC Okay.

02 07 36 03 CDR Okay. The CDR's is 16111.

02 07 36 10 CC 16111.

02 07 36 21 CDR CDR's is 03111.

02 07 36 26 CC 03111.

02 07 36 38 CC 9, Houston. On the first COM checks we had today, they were recorded real good at the site, and evidently we had just a bit of a problem getting them back to MCC; but the COM checks were good.

(0055 MET 1)

Type 36/3
Page 28

- 02 07 36 50 CDR Oh, very good. Okay. What kind of heater/fan configuration would you like tonight on the cryos?
- 02 07 36 59 CC Okay. We will give that to you over Texas; probably heaters off and we'll have the fan on. Okay --
- 02 07 37 08 CDR Okay. We'll be standing by for your word.
- 02 07 37 10 CC Okay. And I've got a EAV check for you if you're ready to copy it.
- 02 07 37 14 CDR Stand by.
- 02 07 37 34 CDR Okay. Go ahead with the EAV check.
- 02 07 37 37 CC Okay. Of course, the purposes for going off the range: GBT 036 30 0000, minus 3251, minus 00310 1250. Over.
- 02 07 38 03 CDR Roger. 036 30 0000, minus 3251, minus 00310 1250.
- 02 07 38 15 CC Roger. It's good, and the computer is yours.
- 02 07 38 18 CDR Oh, very well. Thank you.
- 02 07 38 32 CC 9, Houston. Another thing we came to a conclusion here was that we had to be in high bit rate for the FRRCS to AOS initialization.
- 02 07 38 48 CDR Roger. Understand.
- 02 07 38 56 CC Now, we're just about to LCG here. I'll give you some more info on tomorrow's activities when we get over Hawaii.
- 02 07 39 05 CDR Okay. Understand.
- 02 07 39 06 CC And you might be thinking about if there's any changes in the window fogging from yesterday.
- 02 07 39 13 CDR Roger. Today the left-hand rendezvous window was fogging a little more around the edges. It looks like it'll be okay through rendezvous, but it's ...
- HAWAII (REV 35)
- 02 07 47 03 CC Apollo 9, Houston through Hawaii.

(0088 EFT 1)

Type 36/b
Page 223

- 02 07 47 07 CDR Roger, Houston, Apollo 9.
02 07 47 10 CC Okay. I missed your comment on the windows there as you went over the hill.
02 07 47 13 CDR Okay. The windows are looking pretty good. All of them are just fine as a matter of fact, except the left-hand rendezvous window. And the film that we had yesterday is continuing to grow, the little light band around the edges. It'll be fine for the rendezvous but interesting to see how long it lasts on into the 10 days. Let's see, only one of the bunch, really, that looks like it has a problem. The little circle that was in the center of the hatch window hasn't seemed to grow any. And the rest of them are - I'm not seeing about the same, pretty good.
02 07 47 49 CC Okay.
02 07 47 52 CDR And the temperature is about 90.6.
02 07 47 53 CC Roger. 90.6. Okay. I've got a few comments on tomorrow's timelines if you're ready to copy and listen, there, I guess.
02 07 48 18 CDR Okay. Just a second.
02 07 48 20 CC Okay. Basically what we've planned is to stay on the normal timeline for both vehicles up to the point of going EVA. And when we get into the PLSS things there, we'll go through the normal PLSS hookups, but stay on the LM ECU hoses in suit disconnect from the LM, instead of connecting the OPS.
02 07 48 53 CDR Okay.
02 07 48 56 CC Okay. We want to keep the TV pass as scheduled, and it's kind of a dealer's choice there, shots inside the LM, the tunnel, or whatever you want.
02 07 49 10 CDR Okay.
02 07 49 13 CC Okay. Do you have any druthers on the PLSS COMM? We're thinking that maybe you - going ahead and use the LM relay mode.
02 07 49 22 CDR All right. Stand by.
02 07 50 43 CC 9, Houston.

(GOSS NET 1)

Tape 36/5
Page 226

02 07 50 45 CDR Roger. Go ahead.
02 07 50 51 CDR Houston, 9. Go ahead.
02 07 50 52 CC Roger. We're curious. Did Rusty take a Maresine and a Lcomotil this morning?
02 07 51 04 CDR That's affirmative.
02 07 51 06 CC Roger.
02 07 51 11 CDR We're massaging your plan right now.
02 07 51 14 CC Okay.
02 07 51 20 CC 9, this is Deke. Do you read?
02 07 51 23 CDR Say again.
02 07 51 24 CC Deke here. Now do you read?
02 07 51 26 CDR Stand by one, Deke.
02 07 51 28 CC Okay.
02 07 52 04 CDR Okay. Go ahead.
02 07 52 06 CC Roger. I think we had LOS on you before we finished our last transmission. I thought I'd let you know that everybody down here is very happy with the way the day has gone, and I'd like to congratulate you for an outstanding job.
02 07 52 16 CDR Thank you.

GOLDSTONE (REV 35)

02 07 53 29 CC Apollo 9, Houston.
02 07 53 31 CDR Roger, Houston. Go ahead.
02 07 53 33 CC Roger. I think we might add a little bit to what we were saying about tomorrow, and that is that we intend to just have the hatch open only during the first daylight pass and then button it up.
02 07 53 48 CDR Roger. Fading out. We haven't got a solid lock I don't think, yet. Would you say it once more, please?

(0088 MET 1)

Tape 36/6
Page 227

- 02 07 53 55 CC Okay. How are we now?
- 02 07 53 59 CDR Okay. I think you're coming in better now.
- 02 07 54 02 CC I might add that we plan to have the hatch open only during the first daylight pass and then button it up rather than going all the way around with the hatch open.
- 02 07 54 16 CDR Roger. Yes, I'd like to finish up tomorrow's activities a little earlier, if we can.
- 02 07 54 24 CC We understand that.
- 02 07 54 27 CDR Okay. We only have a 7-1/2-hour rest period tomorrow night, and I want to make sure that we have enough time to configure the spacecraft for the transfer the next day and still get some sleep.
- 02 07 54 41 CC Come on.
- 02 07 54 42 CDR It looks like we're going to have to open the hatch at normal time, leave it open for that daylight pass, close it, configure it for the TV, and when the TV is over then we would leave the LM, come back in the command module. Is that right?
- 02 07 55 00 CC That's right, and as a matter of fact, we can't even wait the TV to interrupt the transfer. If possible you can, you know, start the transfer early.
- 02 07 55 09 CDR Oh, okay. I see what you're - You're saying that we plan to follow normal timeline and then we get to the time to open the hatch, as we do that, leave them open during the first daylight pass, close them up, and then we egress the LM and tune in the TV on the way out, sort of.
- 02 07 55 25 CC Something like that, yes.
- 02 07 55 28 CDR Yes. That sounds like a pretty reasonable plan.
- 02 07 55 34 CC And, 9, Houston. While we've got a little bit of COMM here, I've got some block data number 7 for you.

(0088 REV 1)

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02 07 55 41

CCB

Okay. We'll whip up the pad here. One thing that we - you might take under advisement is be prepared for us to be a little bit late in the morning because it's really a scramble trying to get suited, and once you get suited you become all tangled up in these hoses, so we have to take a little - It takes a little bit longer, I guess, in the morning than we really have allotted in our flight plan. So we may be just a little late getting over there.

02 07 56 06

CC

Okay. We understand.

I think once we get to the LM, we find that we worked that through enough and there's not that much jumping around that requires to take too much longer than normal.

02 07 56 20

CC

Okay.

02 07 56 23

CCB

Okay. Go ahead with your block data.

TDRS (REV 36)

02 07 56 35

CDF

Houston, go ahead with the block data. We're ready.

02 07 56 44

CC

9, Houston. One more thing here. We plan to turn H₂ tank 1 fan on at 56 plus 00.

02 07 56 54

CDF

Say again the time, please.

02 07 56 55

CC

At 56 plus 00.

02 07 56 59

CDF

H₂ tank 1 fan 1 on at 56 plus 00.

02 07 57 04

CC

Roger. And how about S-band volume up at 56 plus 22. We'll try an S-band A3IA pass.

02 07 57 20

CDF

Okay. S-band volume ...

02 07 57 28

CC

Okay. Now we're ready for block data.

02 07 57 34

CDF

Okay. Go ahead.

02 07 57 37

CC

Area 039 3 Alfa, plus 273, plus 1450 061 35
08 4355; 040 Alfa Charlie, minus 091, minus 0120
062 29 34 4355; 041 Alfa Charlie, minus 008,
minus 0230 064 02 26 4355; 042 Alfa Charlie,
plus 090, minus 0320 065 35 55 4355. Still with
me, 9?

(0088 REV 1)

Tape 36/8
Page 229

- 02 07 59 22. CDR Roger. Press on.
- 02 07 59 24 CC 043 2 Alfa, plus 247, minus 0270 067 18 51 4355; 044 Alfa Charlie, plus 313 0 - belay that - minus 4355. And 9, your SPS trim: pitch, minus 0.9; yaw, minus 1.1. Houston, over.
- 02 08 00 38 CDR Roger. I didn't know KENNEDY had so many areas.
- 02 08 00 41 CC Yes, He's got a bunch of them.
- 02 08 00 46 CDR Okay. I guess we start at 039 3 Alfa, right?
- 02 08 00 50 CC Affirmative.
- 02 08 00 52 CDR Plus 273, plus 1450 061 35 03 4355; 040 Alfa Charlie, minus 091, minus 0120 032 29 34 4355; 041 Alfa Charlie, minus 003, minus 0230 064 02 56 4355; 042 Alfa Charlie, plus 090, minus 0350 065 35 55 4355; 043 2 Alfa, plus 247, minus 0270 067 18 51 4355; 044 Alfa Charlie, plus 313, minus 0290 068 46 52 4355.
- 02 08 02 04 CC 9, Houston. Your readback is correct. And request you verify CO₂ canister change there a while back.
- 02 08 02 11 CDR That's verified, on time.
- 02 08 02 13 CC Roger.
- 02 08 02 15 CDR Houston, Apollo 9.
- 02 08 02 18 CC Houston, here.
- 02 08 02 19 CDR Do you have any good information on why our rendezvous radar data wasn't getting into the computer?
- 02 08 02 25. CC We've got the bigheads moving it over down here, and we haven't come up with a real good answer yet.
- 02 08 02 33 CDR Okay. Did you get any good downlink data from those checks that we did?
- 02 08 02 39 CC Say again.
- 02 08 02 42 CDR Did you get any downlink data from the rendezvous radar checks that we did?

(0088 REV 1)

Tape 36/9
Page 230

02 08 02 49 CC That's affirmative. We did get some data.
02 08 02 52 CDR Okay. So you have the data to look at, too.
02 08 02 53 CC Yes.
02 08 02 56 CDR Alright. We'll be standing by anxiously to find out what your conclusion is.
02 08 03 00 CC Okay. And the computer is yours; you can go to BLOCK on the computer.
02 08 03 05 CDR Okay. And it's already put to bed.
02 08 03 13 CDR Say, Houston. Say, we've got H₂ heaters OFF now and O₂ heaters ON.
02 08 03 21 CC Say again, Dave.
02 08 04 09 CC Apollo 9, Houston.
02 08 04 42 CC Apollo 9, Houston.

(END OF TAPE)

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 37/1
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ARIA (REV 36)

- CC Apollo 9, Houston.
- CC Apollo 9, Houston.
- CC Apollo 9, Houston through ARIA.
- CC ARIA 5, Houston CAP COMM. Let's try VHF uplink and downlink.
- CC Apollo 9, Houston through ARIA.
- CMP Roger. Houston, Apollo 9. You're garbled, but readable.
- 02 08 26 24 CC Roger. We are VHF at this time. I tried you on S-band. Did you hear me at all?
- 02 08 26 31 CMP Negative. We didn't hear you on S-band, and I've got it turned up.
- 02 08 26 38 CC Okay. Evidently the S-band didn't work. Let's go ahead and keep the VHF here. We will try S-band at the end of the pass again. Got some good dope for you on the rendezvous radar DSKY test.
- 02 08 26 51 CMP Stand by a minute.
- 02 08 27 20 CMP Okay, Houston. Go ahead.
- 02 08 27 22 CC Roger. The downlink shows that the rendezvous radar self-test is okay, and in checking it out a little bit more, the self-test doesn't show up on the DSKY because the antenna is in the STOWED position.
- 02 08 27 53 CMP Okay. Understand, Houston. Downlink shows that the RR self-test is okay, and the reason that it didn't show up on the DSKY was because it was in the STOWED position.
- 02 08 28 04 CC That is affirmative. We've ginned up a procedure so that you could look at it on a DSKY. However, since it was good on the downlink, rather than mess around with a new procedure, we'll probably go ahead - we'd like to go ahead and say it works, and try it out on rendezvous day.
- CMP Okay. Understand.

(GOSS NET 1)

Tape 37/2
Page 232

02 08 28 31 CMP Stand by one, Houston.
02 08 28 33 CC Houston. Go.
02 08 28 37 CMP Stand by one, Houston.
02 08 29 11 CMP Houston, 9.
02 08 29 13 CC Houston. Go.
02 08 29 15 CMP Okay. How about whipping those procedures into reasonable form? And, if there is time tomorrow, I guess we would like to look at that, and perhaps even stow it - just to get the feeling on board. Okay?
02 08 29 30 CC Okay. We can do that for you; and we will have it for you tomorrow.
02 08 29 34 CMP Okay. Very well. Thank you.
02 08 29 46 CC Okay. That was the USB we're talking on here. It looks like we are about LOS, and talk is not too good over Tananarive. So, if you don't hear from us, have a good night's sleep.
02 08 29 58 CMP Okay. Thank you very much. We'll see you in the morning.
02 08 30 02 CC Roger.

END OF TAPE

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APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(COSS REV 1)

**Type 50/1
Page 233**

DELT PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(CCSB REC 1)

Type 39/1
Page 234

REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(0088 REV 1)

Tape 40/1
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BEST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUNDED VOICE TRANSCRIPTION

(0088 REV 1)

Tape 41/1
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DEBT PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(0088 MET 1)

Tape 42/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(0088 REV 1)

Tape 43/1
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MERCURY (REV 42)

- 02 18 54 28 CC Good morning, Apollo 9. Houston.
- 02 18 54 36 CDR Morning.
- 02 18 54 40 CDR Morning.
- 02 18 54 42 CC Roger. Comes mighty early doesn't it?
- 02 18 54 44 CDR Oh, yes. It's still dark outside, too.
- 02 18 54 49 CC Say, that's right.
- 02 18 55 02 CC 9, Houston. We've got quite a few things to pass up to you here this morning before we get started.
- 02 18 55 10 CDR Okay. Now about it?
- 02 18 55 11 CC Okay. First of all, BATT B is charged, so you can terminate BATT B charge.
- 02 18 55 19 CDR Okay. Terminating B at this time.
- 02 18 55 21 CC Okay. On your H₂ tanks: we like tank 1 heater OFF, and tank 2 heater OFF. Let me relay that: tank 2 heater in AUTO.
- 02 18 55 42 CDR Okay. Tank 1 heater is OFF, and tank 2 heater is in AUTO.
- 02 18 55 47 CC Okay. And, of course, the fans are OFF. H₂ fans are OFF.
- 02 18 55 51 CDR Roger. Both H₂ fans to OFF.
- 02 18 55 55 CC Okay. I have a consumables update whenever you want it, and then I can go through some stuff on the EVA.
- 02 18 56 06 CDR Okay. Stand by.
- 02 18 56 32 CDR Okay, Houston. Go ahead with the consumables.
- 02 18 56 35 CC Okay. GET: 067 70 23 69 29 76 30 70 39 435 40 38 36 39 100 97 41 1019 583. Over.

ANTIGUA (REV 43)

02 19 22 35 CC Apollo 9, Houston through Antigua.
02 19 22 38 CDR Roger. Houston, Apollo 9. How do you read?
02 19 22 40 CC Roger. Loud and clear, Dave.
02 19 22 42 CDR Okay. Here's your readback on the consumables. Ready?
02 19 22 45 CC Go.
02 19 22 47 CDR 067 70 23 69 29 76 30 70 30 495 40 38 36 39 100 97 b1 1019, and I didn't catch the last one.
02 19 23 16 CC Roger. 588.
02 19 23 20 CDR 588.
02 19 23 21 CC And, Dave, we've got a bunch of things here to change in the EVA checklist, there. What I would suggest is that you dig out the EVA checklist; and also we want to add pages 17-32 and -33 of your systems checklist in there.
02 19 23 39 CDR Okay. Stand by. Which spacecraft?
02 19 23 42 CC LM spacecraft.
02 19 23 43 CDR For the LM. Okay. Stand by.
02 19 24 09 CDR Okay, Houston. Go ahead with the EVA checklist updates.
02 19 24 15 CC Okay. Place page systems-17 after EVA-15, and systems-32 and -33 after EVA-19.
02 19 24 34 CDR That's okay. I wasn't expecting any kind of an update. Go ahead, what's the next one? Systems-17 after EVA-15, what's next?
02 19 24 41 CC Systems-32 and -33 after EVA-19.
02 19 24 55 CDR Okay. Systems-17 after EVA-15 and systems-32 and -33 after EVA-19.
02 19 25 03 CC Okay. Page EVA-17.
02 19 25 08 CDR What other updates did you have?

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- 02 19 25 11 CC Okay. What I was going to try to do - If you've got the checklist in front of you, I'll read it through here and let you mark them in the checklist as we go. We've got about 20 minutes or until 40, with a couple of minutes in between logged.
- 02 19 26 21 CC 9, Houston. Are you with me again?
- 02 19 26 24 CDR Roger. With you.
- 02 19 26 29 CC Okay. We've got a lot of things here, Dave, if you want me to read it up and you copy it down, or else we'll just make the changes as we go right through the checklist.
- 02 19 26 37 CDR Go ahead. I've got the systems-17 after EVA-16, systems-32 and -33 after EVA-19.
- 02 19 26 45 CC Okay. On page EVA-17: delete the rendezvous radar antenna positioning.
- 02 19 26 57 CDR Okay. EVA-17 - What do you want to do?
- 02 19 27 00 CC Delete the rendezvous radar antenna positioning.
- 02 19 27 11 CDR Roger. It's deleted.
- 02 19 27 13 CC Okay. And EVA-17, the EVA prep: delete step 3 and step 4, lines 2 and 3.
- 02 19 27 31 CC Okay. That's the entire step 3: in step 4, just lines 2 and 3.
- 02 19 27 47 CDR Okay. You want us to delete all of step 3, and you want us to eliminate steps 2 and 3 of step 4.
- 02 19 27 56 CC Affirmative. Lines 2 and 3 of step 4.
- 02 19 28 01 CDR Roger.
- END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

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VANGUARD (REV 43)

- 02 19 28 03 CC Okay. On EVA-18 and -19: delete the PLSS COMM check.
- 02 19 28 14 CP Okay. PLSS COMM check.
- 02 19 28 16 CC Okay. GM systems-32 --
- 02 19 28 26 CP I'll have to write that down.
- 02 19 28 29 CC Perform at 71 plus 14 over Carnarvon.
- 02 19 28 40 CP Okay. Systems-32. You want to do it at 71:14 over Carnarvon.
- 02 19 28 46 CC And on Systems-33: perform at 71 plus 33 over Mercury.
- 02 19 29 04 CP Roger. Systems-33 at 71:33 over Mercury.
- 02 19 29 12 CC Okay. Systems-33 in the lunar stage backup with relay: delete step 3 and add return to CGM basic with LM two-way relay by setting RANGE to RANGE, VOICE to VOICE. PLSS mode 3, then COMM check with NEW. PLSS mode 3, at 8 and UGIA dump.
- 02 19 30 16 CP You got away from me, Ron. You want to do the lunar stage backup with relay; then you want to delete step 3; then you want to return to LM basic. Then you want to go to two-way relay?
- 02 19 30 28 CC That's right. Return to LM basic with two-way relay.
- 02 19 30 47 CP Okay. I don't have that system worked out right now, and I can't make no change. What else did you say after that? Just say it again fast, and I'll see if I have to write it down.
- 02 19 30 53 CC Okay. You return to two-way relay by setting RANGE to RANGE, VOICE to VOICE. PLSS mode 3, then COMM checks with NEW. Then PLSS mode 3, and then you have your rest and eat period.
- 02 19 31 32 CP Okay. Let me see if I can decipher my writing here. You want a lunar stage backup with relay and then delete step 3. Return to LM basic with two-way relay by going RANGE to RANGE, VOICE to

(CONT'D 1)

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VOICE. Then go to PLM mode 5; make an EVA voice check, then return to mode 3 and rest and eat.

- 02 19 31 49 CC Affirmative. Okay. While I think about it, S-band volume up at 36. Okay. Let's go to EVA page 20.
- 02 19 32 02 CP Okay. Go ahead.
- 02 19 32 04 CC Okay. In the final prep, step 3: delete lines 8, 9, 10, 11, and 12.
- 02 19 32 35 CP Okay. Delete 2, 9, 10, 11, and 12.
- 02 19 32 40 CC Okay. On EVA-H1, LN PGM check.
- 02 19 32 52 CP Go.
- 02 19 32 54 CC On step 1: delete lines 1 and 4 through 7.
- 02 19 33 10 CP Do you have the checklist there?
- 02 19 33 12 CC Yes.
- 02 19 33 14 CP What's the first line? CB-14 BM unit flow controls?
- 02 19 33 17 CC Affirmative. Delete that.
- 02 19 33 23 CP Okay. And what else?
- 02 19 33 24 CC Okay. Disconnect LOP O₂ hoses, and then all the way down to installing the oxygen purge valves; delete that.
- 02 19 33 39 CP Okay.
- 02 19 33 45 CC Okay. Your first sunrise time is 73 plus 07.
- 02 19 33 55 CP Okay.
- 02 19 33 56 CC Okay. On EVA-H1: just scratch it starting at the first sunrise.
- 02 19 34 16 CP Okay. You want to scratch everything on first sunrise.
- 02 19 34 20 CC All the way through EVA-H3. Okay. Go to the top of EVA-H4.

(CONT'D REV 1)

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02 19 34 41 CDR Okay. Go ahead.
02 19 34 43 CC Change plus 207 to plus 29.
02 19 34 55 CDR Okay. Plus 29.
02 19 34 57 CC Delete lines 1, 2, 3, and 6.
02 19 35 03 CDR Of the 207 step?
02 19 35 07 CC Okay. On the change --
02 19 35 08 CDR Do you want me to delete lines 1, 2, 3, and 6 of the 207?
02 19 35 14 CC That's affirmative. Okay. On the plus 213 - or change plus 213 to plus 40.
02 19 35 32 CDR Okay. Plus 40.
02 19 35 34 CC Delete lines 1, 2, and 4.
02 19 35 42 CDR Okay.
02 19 35 47 CC Okay. After - on down in there - after PL23 O₂ OFF, it's about line 15.
02 19 35 55 CDR - PL23 O₂ OFF, and then what?
02 19 35 57 CC ADD: LM/P suit isolation to suit flow and PL23 pump and fan both OFF. Delete the next two lines that are concerning the cut purge valve to depress the suit.

MADRID (REV 43)

02 19 36 42 CC Apollo 9, Houston.
02 19 36 52 CC Apollo 9, Houston.
02 19 36 59 CC Apollo 9, Houston through Madrid.
02 19 37 15 CC Apollo 9, Houston through Madrid.
02 19 37 39 CC Apollo 9, Houston.
02 19 37 53 CC Apollo 9, Houston.
02 19 38 16 CC Apollo 9, Houston.

(0008 EVA 1)

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- 02 19 38 54 CC Apollo 9, Houston.
02 19 39 08 CC Apollo 9, Houston. I'll transmit in the blind. On EVA-25, step 3: delete lines 2 and 3. Step 4: delete line 1. Step 5: delete line 1. Add LMP suit isolation to suit disconnect. Delete EVA-25 Alfa. Continue with post EVA procedures. We'll pick you up at Carnarvon at 07.

CARNARVON (EVA 1)

- 02 20 07 46 CC Apollo 9, Houston through Carnarvon.
02 20 07 47 CC Go ahead, Houston. Apollo 9.
02 20 07 50 CC Roger. Did you get my comment there on EVA-25?
02 20 07 58 CP Stand by.
02 20 08 02 CP Houston, we only got part of it, and then you cut out.
02 20 08 04 CC Okay. Are you ready to go with a little bit more there?
02 20 08 12 CP Roger.
02 20 08 13 CC Okay. On EVA-25, step 3: delete lines 2 and 3; step 4: delete line 1.
02 20 08 27 CP Roger.
02 20 08 28 CC And add LMP suit isolation to suit disconnect.
Okay. Then just continue with your post EVA procedures.
02 20 08 42 CC Okay. You might want to write some of these things down. These are in the terms of flight plan update.
02 20 09 03 CP Okay. Are these going to be in the EVA checklist now, or in the flight plan, Ron?
02 20 09 12 CC Well, it's kind of both, but I'll give you a time, and you can convert them into your EVA checklist there. In fact, we're going to power the LM down a little bit early. That will give you time on a TV pass.

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- 02 20 09 32 CDP Okay. Stand by here. Let me get something to copy those on.
- 02 20 09 41 CDP Okay. Go ahead, Ron.
- 02 20 09 43 CC Okay. At 74 plus 57, close primary EVAP flow. And start your LM powerdown.
- 02 20 10 00 CDP Close the primary EVAP flow.
- 02 20 10 02 CC Okay. Start TV pass at 74 plus 57 through 75 plus 13.
- 02 20 10 23 CDP Understand. TV pass 74 plus 57 through 75 plus 13. Now let me copy that down here.
- 02 20 10 47 CDP Okay. Go ahead.
- 02 20 10 50 CC Okay. While you're going that, Jim, he can start his transfer back through the tunnel at this time if you want to. Okay. While I'm thinking about it, S-band up at 14 for Honeysuckle.
- 02 20 11 09 CDP Okay.
- 02 20 11 11 CC Okay. We want LMP remain on LM CCM to perform S-band backup voice check, mode 4, over Ascension at 75 plus 25.
- 02 20 11 39 CDP Okay. 75 plus 25 over the Ascension pass you want the LMP on the LM CCM to perform a voice backup check.
- 02 20 11 48 CC Affirmative. S-band voice backup mode 4.
- HONEYBUCKLE (REV 43)
- 02 20 14 36 CC Apollo 9, Houston through Honeysuckle.
- 02 20 14 58 CC Apollo 9, Houston through Honeysuckle.
- 02 20 15 26 CDP Okay, Houston. We got you again out here somewhere.
- 02 20 15 28 CC Okay, Dave. What we said so far looks like the major changes. Of course, there may be a lot of optional changes in there in which you may or may not want to do - such as configuring the

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cameras, EVA gloves and moving the IBI and a few other things that are -

- 02 20 15 52 LMP Roger. This is Rusty. We'll try to figure that out as we go along on any of those. Say, I've got one thing I would like to check with you before we start the LM operation again, and that was on the - Something happened yesterday we neglected to report, and I'd like to get a check on it.
- 02 20 16 09 CC Okay. Go.
- 02 20 16 11 LMP Okay. During the cabin closeout - and I can't find the systems checklist right at the moment, but one of the last steps in the cabin closeout when we are powering down the ECS, one of the steps there is cabin repress from AUTO to CLOSE. And when I moved the valve from AUTO to CLOSE we got a great big, loud bang; and I immediately went back to AUTO and then recalled that LM had had a problem like that in the chamber. And I think the word was that it came out okay, so I went to CLOSE, and as I went from AUTO to CLOSE it went bang again and then stopped. But I'd like to get confirmation on that. But is that the normal behavior of the valve?
- 02 20 17 06 CC Okay. We'll check it for you.
- 02 20 17 14 CC Okay, Dave. Got a few comments on your part of the EVA.
- 02 20 17 21 LMP Okay. Stand by. He's not on the LM just now.
- 02 20 17 23 CC Okay.
- 02 20 17 51 CC 9, Houston. What it looks like here we can go ahead and initiate a command module powerdown at 76 plus 55.
- 02 20 18 02 LMP Command module powerdown at 76 plus 55.
- 02 20 18 05 CC Roger. That'll give you an extra hour tonight for a rest.
- 02 20 18 12 LMP Thanks.
- 02 20 18 14 CC How about that?
- 02 20 18 15 LMP We'll take it.

(0023 MET 1)

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- 02 20 18 22 CC Dave, you can?
- 02 20 18 24 CDP Roger.
- 02 20 18 30 CC Okay. Your EVA checklist is essentially the same. Go on up through opening the hatch. Now when you open the command module hatch, if you think you can retrieve that thermal sample by the hatch, do so. You know, if it looks like it's easy to reach and you can pull it back in there without crawling all the way out. But use your own judgment and whatever you think if you can get it back in.
- 02 20 18 57 CDP Okay. We've gone through all that and told Houston the position ... with everything and I think I'll probably be able to do it, but I'm not going to stretch the hoses at all, so we'll just take a look in real time to see what it seems like we can do.
- 02 20 19 10 CC Okay. Great. And your hatch closing will be at 73 plus 40.
- 02 20 19 18 CDP 73 plus 40. Okay.
- 02 20 19 21 CC Roger. Your OCRM plan will be your GNC basic DUPLEX A receive B data except when the LMP is on the PLSS. When he's on there, you can figure DUPLEX A receive A only.
- 02 20 19 40 CDP Okay. Understand DUPLEX A - B data until we get on the PLSS and then DUPLEX A receive A only.
- 02 20 19 46 CC Roger. And then you return back to basic again when he goes off the PLSS.
- 02 20 19 51 CDP Roger. Understand.
- 02 20 20 10 CC 9, Houston. Initial look at that valve looks like that's a normal condition that goes bang when you go from AUTO to CLOSE, and we'll just watch checking on it.
- 02 20 20 20 LMP Okay. It sure increased the heart rate yesterday.
- 02 20 20 23 CC Roger. Understand. That's built in there to keep you alert, Rusty.
- 02 20 20 33 CC 9, Houston. We'll pick you up Mercury at 25, and I'll have some block data for you at that time.

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02 20 20 41 CDR Roger. Understand. Mercury at 26 with block data.

MERCURY (REV 43)

02 20 26 33 LMP Houston, Apollo 9. How do you read?

02 20 26 41 CC Roger. Apollo 9, Houston. We've got you through Mercury.

02 20 26 46 LMP Good morning, Sluggy. How're you doing?

02 20 26 48 CC Real good. How are things in the wild blue?

02 20 26 53 LMP Wild black.

02 20 26 58 CDR He's doing all right.

02 20 27 00 CC Okay. And I've got block data number 8 when you're ready to copy.

02 20 27 02 CDR All set. Go ahead.

02 20 27 07 CC Okay. Reading block data number 8. 045 1 Baker, plus 282, minus 06 29 070 12 33 43 54; 046 1 Baker, plus 332, minus 06 20 071 46 43 43 54; 047 1 Baker, plus 331, minus 06 20 073 20 28 43 54; 048 1 Alpha, plus 288, minus 06 40 074 54 09 43 54; 049 1 Baker, plus 320, minus 16 19 077 40 30 43 54; 050 1 Baker, plus 337, minus 16 20 079 14 13 43 54. And your SPS trim gimbals: pitch minus 1.07, yaw minus 1.11. End of the update.

02 20 30 31 LMP Okay. I think the only thing I missed was the third digit on the SPS pitch trim.

02 20 30 37 CC Okay. That's 7 pitch trim minus 1.07.

02 20 30 46 CDR Okay. You want to read back; or have you got some other poop?

02 20 30 48 CC No. Let's have the readback, and you can go as fast as you like.

02 20 30 53 LMP Okay. 45 1 Bravo, plus 28.2, minus 0629 070 12 33 4354; 461 Bravo, plus 33.2, minus 62.0 7146 43 435.4. Have you got them in the decimals in them, or do you want me to read all digits?

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02 20 31 21 CC The way you're reading them is fine. Just keep pressing.

02 20 31 25 LMP 471 Bravo, plus 33.1, minus 62.0 732028 435.4;
481 Alpha, plus 28.8, minus 64.0 745409 435.4;
494 Bravo, plus 32.0, minus 161.9 774030 435.4;
54 Bravo, plus 33.7, minus 162.0 791413 435.4.
Pitch trim minus 1.07; yaw minus --

02 20 32 17 CC Okay. I believe we lost you. We'll see you at Antigua at 52 if you can read me, and that was a good job. You were racing the clock.

ANTIGUA (REV 44)

02 20 53 38 CC Apollo 9, this is Houston through Antigua. Standing by.

02 20 54 05 CDR Okay, Houston. Apollo 9 here. We're purging the three fuel cells with O₂.

02 20 54 13 CC Roger. Understand.

02 20 54 24 LMP And, Houston, did you get the readback on all the block data?

02 20 54 27 CC That was a beautiful job, Rusty. I got everything except the very last item. I'd like to verify the yaw trim as minus 1.11.

02 20 54 37 LMP Roger. Minus 1.11.

02 20 54 45 LMP Say, Houston, we have another question for you here. Looking over the day, we've come to the conclusion that there's no necessity for powering up the DDU and doing an alignment here in the command module. That way we can avoid using any fuel and playing Mickey Mouse with gimbal lock every 10 minutes. We'd like to know if you concur?

02 20 55 09 CC Roger. We copy. Stand by one.

02 20 57 51 CC Apollo 9, Houston.

02 20 57 56 LMP Go ahead.

02 20 57 58 CC Roger. That sounds like a pretty sterling idea. I guess - Is your plan to manually point it in

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about the right attitude via the sun and then go to a SCS hold there?

- 02 20 58 12 LMP Well, we didn't see any particular need for anything other than drifting flight today since we won't be taking the EVA photographs.
- 02 20 58 21 CC Okay. We're kicking this around, and we'll have some more info for you. The consideration here, Rusty, is the sun shafting on the command module hatch.
- 02 20 58 34 LMP I got you. Okay. We'll think about that one, too. Thank you.
- 02 20 58 37 CC Roger.
- 02 21 02 32 LMP Houston, are you still with us?
- 02 21 02 37 CC That's affirmative, Apollo 9. We're going to have you here for awhile.

END OF TAPE

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MADRID (NET 44)

- 02 21 02 40 LMP Okay, Dave. We were just talking this over, Stu, and - Dave says that if there is any constraint on the inside of the spacecraft - that is - not the sun on the hatch, evidently there's none there, but if there's a constraint with the sun coming in impinging on the internal part of the spacecraft, he can maneuver manually to keep - to get the sun out of the way, release the EAGS and attitude hold using SPS there, the two quads, MAX deadband, low rate.
- 02 21 03 28 CC Roger, Apollo 9. We copy that. And that's probably what we're going to come up with. You know, we had these discussions about doing drift and flight and covering up the instrument panel, and so forth. But this sounds like a good approach, and that's probably what we're going to arrive at.
- 02 21 03 36 CDR Okay. We're favorable to that.
- 02 21 03 38 CC Okay.
- 02 21 03 56 CC And I'll have you here for about another 10 minutes. And you can go ahead and bring up your S-band volume if you want. We'll be handing over to Madrid later on in this pass.
- 02 21 04 01 CDR Okay.
- 02 21 05 24 CC Apollo 9, Houston.
- 02 21 05 26 CDR Go ahead.
- 02 21 05 28 CC Roger. Another change here. We'd like to have the DFI ON from the time you start the EPS activation and checkout on EVA-6, and leave it on through your suit fan and water separation check on EVA-11.
- 02 21 05 51 CDR Okay. DFI ON EVA-6, and OFF on EVA-11.
- 02 21 05 55 CC That's affirmative.
- 02 21 07 01 CDR Houston, Apollo 9.
- 02 21 07 03 CC Go, Apollo 9.
- 02 21 07 06 CDR Roger. Do you want that DFI OFF prior to the S-band and VEF activation, or following it on EVA-11?

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02 21 07 20 CC Roger. You mean systems or EVA-11?
02 21 07 25 CDR Whoops. Stand by. Wrong book.
02 21 07 33 CC We'd like to have it off through the suit fan
water separation - separator check on EVA-11.
02 21 07 42 CDR Roger. Stand by one.
02 21 07 43 CC Roger.
02 21 12 30 CC Apollo 9, this is Houston. We're going to lose
you here at Madrid in about another minute.
We'll see you over Carnarvon at 39.
02 21 12 38 CDR Roger. Carnarvon at 39.

CARNARVON (REV 44)

02 21 39 45 CC Apollo 9, this is Houston through Carnarvon.
Standing by.
02 21 39 49 CDR Roger, Houston. This is Apollo 9. And we are
running way late again, so we're going to be
scrambling to get caught up.
02 21 39 56 CC Roger. Understand.
02 21 46 23 CC Apollo 9, Houston. We're going to drop you; we'll
pick you up Moneysuckle in about a minute with
the S-band volume up, please.
02 21 46 30 CDR Okay.

MERCURY (REV 44)

02 22 00 58 CC And, Apollo 9, Houston. Don't bother to answer.
We've got you through the Mercury for about the
next 6 minutes.
02 22 01 04 CDR Okay.
02 22 06 23 CC Apollo 9, Houston. We'll see you over Texas at
22.

TEXAS (REV 45)

- 02 22 22 45 CC Apollo 9, this is Houston through Texas. Standing by.
- 02 22 23 28 CC Apollo 9, this is Houston. Could you give us high bit in the Spider?
- 02 22 23 51 CC Apollo 9, Houston. How do you read?
- 02 22 24 21 CC Apollo 9, Houston. Do you read?
- 02 22 24 25 CDR Roger. Apollo 9 reading you, Houston.
- 02 22 24 28 CC Roger. We'd like to have high bit rate in Spider, please.
- 02 22 24 31 CDR Okay.
(GUMDROP)
- 02 22 24 36 CDR Stand by. We're reconfiguring the COMM right now.
(GUMDROP) We're on EVA-12 if you wonder where we are.
- 02 22 24 40 CC Thank you very much.
- 02 22 24 44 CDR Say, this - It really takes a long time to get ready to start clearing the tunnel. Once we get work done on the tunnel, everything goes pretty fast, but up until then it sure takes a long time.
(GUMDROP)
- 02 22 24 54 CC Roger. Copy that. I think we need to talk about that in preparation for tomorrow, sometime today.
- 02 22 25 00 CDR Roger. That's why I'm telling you now. We've got to get another plan. We have to get up earlier, and we also have to do a lot more reconfiguring at night. I cannot run too long ... I do that.
(GUMDROP)
- 02 22 25 16 CDP We started configuring the tunnel today 5 minutes late.
(GUMDROP)
- 02 22 25 20 LMP Gumbrop, Spider. How do you read?
(SPIDER)
- 02 22 25 23 CDP Spider, Gumbrop. Five-by.
(GUMDROP)
- 02 22 25 25 LMP Roger. We're supposed to be on A, shall I switch it to B and see if you are receiving me there?
(SPIDER)
- 02 22 25 29 CDP Okay. How about B?
(GUMDROP)

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- 02 22 25 54 LMP Okay, Osmirop. Spider on A.
(SPIDER)
- 02 22 26 00 LMP Roger. We're ready to proceed, Commander.
(SPIDER)
- 02 22 26 04 CDR Roger.
(GUMDROP)
- 02 22 26 06 CDR They would like to have you go to bit rate high,
(GUMDROP) please.
- 02 22 26 12 LMP Roger. High bit rate.
(SPIDER)
- 02 22 26 13 CDR Okay. And VHF B transmitter to DATA and VHF B
(GUMDROP) receiver off.
- 02 22 26 20 LMP Roger. Go.
(SPIDER)
- 02 22 26 23 LMP This one a VHF antenna check here?
(SPIDER)
- 02 22 26 29 CDR Okay. That's still set up from yesterday, okay?
(GUMDROP)
- 02 22 26 31 CDR Okay.
(GUMDROP)
- 02 22 26 35 CDR You can turn the tape off.
(GUMDROP)
- 02 22 26 37 LMP Roger. Tape off.
(SPIDER)
- 02 22 26 41 CDR That's affirmative, isn't it.
(GUMDROP)
- 02 22 26 43 LMP Affirmative.
(SPIDER)
- 02 22 26 44 CDR Okay. Let me send a few other things over there
(GUMDROP) with you, and then we'll be all set.
- 02 22 26 50 CDR I tell you what, how about getting me off - the
(GUMDROP) Commander off these hoses and get them back through
and then send them back over. I can't move here.
- 02 22 26 56 CDR Okay.
(GUMDROP)

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- 02 22 26 59 CDR (CDR/COP) Do you want to turn my suit flow off?
- 02 22 27 15 CDR (CDR/COP) Okay. You can pull them back through.
- 02 22 27 17 CDR (CDR/COP) Okay.
- 02 22 27 31 CDR (CDR/COP) Houston, this is Apollo 9.
- 02 22 27 33 CC Go ahead, Apollo 9. This is Houston.
- 02 22 27 36 CDR (CDR/COP) We haven't got the water chlorinated this morning.
...
02 22 28 06 CDR (CDR/COP) Hey, Rusty. I'm going to go off the CCM here,
and I'll be over there in a minute.
- 02 22 28 10 LMP (SPIDER) Okay.
- 02 22 32 06 LMP (SPIDER) Houston, Spider.
- 02 22 32 10 CC Spider, this is Houston.
- 02 22 32 13 LMP (SPIDER) Roger. One of the things we noticed yesterday was
the window heaters get the windows very hot, and
we're going to have the shades up for a good part
of the day. I wonder if we could have clearance
to shut those window heaters off?
- 02 22 32 33 CC Roger, Spider. We understand that. You can go
ahead and turn them off.
- 02 22 32 40 LMP (SPIDER) Roger. Thank you.
- 02 22 33 04 LMP (SPIDER) Okay. We have got the three window heaters off.
- 02 22 33 08 CC Roger. Copy. Three window heaters off.

END OF TAPE

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- 02 22 38 08 CMP Five-by, Spider.
(GUMDROP)
- 02 22 38 09 LMP Again.
(SPIDER)
- 02 22 38 10 LMP Five-by again.
(SPIDER)
- 02 22 38 11 LMP Again.
(SPIDER)
- 02 22 38 13 CMP One more five-by.
(GUMDROP)
- 02 22 38 16 LMP Okay. Fine. Thank you.
(SPIDER)
- 02 22 38 18 CMP Okay. You have got your normal squeal, but other than that it's pretty good.
(GUMDROP)
- 02 22 38 25 CDR Is mine still on and running?
(SPIDER)
- 02 22 38 27 CMP Sure is.
(GUMDROP)
- 02 22 43 24 CC Spider, Houston.
- 02 22 43 39 CC Spider, this is Houston.
- 02 22 43 53 CMP Houston, Gumdrop. Spider is reading you. Go ahead.
(GUMDROP)
- 02 22 43 56 CC Roger. We are showing battery 4 is higher than the other three. We'd like to have him turn off battery 4 at this time, and we will give him a call. We'll turn it back on prior to DEPRESS.
- 02 22 44 15 CMP Spider, Gumdrop. Did you copy?
(GUMDROP)
- 02 22 44 17 CC Hey, I'm sorry about that. It's lower than the other three - just to end the confusion. And we'll turn it off now, and we'll get it back on prior to DEPRESS.
- 02 22 44 31 LMP Okay.
(SPIDER)
- 02 22 44 32 CMP Okay, Houston. Spider copied, and battery 4 is coming off.
(GUMDROP)

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02 22 44 39 CC Roger.

02 22 44 43 LMP (SPIDER) Gumdrop, was that battery 4 OFF or 3 OFF?

02 22 44 47 CDR (GUMDROP) Battery 4, Spider. Battery 4.

02 22 44 51 LMP (SPIDER) Roger. Battery 4 is OFF.

02 22 45 17 CC Spider, Houston. I read your last transmission. If you read me, we'd like to know if Rusty is planning on being on the Commander's hoses and COME leads -

02 22 45 50 CC Spider, we'd like to have you go low bit rate, and at this time we'll see you over Carnarvon at about 14.

02 22 46 11 CC And, Gumdrop, I am not reading Spider, if you will relay that to him.

CARNARVON (REV 45)

02 23 13 26 CC Apollo 9 - Gumdrop and Spider, this is Houston through Carnarvon.

02 23 13 32 LMP (SPIDER) Roger. This is Apollo - This is Spider here.

02 23 13 36 CDR (GUMDROP) And the Gumdrop.

02 23 13 37 CC Roger. Copy you both. Spider, could you give us high bit rate?

02 23 13 42 CC Okay. We've got it, Spider.

02 23 13 45 CDR (SPIDER) Finishing up the ascent battery checkup, and we are going to start on EVA-17 here. We are going to be a little late for your 32 - systems-32.

02 23 13 56 CC Roger. We understand.

02 23 13 59 LMP (SPIDER) And, Houston, the EV batteries are 36.8, 37.5, respectively.

02 23 14 06 CC Roger. 36.8, 37.5. Thank you.

(0088 NET 1)

Tape 46/3
Page 258

- 02 23 14 13 LMP Roger. With the ascent batteries ON, ascent
(SPIDER) battery 5 is drawing 16 AMPS and 6 is drawing 10.
- 02 23 14 22 CC Roger. Copy.
- 02 23 14 32 CMP And, Houston, Gumdrop.
(GUMDROP)
- 02 23 14 33 CC Go ahead, Gumdrop.
- 02 23 14 36 CMP Okay. On the other side, we are just about up
(GUMDROP) to the time line; the hatch is closed and the
hatch integrity - The tunnel hatch and the tun-
nel hatch integrity check is complete.
- 02 23 14 46 CC Roger. Copy, Gumdrop. If you've got about
30 seconds, I would like to talk to you a little
bit about the attitude control on the rest of
day here.
- 02 23 14 58 CMP That was my next question. Go ahead.
(GUMDROP)
- 02 23 15 00 CC Roger. I must be looking down your checklist.
Okay. We would like to have you go with standard
EVA configuration as far as quads A and - Alfa
and Bravo are concerned, in other words, OFF.
We would like to turn off the roll jets in quad
Delta, leaving only quad Charlie for roll con-
trol. And when you start your attitude hold,
we would like to do that with the limit cycle
on. How we may get some excessive firings. If
we get just a series of small pulses, we would
like to have you turn the limit cycle OFF.
- 02 23 15 49 CMP Okay. Understand quads A - Alfa and Bravo are
(GUMDROP) OFF, Delta roll OFF, and limit cycle at the at-
titude hold. And I tried that the other day
when we were doing something - I don't remember
what, but in a tight - I know what it was. It
was with the IM in a tight deadband; SCS to
LIMIT CYCLE seemed to help quite a bit.
- 02 23 16 13 CC Roger. Copy.
- 02 23 16 17 CMP Now, do you want to try to assume an attitude,
(GUMDROP) or do you just want to let it go until we think
there may be a problem and then pick up an atti-
tude?

(0088 MET 1)

Tape 46/4
Page 259

- 02 23 16 30 CC Apollo - Gumdrop, this is Houston. We would like, if you could, to take just a gross cut at the proper attitude. Now if it's going to take you a lot to get there, why you might use your own judgement, but if you get somewhat near the right attitude and then - of course, the primary concern is just keep out of the cockpit.
- 02 23 16 54 CDR (GUMDROP) Okay. I'll give it a whirl.
- 02 23 16 56 CC Okay.
- 02 23 17 10 CC And, Spider, this is Houston. We show you have gone to low bit rate. We would like to leave it on high, please.
- 02 23 17 20 CDR (SPIDER) Roger. High.
- 02 23 18 02 CC And, Spider, this is Houston. When you get a chance, we would like to get an onboard readout of your supercritical helium, and we'd like to remind you about the circuit breaker on panel 11 - to get that reading. We are showing it a little lower than normal. And we would also like to have a comment on how you will be hooked up to the LM hoses. Will the CDR be on the LMP's hoses and COMM umbilical?
- 02 23 18 37 CDR (SPIDER) No. CDR will be on his own hoses.
- 02 23 18 40 CC Understand. Copy. The CDR will be on his own hoses.
- 02 23 18 44 CDR (SPIDER) You want me to read the SUPERCRIT pressure out, is that what you want?
- 02 23 18 47 CC That is affirmative. That's when you get a chance.
- 02 23 18 54 LMP (SPIDER) Roger. Let's stand by a little while.
- 02 23 18 56 CC Roger. No sweat at all.
- 02 23 19 06 CDR (GUMDROP) Houston, Gumdrop. I just got an H₂ 1 low pressure on the cryo pressure light. Do you want to do anything with that?

(008 NET 1)

Tape 46/5
Page 260

02 23 19 16 CC Copy, Gumdrop. Stand by.
02 23 20 05 CC And, Gumdrop and Spider. We will have Honeysuckle in about a minute. Let's bring up our S-band volumes.
02 23 20 14 CMP Gumdrop.
(GUMDROP)
02 23 20 15 LMP Spider.
(SPIDER)

HONEYSUCKLE (REV 45)

02 23 27 29 CC And, Gumdrop and Spider. We are going to lose you at Honeysuckle here in about a minute. We will see you over the Mercury in about 6 minutes at 33.
02 23 27 37 LMP Okay.
(SPIDER)
02 23 27 39 CMP Roger.
(GUMDROP)

MERCURY (REV 45)

02 23 34 24 CC And, Gumdrop and Spider. We've got you through the Mercury for about 6 minutes. Standing by.
02 23 34 59 CC Spider and Gumdrop, this is Houston through the Mercury. Standing by. We've got about another 4 minutes.
02 23 36 06 LMP Okay. Gum - Houston, this is Spider. How do you read?
(SPIDER)
02 23 36 09 CC I'm reading you loud and clear, Rusty.
02 23 36 12 LMP Okay. We're just completing the donning procedure at this time, so it will be a while before we can make any COMM check here.
(SPIDER)
02 23 36 18 CC Roger. Understand.
02 23 36 22 CMP Gumdrop's with you.
(GUMDROP)
02 23 36 24 CC Roger, Gumdrop.

(0088 MET 1)

Tape 46/6
Page 261

02 23 39 06 CDR Houston, do you read Spider?
(SPIDER)

02 23 39 09 CC That's affirmative, Spider. We read you. We'll have you for about another minute and a half.

02 23 39 13 CDR Okay. We're not going to have enough time to make (SPIDER) that COMM check.

02 23 39 19 CDR We have -
(SPIDER)

02 23 39 21 CC No sweat, Spider.

02 23 39 24 CDR Go ahead.
(SPIDER)

02 23 39 25 CC No sweat on that. We've already scrubbed it.

02 23 39 29 CDR Okay. Hey, I've got a recommendation to make here.
(SPIDER)

02 23 39 34 CC Okay. Go ahead.

02 23 39 37 CDR Why don't we hook up the OPS to the - to Rusty the same way we normally hook it up - take out all those things that you scrapped this morning, put them back in.

02 23 39 48 CC Okay. We copy that, and we're going to lose you here in about a minute. Let's see if we can give you a fast reading.

02 23 39 59 CDR Okay. He's feeling a lot better and he looks like - He's acting like he feels a little better. Maybe we can extend this a little bit.
(SPIDER)

02 23 40 08 CC Okay. That's your judgment there, and we say go ahead if you feel that way, Jim.

02 23 40 15 CDR Okay. Let me - I'd like to configure that way, and then we will see how things go.
(SPIDER)

02 23 40 20 CC Okay. Very good. And we'll see you over Guaymas about 52.

02 23 40 25 CDR Okay.
(SPIDER)

GUAYMAS (REV 46)

02 23 52 37 CC Guadrop and Spider, this is Houston through Guaymas. Standing by.

02 23 52 44 CMP (GUMDROP) Guadrop.

02 23 52 56 CC And I copy you, Guadrop.

02 23 55 57 CMP (GUMDROP) VHF A OFF.

02 23 56 10 LMP (SPIDER) Copy that. VHF antenna select ... disconnected the LM COMM cable, and connected the PLSS COMM umbilical. Do you want to get my audio breaker OPEN? And BIOMED should go to left now.

02 23 56 58 CC And, Guadrop and Spider, you are GO for 63 dash 1.

02 23 57 06 CDR (SPIDER) ... door handle.

02 23 57 07 LMP (SPIDER) I know it.

02 23 57 10 CMP (GUMDROP) Roger. Guadrop copies. GO for 63 dash 1

02 23 57 13 CC Roger, Guadrop.

02 23 57 58 LMP (SPIDER) ... HIGH; VHF antenna selector 1 slash 2 ... PLSS valve to position 1; connecting the COMM cable; portable warning tone ON.

02 23 58 16 CMP (GUMDROP) Reading you loud and clear. How about me?

02 23 58 18 CMP (GUMDROP) Do you? Good.

02 23 58 21 LMP (SPIDER) Hey, Spider - or Guadrop - whatever your name is.

02 23 58 24 CMP (GUMDROP) Roger. This is the Guadrop.

02 23 58 26 LMP (SPIDER) Configure for the normal EVA, Davey. We're going to skip all of these COMM checks, so just configure for your normal one-way down relay.

(0088 NET 1)

Tape 46/8
Page 263

- 02 23 58 37 CMP Okay. Just a minute.
(GUMDROP)
- 02 23 58 42 LMP ... O₂ pressure gage -
(SPIDER)
- 02 23 58 50 LMP Okay. Perform COMM check for CDR, CMP and
(SPIDER) biolink to MSFN.
- 02 23 58 54 CDR Let's skip MSFN.
(SPIDER)
- 02 23 59 28 CMP Okay. Push/pull position 5.
(GUMDROP)
- 02 23 59 36 CDR We're reading you okay ...
(SPIDER)
- 02 23 59 41 CDR PLSS mode position 3.
(SPIDER)
- 02 23 59 43 LMP PLSS ... in E.
(SPIDER)
- 02 23 59 44 CDR POA dump.
(SPIDER)
- 02 23 59 49 CMP Spider, Gumdrop.
(GUMDROP)
- 02 23 59 50 CDR Go ahead, Gumdrop. Do you read Spider?
(SPIDER)
- 02 23 59 51 CMP Roger. I'm reading you five-by; I couldn't
(GUMDROP) relay. I guess I lose you; let me try again.
- 02 23 59 56 CDR Okay. Were you reading the PLSS? Try him now,
(SPIDER) Rusty.
- 03 00 00 00 CDR Just a second, Gumdrop ... before you go any place.
(SPIDER)
- 03 00 00 02 CMP Okay.
(GUMDROP)
- 03 00 00 03 CC Spider, this is Houston. I hate to break in on
that; I'm reading you. We need R and D, A and
E circuit breakers CB and DEI ON.
- 03 00 00 39 CMP Roger. I read you. Spider, did you copy Houston?
(GUMDROP)

(0088 NET 1)

Tape 46/9
Page 264

- 03 00 00 23 CDR Have him give me another call. I think I hear him very weakly.
(SPIDER)
- 03 00 00 29 CC Spider, I was reading you real good just a second ago, Jim. We need R and D, A and B circuit breakers IN and the DFI ON.
- 03 00 00 40 CMP Okay, Smokey. This is Gumdrop. He got that. PLSS, the Gumdrop here. You are very weak, but readable.
(GUMDROP)
- 03 00 00 49 CMP Still weak but readable.
(GUMDROP)
- 03 00 02 11 CDR Whistling around.
(SPIDER)
- 03 00 02 18 CDR Okay. Your helmet's on and locked.
(SPIDER)
- 03 00 02 38 CDR Where are your other gloves?
(SPIDER)
- 03 00 02 42 CDR Don't need your watch, do you?
(SPIDER)
- 03 00 04 05 CDR Where did the checklist go? Okay. Here it is.
(SPIDER) Got it.
- 03 00 04 31 CDR Okay. Here, we don't need this thing on it.
(SPIDER)
- 03 00 04 44 CDR Snap - Recognize that?
(SPIDER)
- 03 00 05 00 CMP Spider, Gumdrop.
(GUMDROP)
- 03 00 05 01 CDR Go ahead.
(SPIDER)
- 03 00 05 02 CMP Let me give you a COMM check on VOX on the other panel, please.
(GUMDROP)
- 03 00 05 07 CDR Okay. Say, you gonna give me one?
(SPIDER)
- 03 00 05 10 CMP Roger. I'd like to listen to the ...
(GUMDROP)
- 03 00 05 16 CDR Okay. Go ahead.
(SPIDER)

(0088 NET 1)

Tape 46/10
Page 265

- 03 00 05 18 CMP Okay. Gumdrop on the VOX. How do you read?
(GUMDROP)
- 03 00 05 20 LMP Loud and clear.
(PLSS)
- 03 00 05 27 CC Roger, PLSS. You're loud and clear. Very good
on this panel.
- 03 00 05 34 CMP Yes. It really sounds very good.
(GUMDROP)
- 03 00 05 44 CMP Okay. Very good.
(GUMDROP)
- 03 00 05 54 CMP PLSS, Gumdrop.
(GUMDROP)
- 03 00 05 56 LMP Roger. Go ahead.
(PLSS)
- 03 00 05 58 CDR Okay. That sounds fine, too. Now I'm RELAY,
(SPIDER) and I'm all configured to hold both of them.
- 03 00 06 03 LMP Roger. Understand you are in RELAY at this
(PLSS) time.
- 03 00 06 06 CDR That's affirmative.
(SPIDER)
- 03 00 06 07 LMP Roger. We are also, I think, in proper con-
(PLSS) figuration right now.
- 03 00 06 15 CMP Okay, Spider. How do you read me?
(GUMDROP)
- 03 00 06 17 CDR I'm reading you okay, Davey.
(SPIDER)
- 03 00 06 19 CMP Hey, that's great.
(GUMDROP)
- 03 00 06 23 CDR Man, have I got a bunch of bags over here.
(SPIDER)
- 03 00 06 28 CDR All the snaps are off them and the locks don't
(SPIDER) lock.
- 03 00 06 35 LMP All I need to do is have that float out.
(PLSS)

- 03 00 06 39 CDR Jim, the only thing that we didn't get that we
(GUMDROP) got to get is the EVA tether out.
- 03 00 06 45 CDR Yes.
(SPIDER)
- 03 00 06 49 LMP ... sure here's about 50 percent of the snaps in
(PLSS) the spacecraft left on.
- 03 00 07 00 CC Spider and Gumdrop and PLSS, this is Houston.
And we can read all three of you loud and clear.
- 03 00 07 06 CDR Roger. Very good.
(SPIDER)
- 03 00 07 09 LMP Roger, Houston. This is PLSS. Believe it or
(PLSS) not, I read you.
- 03 00 07 13 CC Roger. You're coming through beautifully, Rusty.
It's loud and clear.
- 03 00 08 06 CC Gumdrop, this is Houston. Did you call? If you
did, say again.
- 03 00 08 13 CDR Roger, Houston. ... within 20 degrees of the
(GUMDROP) proper attitude ... go in attitude hold for about
10 minutes.
- 03 00 08 24 CC Roger. Understood. Copy. And you came through
loud and clear there at the last, Gumdrop.
- 03 00 08 30 CDR This is Spider here. Just so everybody ...
(SPIDER) familiar, I think we'll do one daylight pass out
on the porch.
- 03 00 08 40 CC Roger. Copy, Spider. And we agree with that
wholeheartedly. A loud cheer.
- 03 00 08 57 CDR You get that, Dave?
(SPIDER)
- 03 00 09 01 CDR Gumdrop?
- 03 00 09 09 CDR ... bypass out on the porch, okay?
(SPIDER)
- 03 00 09 15 CDR Spider, Gumdrop. Go.
(GUMDROP)
- 03 00 09 17 CDR Roger, Gumdrop. I say we are going to do one
(SPIDER) daylight pass out on the porch.

(0088 MET 1)

Tape 46/12
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03 00 09 21

CMP
(GUMDROP) All right.

VANGUARD (REV 46)

03 00 09 44

CDR
(SPIDER) Gumdrop, how do you read Spider?

03 00 09 46

CMP
(GUMDROP) All right.

03 00 09 49

CDR
(SPIDER) I don't read you any more, G~~um~~drop.

03 00 09 52

CMP
(GUMDROP) Okay. How about now?

03 00 09 54

CDR
(SPIDER) Reading you loud and clear now.

03 00 09 58

CDR
(SPIDER) How me?

03 00 10 06

CMP
(GUMDROP) Okay. Spider, Gumdrop. How do you read now?

03 00 10 11

CDR
(SPIDER) Read you loud and clear. How me?

03 00 10 14

CMP
(GUMDROP) Okay. You are five-by. Did you catch the comment on the break lock?

03 00 10 18

CDR
(SPIDER) Negative.

03 00 10 20

CMP
(GUMDROP) Okay. Seems like we break lock with the S-band. I get a lot of static unless I turn relay off, so I'll probably have to run the relay off to hear you. I can't even hear you with my relay on when we break lock.

03 00 10 33

CDR
(SPIDER) Okay.

03 00 10 39

CDR
(SPIDER) Okay. 56 minutes to go - egress.

(0088 NET 1)

Tape 46/13
Page 268

03 00 11 08 CDR Hey, I want to see where I am. I want to suit
(SPINNER) up here, too.

03 00 11 30 CDF Okay.
(GUNDROP)

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 47/1
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VANGUARD (REV 46)

- 03 00 12 26 CDR I keep thinking of that food.
(SPIDER)
- 03 00 12 35 CDR If you get it open, it's going to keep falling
(SPIDER) out.
- 03 00 12 44 LMP I'll just leave it some place.
(PLSS)
- 03 00 12 52 LMP Yes, if it blows up, it won't hurt anything in
(SPIDER) there.
- 03 00 13 10 CC Spider, this is Houston. We would like to have
DFI OFF and battery 4 ON.
- 03 00 13 15 CDR You want DFI power OFF and battery 4 ON?
(SPIDER)
- 03 00 13 20 CC That is affirmative, Spider.
- 03 00 13 22 CDR Okay.
(SPIDER)
- 03 00 13 26 CC And R and D circuit breaker Alfa OPEN.
- 03 00 13 30 LMP Oh, okay.
(PLSS)
- 03 00 14 10 LMP Battery 4 coming ON. Oh, is that great.
(PLSS)
- 03 00 14 12 CDR I guess I better get this visor on.
(PLSS)
- 03 00 14 23 CDR Waste of time.
(SPIDER)
- 03 00 14 33 CC And, Spider and Gumdrop, you are GO for DEPRESS.
- 03 00 14 39 CDR Roger. Spider.
(SPIDER)
- 03 00 14 54 CDR Tell you what we'll do is you go on outside,
(SPIDER) stand there, get accustomed to what you are
doing. I'll take a couple of pictures of you,
... look around, and get hold, Gumdrop. When
you look like you're stabilized and you think
you can handle something, I'll send the camera
out to you.

(GOSS NET 1)

Tape 47/2
Page 270

03 00 15 11 LMP Right.
(PLSS)

CANARY (REV 46)

- 03 00 15 18 CDR Very cleverly put on that piece of rubber that
(SPIDER) we've never had on this thing before.
- 03 00 15 30 CDR Leave it off on this side. Get mine on first.
(SPIDER)
- 03 00 15 57 CDR Okey-dokey.
(SPIDER)
- 03 00 16 26 LMP Remember to clean that out when we leave.
(PLSS)
- 03 00 16 48 LMP Throw that up here.
(PLSS)
- 03 00 17 18 CDR Okay. The camera is up there. Put the handle
(SPIDER) on it.
- 03 00 17 26 LMP Let's see; do we have the sequence camera cir-
(PLSS) circuit breaker in here?
- 03 00 17 47 CDR Test the belt.
(SPIDER)
- 03 00 17 56 CDR I can't get that thing screwed in.
(SPIDER)
- 03 00 18 01 CDR Look at that.
(SPIDER)
- 03 00 18 11 LMP Hey, I can't get it out.
(PLSS)
- 03 00 18 17 CDR ... get it out ...
(SPIDER)
- 03 00 18 33 LMP That's supposed to go in that bag over there.
(PLSS) Stick that over in the bag.
- 03 00 18 42 CC Spider and Gumdrop, 1 minute LOS Canaries. We
may talk to you over Tananarive at about 32; if
not, Carnarvon at 48. And, Gumdrop, you do have
a GO for DEPRESS. I didn't hear you acknowledge
it.

(GOSS NET 1)

Tape 47/3
Page 271

03 00 19 05 CMP Roger, Houston. Gumdrop copied the GO for
 (GUMDROP) DEPRESS.

03 00 19 09 CC Roger. You are loud and clear on that one.

03 00 19 11 CMP Okay. Thank you.
 (GUMDROP)

03 00 19 17 IMP Let me check to see if everything is glued down.
 (PLSS)

03 00 19 43 IMP Verify the following: helmet visor 2, locked
 (PLSS) and adjusted - helmet tie down 2 adjusted, ...
 02 connectors.

03 00 20 04 CDR ... Close and in.
 (SPIDER)

TANANARIVE (REV 46)

03 00 32 05 CT TAN AOS.

03 00 32 57 CMP Spider, Gumdrop.
 (GUMDROP)

03 00 32 58 CDR Go ahead.
 (SPIDER)

03 00 33 00 CMP Be advised it is 73:02.
 (GUMDROP)

03 00 33 20 CMP Hey, they gave me a time - a different time in
 (GUMDROP) that update this morning. Dave, they gave a
 new time, and I wrote it in the update.

03 00 33 25 CMP I wrote the time down in the flight plan as 73:02.
 (GUMDROP)

03 00 33 37 CC Spider and Gumdrop, this is Houston through
 Tananarive. Sunrise time is 08.

03 00 36 43 CT Tananarive, Houston COMM TECH NET 1.

03 00 36 46 CT Houston COMM TECH, Tananarive.

03 00 36 51 CT Roger. Are you receiving anything down from the
 spacecraft at this time?

03 00 36 55 CT We were when they first came overhead, but we
 are not at the present time.

(GOSS NET 1)

Tape 47/4
Page 272

03 00 36 59 CT All right, thank you.
03 00 37 14 CC Spider and Gumdrop, Houston. Sunrise is at 08.
We will see you over Carnarvon at 48.
03 00 47 56 LMP And I'm going to go to MAX as soon as the tone
(PLSS) goes off and see if I do get good cooling.
03 00 48 04 CDF Hey, you've got the other LCG on.
(GUMDROP)
03 00 48 05 LMP I know.
(PLSS)
03 00 48 16 LMP Got that nice pump sound, though.
(PLSS)
03 00 48 20 CMP Nice pump what?
(GUMDROP)
03 00 48 21 LMP I say it's got that nice solid PLSS pump sound,
(PLSS) though. Purrrr.

CARNARVON (REV 46)

03 00 48 30 CMP Rusty, how are you feeling?
(GUMDROP)
03 00 48 32 LMP Good.
(PLSS)
03 00 48 36 CC Spider and Gumdrop. We've got you through
Carnarvon. Houston standing by.
03 00 48 42 CMP We're probably going to have to REPRESS the
(GUMDROP) cabin fairly slow.
03 00 48 45 CDR Okay.
(SPIDER)
03 00 48 47 CDR First thing I pass you will be a Hasselblad;
(SPIDER) then I will pass you a cam - movie camera right
after that - shortly thereafter.
03 00 48 54 LMP After I pass the Hasselblad in?
(PLSS)
03 00 48 56 CDR Okay.
(SPIDER)

(GOSS NET 1)

Tape 47/5
Page 273

- 03 00 49 01 CDR I'll take a couple of pictures and pass you the
(SPIDER) Hasselblad. You take a couple and pass it back.
I'll hand you the movie camera, and I'll take
some more pictures with the Hasselblad.
- 03 00 49 08 LMP And I'll retrieve the EVA sample, too.
(PLSS)
- 03 00 49 09 CDR Right. That too.
(SPIDER)
- 03 00 49 14 CDR Wonder where that belongs?
(SPIDER)
- 03 00 49 22 LMP What time did I say it was when I turned that on?
(PLSS)
- 03 00 49 25 CDR 47, wasn't it?
(SPIDER)
- 03 00 49 26 LMP I think so. 47.
(PLSS)
- 03 00 49 28 CDR Okay.
(SPIDER)
- 03 00 49 34 CDR ... PLSS water on at 47. It is now 49 35. Do
(SPIDER) you feel anything?
- 03 00 49 41 CDR Is it cooling yet?
(SPIDER)
- 03 00 49 42 LMP No, I'm waiting for the tone to go off.
(PLSS)
- 03 00 49 47 LMP That pressure? Okay, it's coming down to 4.1.
(PLSS)
- 03 00 50 07 CDR It picked up ... hooked up - locked.
(SPIDER)
- 03 00 50 14 LMP The what?
(PLSS)
- 03 00 50 15 CDR The life line - your tether.
(SPIDER)
- 03 00 50 16 LMP Yes.
(PLSS)

(GOSS NET 1)

Tape 47/6
Page 274

- 03 00 50 30 LMP ... make sure I've got it all the way down?
(PLSS)
- 03 00 50 36 LMP Okay. Feed water is ON. Going to MAX cooling.
(PLSS)
- 03 00 50 41 LMP Come on, Baby.
(PLSS)
- 03 00 50 56 CMP -- Blink.
(GUMDROP)
- 03 00 50 57 CDR Okay. It's now showing 250, and we've turned
(SPIDER) the cooling ON - MAX cool, and Rusty says he
feels the cooling coming.
- 03 00 51 07 CMP Great.
(GUMDROP)
- 03 00 51 20 CMP Okay. Spider, Gumdrop.
(GUMDROP)
- 03 00 51 26 CDR Go ahead.
(SPIDER)
- 03 00 51 28 CMP I'm all set to DEPRESS whenever you give the
(GUMDROP) word.
- 03 00 51 32 CDR Okay. We're all set over here, Dave.
(SPIDER)
- 03 00 51 35 CMP Say again.
(GUMDROP)
- 03 00 51 38 CDR Roger. You are clear to DEPRESS.
(SPIDER)
- 03 00 51 40 CMP Okay. And I just checked all the systems,
(GUMDROP) and everything's running like a clock.
- 03 00 51 46 LMP Going back to intermediate cooling.
(PLSS)
- 03 00 51 48 CDR Very good.
(SPIDER)
- 03 00 52 00 CDR Okay. My antenna is released.
(SPIDER)
- 03 00 52 02 LMP Yes.
(PLSS)

03 00 52 04 CDR Okay, I've got --
(SPIDER)

03 00 52 05 LMP I've ... down ...
(PLSS)

03 00 52 08 CDR The antenna is all bent out of shape, but it
(SPIDER) will ...

03 00 52 11 LMP Is it still out of shape? Come down ...
(PLSS)

03 00 52 12 CDR No. It's all right now.
(SPIDER)

03 00 52 16 CDR It means you got to be careful now with that
(SPIDER) flap on that door handle.

03 00 52 20 LMP Yes. I know. It's almost impossible not to
(PLSS) wipe that off.

03 00 52 31 CDR There. Velcro is back in.
(SPIDER)

03 00 52 35 LMP Say again.
(PLSS)

03 00 52 36 CDR I have a Velcro closed again.
(SPIDER)

03 00 52 38 LMP Okay.
(PLSS)

03 00 52 57 LMP How's the descent oxygen and everything look?
(PLSS)

03 00 53 00 CDR They're all doing fine.
(SPIDER)

03 00 53 02 LMP Let's see, that cabin pressure is still reading
(PLSS) at a tenth, isn't it?

03 00 53 05 CDR Yes.
(SPIDER)

03 00 53 21 LMP The next thing I've got to do is not get this
(PLSS) doggone tether tangled around my wrist. Okay.
I got it the right way now.

03 00 53 28 CDR Don't get it tangled around any of your knobs
(SPIDER) either, on the way out.

(GOSS MET 1)

Tape 47/8
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03 00 53 31 LMP (PLSS) Yea.

03 00 54 24 LMP (PLSS) I've got a MIN cooling.

03 00 54 27 CDR (SPIDER) Okay.

03 00 54 35 CMP (GUMDROP) About 10 minutes to sunrise.

03 00 54 54 CC Spider, Gumdrop. No need to answer. Sunrise 08.

HONEYSUCKLE (REV 46)

03 00 56 19 CDR (SPIDER) Hello, Spider.

03 00 56 39 CDR (SPIDER) Hello. Can you read, Spider?

03 00 56 48 CMP (GUMDROP) ... and Honeysuckle, too, but now Honeysuckle on S-band only.

03 00 56 52 CDR (SPIDER) Yes, that's right.

03 00 56 57 CC Spider and Gumdrop, this is Houston through Honeysuckle. I'm reading the Spider loud and clear.

03 00 57 06 CDR (SPIDER) Listen, this is Spider. Transmitting in the dark. If you read, fine; if you don't, too bad. It's 72:57. We've had this cabin depressurized for about 12 minutes. Everything looks like it's going along fine, now. Rusty's PLSS seems to be working all right, and Dave is in the process of depressurizing the --

03 00 57 37 CMP (GUMDROP) They were calling in the middle while you were trying to talk, Jim.

03 00 57 40 CC Roger. Spider, this is Houston. I copy all of that. You are coming through loud and clear. I'm reading the PLSS loud and clear.

03 00 59 02 CMP (GUMDROP) Spider, Gumdrop.

03 00 59 04 CDR Go ahead, Gummy. Here's the Spider.
(SPIDER)

03 00 59 06 CMP Okay. All DEPRESSED, and everything is looking
(GUMDROP) good.

03 00 59 11 CDR Notice anything when you open the door?
(SPIDER)

03 00 59 13 CMP No. I haven't opened the door yet.
(GUMDROP)

03 00 59 16 CDR Okay.
(SPIDER)

03 00 59 20 LMP Don't lose anything when you do.
(PLSS)

03 00 59 23 CMP Okay. I'll try.
(GUMDROP)

03 00 59 27 LMP I'll be the goaltender - keep everything in.
(PLSS)

03 00 59 30 CMP Yes.
(GUMDROP)

03 00 59 32 CDR Okay, we're about - sort of between 4 and 7
(SPIDER) minutes of being at sunrise, Dave. You might go ahead and start the door.

03 00 59 41 CMP Okay, sure will.
(GUMDROP)

03 01 00 22 CDR Are you hearing the data at all?
(SPIDER)

03 01 00 25 CMP No.
(GUMDROP)

03 01 00 31 LMP I feel much different with this down.
(PLSS)

03 01 00 36 CDR Any change?
(SPIDER)

03 01 00 37 LMP Yes. A lot quieter.
(PLSS)

03 01 00 41 CMP I'll go back to data.
(GUMDROP)

(GOSS NET 1)

Tape 47/10
Page 278

- 03 01 00 44 CDR Okay.
(SPIDER)
- 03 01 00 45 CMP Put that - I wasn't hearing any data for a long
(GUMDROP) time, so I wasn't hearing any noise for a long time, and then about 5 minutes ago I started picking up a lot of high static. And I don't know how it started; it sort of dribbled on down. I thought that's what that still was. When we first cranked that up, it was just as clear as a bell. In fact, now it's not making as much as it was before we got this other FREQ on.
- 03 01 01 05 CDR Roger.
(SPIDER)
- 03 01 01 08 CDR Well, we've had a little problem with some of
(SPIDER) the commutators. The transducers or the battery current things - Sometimes it will fall to detent, and it makes a funny noise. That happened in chamber A. It could be that same thing. Maybe if you wiggle it in 1, you will hear a different noise.
- 03 01 01 33 CMP Oh, okay.
(GUMDROP)
- 03 01 01 41 LMP Come on, PLSS.
(PLSS)
- 03 01 01 45 CC Roger, Spider and Gumdrop. We're going to lose you here at Honeysuckle, and you're showing 6 minutes to sunrise.
- 03 01 01 48 CDR How's your cooling?
(SPIDER)
- 03 01 01 52 CDR How are you feeling?
(SPIDER)
- 03 01 01 53 LMP Good.
(PLSS)
- 03 01 01 56 CMP Okay. Spider, Gumdrop. The hatch is open.
(GUMDROP) no sweat. It just swings like it ought to swing.
- 03 01 02 02 CDR Very good; let's hope it swings back again.
(SPIDER) now.

(COSS NET 1)

Tape 47/11
Page 279

03 01 02 05 CMP Well, it stays just where I wanted it.
(GUMDROP)

03 01 02 07 CDR Good.
(SPIDER)

03 01 02 09 CMP Where I put it.
(GUMDROP)

03 01 02 10 CC Gumdrop and Spider, Houston. Sunrise will be in
about 5 minutes 40 seconds. We're going to lose
you at Honeysuckle.

MUETSVILLE (REV. 46)

03 01 03 53 CMP I can see Rusty's foot.
(GUMDROP)

03 01 03 57 CDR Very good.
(SPIDER)

03 01 03 58 CMP Does he have a camera set up, Dave?
(GUMDROP)

03 01 04 03 CMP Forgot.
(GUMDROP)

03 01 04 08 IMP Hey, this is like spectacular.
(PLSS)

03 01 04 12 CMP Pretty neat, huh?
(GUMDROP)

03 01 04 14 IMP Oh, boy!
(PLSS)

03 01 04 16 IMP Can you see me wiggling my toes?
(PLSS)

03 01 04 18 CMP Sure can.
(GUMDROP)

03 01 04 28 CMP If Jim looks out the top window he can see me.
(GUMDROP)

03 01 04 36 CDR Just so I can see you, Dave.
(SPIDER)

(GOSS NET 1)

Tape 47/12
Page 280

- 03 01 04 39 CMP Jim, you're going to have to try and be a little
(GUMDROP) more careful about that VOX cutting - You've got
a squeal in both your units.
- 03 01 04 52 LMP Oh, gee. I'm glad we stopped here. I pulled
(PLSS) down my visors.
- 03 01 05 00 LMP Okay, I've got the EVVA now.
(PLSS)
- 03 01 05 05 CMP He's brilliant.
(GUMDROP)
- 03 01 05 08 CMP Okay. I'm going to reset the PEP here and go
(GUMDROP) on. I'm going to go on up.
- 03 01 05 10 LMP Okay.
(PLSS)
- 03 01 05 25 LMP Did you see that moonrise?
(PLSS)
- 03 01 05 28 CMP What?
(GUMDROP)
- 03 01 05 29 LMP The moonrise.
(PLSS)
- 03 01 05 30 CDR Yes.
(SPIDER)
- 03 01 05 33 CMP Yes. You really can see at night, can't you?
(GUMDROP)
- 03 01 05 37 LMP Yes.
(PLSS)
- 03 01 06 28 CDR Okay. The sun is going to be just about over
(SPIDER) your left shoulder. How's that?
- 03 01 06 36 LMP While standing in the slippers?
(PLSS)
- 03 01 06 39 CDR Right.
(SPIDER)
- 03 01 06 40 LMP Okay.
(PLSS)
- 03 01 06 49 CDR ... over there, Dave. You hold Y deadband limit
(SPIDER) cycle?

03 01 06 56 CMP Yes, I had to turn the limit cycle off. It was
(GUMDROP) just banging too much.

03 01 07 23 CDR Okay. That ought to about do it, hadn't it?
(SPIDER)

03 01 07 25 CMP Sort of looks like it.
(GUMDROP)

03 01 07 27 CDR Mr. Schweickart, proceed on the door.
(SPIDER)

03 01 07 30 IMP Do you have your camera on there, CMP?
(PLSS)

03 01 07 32 CMP It's ready.
(GUMDROP)

03 01 07 34 IMP Okay. Proceeding on out.
(PLSS)

03 01 07 43 CDR I see a little bag full of - -
(SPIDER)

03 01 07 49 CMP Floating away?
(GUMDROP)

03 01 07 52 IMP Yes. I missed that one.
(PLSS)

03 01 07 57 IMP It has a red dot on it and a striped line.
(PLSS)

03 01 08 06 CMP Jim has that one.
(GUMDROP)

03 01 08 05 IMP Okay, in the golden slippers.
(PLSS)

03 01 08 12 IMP Hello, there.
(PLSS)

03 01 08 15 CMP Hello, there. That looks comfortable.
(GUMDROP)

03 01 08 18 IMP Boy, oh boy; what a view!
(PLSS)

03 01 08 20 CMP Isn't that spectacular?
(GUMDROP)

(GOSS MET 1)

Tape 47/14
Page 282

- 03 01 08 21 LMP It really is. There's the moon right over there.
(PLSS)
- 03 01 08 29 CDR Okay, Rusty. The Hasselblad is going to be use-
(SPIDER) less from in here except to take a picture of
Dave.
- 03 01 08 38 CDR Okay.
(SPIDER)
- 03 01 08 42 LMP Did you reel out the ...
(PLSS)
- 03 01 08 45 CMP Why don't you just throw it out ...
(GUMDROP)
- 03 01 08 48 CDR Okay. Take it easy for a while.
(SPIDER)
- 03 01 08 50 LMP There's a nice reflection off the ...
(PLSS)
- 03 01 09 03 LMP I'm going to get that - We'll never get it opened
(PLSS) again.
- 03 01 09 10 LMP Dave, how do you read?
(PLSS)
- 03 01 09 12 CMP Five-square. How me?
(GUMDROP)
- 03 01 09 13 IMP Okay. Read you just fine. Are you in RELAY
(PLSS) now?
- 03 01 09 16 CMP That's right.
(GUMDROP)
- 03 01 09 17 IMP Very good.
(PLSS)
- 03 01 09 19 CMP Why don't you say hello to the camera or some-
(GUMDROP) thing?
- 03 01 09 23 IMP Hello there, camera. Boy, is this great!
(PLSS)

REDSTONE (REV 46)

- 03 01 19 31 LMP The sequence cameras ... Oh heck. Let me take
(PLSS) one of the radar antenna. I haven't taken one
of that.

(GOSS NET 1)

Tape 47/15
Page 283

03 01 19 42 CC Spider and Gumdrop, we have you through Redstone,
and we've been copying you loud and clear.

03 01 19 48 CDR (SPIDER) Very good, Houston. Everything's going along
fine up here.

03 01 19 53 CC Roger. We copied you all across Carnarvon and
Huntsville real well; we've been following you,
and it sounds great.

03 01 20 00 CDR (SPIDER) Okay. Do you have anything special that you
want done in this pass?

03 01 20 10 CC No, unless you want to poke the TV camera out
there.

03 01 20 17 CDR (SPIDER) I'm not sure we can get that configured out
that quickly.

03 01 20 20 CC Roger. Understand.

03 01 20 23 LMP (PLSS) Dave, are you taking some more movies?

03 01 20 26 CMP (GUMDROP) I will as soon as he passes the camera out to
you.

03 01 20 28 LMP (PLSS) Dude, are you ready for this camera?

03 01 20 31 CDR (SPIDER) Yes.

03 01 20 32 LMP (PLSS) Okay. Haul away.

03 01 20 35 CMP (GUMDROP) Camera - It's running.

03 01 20 37 LMP (PLSS) Dude, you ought to get a picture of this relay
here. It's too late.

03 01 20 42 CMP (GUMDROP) I'm taking it.

03 01 20 43 LMP (PLSS) Okay.

03 01 20 53 LMP (PLSS) Little more.

(GOSS NET 1)

Tape 47/16
Page 284

03 01 21 01 LMP Right in.
(PLSS)

03 01 21 02 CC Spider and Gumdrop, this is Houston. You are clear to do anything - go as far as you want.

03 01 21 10 LMP Houston, you cut up on that one; say that again.
(PLSS)

03 01 21 14 CC Roger. Just let you know that it sounds great, and you are clear to go as far as you want to as far as we're concerned.

03 01 21 20 CDR Okay. What about the time limit? How are you (SPIDER) feeling, Rusty?

03 01 21 24 LMP I'm feeling fine.
(PLSS)

03 01 21 29 CDR Houston, do you want to go ahead and try the (SPIDER) thing for two day passes and the one night pass? Looks like we might be able to do that for you.

03 01 21 39 CC Jim, that's your decision, it's up to you; it's all GO with us.

03 01 21 46 CDR Okay. The thing that bothers me is if it does, (SPIDER) we may have to reconsider how we're going to do the rendezvous tomorrow. We're going to have to get some sleep here sometime.

03 01 21 57 CC Roger. We copy.

03 01 22 00 CDR Well, think it over and see what you decide.
(SPIDER)

03 01 22 02 CC Okay.

03 01 22 05 CMP And, Houston, Gumdrop.
(GUMDROP)

03 01 22 17 CMP Houston, Gumdrop.
(GUMDROP)

03 01 22 23 LMP Houston, Gumdrop is calling. How do you read?
(PLSS)

03 01 22 27 CC Go, Gumdrop.

03 01 22 31 CMP Now we do.
(GUMDROP)

(GOSS FET 1)

Tape 47/17
Page 285

- 03 01 22 32 LMP But I can't really tell when the jets are firing,
(PLSS) and it's sort of hard for me to tell on the quantity.
- 03 01 22 52 CDR Okay, Rusty. Why don't you start hauling out
(SPIDER) again?
- 03 01 22 55 LMP Okay. Coming out.
(PLSS)
- 03 01 23 01 CMP Hey, how about giving Houston a call and asking
(SPIDER) them about that?
- 03 01 23 04 LMP Okay. Hey, Houston. How do you read the PLSS?
(PLSS)
- 03 01 23 08 CC PLSS, you are coming through loud and clear.
- 03 01 23 12 LMP It keeps slipping, Jim. You're going to have
(SPIDER) to help the cable come out a little. Let me
 get up closer.
- 03 01 23 20 CDR Just a minute.
(SPIDER)
- 03 01 23 21 LMP Never mind; I got it. I'll just come up closer
(PLSS) here. Okay, I got it now.
- 03 01 23 31 CC Gumdrop, this is Houston. You are using very
 little propellant; looks real good.
- 03 01 23 38 CMP Okay, Houston. Thank you. Just wanted to make
(GUMDROP) sure.
- 03 01 23 43 CC And, Spider, this is Houston. We are recommending
 that you terminate at the end of this day-light pass.
- 03 01 23 50 CDR Okay. I sort of felt that way too. I don't think
(SPIDER) we ought to try that transfer for sure.
- 03 01 23 55 CDR All right. We'll terminate here.
(SPIDER)
- 03 01 24 01 LMP Okay, Davey. Come on out.
(PLSS)
- 03 01 24 03 CMP Okay. I'm going to let the camera run here.
(GUMDROP)
- 03 01 24 08 LMP Dave, come on out, wherever you are.
(PLSS)

(GOSS NET 1)

Tape 47/18
Page 286

- 03 01 24 10 CMP Stand by. Let me get away my little pushbutton.
(GUMDROP) Now we're all taking pictures of everybody taking pictures.
- 03 01 24 25 LMP Yes; you want to retrieve the sample?
(PLSS)
- 03 01 24 27 CMP Roger. That's a good idea.
(GUMDROP)
- 03 01 24 33 CC And, Gumdrop, you'll be getting a warning on your H₂ tank in about 4 minutes.
- 03 01 24 36 CMP Hey, Rusty. Why don't you lean over here again;
(GUMDROP) I'd sure like to get a picture of that whole scene.
- 03 01 24 41 LMP Okay. Coming over.
(PLSS)
- 03 01 24 49 CC Gumdrop, you'll be getting a warning in about 1 minute on your H₂ tank. No sweat.

GOLDSTONE (REV 46)

- 03 01 25 03 CDR ... bet those window marks were over there.
(SPIDER)
- 03 01 25 06 LMP Yes.
(PLSS)
- 03 01 25 17 CC Gumdrop, this is Houston. You may be getting a warning on your H₂ tank; no problem.
- 03 01 25 19 CMP Okay.
(GUMDROP)
- 03 01 25 26 CMP Hey, you ready for --
(GUMDROP)
- 03 01 25 29 LMP Okay. You ready?
(PLSS)
- 03 01 25 30 CMP -- thermal samples here?
(GUMDROP)
- 03 01 25 32 LMP Ready.
(PLSS)

(GOSS NET 1)

Tape 47/19
Page 287

- 03 01 25 37 LMP Okay, Dave. Let me get around here where I can
(PLSS) get a picture, too.
- 03 01 25 40 CMP Okay.
(GUMDROP)
- 03 01 25 42 CC Gumdrop, Houston.
- 03 01 25 46 CMP Okay. Look at all these marks all over these
(GUMDROP) windows; shoot. Oh, dear.
- 03 01 25 56 CC Gumdrop, Houston.
- 03 01 25 57 LMP Hey, Dave. Are you ready?
(PLSS)
- 03 01 26 04 CDR Hey, use your head when you're out there; you
(SPIDER) know this isn't a contest between you and that
sample.
- 03 01 26 07 CMP Roger.
(GUMDROP)
- 03 01 26 13 CC Gumdrop, Houston. Anticipate a warning very
soon on your H₂ tank.
- 03 01 26 19 LMP Okay. And you want to hook it in the solid ring,
(PLSS) David, rather than that wire.
- 03 01 26 22 CMP Okay.
(GUMDROP)
- 03 01 26 39 IMP No problem. There's one.
(PLSS)
- 03 01 26 42 CMP It didn't even close on itself.
(GUMDROP)
- 03 01 26 47 IMP Now you got to pull ...; and there's one more. Okay,
(PLSS) now, next one - oops!
- 03 01 26 55 CMP How about this.
(GUMDROP)
- 03 01 26 56 CMP That's the thermal sample.
(GUMDROP)
- 03 01 26 59 IMP Yes, you're getting it wrapped up around your
(PLSS) neck.
- 03 01 27 02 CMP ...
(GUMDROP)

(GOSS NET 1)

Tape 47/20
Page 288

03 01 27 05 LMP Okay ...
(PLSS)

03 01 27 16 CC Gumdrop, do you read Houston?

03 01 27 18 CMP Do we --
(GUMDROP)

03 01 27 25 CC Gumdrop, do you read Houston?

03 01 27 29 LMP Oh, there's Baja California. Oh, very pretty!
(PLSS) Wonder if I got any film left? Oh, yes; got
more film here - going across Baja here.

03 01 28 02 CDR That's one place that's not too hard to recognize.
(SPIDER)

03 01 28 05 LMP Yes. That's true. Got to switch hands with the
(PLSS) camera.

03 01 28 17 LMP Oh, no. You got it on a sixtieth, though.
(PLSS)

03 01 28 20 CDR It wasn't when it went out there.
(SPIDER)

03 01 28 24 LMP Okay. You got it now.
(PLSS)

03 01 28 28 CC Spider, do you read Houston?

03 01 28 34 LMP I wonder if I ought to keep it there.
(PLSS)

03 01 28 38 CDR I don't know. The other ones were taken at
(SPIDER) 250; it depends on when it got knocked over.
If it got knocked over when you ... when it was
going out. Why not leave it there?

03 01 28 48 LMP Is this the camera we used this morning when I
(PLSS) took pictures inside the tunnel with the wide
angle lens on it at a sixtieth, Jim?

03 01 28 56 CDR Well, I --
(SPIDER)

03 01 29 07 LMP Did you know there is a washer between the two
(PLSS) panes of our overhead window?

03 01 29 11 CDR Hey ...
(SPIDER)

(COSS NET 1)

Tape 47/21
Page 289

- 03 01 29 14 CMP Okay. Come on in and I'll fix you --
(GUMDROP)
- 03 01 29 19 CC Gumdrop, this is Houston. Do you read?
- 03 01 29 22 LMP Houston, LMP receiving.
(PLSS)
- 03 01 29 24 CC Roger. Pass the word to Gumdrop that if he just
got a MASTER ALARM, it's the H₂ tank; no problem.
- 03 01 29 31 CMP The lights are off, which was not scheduled.
(GUMDROP)
- 03 01 29 37 CC Gumdrop, Houston.
- 03 01 29 52 CDR It's 24 minutes through the run. We've got about
(SPIDPR) another 15 minutes, and we should start thinking
about getting back in.
- 03 01 31 04 CMP Must be inhabited; the water's all dirty.
(GUMDROP)
- 03 01 31 45 CMP Hey, you ...
(GUMDROP)
- 03 01 32 01 CMP There you go. David, things are still falling out
(GUMDROP) up there. What are you doing, throwing everything
overboard?
- 03 01 32 26 CDR Yeah, yeah.
(GUMDROP)
- 03 01 32 31 CMP The border sticks out, but the city doesn't.
(GUMDROP)
- 03 01 32 40 IMP (Laughter) Yes, the winds look pretty strong.
(PLSS)
- 03 01 32 45 CMP Lots of clouds.
(GUMDROP)
- 03 01 32 47 IMP ... flags.
(PLSS)
- 03 01 32 50 CMP That's right. They're red, white, and blue from
(GUMDROP) up here.
- 03 01 33 09 IMP Houston, how are you reading Red Rover here?
(PLSS)
- 03 01 33 14 CC Roger. Reading you loud and clear here; how
do you read me?

03 01 33 27 IMP Wonder why they're not talking to us.
(PLSS)

03 01 33 31 CC Spider; Gumdrop, this is Houston. How do you read me?

03 01 33 34 IMP Spider, are you reading Houston?
(PLSS)

03 01 33 37 CMP No. I haven't heard him say anything, either.
(GUMDROP)

03 01 33 40 CDR This is Spider. Do you read?
(SPIDER)

03 01 33 44 CC Roger, Spider. This is Houston.

03 01 33 46 CMP ... I heard him then.
(GUMDROP)

03 01 33 49 CC Spider, this is Houston. How do you read?

03 01 33 54 CDR Houston, Spider. Do you read?
(SPIDER)

03 01 33 57 CC That's affirmative, Spider. This is Houston.
Reading you loud and clear.

03 01 34 09 CDR Okay, Rusty. Why don't you pass the camera back
(SPIDER) in here and work on the handrails for just a minute.

03 01 34 14 IMP Can you stand by one? Let me change film packs
(PLSS) here.

03 01 34 20 CDR Okay. Here comes a camera. Just a minute, let
(SPIDER) me get this other one zipped in. Now take it easy out there; don't want you getting --

03 01 34 25 IMP Okay.
(PLSS)

03 01 34 27 CMP Hey, Rusty?
(GUMDROP)

03 01 34 28 IMP Yes, sir?
(PLSS)

03 01 34 29 CMP Stand by.
(GUMDROP)

(GOSS NET 1)

Tape 47/23
Page 291

- 03 01 34 31 LMP (PLSS) Oh, I'm not going to start yet. I've got to pass this camera back in. Take your time.
- 03 01 34 42 LMP (PLSS) Oh, that sun is really bright! Houston, this is Red Rover. If you read me, I'm just going to call you in the blind here. The suit is very comfortable. I'm on MIN cooling, and I haven't had any problem at all. The only thing that is warm at all are my hands, and they are just barely warm; they are not very hot at all.
- 03 01 35 07 CC Roger. Red Rover, this is Houston. We are reading you loud and clear. We are copyin' all transmissions.
- 03 01 35 20 LMP (PLSS) You know that tether - a good way of getting things in and out, but they are sort of out of control.
- 03 01 35 28 CDR (SPIDER) Why? Won't they get inside?
- 03 01 35 30 LMP (PLSS) It's just getting it through the last part of the door there. It ricocheted off everything on the door.
- 03 01 35 34 CDR (SPIDER) Oh, yes.
- 03 01 35 40 LMP (PLSS) You know, the one thing I didn't take a picture of was the hatch.
- 03 01 35 44 CDR (SPIDER) Hey, you want the camera back again?
- 03 01 35 45 LMP (PLSS) No; that's all right.
- 03 01 36 04 CC Red Rover, this is Houston. How do you read?
- 03 01 36 05 CDR (SPIDER) ... have about 10 more minutes out there, and then you ought to start coming back in.
- 03 01 36 08 LMP (PLSS) Okay.
- 03 01 36 11 CDR (SPIDER) I want us to be in while it's still light outside.

(GOSS MST 1)

Tape 47/24
Page 292

- 03 01 36 18 LMP (PLSS) Oh, we just passed over Florida or somewhere. It looks like maybe Jacksonville.
- 03 01 36 28 CC Red Rover, Houston. How are you reading now?
- 03 01 36 30 LMP (PLSS) It's all cloudy. I guess the Cape is clouded over.
- 03 01 36 45 LMP (PLSS) Let me see if I can see any islands down there.
- 03 01 36 58 LMP (PLSS) No. I can't tell how far north we are, but we came up fairly far south of the Baja, so ...
- 03 01 37 08 CMP (GUMDROP) Here, I'll shoot something out there, and we will make a satellite.
- 03 01 37 14 CMP (GUMDROP) It's right between your legs. It's gone up, now it's down on your knee.
- 03 01 37 23 LMP (PLSS) My heavens! It's an antifog wipe.
- 03 01 37 30 CMP (GUMDROP) I'll tell you, the toughest part of the whole thing is trying to change the film magazine.
- 03 01 37 34 CDR (SPIDER) Yes; I figured it would be, Dave.
- 03 01 37 37 CMP (GUMDROP) It's a rather mundane task.
- 03 01 37 39 CDR (SPIDER) Matter of fact, Rusty, why don't you get out there and move around a little bit and - Hey, there goes the camera, Dave.
- 03 01 37 45 CMP (GUMDROP) No; it's tethered. I learned that from a friend of mine named Mike.
- 03 01 37 48 CDR (SPIDER) Yes.
- 03 01 37 50 CDR (SPIDER) Rusty, why don't you exercise the handrails just a little bit just to see how they work, and don't go very far up. And if Dave gets the picture, fine, and if he doesn't, well that's just too bad.
- 03 01 38 01 LMP (PLSS) Okay.

(GOSS RET 1)

Tape 47/25
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- 03 01 38 02 CDR I think it's going to go 90 degrees to that way,
(SPIDER) Dave.
- 03 01 38 04 CMP Right.
(GUMDROP)
- 03 01 38 06 CC Red Rover, Houston. Do you read?
- 03 01 38 10 CMP I can't see it very good.
(GUMDROP)
- 03 01 38 13 CDR ... don't know what to ...
(SPIDER)
- 03 01 38 17 LMP Say again.
(PLSS)
- 03 01 38 18 CMP Ever see one of these things before, Dave?
(GUMDROP)
- 03 01 38 19 CDR ... about this zero G.
(SPIDER)
- 03 01 38 24 LMP It's the somebody effect.
(PLSS)
- 03 01 38 28 CDR There you go. Got it.
(SPIDER)
- 03 01 38 29 CMP A friend of mine named Gene.
(GUMDROP)
- 03 01 38 31 LMP Yes.
(PLSS)
- 03 01 38 33 CMP He checked the various and sundry settings.
(GUMDROP)
- 03 01 38 36 LMP Okay. As soon as you got that done, turn it on,
(PLSS) and I'll be going here.
- 03 01 38 40 CDR Why don't you come over and get the thermal sample
(SPIDER) and get it in so we won't have to mess around with
it.
- 03 01 38 44 LMP That's a good idea; coming up. Hey, let me have
(PLSS) my ...
- 03 01 38 49 CMP Oh, shoot.
(GUMDROP)
- 03 01 38 53 CMP Wait a second. This poor movie camera. If it
(GUMDROP) ever runs again, it will be a miracle.

(GOSS NET 1)

Tape 47/26
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- 03 01 38 59 LMP Was it kind of warm when it came in?
(PLSS)
- 03 01 39 01 CMP No. It just got bashed around. The hook doesn't
(GUMDROP) hook onto it right; it slides up and down the
wire, and it's got that stretched cable on it,
so every time the tension come out, the stretch
cable slams it into something.
- 03 01 39 12 LMP Okay.
(PLSS)
- 03 01 39 13 CMP Go ahead; pull it.
(PLSS)
- 03 01 39 14 LMP Okay. I'm coming.
(PLSS)
- 03 01 39 20 CC Red Rover, Houston. Do you read?
- 03 01 39 21 LMP Okay. Stand by.
(PLSS)
- 03 01 39 25 LMP Okay. ... Okay, hook it on down there and lock
(PLSS) it. Dave, have you taken any pictures yet?
- 03 01 39 31 CMP No, I can't get it to run now, would you believe?
(GUMDROP)
- 03 01 39 33 LMP Okay. The heck with it then.
(PLSS)
- 03 01 39 35 CDR He got smashed around a little bit, too. I think
(SPIDER) these cameras are good for one film pack, and that's
about it when you are doing work like this with
them.
- 03 01 39 45 CC Red Rover, Houston. Do you read?
- 03 01 39 47 CDR Let me turn around here and get some stills.
(SPIDER)
- 03 01 39 53 LMP Okay, Jim. Stand by just one here.
(PLSS)
- 03 01 39 59 CC Gumdrop, Houston. Do you read?
- 03 01 40 05 CC Hey, anybody up there read me? This is Houston.
- 03 01 40 09 CDR Oops, there goes a nut.
(SPIDER)

(GOSS MET 1)

Tape 47/27
Page 295

- 03 01 40 12 LMP Okay. What, are you talking about me again?
(PLSS)
- 03 01 40 15 CDR (Laughter)
(SPIDER)
- 03 01 40 17 LMP Okay. Pull her in. One each, thermal sample
(PLSS) coming in.
- 03 01 40 26 CC Spider, Houston. Do you read?
- 03 01 40 28 LMP Okay. Can you take up out there and let me get
(PLSS) that hook back?
- 03 01 40 31 CMP Yes; you just ... hang on a second.
(GUMDROP)
- 03 01 40 34 LMP Okay. I tell you what. I don't need the hook
(PLSS) just to go part of the way up and back down again.
Okay --
- 03 01 40 41 CMP Goodness. Get down in there.
(GUMDROP)
- 03 01 40 44 LMP -- what ...
(PLSS)
- 03 01 40 45 LMP Do you want me to start, Jim?
(PLSS)
- 03 01 40 48 CDR Yes, Rusty.
(SPIDER)
- 03 01 40 49 LMP Okay. Here I go.
(PLSS)
- 03 01 40 50 CDR Rusty, I want you to evaluate those handles and
(SPIDER) when you get through with that, I want a conclu-
sion from you on whether or not it's a practical
way of doing it, like we've already said it is.
- 03 01 41 00 LMP Okay.
(PLSS)
- 03 01 41 01 CDR Stay away from the radar antenna.
(SPIDER)
- 03 01 41 02 LMP Roger.
(PLSS)

(GOSS NET 1)

Tape 47/28
Page 296

- 03 01 41 04 LMP Oh, yes. This is very good.
(PLSS)
- 03 01 41 06 CDR Yes. Hey, let me get that camera out.
(SPIDER)
- 03 01 41 10 LMP Okay.
(PISS)
- 03 01 41 12 CDR Anything left of that one.
(SPIDER)
- 03 01 41 14 LMP This is very good. This is no problem at all.
(PLSS)
- 03 01 41 23 CDR Good. Be right there. Smile.
(SPIDER)
- 03 01 41 28 LMP Hello, there. This is no problem at all.
(PLSS)
- 03 01 41 33 CDR Okay. Go on back down it again. Hey, Dave, did you get your movie camera running yet?
- 03 01 41 37 CMP Not yet; but I would like to try it, if you will give me a minute.
(GUMDROP)
- 03 01 41 41 CDR Well, you've got 4 minutes. When the 4 minutes are over, then we are going to have to come back in, with or without the movies. If we get them, fine.
- 03 01 41 52 LMP Yes, there are almost no disturbing torques, I mean I don't have any problem at all just maintaining myself wherever I want.
(PLSS)
- 03 01 42 00 CDR Come around the window here. Can you?
(SPIDER)
- 03 01 42 02 LMP Yea. Hold on. I'll just push out a little bit.
(PLSS)
- 03 01 42 06 LMP Wait, let me come up this way. How's that?
(PISS)
- 03 01 42 12 CDR Good.
(SPIDER)
- 03 01 42 14 LMP I'm in the shade, though.
(PLSS)

(0088 NET 1)

Tape 47/29
Page 297

- 03 01 42 15 CDR That's okay.
(SPIDER)
- 03 01 42 18 LMP Now, you got to get a good picture.
(PLSS)
- 03 01 42 21 CDR If we got any good pictures, it will take a lot
(SPIDER) of them.
- 03 01 42 24 LMP Yes. Then, too, maybe it will change the setting
(PLSS) a little too.
- 03 01 42 38 LMP How's that?
(PLSS)
- 03 01 42 42 CDR That was pretty good.
(SPIDER)
- 03 01 42 43 LMP Yes. I don't want to touch your quad, though.
(PLSS)
- 03 01 42 45 CDR Good idea. Don't touch the quad.
(SPIDER)
- 03 01 42 48 LMP Yes.
(PLSS)
- 03 01 42 59 CDR Yes. The trouble is, I've got this latch ...
(SPIDER) I'll try to take pictures around that. I'm not
sure I'm succeeding.
- 03 01 43 05 CDR Okay, Dave. You ought to take some pictures that
(SPIDER) I can turn around and - Rusty, why don't you go up
and down the thing. Go back down to the shoes and
get back out there again, and let's call it quits.
- 03 01 43 41 CC Spider, this is Houston. We are copying all trans-
missions loud and clear.
- 03 01 43 51 LMP That's a very pretty scene.
(PLSS)
- 03 01 44 15 CC Spider, this is Houston - or Gumdrop or Red Rover.
Do you read?
- 03 01 44 27 CC Hello, Gumdrop. This is Houston. How do you read?
- 03 01 44 46 CDR Okay, Dave. Do you have it running yet?
(SPIDER)
- 03 01 44 48 CMP Just about.
(GUMDROP)

(GOSS MET 1)

Tape 47/30
Page 298

- 03 01 44 49 CDR What?
(SPIDER)
- 03 01 44 50 CMP Just about.
(GUMDROP)
- 03 01 44 54 CDR Want to set it on 2 $\frac{1}{2}$ frames a second?
(SPIDER)
- 03 01 44 57 LMP Yes. And hand hold it there. You're going to
(PLSS) have to come in.
- 03 01 45 11 LMP Is it working?
(PISS)
- 03 01 45 12 CMP I can't tell. Just a minute.
(GUMDROP)
- 03 01 45 15 LMP I could feel it when mine was going.
(PLSS)
- 03 01 45 24 CMP I'm afraid, amigo, the camera has failed.
(GUMDROP)
- 03 01 45 27 LMP Okay.
(PISS)
- 03 01 45 28 CDR Okay.
(SPIDER)
- 03 01 45 29 CDR Okay, Rusty. Why don't you start coming in?
(SPIDER)
- 03 01 45 30 LMP Right. Coming in.
(PLSS)
- 03 01 45 47 CDR Oh, shoot.
(SPIDER)
- 03 01 45 48 LMP Okay, Jim. Do you want to pull in the tether
(PLSS) a little?
- 03 01 45 52 CDR I'd sure like to.
(SPIDER)
- 01 45 59 LMP I believe the door finally got itself closed and
(PISS) stuck. It's open now again.
- 11 46 09 CDR Okay.
(SPIDER)

TAPE

APOLLO 9 AIR-TO-GROUND TRANSCRIPTION

(GOSS NET 1)

Tape 48/1
Page 299

COLDSTONE (REV 47)

----- CDR Believe the door finally got itself closed
(SPIDER) and stuck.
----- CDR -- open now again.
(SPIDER)
----- LMP Okay.
(PLSS)
----- CDR Okay. Now ... I'll do my best to stay out of
(SPIDER) your way. The only trouble is my hoses are
kind of out where you are liable to hit them.
----- LMP Okay.
(PLSS)
----- CDR Okay. I think they're out of your way.
(SPIDER)
----- CDR ...
(SPIDER)

CANARY (REV 47)

03 01 47 45 CDR It's going to take me awhile to get down there
(SPIDER) and get that thing closed. I just wanted to
make sure you got back inside. I'm having trouble
with the hatch. Every time it's been once closed
...
03 01 47 58 LMP ... while it's still daylight.
(PLSS)
03 01 48 02 LMP How can I help you?
(PLSS)
03 01 48 04 CDR We ought to close that thing so I can see this
(SPIDER) hatch before I try to lock it.
03 01 48 14 CDR ... there we are.
(SPIDER)
03 01 48 17 LMP Okay.
(PLSS)

(GOSS NET 1)

Tape 48/2
Page 300

03 01 48 19 LMP Okay, now.
(PLSS)

03 01 48 24 LMP Okay!
(PLSS)

03 01 48 26 CDR Whew!
(SPIDER)

03 01 48 27 LMP Okay.
(PLSS)

03 01 48 28 LMP Let me get across the top here. Maybe I can get
(PLSS) out of your way. No. That isn't going to work;
let me get back in the corner.

03 01 48 36 CDR Ho. I think it's okay.
(SPIDER)

03 01 48 39 LMP Looks like it's all right the way it is.
(PLSS)

03 01 48 41 CDR The best that you can do, if you can, is to gather
(SPIDER) this tube up here; sort of keep it up off the
floor.

03 01 48 51 CDR Okay, Dave. You ought to start getting your hatch
(SPIDER) closed.

03 01 48 55 CMP Say again.
(GUMDROP)

03 01 48 56 CDR Better start getting your hatch closed if you
(SPIDER) aren't already doing it.

03 01 49 00 CMP Okay.
(GUMDROP)

03 01 49 05 CC Spider, this is Houston. Do you read? Sounds
like you have your hatch closed.

03 01 49 11 CDR Ho, not quite. It closed, just not locked.
(SPIDER)

03 01 49 16 CC Roger. Understand.

03 01 49 18 CMP Houston, Gumdrop.
(GUMDROP)

03 01 49 20 CC Gumdrop, Houston. Go ahead.

03 01 49 23 CMP Gumdrop's hatch is closed and locked.
(GUMDROP)

(GOSS NET 1)

Tape 40/3
Page 301

- 03 01 49 26 CC Roger. Understand. Hatch closed and locked. Good show. And I couldn't get up to you, but all three of you were coming in loud and clear. Sounded like Red Rover had quite a time.
- 03 01 49 44 CDR (SPIDER) ... Well, I hate to do it, but I've got to get my head in front of your legs, instead of behind them.
- 03 01 49 53 CDR (SPIDER) There, that's good.
- 03 01 49 56 CDR (SPIDER) Oooh, it's closed! Locked!
- 03 01 49 58 LMP (PLFS) It's locked!
- 03 01 50 00 CC Houston. Copy.
- 03 01 50 31 CC And, Spider and Gumdrop, if we lose you over Canaries here in a couple of minutes, we'll see you over Tananarive about 06.
- 03 01 50 39 CDR (SPIDER) Okay.
- 03 01 50 42 SC ... this again. I ha - -
- 03 01 50 49 SC ... Bravo ...
- 03 01 50 52 CDR (SPIDER) Okay. I got it.
- 03 01 50 53 LMP (SPIDER) -- order, this one should be in order ...
- 03 01 50 57 SC -- do you?
- 03 01 50 59 SC -- Okay.
- 03 01 51 10 CDR (SPIDER) ... in REPRESS code AUTO. Let's see, let's - -
- 03 01 51 12 LMP (SPIDER) What are the steps after that?
- 03 01 51 15 CDR (SPIDER) ... CABIN REPRESS, AUTO CABIN, and it's 4.4 psi.
- 03 01 51 20 SC Okay.
- 03 01 51 22 CDR (SPIDER) And, we'll do it at 46 ...

(GOSS NET 1)

Tape 48/4
Page 302

03 01 51 27 SC -- from AUTO?

03 01 51 31 SC -- AUTO?

03 01 51 40 CDR (SPIDER) -- I'm repressing.

03 01 51 53 CDR (SPIDER) -- Rusty?

03 01 51 54 LMP (SPIDER) What's that?

03 01 51 55 CDR (SPIDER) Oh, yes.

03 01 52 05 CDR (SPIDER) OPS purge control CLOSED.

03 01 52 16 CDR (SPIDER) There we go!

03 01 52 25 CDR (SPIDER) How are your ears?

03 01 52 28 CDR (SPIDER) How are your ears, Rusty?

03 01 52 31 LMP (SPIDER) Okay.

03 01 52 38 CDR (SPIDER) Okay, Rusty. The psi.

03 01 52 48 LMP (SPIDER) 2.2.

03 01 52 59 LMP (SPIDER) About 3.

03 01 53 00 CDR (SPIDER) ... cabin pressure a little ...

TANANARIVE (REV 47)

03 02 06 00 CC Spider; Gumbrop, Houston through Tananarive.

03 02 06 54 CC Spider; Gumbrop, Houston through Tananarive.
Receiving no transmission. All stand by and talk to you over Carnarvon at 22.

(GOSS NET 1)

Tape 48/5
Page 303

03 02 08 29 CC Spider; Gumdrop, Houston through Tananarive.
How do you read?

03 02 09 19 CC Tananarive M&O, Houston CAP COMM. Do you read?

03 02 09 24 CT ... Tananarive.

03 02 09 26 CC Roger. Am I going up to the spacecraft?

03 02 09 30 CT Say again.

03 02 09 31 CC Roger. Are you hearing anything from the spacecraft?

03 02 09 35 CT Negative. Downlink from the spacecraft, but you are going out, though.

03 02 09 38 CC Okay. Thank you.

CARNARVON (REV 47)

03 02 21 09 LMP Go ahead, Gumdrop.
(SPIDER)

03 02 21 11 CMP How are you doing over there?
(GUMDROP)

03 02 21 12 LMP Okay. We are trying to get through the ... get it back ...
(SPIDER)

03 02 21 19 CMP Okay. Everything squared away over here. We are back up to 5.1; the O₂ flow now is ...
(GUMDROP)

03 02 21 27 CC And, Spider and Gumdrop, this is Houston through Carnarvon. Reading you loud and clear.

03 02 22 27 CC Spider and Gumdrop, Houston through Carnarvon.

03 02 22 32 CDR Houston, this is the Spider.
(SPIDER)

03 02 22 35 CC Roger, Spider. Reading you loud and clear.

03 02 22 40 CMP And, Houston, this is Gumdrop. Back up to 5.1.
(GUMDROP) Everything is nominal.

03 02 22 45 CC Roger. Copy, Gumdrop.

03 02 22 51 CDR Hey, Houston. This is Spider.
(SPIDER)

(GOSS NET 1)

Tape 48/6
Page 304

03 02 22 53 CC Go ahead, Spider.

03 02 22 57 CDR (SPIDER) Spider here, Houston. What time was TV pass?

03 02 23 08 CC Roger, Spider. It's 7¹/₂ plus 57 and will last until 75 plus 13.

03 02 23 18 CDR (SPIDER) Can't read him. See if you can get him.

03 02 23 21 CMP (GUMDROP) Roger. Understand, Houston. 7¹/₂ plus 57 to 75 plus 13. Is that correct?

03 02 23 27 CC That's affirmative, Gumdrop.

03 02 23 31 CMP (GUMDROP) Okay. You copy, Spider?

03 02 23 33 CDR (SPIDER) Yes; we got it.

03 02 23 34 CMP (GUMDROP) He copies.

03 02 28 30 CC And, Spider and Gumdrop, we are going to lose you here at Carnarvon in about a minute. We'll see you over Huntsville about 37.

03 02 28 37 CMP (GUMDROP) Roger. Huntsville 37.

HUNTSVILLE (REV 47)

03 02 38 12 CC And, Spider; Gumdrop, Houston through the Huntsville. Standing by.

03 02 39 18 CC Spider and Gumdrop, this is Houston through the Huntsville. How do you read?

03 02 44 02 CC And, Gumdrop; Spider, if you read, we will see you over Hawaii in about 4 minutes.

HAWAII (REV 47)

03 02 47 44 CC And, Spider; Gumdrop, Houston through Hawaii. Standing by.

(COSS NET 1)

Tape 48/7
Page 305

- 03 02 47 49 CDR (SPIDER) Hello, Houston. This is Spider.
- 03 02 47 52 CC Roger, Spider. Reading you loud and clear.
- 03 02 47 55 CDR (SPIDER) Okay. On this TV pass, all you want is a TV on. You don't want a whole bunch of COMM checks, do you?
- 03 02 48 00 CC That is affirmative. We would just like to look at some nice, pretty pictures of you all.
- 03 02 48 06 CDR (SPIDER) We don't have any up here.
- 03 02 48 12 LMP (SPIDER) Okay. Be advised we will be in basic COMM band, with the exception that the S-band will be in MODULATE, and we will have the TV breaker pushed in.
- 03 02 48 26 CC Roger. Copy. You will be basic COMM S-band FM, and you will be having a circuit breaker shortly before 57. Affirm?
- 03 02 48 39 LMP (SPIDER) That is affirmative, and we are in FM now; and when we come over the hill at 55, we will push the TV breaker closed.
- 03 02 48 48 CC Okay. At 55 you will be closing the breaker.
- 03 02 48 51 LMP (SPIDER) Right.
- 03 02 49 12 CC And, Spider, this is Houston. I'm not trying to hurry you at all; just at your convenience, we would like to have an onboard readout of your supercritical helium.
- 03 02 49 24 LMP (SPIDER) Roger. In work for your information, the onboard readout of the O₂ quantity is 57 percent, and be advised we REPRESSED the command module for about 2 psi, to about 4.5.
- 03 02 49 42 CC Roger. Copy.
- 03 02 50 05 CDR (SPIDER) Houston, it looks like it is about 750.
- 03 02 50 10 CC Roger. Copy 750. And that verifies our reading. And just for your info, we feel this is either a leak upstream of the helium --
- 03 02 50 21 CDR (SPIDER) -- Houston, are you still there?
- 03 02 50 24 CC Roger, Spider. How do you read Houston?

(GOSS NET 1)

Tape 48/8
Page 306

03 02 50 35 CC Hello, Spider. This is Houston. Do you read?
03 02 50 50 CC Hello, Gumdrop. Do you read Houston? I haven't heard you over Hawaii here.
03 02 51 40 CC Hello, Spider. Houston. How do you read?

REDSTONE (REV 47)

03 02 55 15 CC Spider; Gumdrop, Houston. How do you read through the Redstone?
03 02 55 27 CC Hello, Spider; Gumdrop, this is Houston through the Redstone. How do you read?
03 02 56 15 CC Spider; Gumdrop, Houston. How do you read?
03 02 57 31 CC Spider; Gumdrop. How do you read Houston?

GOLDSTONE (REV 47)

03 02 58 03 CC Okay, Spider. This is Houston. We do have a TV picture. We are receiving no voice.
03 02 58 10 LMP (SPIDER) Roger. Understand you are receiving no voice.
03 02 58 12 CC Oh, that's it. You are coming through loud and clear, Rusty.
03 02 58 16 LMP (SPIDER) Oh, crazy. You're reading voice now.
03 02 58 20 LMP (SPIDER) Okay. We are in the process of recharging the FISS. We have recharged it with oxygen, and we've just put in the water, and we are going to vent now.
03 02 58 32 CC Roger. Your picture is good. We can see you loud and clear going down the checklist there like a good pilot.
03 02 58 39 LMP (SPIDER) Right.
03 02 59 12 CC And, Spider, this is Houston. Do we still have you in voice here?

(GOSS NET 1)

Tape 48/9
Page 307

- 03 02 59 17 CDR (SPIDER) Sure do. Just kind of busy here. That's why we are not talking.
- 03 02 59 23 CC Okay. Understand.
- 03 02 59 25 CDR (SPIDER) What we are doing is - We are recharging the PLSS, and I'm eating my lunch.
- 03 02 59 30 LMP (SPIDER) Yes. The Commander is talking while he is eating. He's not supposed to do that.
- 03 02 59 56 CDR (SPIDER) Okay, Houston. It's done.
- 03 02 59 59 CC Oh, very good. Hey, it's a tremendous picture, Spider.
- 03 03 00 04 CDR (SPIDER) Great.
- 03 03 00 09 CDR (SPIDER) How much longer do we have on this picture? Ten minutes?
- 03 03 00 17 CC Yes. We've got it for about another 13 minutes, Spider. We can watch your whole lunch there - count your bites.
- 03 03 00 24 CDR (SPIDER) Thanks.
- 03 03 00 26 CC You are welcome.
- 03 03 00 33 CC And, Spider, were you reading me back over Redstone and Hawaii?
- 03 03 00 38 CDR (SPIDER) I read you the first time, but that was only one time.
- 03 03 00 41 CC Okay. Understand.
- 03 03 00 45 LMP (SPIDER) ... just barely in ...
- 03 03 01 00 LMP (SPIDER) Houston, Spider.
- 03 03 01 01 CC Go ahead, Spider.
- 03 03 01 03 LMP (SPIDER) We wondered - going over the stateside there - the EVA. Did you read us all the way? We noticed that you didn't say anything even when we asked questions.

(GOSS NET 1)

Tape 48/10
Page 308

- 03 03 01 13 CC We were reading everything - all of you - loud and clear, and we just weren't getting up to you. But the COMM from you was terrific. We read all your conversations - sounded like you were really having a ball.
- 03 03 01 27 LMP (SPIDER) Yes. Pretty good view from out there.
- 03 03 01 30 LMP (SPIDER) That's what you call a view from the top of the stairs - LM stairs, that is.
- 03 03 01 42 CDR (SPIDER) Have you got any words of wisdom on tomorrow's flight plan yet, Smokey?
- 03 03 01 48 CC Roger. We'll cover that with you later if you want. We'll settle down, and - Have you got anything that you can give us along the line about clearing the tunnel? It sounds like that goes pretty well.
- 03 03 02 02 CDR (SPIDER) Yes. The tunnel doesn't take long at all. It's getting ready to clear the tunnel.
- 03 03 02 13 CC Okay. And hey, Red Rover, we've - How about a big smile for the folks at home here. Let us know if you are feeling pretty good after that show.
- 03 03 02 23 CDR (SPIDER) Yes. We're feeling gre as a matter of fact.
- 03 03 02 28 LMP (SPIDER) McDivitt doesn't look so good, but he feels all right.
- 03 03 02 32 CC Well, that was a typical friendly CDR smile.
- 03 03 02 36 CDR (SPIDER) Right. They don't like me because I have got a better beard than they do.
- 03 03 02 41 LMP (SPIDER) Straight teeth, but a crooked smile.
- 03 03 02 46 CC I don't like you because you've got a better view than I do.
- 03 03 02 50 CDR (SPIDER) That's okay. We just don't like you.
- 03 03 02 58 CC Okay. We are coming up on a keyhole now. We'll probably have a dropout for about a minute and 55 seconds or so and pick you back up again.

(COSS NET 1)

Tape 48/11
Page 309

03 03 03 05 CDR Okay. Okay. Do you want the TV to stay on?
(SPIDER)

03 03 03 09 CC That's affirmative. Leave it just like it is.
We'll just have a little blizzard for the folks
at home and pick you back up again.

03 03 03 16 CDR Okay.
(SPIDER)

GOLDSTONE (REV 48)

03 03 04 42 CC Okay, Spider. We've lost your picture here now.
We should be able to pick it back up shortly.
I'm curious, if we get the picture back, if you
could show us a view out of the overhead window
of the command module. Would that be possible?

03 03 04 58 CDR Roger.
(SPIDER)

03 03 04 59 CC Out the window and up around the tunnel area if
you could, and we are showing about 8 minutes left
in the pass.

03 03 05 08 CDR Okay. I'll show you a picture of Dave over in
(SPIDER) the Gumdrop waving at us.

03 03 05 12 CC Okay. We do not have your TV picture at this
time. I'll let you know when we get it.

TEXAS (REV 48)

03 03 05 37 CC Okay. Spider, we've got the picture back again now.

03 03 05 51 CDR I can show you a picture of the back of the LM.
(SPIDER) I don't know if you could see much back there.

03 03 05 56 CC Okay. And just a word, Jim. We'd like to have
you hold the camera, oh, about a minute or so in
each position, to let the light compensate right.
Maybe the picture will come in a little clearer.

03 03 06 10 CDR Okay. I'll give you the one out of the top first -
(SPIDER) to make sure we get it.

03 03 06 12 CC Okay. Yea. We can see it out - we - It's a good
view, Spider.

(GOSS NET 1)

Tape 48/12
Page 310

- 03 03 06 21 CC Hey, that's terrific. Dave, how about waving to the folks at home?
- 03 03 06 34 CC Hey, that's really great, Spider and Gumdrop. It is really beautiful! And we can see you waving, Dave.
- 03 03 06 47 CC Hey, that's really a terrific shot.
- 03 03 06 52 CDR (SPIDER) Tell you what I'll do. I don't know if it is still light out there, maybe I can give you a view out the top window of the IM down at the light.
- 03 03 07 00 CC All right. Yes. Let's do that. And we've got about 6 minutes left. That's really great.
- 03 03 07 09 CDR (SPIDER) Well, I can't see much out there. I'll show you one of our quads.
- 03 03 07 15 CC Hey, that's a terrific shot. You know that camera picks up pretty well even when you are moving it fast. And that's a beautiful shot of the quad now, Jim.
- 03 03 07 30 CDR (SPIDER) Okay. Now I'll show it right straight down the minus X-axis, or as close as I can get it, and you can just see the legs sticking out down there.
- 03 03 07 45 CC Okay. The picture is pretty good, Spider. It's real clear. I'm not sure I can pick out the leg right there at this time. We'll take a look at it.
- 03 03 07 56 CDR (SPIDER) That's okay. Neither can I. You don't see very much of it, Smokey.
- 03 03 08 01 CC Okay. Well, I don't feel so bad then.
- 03 03 08 04 CDR (SPIDER) Okay. Just a minute.
- 03 03 08 14 CDR (SPIDER) Let me show you a little more of the outside of the command module. I'll show you the side window, and you can see the EVA light sticking out, out there on the pole. It's also part of the IM radar antenna.
- 03 03 08 37 CC Jim, can you move the camera a little closer to the window?
- 03 03 08 41 CDR (SPIDER) It's right up against the window, now.

- 03 03 08 43 CC Okay.
- 03 03 08 46 CDR (SPIDER) I'm not sure that you can really see it that well.
- 03 03 08 56 CDR (SPIDER) Here's a picture of the radiation meter. So far, we haven't detected any radiation.
- 03 03 08 59 CC Oh, very good. Hey, that's a real good picture.
- 03 03 09 06 CDR (SPIDER) It also might be interesting to look at the front of the IM and the instrument panel.
- 03 03 09 13 CC Yes. That would be real great. If you could show us a couple of views of that, and maybe one of up in the tunnel, so we can see how you get in and out of there on your way to work each morning.
- 03 03 09 22 CDR (SPIDER) Okay. This is the interim stowage assembly that we are looking at right here. Instrument panel is right behind it. For the EVA, we put all of our equipment in that big bag. You can see the telescope sticking out right above that with all the wires wrapped around it.
- 03 03 09 39 CC Okay, Jim. We can see where it is. It's just a little dark to show the AOP up real good, but we've got a real clear picture of your stowage bag.
- 03 03 09 50 CDR (SPIDER) Okay. Maybe I can take a diagonal picture of the instrument panel here.
- 03 03 09 57 CMP (GUMDROP) Spider, I got the docking target up here. Why don't you try that?
- 03 03 10 01 CDR (SPIDER) Okay.
- 03 03 10 06 CDR (SPIDER) Smokey, can you see this picture?
- 03 03 10 10 CC Okay. We can see the caution and warning panel with a couple or three lights lit up, but it is just a little dark on the panel itself.
- 03 03 10 20 CDR (SPIDER) Okay. Listen, we'll go back, and I'll show you the docking target. It is green and yellow; too bad we don't have green and red. Too bad we don't have color TV. It is in the command module window now.

(GOSS NET 1)

Tape 48/14
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- 03 03 10 32 CC Okay. That will be a good shot if we can get through to that.
- 03 03 10 40 CC Oh, hey. That picture is fantastic, Dave - I mean Jim. Let's just hold it right there for awhile.
- 03 03 10 54 CC That's really a terrific shot, Jim. We are getting the earth in the background and the clearness of the command module is outstanding.

MILA (REV 48)

- 03 03 11 05 CMP (GUMDROP) It's a clear command module.
- 03 03 11 08 CC Roger.
- 03 03 11 12 CC I guess I should say, "The Gumdrop looks loud and clear."
- 03 03 11 34 CC Okay, Jim. We've got about a minute and a half left. That picture looks beautiful.
- 03 03 11 41 CDR (SPIDER) Okay.
- 03 03 11 43 CC And could we give it a try up the tunnel? It's probably pretty dark, but we'd like to see how it comes in.
- 03 03 11 54 CDR (SPIDER) Hey, I'm not sure. Say, Dave, is the tunnel pressurized or not?
- 03 03 12 00 CMP (GUMDROP) Yes. It's pressurized.
- 03 03 12 02 CDR (SPIDER) Okay. It's still ... We don't have the tunnel open, and we can't get it open very far because we still have the OPS's on the back wall.
- 03 03 12 11 CC Roger. We understand, Jim.
- 03 03 12 18 CDR (SPIDER) Okay. There's a picture of the drogue sticking down into the tunnel with the probe stuck in the end of it, and you can see the upper hatch of the LM is open. It's probably not --
- 03 03 12 28 CC Now hold the camera right there, Jim. That's real clear. It's a beautiful picture.

(GOSS NET 1)

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() 03 03 12 33 CMP Okay. Stand by. And I'll pull the hatch off.
(GUMDROP)

03 03 12 36 CC Okay.

03 03 12 45 CC It's really a clear picture, Jim.

03 03 12 51 CDR I'll tell you, the picture we really ought to have
(SPIDER) for you are those six black hoses in the LM, or in
the command module snaking around three people who
are trying to do something.

03 03 12 59 CC Roger. Understand. We're going to lose you here.
Tell Dave to delay taking out the hatch.
We're just about to drop you.

03 03 13 10 CDR I think it's out now. I don't think you can see
(SPIDER) anything.

03 03 13 13 CC No. We've lost the picture. That's the end of
the pass. Right on schedule.

03 03 13 17 CDR It works.
(SPIDER)

() 03 03 13 18 CC Hey, we sure appreciate your taking that time
out, Jim. That was great.

VANGUARD (REV 48)

03 03 14 24 CC Apollo 9, this is Houston - excuse me, Spider;
Gumdrop, Houston. We should still have COMM
with you. How do you read?

03 03 14 33 CDR Spider, loud and clear.
(SPIDER)

03 03 14 34 CMP Gumdrop, five-by.
(GUMDROP)

03 03 14 36 CC Okay. Spider, we've got you for about another
5 minutes here before we pull off the ground, and
we'll be right back in contact. You're all strapped up
for tomorrow's work. What is - Is it just getting
on the suits and hoses and everything that's giving
you the delay in the morning?

(GOSS NET 1)

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- 03 03 14 55 CDR Yes. The problem is that although we've got three people in there, we can't have all three guys working at the same time. And once you put your suit on, you become sort of useless. And everybody has to eat, and we have to get the suits on, we have to power up the spacecraft, we probably have to take them through a P52 or P51, and by the time you get through doing all those things, it just takes up 2 or 3 hours.
- 03 03 15 19 CC Roger. Understand. We're starting the rest period tonight at 77:30 - right about that - which is an hour and a half early. And as far as tomorrow morning goes, do you agree with getting up an hour and a half before the scheduled time? Is that going to give you enough time?
- 03 03 15 42 CDR I think maybe if we did some more work tonight, we might be able to get up something like an hour beforehand tomorrow. The trouble is we were up pretty late last night trying to sort out all the things. As you know, we transferred the checklist back and forth, and flight plans back and forth; it's really kind of a mess. I guess the thing that we can plan on doing is getting up something like an hour ... checklist squared away, and then we'll be ISA UP for tomorrow morning tonight. I just hope we can get it all done in an extra hour. I tell you what, I have to look at tomorrow morning's flight plan before I can tell you. I'll let you know exactly what we are going to do.
- 03 03 16 26 CC Roger. Spider, do you still read me?
- 03 03 16 35 CMP Houston, Gumdrop's still with you.
(GUMDROP)
- 03 03 16 37 CC Okay, Gumdrop. Spider sort of faded out there. We agree with that. We're going to do everything we can to get you turned in as soon as possible tonight, and we agree to the hour in the morning for getting up earlier and guess we can discuss it more later, but we sure concur with all those.
- 03 03 17 00 CMP Okay. Very good. We'll take a look
(GUMDROP) at the flight plan later on, too, and get it all squared away.

(GOSS NET 1)

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03 03 17 05 CC All right. Fine.

03 03 17 14 CMP Spider, Gumirop.
(GUMDROP)

03 03 17 16 CDR Go ahead.
(SPIDER)

03 03 17 17 CMP Roger. They copied. They agree with all that.
(GUMDROP)

03 03 17 20 CDR Okay.
(SPIDER)

03 03 19 38 CDR Gumirop.
(SPIDER)

03 03 19 41 CMP Go ahead.
(GUMDROP)

03 03 19 42 CDR Find out what we do with the super ... whether
(SPIDER) we leave it here or bring it back.

03 03 19 47 CMP Okay. Stand by.
(GUMDROP)

03 03 19 53 CC And, Spider; Gumirop, if you read Houston,
we're deleting the backup COM check over
Ascension.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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ASCENSION (REV 48)

03 03 25 42 CC Gumdrop/Spider, this is Houston through Ascension. And we are deleting this backup voice check.

03 03 25 50 CMP (GUMDROP) Roger.

03 03 25 58 IMP (SPIDER) And, Houston, this is Spider. As soon as we get the tunnel clear, we're going to be transferring back and drawing out the trouble meter.

03 03 26 05 CC Roger. We agree with that. We'll just be standing by.

03 03 32 07 CC We'll see you over Tananarive at 42.

TANANARIVE (REV 48)

03 03 42 36 CC Spider/Gumdrop, Houston through Tananarive. Standing by. We will have you for about 4 minutes; see you at Carnarvon at 56.

03 03 42 45 CDR (SPIDER) Spider.

03 03 43 01 CDR (SPIDER) Hey, Dave, how would you like to have us mix up this fruit plate with this LM water?

03 03 43 07 CMP (GUMDROP) I think that would be all right.

03 03 43 10 CDR (SPIDER) Okay. Should make it a lot better.

03 03 43 12 CMP (GUMDROP) Yes. I wouldn't mind having some of that.

03 03 43 18 CMP (GUMDROP) Good idea.

CARNARVON (REV 48)

03 03 56 12 CC Spider/Gumdrop, Houston through Carnarvon. Standing by.

(COSS NET 1)

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- 03 03 56 17 LMP (SPIDER) Roger, Houston. Spider here. We've started to dry out.
- 03 03 57 21 CC Roger. Understand.
- 03 03 57 34 CC And, Rusty, could you give us a time on when you started?
- 03 03 57 39 LMP (SPIDER) Roger. On my Mark, we started 6 minutes and 40 seconds ago. 3, 2, 1.
- 03 03 57 48 LMP (SPIDER) MARK.
- 03 03 57 49 LMP (SPIDER) Six minutes and 40 seconds into the dryout.
- 03 03 57 53 CC Very good; thank you, Rusty.
- 03 03 57 57 LMP (SPIDER) Roger.
- 03 04 01 28 CC Spider, Houston.
- 03 04 01 32 LMP (SPIDER) Roger. Go ahead, Houston.
- 03 04 01 34 CC Roger. Just to verify our TM here, Rusty. Several times we've noticed connects and disconnects of the suit isolation valve, the suit isolation valve, going from connect to disconnect. Can you verify that?
- 03 04 01 52 LMP (SPIDER) The commander just went off, and we disconnected his.
- 03 04 01 56 CC No, I mean this was during the day.
- 03 04 02 02 LMP (SPIDER) Yes. I guess we did it about four or five times today.
- 03 04 02 09 CC Okay. And are you connected now?
- 03 04 02 14 LMP (SPIDER) That is affirmative. The LMP is connected and flowing, and the Commander is not.
- 03 04 02 22 CC Okay. That solves our problem, then. Thank you, Rusty.
- 03 04 02 47 CC Spider, Houston.
- 03 04 02 51 LMP (SPIDER) Go ahead.

(GOSS NET 1)

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03 04 02 52 CC Roger. We're recommending that you be off of the LM ECS hoses by 76 plus 10. That's about 8 minutes from now, if you can make it. We would also like the time at which you do go off. It's about 1 minute to LOS here at Carnarvon, and I'll probably see you over Hawaii around 21.

03 04 03 14 LMP (SPIDER) Okay. I'll be on the command module hoses by that time.

03 04 03 22 CC And, Spider, one more question. Could you - Would you have time to tell me whether the suit isolation disconnect circuit breaker is IN or OUT?

03 04 03 36 LMP (SPIDER) Suit flow control circuit is CLOSED. I believe that's what you want.

03 04 03 41 CC That's what I wanted, Rusty; thank you. It's closed.

03 04 03 44 LMP (SPIDER) Roger.

HUNTSVILLE (REV 48)

03 04 13 17 CC Gumdrop/Spider, this is Houston through the Huntsville. I'll have you about 2-1/2 minutes. And Gumdrop, do you read?

03 04 13 31 LMP (SPIDER) This is Spider here. Go ahead.

03 04 13 33 CC Okay. Could you pass the word to Gumdrop there that we will pick him up - We'll pick y'all up over Hawaii in about 8 minutes at 21. The first item will be some block data that we would like to get out of the way, and then we'll have some questions on the optics and on the cryo plan for tonight.

03 04 13 55 LMP (SPIDER) Roger. When did you say you were going to do that?

03 04 13 57 CC We'll do that over Hawaii - coming across the States - We'll have Hawaii at 21, and we would like to have them to have their block data FAD out.

(GOSS MET 1)

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03 04 14 06 LMP Okay. We'll be all set.
(SPIDER)

03 04 14 08 CC Okay. And, Gumdrop, we're trying to do some COMM troubleshooting here. This will be VHF only at Hawaii, if we can make it. And I'd like to insure that your VHF is set up.

03 04 14 24 LMP Okay. All set; VHF only.
(SPIDER)

03 04 14 26 CC Okay.

HAWAII (REV 48)

03 04 21 20 CC Hello, Spider/Gumdrop, Houston through Hawaii.

03 04 21 25 SC Roger. Standing by.

03 04 21 42 CC Gumdrop, do you read Houston?

03 04 21 45 CDR ... Houston. Never mind. We're reading you.
(SPIDER)

03 04 21 50 CC Roger. Copy. Stand by.

03 04 22 54 CMP Houston, Apollo 9.
(GUMDROP)

03 04 22 57 CC Roger. Apollo 9, this is Houston. I think I've got you a little better now. How do you read me?

03 04 23 05 CMP I'm picking you up five-square. Go ahead with your block data.
(GUMDROP)

03 04 23 08 CC Okay. Reading block data: 051 4 Alfa, plus 307, minus 1619 080 49 10 4651; 052 3 Baker, plus 338, plus 1485 082 12 23 4710; 053 3 Alfa, plus 316, plus 1485 083 46 06 4663; 054 3 Baker, plus 259, plus 1450 085 19 30 4601; 055 Charlie Charlie, minus 210, minus 1620 087 11 08 4475; and the last one, 056 Alfa Charlie, plus 014, minus 0240 087 47 06 4580. And your SPS trim: pitch, minus 1.07; yaw, minus 1.11. End of update.

03 04 26 19 CMP Roger. I missed the first 2 lines of the third one.
(GUMDROP)

(COSS NET 1)

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03 04 26 23 CC Okay. The first two lines of the third one:
053 3 Alfa, plus 316.

03 04 26 37 CMP Okay. Coming back at you. Ready?
(GUMDROP)

03 04 26 40 CC Go ahead.

03 04 26 42 CMP 051 4 Alfa, plus 307, minus 1619 080 49 10 4651;
(GUMDROP) 052 3 Bravo, plus 338, plus 1485 082 12 23 4710;
053 3 Alfa, plus 316, plus 1485 083 46 06 4663;
054 3 Bravo, plus 259, plus 1450 085 19 30 4601;
055 Charlie Charlie, minus 210, minus 1620 087
11 08 4475; 056 Alfa Charlie, plus 014, minus
0240 087 47 06 4580.

03 04 27 48 CC Roger. Your readback correct. Your trim's
minus 1.07 and minus 1.11.

03 04 27 55 CMP Roger. Minus 1.07 and minus 1.11.
(GUMDROP)

03 04 28 00 CC Okay. And while I've got you in a writing mood,
let me pass you a NAV check that will be for
a state vector. We'll load to you coming across
the States, here.

03 04 28 12 CMP Okay. Houston, you faded. Stand by one.
(GUMDROP)

03 04 28 16 CC Roger.

03 04 28 19 CC We'll see you in about 30 seconds, if you read,
Gumdrop.

REDSTONE (REV 48)

03 04 29 49 CC Okay. Gumdrop, Houston again. Do you read me
now?

03 04 29 56 CMP ... Houston ...
(GUMDROP)

03 04 30 16 CC Gumdrop, this is Houston. I think you answered
me. Try me again. See if I can read you.

03 04 30 20 CMP Okay. How about now?
(GUMDROP)

(GOSS NET 1)

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03 04 30 22 CC Okay. You're loud and clear. Are you ready to copy a NAV check?

03 04 30 26 CMP (GUMDROP) Roger. Go with the NAV check.

03 04 30 28 CC It's 077 all zeros all zeros, minus 0735, minus 02499 1272.

03 04 30 55 CMP (GUMDROP) Roger. 077 all zeros, minus 0735, minus 024 - and I didn't catch the rest - 12721

03 04 31 08 CC Roger. The longitude is minus 02499.

03 04 31 16 CMP (GUMDROP) Minus 02499.

03 04 31 19 CC That is affirmative. And, Dave, if you've got time, there's a couple of questions I'd like to ask you about the optics.

GOLDSTONE (REV 48)

03 04 31 38 CMP (GUMDROP) Hey, Houston.

03 04 31 46 CC Gumdrop, this is Houston. Could you give us POO in ACCEPT, please? We're going to uplink you a state vector.

03 04 32 27 CC Hello, Gumdrop; this is Houston. How do you read me now?

03 04 33 11 CC Okay. Gumdrop, this is Houston. I think we've got you again, now. How do you read?

03 04 33 16 SC ...

03 04 33 54 CC Okay. Gumdrop, Houston trying again. Do you read?

03 04 33 58 CMP (GUMDROP) Okay. I read you again; how me?

03 04 34 09 CC Oh, boy; you are loud and clear now. I don't know what our COMM troubles are, but we've got them. I'd like to talk to you a little bit about the cryo plan for tonight.

03 04 34 11 CMP (GUMDROP) Okay. Go.

() 03 04 34 12

CC

Okay. We'd like this to be done just before you go to sleep, and you are going to have to allow about 30 minutes. What we'd like to have you do is bring both H₂ tanks up to 270 psi, using manual operation of both heaters and fans in both tanks. This 270 psi in tank 2 flow should correspond to the caution and warning trip limit, so you should get a light on that. Then after you've got the pressure up, we'd like to have you turn fans OFF, and place heaters in AUTO.

03 04 35 02

CMP
(GUMDROP)

Okay. Copied that. You want both H₂ up to 270 with both the heaters and the fans. And then, when we get there, the fans OFF and the heaters to AUTO. And expect a caution warning light on tank 2 at 270.

03 04 35 18

CC

That's right. And this should be done just before your sleep period; you should allow about 30 minutes for this.

03 04 35 24

CMP
(GUMDROP)

Okay. Understand.

03 04 35 26

CC

Dave, can you answer a couple of questions about your optics?

03 04 35 29

CMP
(GUMDROP)

Go ahead.

03 04 35 31

CC

Okay. This is in regard to the problem you stated the other day about the telescope sticking in 64 degrees in MANUAL drive.

03 04 35 41

CMP
(GUMDROP)

Roger.

03 04 35 43

CC

Okay. Is that shaft counter permanently frozen at 64, or when you get it past 64, does it count again?

03 04 35 54

CMP
(GUMDROP)

No. The mechanical counter is permanently frozen.

03 04 35 58

CC

Okay. It is frozen. The way we copied it, you went to AUTO OPTICS to get past 64. Is that correct?

() 03 04 36 07

CMP
(GUMDROP)

Not - Yes, that's one way; it was a sort of transient kind of thing. The feedback readout

froze the day before, but we didn't notice any slowing up. Then on the morning when I realigned, when I came - just before I gave you the comments - I got stuck in 64 one time, but got it past and haven't had any trouble since.

- 03 04 36 31 CC Okay. Understand that you do not have any trouble with it now, with the exception of the counter being at 64 degrees.
- 03 04 36 39 CMP (GUMDROP) That's affirmative. I've done two more alignments since then, and I've run back and forth across about the 60-degree point, and it doesn't seem to hang up any more.
- 03 04 36 48 CC Okay. That's real good. We really were scratching our heads on that one. So, it sounds like you are squared away for tomorrow, then.
- 03 04 36 57 CMP (GUMDROP) Yes. I believe it's working all right, and the CMC AUTO drive seems to work fine, too.
- 03 04 37 04 CC Okay. Real fine; that helps us out. At this time I would remind you of the waste water dump, which we are showing down here at about 77:30; and we're showing your rest period starting right after, about 77:40.
- 03 04 37 25 CMP (GUMDROP) All right; thanks for the reminder. We'll even try and chlorinate the water before we go to bed.
- 03 04 37 31 CC Okay. Very good.
- 03 04 37 42 CC And, Gumdrop, also we would like to remind you, sometime we would like to get a dosimeter reading.
- 03 04 37 49 CMP (GUMDROP) Okay. We'll get that.
- 03 04 38 39 CC And, Gumdrop, we're through with the computer. It's yours.
- 03 04 38 42 CMP (GUMDROP) Roger.
- 03 04 39 20 CMP (GUMDROP) Houston, Gumdrop. I've got the dosimeter readings, if you want them.
- 03 04 39 26 CC Roger. Right. Go ahead.
- 03 04 39 29 CMP (GUMDROP) Okay. 3112, 6112, 8012 for the CDR, CMP, and LMP.

(GOSS NET 1)

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03 04 39 44 CC Roger. I copy those, Gumdrop. Thank you very much.

03 04 39 49 CMP (GUMDROP) Roger.

03 04 40 16 CC And, Gumdrop, is Rusty still over in the LM?

03 04 40 20 CMP (GUMDROP) Roger. We're sort of cleaning things up and fixing chow with some good water in it!

03 04 40 26 CC Okay. Real good. I'll get with him later, then. There is a note I want to give about the checklist - his malfunction procedure.

03 04 40 35 CMP (GUMDROP) Okay. He ought to be back over in about a half hour or so.

03 04 40 38 CC Okay.

ANTIGUA (REV 49)

03 04 44 24 CC And, no need to answer, Gumdrop. This is Houston. Just like to remind you, you are still in ACCEPT. We would like to have you go back to BLOCK whenever you get around to it.

03 04 44 32 CMP (GUMDROP) Okay. Thank you. Good night.

03 04 44 35 CC Roger.

03 04 44 57 CMP (GUMDROP) Hello. Houston, Apollo 9.

03 04 45 00 CC Go ahead, Apollo 9.

03 04 45 02 CMP (GUMDROP) I've got a question for tomorrow. When we finish up with the LM, we are collecting a tremendous amount of garbage and stuff in the command module here, and we have to bring a bunch of books and things like that back from the LM. I'd like to take one of these great big temporary stowage bags, fill it with all our garbage, and leave it in the IM. This means that the doctors aren't going to be able to figure out when we ate, because all the white spots, and red spots, and blue spots of the food bags are going to be over there in the LM. But we've been intermixing bags and stuff here,

Houston, in an attempt to get something to eat whenever we can, so that data is sort of gone down the tubes anyway.

- 03 04 45 44 CC Roger, Apollo 9. We copy that.
- 03 04 45 49 CMP (GUMDROP) Okay. Could you let us know if we could drop off a couple of big bags of junk over there?
- 03 04 45 55 CC Roger. Why don't you go ahead and do it?
- 03 04 45 59 CMP (GUMDROP) That was sort of my plan, too, Stu.
- 03 04 46 03 CC Say again, Apollo 9.
- 03 04 46 05 CMP I said, that was sort of my plan, too.
- 03 04 46 07 CC Roger. That's the official word. Go ahead. We would just like to caution you: could you sort of fasten it down with one of the restraints or something?
- 03 04 46 17 CMP (GUMDROP) Yes. We'll have it fixed so it doesn't float around, but we've just got to get rid of some of this junk.
- 03 04 46 22 CC That sounds like a great idea.
- 03 04 46 25 CMP (GUMDROP) We just haven't had much time for playing housekeeping, and it's really building up.
- 03 04 46 30 CC We appreciate that. You all are doing a magnificent job, and we're really pulling for you.
- 03 04 46 41 CMP (GUMDROP) Right now, we are filling all our bags full of water from the LM because that water tastes better.
- 03 04 46 46 CC Roger. Understand the water in the LM is much, much better than that in the command module.
- 03 04 46 52 CMP (GUMDROP) Yes. It doesn't have any bubbles, and you can drink it without blowing up like a balloon.
- 03 04 46 56 CC Hey, that sounds great.
- 03 04 46 58 CMP (GUMDROP) Yes. But you ought to see where they go when they ask for a soda.
- 03 04 47 04 CC Of course, I guess it's a little inconvenient to always pull that LM around just so you will have good water to drink, isn't it?

(GOSS NET 1)

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- 03 04 47 10 CMP (GUMDROP) Yes. It's sort of going to be in the way after tomorrow.
- 03 04 47 13 CC Roger.
- 03 04 47 15 CMP (GUMDROP) Besides which, I'm getting tired of looking at the top of it through the command module windows. It sort of blocks the view.
- 03 04 47 21 CC Yes. I guess that cuts down on your geography viewing, there.
- 03 04 47 26 CMP (GUMDROP) Man, I haven't even had time to look at the ground yet.
- 03 04 47 30 CC Yes. I bet I got more view of the ground today from your TV show than you have so far.
- 03 04 47 40 CMP (GUMDROP) The only good view I think I've really had was yesterday during the docked DPS burn when we went across the States face down. That was really quite pretty.
- 03 04 47 48 CC Yes, man; that docked DPS burn was a beautiful thing. It was really great.
- 03 04 50 13 CC Apollo 9, Houston. One other question.
- 03 04 50 15 CMP (GUMDROP) Go ahead.
- 03 04 50 17 CC Roger. We would like to verify that the heaters on the LM windows were OFF all day.
- 03 04 50 25 LMP (SPIDER) Roger. They were. That's affirmative. They were OFF all day.
- 03 04 50 29 CC Okay. Thank you.
- 03 04 51 42 CC And, Apollo 9, we are going to lose you here at Antigua. We'll see you over Ascension at about 59.
- 03 04 51 49 LMP (SPIDER) Roger.
- 03 04 51 53 LMP (SPIDER) Hey, Houston, it looks like we're all done drying out the water boiler. What do you think?
- 03 04 52 00 CC Stand by, Apollo 9.

(GOSS NET 1)

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03 04 52 18 CC That's negative. We don't think it's dry yet,
Apollo 9. We will try to get you a hack, here,
on our estimate.

03 04 52 25 IMP Okay. Very good.
(SPIDER)

03 04 52 50 CC Apollo 9, Houston. In about 5 more minutes,
if you read me, you can shut down the water
boiler. I mean, it will be dried up.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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ASCENSION (REV 49)

- 03 04 59 25 CC Apollo 9, Houston.
- 03 05 00 15 CC Apollo 9, Houston through Ascension.
- 03 05 00 21 CMP This is Apollo 9.
- 03 05 00 27 CC Apollo 9, this is Houston through Ascension. We've got a question on that sequence camera, Dave. Did we report - record that yours broke today?
- 03 05 00 38 CMP (GUMDROP) Yes, ... troubleshooting ... pulled out the spare fuse.
- 03 05 00 50 CC Roger. Understanding that you were troubleshooting, and then you faded out. We will try you again in a little bit.
- 03 05 00 58 CMP (GUMDROP) I said I put in a spare fuse and fiddled with it, and now it works fine.
- 03 05 01 04 CC Roger. Understand. Tremendous. And, Apollo 9, what we were considering - to make sure we got the pictures of the undocking and so forth - is that maybe you would like to swap that one with the one in the LM.
- 03 05 01 21 CMP (GUMDROP) This one's a fine outfit.
- 03 05 01 27 CDR (GUMDROP) Houston, this is Apollo 9.
- 03 05 01 29 CC Go ahead.
- 03 05 01 32 CDR (GUMDROP) I have sort of a climax or summary of what we did today. I think that the procedure that we have worked out for the EVA transfer from one spacecraft to another is no problem whatsoever. The procedures are good, and I think we can plan on using them henceforth if they are needed.
- 03 05 01 56 CC Roger, Apollo 9. We copy and agree with that. From monitoring in your conversation, it did sound like they were real good. It sounded like the getting in and out of the hatch was quite easy, and I heard Rusty's comments on the hand-rail. Sounded like they were pretty good.

(GOSS NET 1)

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03 05 02 13 LMP Yes. Everything seems to work.
(SPIDER)

03 05 02 16 CC Apollo 9, we are ready to shut down. It looks like the water boiler is dried up.

03 05 02 24 CMP Roger. Very good.
(GUMDROP)

03 05 02 51 CMP Houston, here comes a TM CAL.
(GUMDROP)

03 05 02 55 CC Apollo 9, this is Houston. Say again.

03 05 02 57 CMP Here comes a TM CAL.
(GUMDROP)

03 05 02 59 CC Okay. Thank you.

CARNARVON (REV 49)

03 05 30 27 CC Apollo 9, Houston.

03 05 30 31 LMP Roger. Houston, Apollo 9.

03 05 30 34 CC Roger. Rusty, got a message for you, if you're ready to copy.

03 05 30 41 LMP Roger. Stand by. Let me get a book.

03 05 30 43 CC Okay. It's just a message on the malfunction procedures. You don't need to copy.

03 05 30 49 LMP Okay. Go ahead.

03 05 30 51 CC Okay. The message is: we've reviewed the electrical emergency procedure that you and Al came up with prelaunch and IMS and the emergency procedure in the back of the rendezvous checklist. In the light of this review, we recommend that you do not use either of the procedures and use instead the existing malfunction procedures.

03 05 31 13 LMP On the electrical system?

03 05 31 14 CC Affirmative.

03 05 31 18 LMP Okay.

(GOSS NET 1)

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03 05 31 19 CDR Hello, Sonny. How are you?

03 05 31 21 CC Fine, Jimmy.

03 05 31 46 CC Apollo 9, Houston.

03 05 31 48 CMP Go ahead, Houston. Apollo 9.

03 05 31 50 CC Roger. I'm ready to copy the LM batteries, if you've got them there.

03 05 31 57 CMP Roger. BATT 1, 2, 3, and 4 all 31 volts; BATT 5 and 6 are 37; commander's and systems engineering bus is 31; ED BATT A was 36.5, and ED BATT B was 37.3.

03 05 32 22 CC Roger. Copy. BATT 1, 2, 3, and 4 were 31; BATT 5 and 6 were 37; CDR and SE bus is 31, ED BATT A 36.5 and ED BATT B 37.3.

03 05 32 38 CMP Roger.

03 05 32 43 CC If you are at that point yet, we can go ahead and copy the systems stuff from Gumdrop.

03 05 32 51 CMP I don't think we've generated that yet.

03 05 32 54 CC Okay-doke.

03 05 32 55 CMP ... the flight plan a little bit.

03 05 32 58 CC Roger.

03 05 33 02 CMP It's already 77:33 here, and according to our other scheme, we were going to be to bed in an hour or something like that. It looks like we're going to make it about time 79 hours, just like in the regular flight plan here.

03 05 33 21 CC Roger.

03 05 33 23 LMP ... early tomorrow.

03 05 33 25 CC Going to get up early tomorrow?

03 05 33 28 CMP Roger. Normally, we're supposed to get up over Ascension about 06:30. I recommend we get up over Guam at about 05:40.

03 05 33 38 CC Roger. I'll get the parents to get you up about 05:30 or 40.

(COSS NET 1)

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03 05 33 42 CMP Okay. Fine. We'll try to organize the spacecraft so we're in better shape tonight before we go to bed so we'll be able to get over there, but I don't want to stay up all night doing it either. So we'll just have to wait and see.

03 05 34 04 CC Roger. Understand. Are you going to stow away any of your stuff to put it in the LM for tomorrow?

03 05 34 09 CMP Roger. We're still putting the spacecraft back together; getting the drogue, the probe, and stuff like that in the tunnel and rearranging the other stuff.

03 05 34 30 CC Okay. Are you going to have a chance to get the spacecraft batteries and service module RCS read-outs for us?

03 05 34 35 CMP I'll get that for you in just a minute.

03 05 34 37 CC Okay-doke.

03 05 35 39 CC Apollo 9, Houston.

03 05 35 43 CDR Go ahead, Houston.

03 05 35 44 CC You can go AUTO on the heaters now and turn the fans off.

03 05 35 51 CDR Okay. AUTO on the heaters and turning the fans off.

03 05 35 54 CC Yes. On the H₂ tanks.

03 05 35 58 CDR Roger. H₂ heaters.

03 05 36 08 CC Roger. Apollo 9, Houston. We're going to lose you here for a minute, and we'll pick you up at Guam for the systems stuff. That'll be about 41.

03 05 36 15 CDR Okay. Fine.

GUAM (REV 49)

03 05 43 05 CC Apollo 9, Houston.

03 05 43 23 CC Apollo 9, Houston.

03 05 43 51 CC Apollo 9, Houston at Guam.

(GOSS NET 1)

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- 03 05 43 54 LMP Houston, Apollo 9. Go ahead.
- 03 05 43 56 CC Roger. Apollo 9, Houston. We've got a couple of questions to ask you about the LM IMU heater. Do you recall placing an IMU standby circuit breaker in?
- 03 05 44 11 LMP The IMU standby circuit breaker has never been out to my knowledge.
- 03 05 44 15 CC Roger. I also have a question on opening the translunar bus tie circuit breaker. Did you open those before you got out?
- 03 05 44 29 LMP I believe not. I believe they are closed.
- 03 05 44 38 CC Roger. We might have some word on that in a minute.
- 03 05 44 41 LMP Roger.
- 03 05 45 40 CC Apollo 9, Houston.
- 03 05 45 42 LMP Go ahead, Houston.
- 03 05 45 43 CC Roger, Rusty. The problem with IMU heater is that we're not seeing it cycling down here, and apparently with the translunar bus tie circuit breakers in, you get a ground return path, and they don't see the total load that's going into the LM. So, they are investigating a little further right now to see if they can discern some cycling on the IMU heater.
- 03 05 46 10 LMP Roger. Understand. When do you think we'll have some word?
- 03 05 46 14 CC We should have it here very shortly for you. In the meantime, we can copy that systems stuff if you have it ready, Dave.
- 03 05 46 20 LMP Dave is still closing out the tunnel; that's why we'd like to know. He's stopped work right now.
- 03 05 46 25 CC Roger. Understand.
- 03 05 46 27 LMP It's already all closed. I beg your pardon.
- 03 05 48 26 CC Apollo 9, Houston.
- 03 05 48 28 LMP Go ahead, Houston.

(GOSS NET 1)

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03 05 48 29 CC Roger. We're taking a look at all of the bus currents down here now, Rusty, and we won't have a good story for you until you get to Hawaii on whether the thing is okay for tonight or not.

03 05 48 40 LMP Okay.

03 05 48 46 CC The initial interpretation down here right now is that the IMU is cycling, and they are seeing some variations in the currents now. It looks initially like it's probably okay.

03 05 48 58 LMP Okay. Thank you.

HAWAII (REV 49)

03 05 56 12 LMP Houston, Apollo 9.

03 05 56 15 CC Apollo 9, Houston. Go.

03 05 56 19 CDR Okay. Ready to copy the systems readout?

03 05 56 23 CC Roger. Go.

03 05 56 26 CDR Okay. QUAD quantities A, B, C, D: 75, 77, 71, 72; BATT C, 37.0; pyro A and B, 37.1. Command module quad temperatures: all of them are OFF SCALE HIGH, except 6 Charlie, which is 4.6.

03 05 56 59 CC Roger. Copy. Quantities A, B, C, and D: 75, 77, 71, 72; BATT C, 37.0; pyro BATT A, 37.1; pyro BATT B, 37.1. And injector temperatures all OFF SCALE HIGH, except 6 Charlie, which is 4.6.

03 05 57 19 CDR Roger.

03 05 57 22 CC Apollo 9, Houston. We'd like for you to confirm that you're all in COMM basic on the audio centers.

03 05 57 42 LMP I can't tell what Dave is ...

03 05 57 55 LMP We have one man out - off the - in his altogether, if that's what you wonder.

03 05 57 59 CC Roger.

03 05 58 04 CC Roger. That answers that question. Like to talk for a minute about this IMU beater. Looks like

all the currents they are reading down here are about the same as they were reading last night. However, with the translunar bus ties closed, if there is anything else pulling current in the LM, it won't show up on their monitoring down here to the extent they can tell what's going on. So we're trying to come to a decision now on whether to recommend going back up in there and opening up those circuit breakers or not.

- 03 05 58 41 CDR Okay.
03 06 01 32 CC Apollo 9, Houston.
03 06 01 36 CDR Go ahead.
03 06 01 39 CC Roger, Apollo 9. We'd like to get some sort of feeling from you, how long you think it would throw you back in the cycle - your sleep cycle - to go back up in there and open the translunar bus ties. We're still working on the data down here, and we can't get any good answer probably until you get to the States. Maybe we could save some time if you just went ahead and did that.

GOLDSTONE (REV 49)

- 03 06 03 24 CDR Houston, Apollo 9.
03 06 03 26 CC Apollo 9, Houston.
03 06 03 29 CDR Roger. You called just as you had broke lock last time. What was it you called down?
03 06 03 34 CC Okay. We're discussing this LM on your heater problem, and they're still massaging the data down here to see whether we're okay for the night or not. In the meantime, we wanted to get a feeling from you as to how much that would cut into your sleep cycle if you just went ahead and got in the LM and pulled those circuit breakers. I think that the problem is that we really can't give you a good feeling for what you've got with those circuit breakers in. We don't know what other systems are powered up, and we don't have a good way of monitoring what's going on.

(GOSS NET 1)

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- 03 06 06 32 CDR Houston, Apollo 9.
- 03 06 06 36 CC Apollo 9, Houston. Go.
- 03 06 06 39 CDR Houston, do you read Apollo 9?
- 03 06 06 40 CC Roger. Read you loud and clear. We'll have an answer for you on these circuit breakers in just a minute, Apollo 9.
- 03 06 06 50 CDR Okay. Fine.
- 03 06 07 33 CC Apollo 9, Houston.
- 03 06 07 35 CMP Go ahead, Houston. Apollo 9.
- 03 06 07 37 CC Roger, Dave. How long would it take you to get back up there and pull those circuit breakers?
- 03 06 07 41 CDR It's going to take about 30 minutes to clear the tunnel and go back up there to pull the circuit breakers out and get back to here. That's if we go like mad.
- 03 06 07 48 CC Roger. Okay. The problem down here, Jim, is we don't know what else is on the line right now, and we don't have a good way of monitoring it, with those circuit breakers in. They're able to catch the IMU heater cycling, and most of the systems seem to be okay for the night. But we - There's an uncertainty as to what the configuration is and what's pulling the power at this point.
- 03 06 08 15 CDR I don't - What's the uncertainty about what the configuration is?
- 03 06 08 24 CDR Houston, I don't understand what the uncertainty is.
- 03 06 08 27 CC Roger. Apollo 9, Houston. Stand by one.
- 03 06 08 45 CC Apollo 9, Houston. The problem is that they're monitoring the command module loads, and they don't know whether the loads that they are reading are command module only or some LM loads which we don't know about at this time.
- 03 06 09 01 CDR Okay. I don't think there's any doubt that the IMU standby circuit breaker is in, if that's what they're wondering about.

(COSS NET 1)

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- 03 06 09 05 CC Yes. Roger. And --
- 03 06 09 11 CDR Tell you, if we're going to do it, we ought to get going on it and not keep talking about it all night.
- 03 06 09 15 CC Yes. That's firm. Let's do it. Stand by one, Apollo 9.
- 03 06 09 33 CC Apollo 9, the decision down in here is for you to go pull the circuit breakers.
- 03 06 09 40 CDR Okay. What are we going to do about the rendezvous tomorrow?
- 03 06 09 52 CC Apollo 9, Houston. I guess we need to know what you want to do about that. We can press along as planned, and it will mean you'll get a half an hour less sleep.
- 03 06 10 04 CDR Yes. Minus the other hour we subtracted from it.
- 03 06 10 07 CC Roger.
- 03 06 10 09 CDR Add all this up and see what it comes to.
- 03 06 10 16 CC Say again, please, Apollo 9.
- 03 06 10 18 CDR Roger. Let me add up sleep times that we're going to have before tomorrow and see what it comes to.
- 03 06 10 26 CC Roger. Copy.
- 03 06 10 28 CDR If we went to bed right now, we'd need 7 hours and 30 minutes. We're not going to be in bed for another hour and a half at least.
- 03 06 11 05 CC Apollo 9, Houston.
- 03 06 11 09 CDR Go ahead, Houston.
- 03 06 11 11 CC Roger. It looks like we can probably slip the rendezvous one rev tomorrow morning to make up for the sleep time. We might have some problems with communications and the sites that we have available, but we can work that out through the night.
- 03 06 11 26 CDR Well, I don't want to do that. We've got enough problems. If we have any problems during the

(GOSS NET 1)

Tape 50/10
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rendezvous, we're going to need that extra rev to recover from it.

03 06 11 33 CC Roger. Understand.

03 06 11 57 CDR Look. I don't want to change - I don't want to slip the site times of that rendezvous. We need all the COM4 link we can get on this thing, and we need to have that extra rev in there in case something goes wrong. Also, it's going to jeopardize the APS burn and depletion, too.

03 06 12 11 CC Roger. Understand.

03 06 12 13 CDR ... we can get this thing done.

03 06 12 16 CC Roger.

03 06 13 18 CT ...

03 06 13 23 SC Roger.

03 06 14 09 CT Spacecraft range and DCA in tune.

03 06 14 13 CDR Roger. Thank you.

TELAS (REV 50)

03 06 19 44 CC Apollo 9, Houston.

03 06 19 54 CDR Houston, Apollo 9.

03 06 19 56 CC Okay. Just a couple more things before we turn you loose for the night here, Jim. When you get the circuit breakers open in the LM, you can perform the system test to verify that everything is okay. And if you're ready to copy, I'll give that to you.

03 06 20 15 CDR We already had those circuit breakers open, Houston. What else do you want now?

03 06 20 19 CC Okay. Check system test meter on position 4 Delta, and you should read 0.5 for 26 seconds, then 2.0 for 5 seconds, and if that looks okay, why, we'll skip that one. The second thing is to remind you of the waste water dump down to 25 percent before you turn in for the night.

(GOSS NET 1)

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03 06 20 45 CDR Okay. Very good. And we've already checked
4 Delta, and it looks like it is operating prop-
erly.

03 06 20 49 CC Roger. And we'll see you in the morning.

03 06 20 52 CDR Okay. Adios.

03 06 20 53 CC Adios.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(COSS NET 1)

Tape 51/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 52/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 53/1
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HAWAII (REV 52)

- 03 10 44 09 CC Apollo 9, Houston.
- 03 10 44 28 CC Apollo 9, Houston.
- 03 10 44 39 CDR Houston, this is Apollo 9.
- 03 10 44 41 CC Roger. Apollo 9, Houston. Pressure in your H₂ tanks is dropping a little faster than we had anticipated. Sorry to disturb you, but we'd like you to go MANUAL heaters and fans until the pressure goes to 260, and go heaters AUTO and fans OFF so that you won't get a MASTER ALARM.
- 03 10 45 02 CDR Okay. You want us to go MANUAL heaters and fans on H₂ number 1 until it gets to 265 and go heaters MANUAL and fans OFF.
- 03 10 45 12 CC Roger. Go to 260, Jim, and then heaters to AUTO and fans to OFF, and that's H₂ tanks 1 and 2.
- 03 10 45 20 CDR Okay; fine.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 54/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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GUAM (REV 54)

03 13 40 24 CC Apollo 9, Houston. Good morning.
03 13 40 34 CMP Good morning.
03 13 40 36 CC A real short night.
03 13 40 56 CC 9, Houston. About 30 seconds to LOS. I'll pick you up at Mercury at 53, and I'll probably have some flight plan updates for you there.

MERCURY (REV 54)

03 13 54 37 CC Apollo 9, Houston through Mercury.
03 13 54 41 CMP Apollo 9. Go ahead.
03 13 54 44 CC Roger, Dave. On your H₂ tanks today: after you've completed the H₂ fan cycle, lock tank 1 heater in AUTO and tank 2 heater OFF.
03 13 55 05 CMP Okay. Tank 1 heater at AUTO and tank 2 heater OFF, and you want us to run through the cycle again, is that right?
03 13 55 10 CC Yes, that's after you've completed the fan cycle ON.
03 13 55 26 CMP Okay. What else do you have?
03 13 55 27 CC Okay. I have some flight plan updates here, and are you ready to copy?
03 13 55 31 CMP Roger. Let's go ahead.
03 13 55 32 CC Okay. Page rendezvous-1: transfer sequence camera that malfunctioned during EVA to LM; leave best camera in command module. Over.
03 13 56 01 CMP Roger. I understand. Transfer the malfunction sequence camera to LM and leave the good one in the command module.
03 13 56 07 CC Roger. Okay. And rendezvous-38, add: transfer the extra sequence camera fuse from LM to command module. Fuse is in LM data card kit.

(COSS NET 1)

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- 03 13 56 47 CMP Okay. Transfer the camera fuse from the LM to the command module in the LM data card kit.
- 03 13 56 54 CC Roger. And at time 104 plus 00, waste water dump.
- 03 13 57 06 CMP 104 plus 00, waste water dump.
- 03 13 57 09 CC Okay. And then you might note that the LM must be in high bit rate to update the AGS state vector from PGNCS.
- 03 13 57 36 CC And, 9, Houston.
- 03 13 57 39 CMP Roger. We hear; I guess we learned that one the other day.
- 03 13 57 42 CC Yes.
- 03 13 57 43 CMP I'm just making sure.
- 03 13 57 44 CC Okay; just making sure. And we've been talking it over down here and you have a GO to transfer to the LM without being connected to the command module umbilicals. That is, you can make the transfer with your helmets and gloves off, if you so desire. Might save a little time, there.
- 03 13 58 01 CMP Okay. Thank you. We'll do that.
- 03 13 58 03 CC Okay.
- 03 13 58 18 CC 9, Houston. We noticed the AUTO switchover to REG 2, and we'd like you to go back to number 1.
- 03 13 58 26 CMP Well, that's very observant of you. We will do that.
- 03 13 58 30 CC Okay.
- 03 13 58 34 CC And we're just about LOS. Ascension at 27. And you might be thinking about it - We can use the rundown on the crew health, sleep, and pills taken in the last couple of days, if you can give it to us there.
- 03 13 58 49 CDR Okay. Let me ask you a question with the radiators there. Do you think we have a problem, or what?
- 03 13 58 57 CC We don't know yet, at this time, but I don't think so.

(GOSS NET 1)

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03 13 59 01 CDR Okay. It's manually and - No, it's not a manual radiator operation, but the automatic switch is in RADIATOR 1 now. Okay.

03 13 59 08 CC Okay.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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ASCENSION (REV 55)

- 03 14 27 57 CC Apollo 9, Houston through Ascension. And I have a consumables update.
- 03 14 28 05 CMP Roger, Houston. Stand by.
- 03 14 28 08 CC Roger.
- 03 14 28 37 CMP Okay, Houston. Go with the consumables.
- 03 14 28 40 CC Roger. GET 086 70 21 69 27 72 29 67 29 450 36 37 34 39 100 97 26 0820 588. Over.
- 03 14 30 34 CC Apollo 9, Houston. Did you copy?
- 03 14 30 39 CMP Roger. I missed the third and fourth from the bottom. The percent RCS-B and descent pounds O₂.
- 03 14 30 48 CC Roger. Percent RCS systems B remaining 97; O₂ is 26.
- 03 14 31 02 CMP Roger. Coming back; are you ready?
- 03 14 31 04 CC Roger. Go fast.
- 03 14 31 07 CMP 086 70 21 69 27 72 29 67 29 450 36 37 34 39 100 97 26 0820 588.
- 03 14 31 29 CC 9, Houston. Your readback is correct. On that radiator flow control, we'd like to go back to AUTO now and see if it stays in 1.
- 03 14 31 43 CMP Okay. It did.
- 03 14 31 55 CMP Houston, 9. Do you read?
- 03 14 31 57 CC Affirmative. You say you went to AUTO?
- 03 14 32 00 CMP That's affirm, and we're still in 1.
- 03 14 32 02 CC Roger. We copy.
- 03 14 32 05 CC And, 9, Houston. Did you get my request there on the - your crew status when you get a chance?
- 03 14 32 12 CMP Roger.
- 03 14 32 18 CMP Okay. I myself feel fine. Been eating good - no pills and got about 5 hours sleep last night.

(GOSS NET 1)

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03 14 32 26 CC Roger.
03 14 33 00 CC Dave, I guess we missed the sleep here night before, also, if you can remember that.
03 14 33 40 CDR Houston, 9. Are you still with us?
03 14 33 41 CC 9, go. Roger.
03 14 33 42 CDR Okay. Night before last I got about 7 hours sleep, too.
03 14 33 50 CC Roger. Okay. I've got yours now.
03 14 33 53 CDR Okay. Did you get everybody?
03 14 33 54 CC Negative. I just got yours and that's all.
03 14 33 58 CDR Really? Okay. I guess I'll let Jim give you a run down on he and Rusty again.
03 14 34 04 CC Okay.
03 14 34 13 CC If you're talking, Jim, I'm not reading you.
03 14 34 17 CDR Are you reading us now, Houston?
03 14 34 18 CC I read you, Dave.
03 14 34 21 CDR Okay. Let me check my friends here.
03 14 34 31 CDR Houston, how do you read?
03 14 34 33 CC I got you now, Dave, - Jim; about 40 seconds to LOS. In Guam at 08.
03 14 34 40 CDR Okay. I took an Actifed and two APC before I went to bed last night and the night before. I got 7 hours sleep the night before last, and 5 hours last night. Rusty took the Seconal last night, nothing the night before, and he got 7 hours and 5 hours.
03 14 34 54 CC Okay. Thank you.

GUAM (REV 55)

03 15 09 18 CC Apollo 9, Houston through Guam.

(GOSS NET 1)

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- 03 15 09 27 CMP Roger, Houston, 9. Go.
- 03 15 09 30 CC Roger, Davey. Tell Rusty we've got another new set of GO/NO-GO limits for rendezvous radar check after RCS SEP. Do you want to copy them down?
- 03 15 09 46 CMP Okay. Stand by.
- 03 15 10 41 CC 9, Houston. While you're digging out books there, I've got some block data for you also.
- 03 15 10 45 CMP Okay. Give me the PAD's first.
- 03 15 10 49 CC Okay. On VERB 83 versus VERB 62, rendezvous radar check after RCS SEP: page 2 and LMP and CDR, rendezvous procedures; change limits R plus or minus 0.27 nautical miles; R dot plus or minus 6.0 feet per second. Over.
- 03 15 11 37 CMP Roger. Understand. VERB 83 versus VERB 62, rendezvous radar check: page 2 and LMP and CDR, rendezvous; change limits R plus or minus 0.27 nautical miles; R dot plus or minus 6.0 feet per second.
- 03 15 11 53 CC Roger. These are the ones we had before flight. We didn't get a chance to stick in your book there, so you can use your own ideas on them.
- 03 15 12 02 CMP Okay. Fine.
- 03 15 12 05 CMP What next?
- 03 15 12 06 CC Okay. I've got the block data, but before we go into that, it looks like your primary radiator outlet temperature was up to 51 degrees, so it was a valid switch to slow propulsion number 2. And we're still checking it to see what causes it, other than that.
- 03 15 12 26 CMP Okay. Fine. Looks like it's up to about 47 or so degrees now.
- 03 15 12 31 CC Okay.
- 03 15 12 33 CMP Thank you.
- 03 15 12 40 CMP Do you want a block data now?
- 03 15 12 41 CC Affirmative. If you're ready.

(GOSS NET 1)

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03 15 12 43 C/P Just a minute; give me 10 seconds.

03 15 13 00 C/P Okay, Ron. Go ahead.

03 15 13 02 CC Okay. Area 057 Alfa Charlie, plus 115, minus 0319 089 19 18 4094; 058 2 Alfa, plus 263, minus 0270 090 5537 4094; 059 Alfa Charlie, plus 322, minus 0279 092 29 25 4094; 060 1 Alfa, plus 294, minus 0629 093 55 38 4094; 061 1 Bravo, plus 335, minus 0629 095 29 25 4094; 062 1 Bravo, plus 327, minus 0625 097 0312 4094; 063 1 Alfa, plus 272, minus 0630 098 3715 4094. Pitch trim minus 1.07; yaw minus 1.12; and this reflects - no - I say again, no rendezvous maneuvers.

03 15 16 18 CC 9, Houston. About 20 seconds LOS; Huntsville at 17.

03 15 16 27 C/P Okay. I'll read them back to you when we get there. Okay?

03 15 16 31 CC Sure.

03 15 16 33 C/P I think I've got them all, and understand reflects no rendezvous maneuvers.

03 15 16 37 CC Roger.

HUNTSVILLE (REV 55)

03 15 20 59 CC Apollo 9, Houston over Huntsville.

03 15 21 14 CT Houston, Huntsville lost a valid lock temporarily.

03 15 22 20 CT Huntsville LOS.

03 15 23 09 CT Huntsville valid two-way.

03 15 23 36 CC Apollo 9, Houston. Looks like we got about one and a half minutes LOS; we'll pick you up at Mercury at 26.

03 15 23 46 IMP Roger. Mercury at 26, and you want me to read back some block data.

03 15 23 50 CC Roger. I can read you good enough. Go ahead. I'll get what I can.

(GOSS NET 1)

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03 15 23 54 LMP Okay. 57 Alfa Charlie, plus 115, minus 0319 089 19 18 0094; 058 2 Alfa, plus 263, minus 0270 090 55 37 0094; 054 1 Alfa Charlie, plus 322, minus 0279 092 29 25 0094; 060 1 Alfa, plus 294, minus 0629 093 55 38 4094.

03 15 24 54 CC Houston --

03 15 24 55 LMP Houston, are you still with us?

03 15 24 56 CC Roger. I got you right now, but we're just about to get you - about 30 seconds yet so - We'll catch the rest of them over Mercury.

03 15 25 32 CMP And I think we've lost you.

MERCURY (REV 55)

03 15 26 57 CC Apollo 9, Houston through Mercury.

03 15 27 00 LMP Roger, Houston. Where'd we dropout?

03 15 27 03 CC Okay. Start with area 61.

03 15 27 07 LMP Okay. 061 1 Bravo, plus 335, minus 0629 095 29 25 4094; 062 1 Bravo, plus 327, minus 0625 097 03 12 4094; 063 1 Alfa, plus 272, minus 0630 098 37 15 4094. Pitch trim minus 1.07; yaw trim minus 1.11; and no rendezvous maneuver.

03 15 27 56 CC Roger, Rusty. Your yaw trim there was minus 1.12, and this reflects no rendezvous maneuvers.

03 15 28 07 LMP I got you.

03 15 28 09 LMP Does that reflect the SEP burn at all?

03 15 28 13 CC That's negative.

03 15 28 16 LMP Negative on the set burn also. Right?

03 15 28 19 CC Yes. You're sounding pretty chipper this morning.

03 15 28 22 LMP Yes man, we is hustling.

03 15 28 25 CDR Houston, Apollo 9.

03 15 28 27 CC Houston. Go.

(GOSS NET 1)

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03 15 28 29 CDR Roger. If we can get into the LM a little early, I'd like to do it. Would you check to see what the descent battery power is right now, and see if we've got the margin to get in there a little early?

03 15 28 41 CC Roger. We'll check it, and let you know.

03 15 29 23 CC Apollo 9, Houston. Roger. There's no problem on descent batteries.

03 15 29 28 CDR Okay. Thank you.

03 15 29 57 CC Apollo 9, Houston. About 30 seconds LOS. We'll pick you up Ascension at 02 - 03.

03 15 33 04 CDR Roger.

03 15 33 42 CMP Okay.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 57/1
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ASCENSION (REV 56)

03 16 03 30 CC Apollo 9, Houston through Ascension. Standing by.

03 16 03 36 CMP (GUMDROP) Roger. Houston, Gumdrop.

03 16 03 40 CC Roger.

03 16 05 48 CC Apollo 9, Houston.

03 16 05 52 CMP (GUMDROP) Go ahead, Houston.

03 16 05 53 CC Lousy COMM here. About 45 seconds to AOS Guam at 44 ...

03 16 06 01 IMP (SPIDER) Okay. Thank you ...

GUAM (REV 56)

03 16 45 22 CC Apollo 9, Houston through Guam. Standing by.

03 16 45 26 CMP (GUMDROP) Roger. Houston, Apollo 9.

03 16 45 28 CC Roger. Loud and clear.

03 16 45 33 CMP (GUMDROP) Houston, how do you feel about the Gumdrop today putting the evap secondary water flow control to AUTO?

03 16 45 41 CC Roger. We copy. Stand by.

03 16 45 49 IMP (SPIDER) Houston, Apollo 9.

03 16 45 52 CC Houston. Go.

03 16 45 54 IMP (SPIDER) Roger. In case you wonder where we are, we're on page 10, rendezvous 10 of the checklist. It looks like we're running about an hour ahead of schedule.

03 16 46 03 CC Roger. That's good.

(GOSS MET 1)

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03 16 46 24 CC Spider, Houston. High bit rate.
03 16 47 21 CC 9, Houston.
03 16 47 23 CMP Go ahead.
(GUMDROP)
03 16 47 28 CC Apollo 9, Houston.
03 16 49 30 CMP Go ahead, Houston. Apollo 9.
(GUMDROP)
03 16 49 32 CC Roger. We concur with the evap water control
to AUTO for Gumirop.
03 16 49 38 CMP Okay. Did you concur?
(GUMDROP)
03 16 49 40 CC Affirmative.
03 16 49 41 CMP Okay. Thank you.
(GUMDROP)
03 16 50 20 CC Spider and Gumirop. Thirty seconds LOS.
Huntsville at 52, and low bit rate for Spider.

HUNTSVILLE (REV 56)

03 16 51 38 IMP Why don't we go back and try B?
(SPIDER)
03 16 51 40 CMP Okay. Go B.
(GUMDROP)
03 16 51 45 CDR Five-square on B.
(SPIDER)
03 16 51 49 CMP Okay.
(GUMDROP)
03 16 51 53 CDR Now I don't read you.
(SPIDER)
03 16 52 77 CMP Rusty, did you check all the plugs and stuff?
(GUMDROP) Why don't you unplug and replug?
03 16 52 09 IMP Okay.
(SPIDER)

(GOSS NET 1)

Tape 57/3
Page 354

- 03 16 52 20 LMP Hang on.
(SPIDER)
- 03 16 52 21 CMP Try it anyway.
(GUMDROP)
- 03 16 52 57 CMP Loud and clear.
(GUMDROP)
- 03 16 53 01 CDR Hey, try mine too, will you?
(SPIDER)
- 03 16 53 14 CDR Okay.
(SPIDER)
- 03 16 53 16 CDR Okay, we can configure both the radio's over here.
(SPIDER)
- 03 16 54 02 CMP Loud and clear.
(GUMDROP)
- 03 16 54 06 LMP How now?
(SPIDER)
- 03 16 54 08 CMP Loud and clear.
(GUMDROP)
- 03 16 54 09 LMP Okay. It looks like yours works, Jim.
(SPIDER)
- 03 16 54 13 CMP Well, I'll be a son of a gun. I wonder what makes something like that fail?
(GUMDROP)
- 03 16 54 18 CMP I don't know. It's weird, isn't it?
(GUMDROP)
- 03 16 54 19 LMP Maybe ... to adjust it.
(SPIDER)
- 03 16 54 22 LMP Let's get back on the VOX.
(SPIDER)
- 03 16 54 23 CMP Okay.
(GUMDROP)
- 03 16 54 27 LMP Going off the air. Need another minute.
(SPIDER)
- 03 16 54 28 CMP Roger.
(GUMDROP)

(GOSS NET 1)

Tape 57/4
Page 355

- 03 16 54 33 CC Apollo 9, Houston through Huntsville. We copied there, but we don't know what you're having trouble with.
- 03 16 54 39 CMP (GUMDROP) Okay, Houston, this is Apollo 9. Apparently both the push to talk buttons on the LMP side of the LM have failed. The one on the cable and also the one on the hand control failed and the only mode of transmission that he had was VOX.
- 03 16 54 58 CC Roger. We'll copy. We'll see if we can't do some troubleshooting for you.
- 03 16 55 04 CDR (SPIDER) Okay. We checked out the CDR's side and it seems to work okay.
- 03 16 55 10 CC Roger. Copy, Spider.
- 03 16 55 36 CMP (GUMDROP) Reading you loud and clear.
- 03 16 55 51 CMP (GUMDROP) Roger. Stand by on A. I'll try the other antenna here for you.
- 03 16 55 55 CMP (GUMDROP) Okay. How do you read now?
- 03 16 55 58 CC Five-square.
- 03 16 56 08 CMP (GUMDROP) Okay.
- 03 16 56 10 IMP (SPIDER) I'm on the right.
- 03 16 57 16 CC Apollo 9, Houston. One minute to LOS. Mercury at 00.
- 03 16 57 20 CMP (GUMDROP) Roger.
- 03 16 57 29 IMP (SPIDER) It appears that the intercom has ... triggered, and yet the tape recorder does not go off. It looks like there's something funny there, too. I'm sorry; I am on VOX, and on VOX the intercom button should not be triggered except when I'm talking and yet the tape recorder does not go off.

(GOSS NET 1)

Tape 57/5
Page 356

03 16 57 58	CMP (GUMDROP)	Okay.
03 16 58 06	IMP (SPIDER)	Okay. The tape has gone off now.
03 16 58 19	CMP (GUMDROP)	Roger. Data.
03 16 58 25	CMP (GUMDROP)	Roger. Received your telemetry well.
03 16 58 30	IMP (SPIDER)	... VOX sensitivity set.

MERCURY (REV 56)

03 16 59 57	CMP (GUMDROP)	... mess around ...
03 17 00 16	IMP (SPIDER)	Okay. I guess I might as well leave all that aside.
03 17 00 19	CMP (GUMDROP)	Okay. Just a minute.
03 17 00 39	CC	Apollo 9, Houston through Mercury. Standing by for POC in ACCEPT.
03 17 00 44	CMP (GUMDROP)	Roger. You have POC - ACCEPT.
03 17 00 48	IMP (SPIDER)	And Spider is on also, Houston.
03 17 00 52	CC	Roger. Got you, Spider.
03 17 02 03	IMP (SPIDER)	Houston, Spider.
03 17 02 05	CC	Spider, Houston. Go.
03 17 02 06	IMP (SPIDER)	Roger. For your information the commander is - OCS is 5600 psi. I'm checking them out right now, so I'll read you the stuff.
03 17 02 17	CC	Okay. Go.
03 17 02 51	CC	Spider, Houston.

(GOSS NET 1)

Tape 57/6
Page 357

03 17 02 54 LMP (SPIDER) Roger. Go ahead.

03 17 02 55 CC Roger. We'd like your CSM to LM power transfer time.

03 17 03 03 LMP (SPIDER) Roger. I think Gumdrop can probably give that to you a little bit better.

03 17 03 14 CC Roger.

03 17 03 16 LMP (SPIDER) An hour ahead, Houston. That's pretty good; that's within 5 minutes.

03 17 03 20 CC Okay. We'll take that.

03 17 03 22 CMP (GUMDROP) That's a good number.

03 17 03 28 CC And I have your rendezvous PADS down there for the Spider and Gumdrop, if you're ready to copy.

03 17 03 36 CMP (GUMDROP) Gumdrop's got to stand by.

03 17 03 38 CDR (SPIDER) What is it you want to give us, Houston?

03 17 03 41 CC Your rendezvous PAD for your DAP data load.

03 17 03 54 LMP (SPIDER) Stand by. Spider too. Gumdrop, let me know when you're ready.

03 17 03 58 CMT (GUMDROP) Okay.

03 17 04 45 LMP (SPIDER) Okay. Spider is ready to copy anything you've got there, Houston.

03 17 04 53 CC Okay, Spider ready. Gumdrop, are you ready?

03 17 05 08 CMP (GUMDROP) Houston, before we start on this ... is ... that you're going to give us?

03 17 05 13 CC Roger. This is your rendezvous PAD for your DAP data loads, CSM weight, and trim angles.

03 17 05 24 CMP (GUMDROP) Okay. Gumdrop's ready.

(GOSS NET 1)

Tape 57/7
Page 358

- 03 17 05 29 CC Roger. I'll go. CSM weight: 27 009; LM weight: 22 145; for Spider, GDA drive angles R1: pitch, 00428; roll, 00730; CSM trim angles: pitch, minus 1.00; yaw, minus 1.10; DELTA-V_C, 16.1. Over.
- 03 17 06 18 CC That's - I'm sorry, that's SPS tail-off instead of DELTA-V_C.
- 03 17 06 24 CMP (GUMDROP) And, Houston, would you repeat the CSM weight, please?
- 03 17 06 27 CC CSM weight: 27 009.
- 03 17 06 34 CDR (SPIDER) Okay. Readback on the LM weight.
- 03 17 06 35 CC Let's --
- 03 17 06 36 LMP (SPIDER) LM weight: 22 145; CSM weight: 27 009; Spider trim angles are plus 00428, 00730.
- 03 17 06 55 CC Houston. Roger.
- 03 17 06 56 CMP (GUMDROP) And for the Gumdrop, I have pitch trim of minus 1.00, yaw trim of minus 1.10, DELTA-V tail-off at 16.1.
- 03 17 07 07 CC Roger. Spider, you might make sure your LMP audio control switch is in NORMAL.
- 03 17 07 15 LMP (SPIDER) Did you get that, Gumdrop?
- 03 17 07 17 CMP (GUMDROP) Negative. He faded on me, too.
- 03 17 07 19 LMP (SPIDER) Okay.
- 03 17 07 49 CC Spider, Houston. Low bit rate.
- END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 58/1
Page 359

CANARY (REV 57)

- 03 17 40 38 CC Spider/Gumdrop, this is Houston through Canaries.
- 03 17 40 42 LMP (SPIDER) Go, Houston. This is Spider. Reading you loud and clear.
- 03 17 40 44 CMP (GUMDROP) Gumdrop.
- 03 17 40 48 CC Roger. I copy both you and Gumdrop. We want to update your Y-PIPA and, since we've got the REFSMMAT in there, we'll just have to punch it in manually. Do you want me to give you the address or do you want us to do it?
- 03 17 41 03 CMP (GUMDROP) Roger. I'm up in the tunnel; why don't you all do it? Okay?
- 03 17 41 09 CC Say again, Gumdrop.
- 03 17 41 11 CMP (GUMDROP) Roger. I said, I'm up in the tunnel. Why don't you all go ahead and do it?
- 03 17 41 15 CC I think that's a sterling idea. We'll --
- 03 17 41 28 CMP (GUMDROP) You've got P00 in ACCEPT?
- 03 17 41 30 CC Roger. Thank you, Gumdrop.
- 03 17 42 39 CMP (GUMDROP) Houston, Gumdrop.
- 03 17 42 40 CC Go, Gumdrop.
- 03 17 42 42 CMP (GUMDROP) Spider's calling you.
- 03 17 42 45 CC Spider, this is Houston. Say again. I'm not reading you at all.
- 03 17 42 50 CDR (SPIDER) Do you read now?
- 03 17 42 51 CC Roger. I'm reading you loud and clear now, Jim.
- 03 17 42 54 CDR (SPIDER) Okay. I'd like to report that the heater indicator on my OPS does not come on. I'm planning on using Rusty's if we have to make a contingency

(GOSS NET 1)

Tape 58/2
Page 360

transfer. We just got an AGS caution and warning light on. I don't know how long it's been up there. I just got suited up and turned around here.

03 17 43 14

CC

Roger, Spider. I copy both those and we see the AGS warning light. We'll give you some words on it.

03 17 43 22

CDR
(SPIDER)

Okay. Roger, Stu. The AGS light did not light off a MASTER ALARM except when I turn the AGS on. My guess is that the AGS light came on and stayed on when I activated the AGS, but there's no way I can be sure of that.

03 17 43 42

CC

Roger, Spider. Copy.

03 17 43 51

CDR
(SPIDER)

For your information, Houston, we're doing the pressure integrity check. We're just starting the pressure integrity check right now.

03 17 43 59

CC

Roger, Spider. Copy.

MADRID (REV 57)

03 17 44 52

CC

Gumdrop, this is Houston. We're through with the uplink. Your Y-PIPA has been updated and the computer is yours.

03 17 45 00

CMP
(GUMDROP)

Roger. Thank you.

03 17 47 28

CC

Spider/ Gumdrop. Bring up your S-band for Madrid.

03 17 48 03

CC

Gumdrop, this is Houston. Do you read?

03 17 48 40

CC

Spider, Houston. If you read, Rusty, check your suit isolation valve. We're showing it disconnected.

MERCURY (REV 57)

03 18 35 39

LMP
(SPIDER)

Hey, Gumdrop. Attitude ... hold is no longer required and any time you get a chance get an 0620 and --

(GOSS NET 1)

Tape 58/3
Page 361

03 18 35 50 CMP Roger. 3, 2, 1.
(GUMDROP)

03 18 35 52 CMP MARK.
(GUMDROP)

03 18 35 53 LMP Give us another 3, 2, 1, Mark.
(SPIDER)

03 18 35 56 CMP 3 ...
(GUMDROP)

03 18 36 00 LMP Okay. Now give us another readout.
(SPIDER)

03 18 36 02 CMP Okay. 14735, 28980, 34653.
(GUMDROP)

03 18 36 15 LMP Let me see if I got those. 14735, 28980, 34653.
(SPIDER)

03 18 36 24 CMP That's corr'ct.
(GUMDROP)

03 18 36 26 LMP Okay. Thank you.
(SPIDER)

03 18 36 27 CMP Roger.
(GUMDROP)

03 18 36 29 CC And, Spider and Gumdrop, this is Houston through
the Mercury. Have you about 4 minutes, and I
copied the CSM angles.

03 18 36 36 LMP Okay. Are you ready for the LM angles?
(SPIDER)

03 18 36 38 CC Go ahead.

03 18 36 41 SC I'm going into the high bit rate for you first.
LM angle: 15476, 01907, 01305.

03 18 36 55 CC Roger. I'll read those back in just a second.
We'd like to have a E memory dump. We're stand-
ing by any time on your Mark.

03 18 37 02 CDR Okay. Stand by just one. Let us finish up the
(SPIDER) dock alignment procedure, and we'll be right
with you.

() (GOSS NET 1)

Tape 58/4
Page 362

03 18 37 07 CC Okay. Reading back your angles: CSM, 14735,
28980, 34653. The LM: 15476, 01907, 01305.

03 18 37 27 CDR (SPIDER) That's Charlie.

03 18 37 29 CC Okay. We'll go to work on some angles.

03 18 37 33 CMP (GUMDROP) Houston, Gumdrop.

03 18 37 34 CC Go, Gumdrop.

03 18 37 36 CMP (GUMDROP) Have my gyro torqueing angles if you're ready.

03 18 37 39 CC I'm ready.

03 18 37 41 CMP (GUMDROP) Roger. GET: 90 31 30, plus 01 097, minus 00
363, plus 00 193.

03 18 38 01 CC Roger, Gumdrop. I copy.

03 18 38 04 CMP (GUMDROP) Roger.

03 18 38 20 CMP (GUMDROP) Okay. Here we come with the E memory dump, if
you're ready, Houston.

03 18 38 24 CC We're rocking on ready. Go ahead.

03 18 38 27 CMP (GUMDROP) Roger. 3, 2, 1.

03 18 38 30 CMP (GUMDROP) MARK.

03 18 38 31 CMP (GUMDROP) E memory dump.

03 18 39 28 LMP (SPIDER) Houston, Spider.

03 18 39 30 CC Go ahead, Spider.

03 18 39 32 LMP (SPIDER) Roger. I just noticed that we don't have R and
D instrumentation B closed - or we did not have it
closed for that E memory dump. Do you want to
re-do that?

() (GOSS NET 1)

Tape 58/5
Page 363

- 03 18 39 43 CC We'd like to have the E memory dump again. We had a drop out of telemetry, and stand by.
- 03 18 39 52 CC Disregard the circuit breaker; let us have the E memory dump.
- 03 18 39 57 LMP (SPIDER) Okay. I understand. Negative on the R and D B, and another E memory dump. 3, 2 ...
- 03 18 40 08 CC Okay. Spider this is Houston. We're not going to get it here. We'll see you over Antigua at about 03, and Spider, give us low bit rate if you read.
- 03 18 40 23 LMP (SPIDER) Low bit rate.
- 03 18 40 25 CDR (SPIDER) Yes. We should have DSI VHF B on over Antigua.
- 03 18 40 31 CC That's affirmative, Spider. And Gumdrop, this is Houston. If you still read me, we didn't give you a NAV check up, but we pulled a vector compare; it's real good. We're going to disregard it.
- 03 18 40 45 CMP (GUMDROP) Gumdrop. Roger. Understand.
- 03 18 40 52 CC Gumdrop, Houston. We'd recommend AC roll.
- ANTIGUA (REV 58)
- 03 19 03 38 CC Hello. Spider/Gumdrop, Houston through Antigua. Do you read?
- 03 19 03 45 CMP (GUMDROP) Gumdrop, five-square.
- 03 19 03 48 CC Roger, Gumdrop. Do I have Spider with me? And as soon as we get data here, we're going to have that E memory dump again, Spider.
- 03 19 03 58 CMP (GUMDROP) Spider, Gumdrop. Houston's on the line, and they say as soon as they get data they're going to do the E memory dump again.
- 03 19 04 04 LMP (SPIDER) Roger. We're ready.

(GOSS NET 1)

Tape 58/6
Page 364

03 19 04 07 CDR Okay, Spider. Do you read Houston?
(GURDROP)
03 19 04 10 LMP Roger, Houston. Read you now.
(SPIDER)
03 19 04 12 CC Okay. While we're waiting on that E memory dump,
let me give you torqueing angles.
03 19 04 17 LMP Roger. Ready to copy.
(SPIDER)
03 19 04 19 CC Roger. Torqueing angles: minus 00370, minus
00790, minus 00310.
03 19 04 34 LMP Roger. Readback: minus 00370, minus 00790,
(SPIDER) minus 00310.
03 19 04 45 CC Roger. Copy. And we'd like to have high bit
rate.
03 19 04 50 LMP Roger. High bit rate.
(SPIDER)
03 19 05 04 CDR Houston, did you ever find out anything about
(SPIDER) that AGS warning light yet?
03 19 05 08 CC Roger. We're working on that, and we'll probably
have a procedure for you that might solve the
problem - probably to turn it off and back on again,
but we'll pass you the details later.
03 19 05 22 CDR Okay.
(SPIDER)
03 19 05 35 CDR ... VERB 42.
END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 59/1
Page 365

ANTIGUA (REV 58)

- 03 19 05 31 CDR Okay.
(SPIDER)
- 03 19 05 44 CMP VERB 42.
(GUARDROP)
- 03 19 06 18 CDR Houston, say again.
(SPIDER)
- 03 19 06 23 CC Spider, this is Houston. We are getting CSM data; we are getting no data from you. You might check the switches, please.
- 03 19 06 34 CDR Roger. Everything's checked out. We're in telemetry HIGH.
(SPIDER)
- 03 19 06 42 CDR And Houston, RD instrumentation B circuit breaker coming in now.
(SPIDER)
- 03 19 06 43 CC Okay. Thank you.
- 03 19 06 52 CC Okay. We've got our data. Spider, we're ready for a memory dump on your Mark.
- 03 19 06 57 CDR Roger. 3, 2, 1.
(SPIDER)
- 03 19 07 00 CDR MARK.
(SPIDER)
- 03 19 07 06 CDR And, Houston, be advised that once again our supercritical ...
(SPIDER)
- 03 19 07 14 CC I'm sorry, Jim; I couldn't read that. Say again.
- 03 19 07 13 CDR Roger. Supercritical pressure gage does not seem to be working for the descent propulsion system.
(SPIDER)
- 03 19 07 26 CC Roger. Copy.
- 03 19 07 34 CC And, Spider, we're reading 794 on the SUPERCRIT.
- 03 19 07 39 CDR Okay.
(SPIDER)
- 03 19 07 54 CC Okay. Spider, Houston. The dump is complete. We're ready to uplink your state vector REFSMMAT.
(SPIDER)

(COSS NET 1)

Tape 59/2
Page 366

03 19 08 01 LMP Roger.
(SPIDER)
03 19 08 04 LMP Okay. Go ahead.
(SPIDER)
03 19 08 06 CC Okay. It's on its way.
03 19 08 47 LMP Houston, Spider. We're ready to copy the NAV
(SPIDER) check if you've got that.
03 19 08 50 CC Roger.
03 19 08 54 CC Reading the NAV check: 092 0000, minus 2799,
plus 14631 1245.
03 19 09 30 CC Spider, Houston. Did you copy the NAV check?
03 19 09 41 CC Spider, this is Houston. Try me again.
03 19 09 47 LMP Okay, Houston. Spider's back on with you now.
(SPIDER) I got the time and that's all.
03 19 09 53 CC Roger. Reading: you have the time, minus 2799,
plus 14631 1245.
03 19 10 23 CC Gumdrop, do you read Houston?
03 19 10 32 CMP Spider, Gumdrop. Houston's breaking up on me, too.
(GUMDROP)
03 19 10 34 LMP Okay.
(SPIDER)
03 19 10 37 CC Okay, Spider. I've got you now. Try your read-
back.
03 19 10 41 LMP Okay. I didn't get it; you're breaking up pretty
(SPIDER) badly, Houston. I get minus 027 and you broke up,
so say again all after, please.
03 19 10 53 CC Okay. Starting with the time: 092 0000, minus
2799, plus 14631 1245.
03 19 11 15 LMP Roger. 92 0000, minus 2799, plus 14631 1245.
(SPIDER)
03 19 11 26 CC That's affirmative, Spider. Houston confirms the
update.
03 19 12 24 CC Okay. Spider/Gumdrop, I've probably got you
solid now. How do you read me?

(GOSS MET 1)

Tape 59/3
Page 367

03 19 12 30 LMP Better now, Houston. You're better.
(SPIDER)

03 19 12 34 CMP Almost five-by.
(GUMDROP)

03 19 12 35 CC Very good.

03 19 13 09 CC Okay. Spider, this is Houston. We've got the state vector in, we have VERB 66ed it, and we're going to hand over here within a few seconds, and then we'll put in the REPSMMAT.

03 19 13 21 LMP Okay. Roger.
(SPIDER)

03 19 14 04 CMP Spider, Gumdrop. I have a good transfer now.
(GUMDROP)

03 19 14 08 LMP Very good. In just a couple minutes we're going to find out if we have a good radar.
(SPIDER)

03 19 14 54 LMP Okay, Houston. Let us know when you're ready for the gimbal drive and throttle.
(SPIDER)

03 19 15 00 CC Okay, Spider. The computer is yours. We are ready for your gimbal drive and throttle checks. Press ahead.

03 19 15 06 LMP Roger. It works.
(SPIDER)

03 19 15 40 LMP Okay. Houston, I'm going to start the drive now.
(SPIDER)

03 19 15 43 CC Roger. Go ahead, Spider; we're ready.

03 19 15 47 LMP Roger. It's going.
(SPIDER)

03 19 15 54 LMP Okay. Are you ready for the throttle check?
(SPIDER)

03 19 15 57 CC That's affirmative, Spider. Go ahead.

03 19 15 59 LMP Roger. LMP throttle is MINIMUM, coming up to the soft stop; soft stop is 53 percent; STP is OFF SCALE HIGH, DEARCPA light back down to the soft stop to idle.
(SPIDER)

(GOSS NET 1)

Tape 59/4
Page 368

03 19 16 22 CC Roger, Spider. We copied. Go ahead.

03 19 16 25 LMP (SPIDER) Okay. Here comes the commander's throttle.

03 19 16 28 CC Okay. Press ahead, Jim; the LMP's throttle looked good.

03 19 16 33 LMP (SPIDER) We're up to soft stop, full throttle, back down to detent.

03 19 16 48 CC Roger. It looked good. Let's press, and this time both vehicles can bring up their S-band.

03 19 16 54 LMP (SPIDER) Roger.

03 19 17 42 CC Spider, this is Houston. You're GO on your gimbals and the throttle checks. We're standing by for the hot fire.

03 19 17 49 LMP (SPIDER) Roger. In work. Okay, Gumdrop. We're going to be doing our hot fire check here.

03 19 17 57 CMP (GUMDROP) Roger. Going to three.

03 19 17 59 LMP (SPIDER) Here comes the first ...

03 19 18 41 CC Roger. You're very weak but we're getting good data. Press ahead, Spider.

03 19 18 58 LMP (SPIDER) Okay, complete.

03 19 19 11 LMP (SPIDER) Okay, we're going to do the hard over check now.

03 19 19 15 CC Okay, Spider. We're getting data.

03 19 19 30 LMP (SPIDER) Complete.

MADRID (REV 58)

03 19 19 44 CC Okay, Gumdrop. If - Can you read me?

03 19 19 49 LMP (SPIDER) Here we go with the other hot mode.

(GOSS NET 1)

Tape 59/5
Page 369

03 19 19 51 CMP Roger.
(GUMDROP)

03 19 19 52 CC Okay. Spider's very weak. His data is good, however. Let me - And I'd like to remind you that B-3 is still ENABLED.

03 19 20 01 CMP Roger.
(GUMDROP)

03 19 20 04 CMP Spider, Gumdrop. They say you're still good.
(GUMDROP)

03 19 20 08 IMP Roger. We read them, and we're going to start the PGNCS checks here in just a minute. We just did the AGS translation control check.
(SPIDER)

03 19 20 16 CC Roger. Now you're loud and clear, Spider. We're working through Madrid now.

03 19 20 22 IMP Okay. Here comes the PGNCS and TTCA's.
(SPIDER)

03 19 20 26 CC Okay.

03 19 20 40 IMP It's complete.
(SPIDER)

03 19 20 46 CC Roger, Spider.

03 19 21 16 IMP Houston, how do you read Spider?
(SPIDER)

03 19 21 18 CC You're loud and clear, Spider.

03 19 21 19 IMP Okay.
(SPIDER)

03 19 21 20 IMP What's the trouble with COMM here?
(SPIDER)

03 19 21 22 CC I don't know. You got real weak on me, but good data across on you there.

03 19 21 30 CC And then it came in good when we handed off to Madrid.

03 19 21 43 CC Okay. And we're probably going to lose Madrid shortly, and we'll see you over Carnarvon at 51. The first look at your checks look real good, Spider.

(GOSS NET 1)

Tape 59/6
Page 370

03 19 21 52 CMP Okay, Houston. Say again the time.
(GUMDROP)
03 19 21 55 CC Roger. We'll see you at Carnarvon about 51.
03 19 21 57 CMP Roger. Carnarvon 51, and Spider, he said your
(GUMDROP) tests look real good.
03 19 22 02 CC And Spider, give me low bit rate.
03 19 22 04 CDR Okay. Low bit rate.
(SPIDER)
03 19 22 09 CC And we just about used it up that time, troops.
03 19 22 11 LMP Yes, I sure would appreciate it if we had better
(SPIDER) COMM.
03 19 22 16 CC So would I.
03 19 22 24 CC Gumdrop, this is Houston. Did you get a C and
W right at the end there?
03 19 22 29 CMP Negative.
(GUMDROP)
03 19 22 31 CC Okay. Thank you.
03 19 22 32 CMP Should I have?
(GUMDROP)
03 19 22 35 CC No. No; the H₂ heater cycle D and we are curious
whether you got it or not.
03 19 22 42 CMP Okay.
(GUMDROP)

CARNARVON (REV 58)

03 19 49 21 LMP ... time ... breakdown.
(SPIDER)
03 19 49 24 LMP Okay.
(SPIDER)
03 19 49 31 LMP CAL is complete there, chiefs.
(SPIDER)
03 19 49 37 CDR Okay.
(SPIDER)

(CGSS MET 1)

Tape 59/7
Page 371

- 03 19 49 38 CC Spider/Gumdrop, Houston through Carnarvon.
Standing by.
- 03 19 49 41 CMP Okay. You're on the air all the time.
(GUMDROP)
- (GUMDROP)
- 03 19 49 44 LMP Yes; I notice that now. Thank you.
(SPIDER)
- 03 19 49 45 LMP I think I use my VOX, and I forget to switch once
(SPIDER) and a while, so if it sounds like we're chatting
here, let us know during the rendezvous.
- 03 19 49 52 CMP Alrighty.
(GUMDROP)
- 03 19 49 55 LMP We're close enough now; we don't need a mike.
(SPIDER)
- 03 19 50 00 CC Gumdrop/Spider, this is Houston through Carnarvon.
Standing by.
- 03 19 50 06 CDR Roger, Houston. This is Spider, here. We just
(SPIDER) finished our landing radar test. We got the
rendezvous radar test one time and it looks
pretty good. We could do it again for you if
you like. We're getting the AGS CAL data for
you right now.
- 03 19 50 18 CC Roger. Understand. And we'd like to have high
bit rate, and leave it on from now on.
- 03 19 50 24 CDR Okay. High bit rate from now on.
(SPIDER)
- 03 19 50 29 LMP How about that R and D B. You want that on from
(SPIDER) now on?
- 03 19 59 33 CC That's affirmative, Spider.
- 03 19 59 36 CDR Okay?
(SPIDER)
- 03 19 59 38 LMP Okay, Houston. If you don't have any higher
(SPIDER) priority here, I got the AGS CAL data.
- 03 19 59 44 CC That's number 1 on our list, Spider. Go.
- 03 19 59 47 LMP Okay. Before the CAL, the bias were, respectively,
(SPIDER) 00 and minus all 7's.

(GOSS NET 1)

Tape 59/8
Page 372

03 19 50 58 CC All right. Copy.

03 19 51 00 IMP (SPIDER) The drift coefficient for plus 407, plus 30, is 28 and plus all zeros.

03 19 51 11 CC Okay. Copy.

03 19 51 13 IMP (SPIDER) The CAL: The bias coefficients were plus 0, plus 0's, plus 0's, minus all 7's.

03 19 51 21 CC Copy.

03 19 51 24 IMP (SPIDER) The coefficient for plus 0019, plus 0013, and 00001.

03 19 51 37 CC Roger. I copy those, Spider. Thank you very much.

03 19 51 42 IMP (SPIDER) Okay. And I've got a question for you.

03 19 51 44 CC Go ahead.

03 19 51 45 IMP (SPIDER) Here we notice in updating the AGS that the computer activity light was on for a very long while. I wonder if maybe you updated our state vector more than a rev ahead, and then by doing a VERB 47 we intergrated it backward too far. I wonder if you could have someone look at that.

03 19 52 09 IMP (SPIDER) Did you get that one?

03 19 52 10 CC We copy, Spider. Stand by.

03 19 52 13 IMP (SPIDER) Okay. It's just a question of whether VERB 47 hurts us, when we do that.

03 19 52 18 CC Roger. We can verify our state vector was not - was not more than a rev ahead, and we'll - We copied your question on the VERB 47.

03 19 52 28 IMP (SPIDER) Okay. As long as it was not more than a rev ahead when you updated us, there should be no sweat.

03 19 52 34 CC Roger. Copy.

03 19 52 38 CMP (GUMDROP) Houston, Gumdrop.

(GOSS MET 1)

Tape 59/9
Page 373

- 03 19 52 40 CC Go, Gumdrop.
- 03 19 52 42 CMP (GUMDROP) My fuel cell 2 condenser exhaust temperature is a tad high. What's it look like to you?
- 03 19 52 47 CC Roger, Gumdrop. We've been checking that. It is running a little high. We think it's going to hold okay through the rendezvous.
- 03 19 52 56 CMP (GUMDROP) Okay; fine. It hasn't changed much during the last 30 minutes. I just thought I'd make sure of it.
- 03 19 53 01 CC Roger. It's been cycling with the night/day cycle. We even think it's slave to the radiator.
- 03 19 53 09 CMP (GUMDROP) Okay.
- 03 19 53 11 LMP (SPIDER) Houston, this is Spider. Do you want either the landing radar or the rendezvous radar self-test performed again over the site?
- 03 19 53 18 CC That's a negative, Spider.
- 03 19 53 21 LMP (SPIDER) Okay. Great.
- 03 19 53 22 CDR (SPIDER) Gumdrop, you're clear to turn your transponder on then.
- 03 19 53 25 CMP (GUMDROP) Roger. And I also expect DUPLEX A, and we'll see ...
- 03 19 53 29 LMP (SPIDER) Okay. Fine.
- 03 19 53 36 LMP (SPIDER) We'll configure the same way; we will be - receive A and B and transmit A.
- 03 19 53 40 CMP (GUMDROP) Okay. And the transponder power is ON.
- 03 19 53 43 LMP (SPIDER) Okay. Gumdrop, are you ready to support a lighting check?
- 03 19 53 49 CMP (GUMDROP) Ready to support.
- 03 19 53 51 CDR (SPIDER) Okay. We're going to turn our tracking light on now; see if you can see it.

(GOSS NET 1)

Tape 59/10
Page 374

- 03 19 54 02 CDR I don't see anything flashing, do you?
(SPIDER)
- 03 19 54 04 CMP ... look down at the porch, Jim.
(GUMDROP)
- 03 19 54 12 CMP I don't see anything.
(GUMDROP)
- 03 19 54 20 CDR I don't see anything either.
(SPIDER)
- 03 19 54 21 LMP I don't see it either, Dave. Just a minute.
(SPIDER)
- 03 19 54 40 CDR Houston, are you with us yet?
(SPIDER)
- 03 19 54 45 LMP Houston, Spider. Do you read?
(SPIDER)
- 03 19 54 49 CMP Houston, Gumdrop.
(GUMDROP)
- 03 19 54 50 CC Houston here. Go ahead.
- 03 19 54 54 LMP Okay. It didn't look like our tracking light
(SPIDER) was on. I think I might see it right now,
though. Yes, Dave, I think I see it flashing.
- 03 19 55 01 CC Roger. Copy. And we'd like to have your S-band
volumes up at about 57. We'll be in Honeysuckle
in about a couple of minutes.
- 03 19 55 10 LMP Okay.
(GUMDROP)
- 03 19 55 11 CDR Okay. I see a reflection on one of the quads out
(SPIDER) here, so I think it is flashing.
- 03 19 55 16 CMP Yes, I've got it now, down by the porch now.
(GUMDROP)
- 03 19 55 20 LMP Boy, it's sure not very bright, is it?
(SPIDER)
- 03 19 55 23 CDR No, it doesn't seem to be.
(SPIDER)
- 03 19 55 28 LMP Okay. Going to a docking light.
(SPIDER)

(GOSS NET 1)

Tape 59/11
Page 375

03 19 55 39 CMP Okay. I've got one of them on the right.
(GUMDROP)

03 19 55 43 IMP Okay. That's good enough. We'll leave the
(SPIDER) docking lights on for you.

03 19 55 46 CMP Okay.
(GUMDROP)

03 19 55 49 IMP Okay. Why don't you give me your lights?
(SPIDER)

03 19 55 52 CMP All right. Here comes my monitor lights.
(GUMDROP)

03 19 56 02 CDR I don't see anything.
(SPIDER)

HONEYSUCKLE (REV 58)

03 19 58 18 CC Okay. Spider/Gumdrop, Houston through Honeysuckle.
How do you read?

03 19 58 33 CMP What did you say?
(GUMDROP)

03 19 58 36 IMP I said give me bright.
(SPIDER)

03 19 58 39 CMP All right. There's not much difference between
(GUMDROP) them.

03 19 58 41 IMP Boy, that thing is really off, Dave. When we come
(SPIDER) back and try to dock, you are really going to have
to keep an eye on me. As a matter of fact ... had
shifted a little bit from when I looked over it
yesterday, I think.

03 19 58 52 CMP Not too much.
(GUMDROP)

03 19 58 58 IMP All right. It's pretty stationary there. It's
(SPIDER) just that the ... isn't pointed in the right
direction. Looks like I'm getting dangerous.
I'll just attitude hold and you can do it.

03 19 59 06 CMP Okay.
(GUMDROP)

(GOSS NET 1)

Tape 59/12
Page 376

- 03 19 59 08 CC Spider/Gumdrop, Houston through Honeysuckle. I have your phasing PAD when you are ready to copy.
- 03 19 59 18 CMP (GUMDROP) Roger, Houston. Stand by. I'll get out the phasing PAD.
- 03 19 59 23 CC Standing by.
- 03 19 59 30 CDR (SPIDER) Hey, Dave, did your spotlight ever work at all?
- 03 19 59 36 CMP (GUMDROP) No, it hasn't.
- 03 19 59 38 CDR (SPIDER) Hey, tell Dave that we're ready to do a phasing PAD.
- 03 19 59 42 CDR (SPIDER) Dave, how about the phasing PAD? Are you ready to copy?
- 03 19 59 46 CDR (SPIDER) I can't hear him now ...
- 03 19 59 47 IMP (SPIDER) S-band, S-band.
- 03 19 59 48 CMP (GUMDROP) We're on S-band.
- 03 19 59 55 CC Gumdrop, Houston. How do you read?
- 03 19 59 58 CDR (SPIDER) Even though I have my volume up on it, I can't read ...
- 03 20 00 00 IMP (SPIDER) Spider's ready.
- 03 20 00 05 CC Roger. Spider/Gumdrop; reading phasing PAD: 093 47 34 00, plus 00 009 all zips, minus 00 907 00 907 000 286, plus 00020 all zips, minus 00907. Your SEP time: 093 02 5300; TPI 0: 094575300. End of update.
- 03 20 01 32 IMP (SPIDER) Roger. On the readback we've got 093 47 34 00, plus 000 09, all zips, minus 00 907 00 907, all zips 286, plus 00020, all zips, minus 00907; TPI: 0945753.
- 03 20 02 07 CC Okay, Rusty. Read me your SEP time again. We dropped it there.

(GOSS NET 1)

Tape 59/13
Page 377

03 20 02 13 LMP Roger. SEP: 93:02:53.
(SPIDER)

03 20 02 17 CC That's right. Houston confirms the PAD. It looks good.

03 20 02 21 CMP And Gumdrop copies.
(GUMDROP)

03 20 02 24 LMP Hey, did you agree with the SEP time, Dave?
(SPIDER)

03 20 02 27 CMP I agree with the ...
(GUMDROP)

03 20 02 30 CDR Okay.
(SPIDER)

03 20 02 31 LMP Are you transmitting B?
(SPIDER)

03 20 02 34 CDR Negative.
(SPIDER)

03 20 02 35 LMP Okay. We've got a change in our COMM since we reconfigured here. I was just trying to figure out why.
(SPIDER)

03 20 02 41 CMP Okay. I'm transmitting ... on.
(GUMDROP)

03 20 02 44 CMP Gone, nothing.
(GUMDROP)

03 20 03 41 CC And, we're about a minute off Honeysuckle, here, so we'll see you over the Mercury about 10.

03 20 04 53 CMP Gumdrop. Copy.
(GUMDROP)

03 20 04 56 LMP This is Spider. Roger.
(SPIDER)

MERCURY (REV 58)

03 20 09 59 CC Spider and Gumdrop, Houston through Mercury.

03 20 10 13 LMP Houston, Spider. How do you read?
(SPIDER)

03 20 10 15 CC Read you loud and clear, Spider. This is Houston. You are GO for undocking, you are GO for 78 dash.

(GOSS NET 1)

Tape 59/14
Page 378

your AGS is GO. You can just unscrew the bulb if that light bothers you. And would like to inform you that during the phasing burn and probably also during breaking, you can anticipate a heater CAUTION light coming on. This will be from the RCS and this is after looking at the data that we've got here. There'll be no sweat.

- 03 20 10 50 LMP Okay. Thank you.
(SPIDER)
- 03 20 11 22 CMP Houston, Gumdrop.
(GUMDROP)
- 03 20 11 36 CMP Spider, Gumdrop.
(GUMDROP)
- 03 20 11 38 LMP Go ahead, Gumdrop. Spider.
(SPIDER)
- 03 20 11 39 CMP I'll give you a Mark at 51:10. Okay?
(GUMDROP)
- 03 20 11 42 LMP Okay.
(SPIDER)
- 03 20 11 44 CMP One.
(GUMDROP)
- 03 20 11 45 CMP MARK.
(GUMDROP)
- 03 20 11 47 LMP Okay. We're off by about a second.
(SPIDER)
- 03 20 11 50 CMP Okay.
(GUMDROP)
- 03 20 11 55 CDR Hey, you sure sound funny all of a sudden; say something again.
(SPIDER)
- 03 20 11 59 CMP Okay. Something again. I just switch to the other --
(GUMDROP)
- 03 20 12 03 LMP All right; you sounded garbled.
(SPIDER)
- 03 20 12 26 CMP Spider, Gumdrop ...
(GUMDROP)
- 03 20 12 38 LMP Houston, Spider. Do you read?
(SPIDER)

(GOSS NET 1)

Tape 59/15
Page 379

03 20 12 42 CC Spider, this is Houston. I'm reading you loud and clear.

03 20 12 45 IMP (SPIDER) Roger. Gumdrop's trying to call you.

03 20 12 48 CC Gumdrop, this is Houston. How do you read?

03 20 12 53 CMP (GUMDROP) I'm ...

03 20 12 54 CC You're breaking up slightly and way down, Gumdrop.

03 20 13 00 CMP (GUMDROP) Roger. That fuel cell 2 ... and I've got a fuel cell 2 light. Just thought I'd let you know.

03 20 13 11 CC Roger. Understand. Fuel cell 2 light and that's from the TCE?

03 20 13 14 CMP (GUMDROP) That's affirmative.

03 20 13 17 CC Okay. And you're loud and clear now, Gumdrop.

03 20 13 22 CMP (GUMDROP) Okay.

03 20 13 26 IMP (SPIDER) You're still a little garbled to me, Gumdrop. Whatever you did in the last few minutes, it sure changed the character of your radio.

03 20 13 31 CMP (GUMDROP) Let me go back the other way.

03 20 13 34 CDR (SPIDER) Gumdrop, it wasn't that; it was when you switched to the rendezvous configuration, I believe.

03 20 13 40 IMP (GUMDROP) Roger. Let me try it the other way.

03 20 13 45 CMP (GUMDROP) How is it now?

03 20 13 48 CDR (SPIDER) It's about the same.

03 20 13 51 CMP (GUMDROP) Okay.

03 20 13 53 CDR (SPIDER) Now it changed.

(GOSS NET 1)

Tape 59/16
Page 380

03 20 14 43 CC Gumdrop, Houston.

03 20 14 45 CMP Houston, Gumdrop. Go.
(GUMDROP)

03 20 14 48 CC Okay. That TCE's hanging right on the ragged edge, Dave - on that caution and warning trip. And we'll be keeping an eye on it for you, but it might trip off here a couple of times during the rendezvous.

03 20 15 03 CMP Okay; very well. Thank you.
(GUMDROP)

03 20 15 05 CC Roger.

03 20 15 11 CC And, troops, I'm going to lose you here. We'll see you over the sunny Grand Bahamas at about 36.

03 20 15 20 IMP Roger.
(SPIDER)

03 20 15 21 CMP Gumdrop.
(GUMDROP)

BAHAMAS (REV 59)

03 20 35 40 CC Spider/Gumdrop, Houston. How do you read?

03 20 35 47 CMP Reading you five-by Houston.
(GUMDROP)

03 20 35 50 CC Roger, Gumdrop. If you've got time now, we'd like for you go ACCEPT so during this busy period we can ship you a state vector. We'll not give you a NAV check; we'll do a vector compare.

03 20 36 00 CMP Roger. Going to ACCEPT now.
(GUMDROP)

03 20 36 02 CC Roger. Thank you.

03 20 36 12 IMP Houston, this is Spider. We're reading you also, now.
(SPIDER)

03 20 36 15 CC Very good; you're loud and clear. Standing by for your undocking.

03 20 36 18 IMP Roger.
(SPIDER)

(GOSS NET 1)

Tape 59/17
Page 381

03 20 36 55 CMP One minute.
 (GUMDROP)

03 20 36 57 LMP Roger. We're ready.
 (SPIDER)

03 20 37 25 CMP Ready.
 (GUMDROP)

03 20 37 26 LMP Roger.
 (SPIDER)

03 20 37 45 CMP 10.
 (GUMDROP)

03 20 37 52 CMP 3, 2, 1.
 (GUMDROP)

03 20 37 54 CMP UNDOCK.
 (GUMDROP)

03 20 37 59 LMP Uh-oh. We didn't release.
 (SPIDER)

03 20 38 00 CMP Hang on something.
 (GUMDROP)

03 20 38 08 CMP We have a short pull backwards.
 (GUMDROP)

03 20 38 10 LMP Say again.
 (SPIDER)

03 20 38 12 CMP I said would you hang on something. I'm going
 (GUMDROP) to pull you back a little bit.

03 20 38 14 LMP Okay.
 (SPIDER)

03 20 38 24 CMP Okay. We're nice and stable with respect to you.
 (GUMDROP)

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 60/1
Page 382

ANTIGUA (REV 59)

- 03 20 39 01 CMP Okay. We seem to be hanging; it seems like
(GUMDROP) the probe's out; the capture latches haven't
 released.
- 03 20 39 05 LMP Yes. That's what it looks like.
(SPIDER)
- 03 20 39 09 LMP We're pretty stable here. Wonder what's wrong
(SPIDER) with it?
- 03 20 39 15 CMP Houston, got any suggestions?
(GUMDROP)
- 03 20 39 17 CC We're copying all that, Gumdrop and Spider.
 Stand by.
- 03 20 39 36 CMP Okay. You're free.
(GUMDROP)
- 03 20 39 38 LMP I'm free?
(SPIDER)
- 03 20 39 39 CMP Roger.
(GUMDROP)
- 03 20 39 40 LMP What did you do?
(SPIDER)
- 03 20 39 41 CMP Oh, went back to the old memory and put a cycle
(GUMDROP) on the switch, and you look like you're free.
- 03 20 39 46 LMP Okay. Great.
(SPIDER)
- 03 20 39 51 CDR Okay. We're going to start you around now.
(SPIDER)
- 03 20 39 54 CMP Hold off.
(GUMDROP)
- 03 20 39 56 LMP What?
(SPIDER)
- 03 20 39 57 CMP Wait a minute.
(GUMDROP)
- 03 20 39 59 LMP I can't hear you.
(SPIDER)

(GOSS NET 1)

Tape 60/2
Page 383

- 03 20 40 01 CMP Hold. Wait a minute till I get clear.
(GUMDROP)
- 03 20 40 02 LMP Okay.
(SPIDER)
- 03 20 40 05 CMP Now you're clear.
(GUMDROP)
- 03 20 40 06 LMP Okay.
(SPIDER)
- 03 20 40 30 CDR Okay. Our attitudes are a little screwed up
(SPIDER) now, Dave, so we may have a little problem
with that.
- 03 20 40 35 CMP Roger. I noticed.
(GUMDROP)
- 03 20 40 37 LMP Okay. I'm stationkeeping on you now, so no
(SPIDER) sweat.
- 03 20 40 40 CMP Okay.
(GUMDROP)
- 03 20 41 10 CMP Spider, I'm going to stay in plane and just
(GUMDROP) follow you with the pitch.
- 03 20 41 14 CDR Okay. Fine. How am I drifting away from you?
- 03 20 41 17 CMP Elliptic; out of plane. To your rear.
(GUMDROP)
- 03 20 41 22 CDR Okay. Well, I can't notice that. My REG's
(SPIDER) look good, except my yaw rate is going around
about 1 degree per second.
- 03 20 41 45 CMP Are you yawing now?
(GUMDROP)
- 03 20 41 47 CDR That's right. I'm yawing right now. I'm doing
(SPIDER) my 120-degree yaw. When I get over here, Dave,
why don't I just stop the yaw and roll - my
roll so that I'm up, rightside up, on the
bellyband. Then it'll get back to maybe about
the right attitude, at least in plane.
- 03 20 42 01 CMP Good idea.
(GUMDROP)
- 03 20 43 00 CDR Okay, Dave. I'm going to roll up in plane now.
(SPIDER)

(GOSS NET 1)

Tape 60/3
Page 384

- 03 20 43 30 CDR Okay, Dave. I'm going to come rightside up here
(SPIDER) now, and when I get hit there, then I'll just stop and you can position yourself.
- 03 20 43 36 CMP Okay.
(GUMDROP)

CANARY (REV 59)

- 03 20 44 05 CDR We won't do the 180-degree pitch, Dave; we'll
(SPIDER) just do the 90-degree pitch up here.
- 03 20 44 09 CMP Okay. Good idea.
(GUMDROP)
- 03 20 44 31 CMP I think it would be all right if we just get
(GUMDROP) some relative attitudes, because I'm going to maneuver to the proper attitude for the SEP, and you can line up on me there.
- 03 20 44 37 CDR Right. Okay. Okay. I'm going to do the pitch-around maneuver, and I'm going to pitch 90 degrees only.
(SPIDER)
- 03 20 44 43 CMP Okay. Fine.
(GUMDROP)
- 03 20 44 44 CDR Okay. I'm going to start now.
(SPIDER)
- 03 20 44 46 CMP You're clear.
(GUMDROP)
- 03 20 45 22 CMP Looking good.
(GUMDROP)
- 03 20 45 23 CDR Okay.
(SPIDER)
- 03 20 46 01 CMP That's a nice looking machine.
(GUMDROP)
- 03 20 46 03 CDR So is yours.
(SPIDER)
- 03 20 46 09 CMP That's about all it looks like, though, is some sort of machine.
(GUMDROP)
- 03 20 46 15 CDR Okay, Dave. When I get about perpendicular to you, I'm going to stop and start my yaw to the left.
(SPIDER)

() (GOSS NET 1)

Tape 60/4
Page 385

- 03 20 46 22 CMP Okay.
(GUMDROP)
- 03 20 46 31 CDR Okay. I'm going to start my yaw right now.
(SPIDER)
- 03 20 46 32 CMP Okay. Keep --
(GUMDROP)
- 03 20 46 35 CMP Go ahead.
(GUMDROP)
- 03 20 47 16 CMP I think we're in good shape, attitude-wise.
(GUMDROP)
- 03 20 47 18 CDR Yes. We only got off about 20 or 30 degrees,
(SPIDER) there, Dave.
- 03 20 47 22 CMP Yes.
(GUMDROP)
- 03 20 48 07 CMP All the downlocks look good so far.
(GUMDROP)
- 03 20 48 10 CDR That's very good.
(SPIDER)
- 03 20 48 50 CC Spider and Gumdrop, Houston. Sometime within
the next 4 minutes let's get - Be sure your
S-band volume is up. We'll be going over to
Madrid.
- 03 20 48 57 LMP Roger. Spider.
(SPIDER)
- 03 20 48 58 CMP Gumdrop.
(GUMDROP)
- 03 20 49 51 CMP Okay. I've got 13 minutes before the SEP
(GUMDROP) burn.
- 03 20 49 56 CDR Would you believe it, but I think my COAS went out.
(SPIDER) Oh, there ...
- 03 20 50 01 SC ... Okay.
- 03 20 50 04 CMP Is it okay?
(GUMDROP)
- 03 20 50 42 CMP I'm getting a look at your engine down here,
(GUMDROP) and it looks pretty clean.

(GOSS NET 1)

Tape 60/5
Page 386

03 20 50 46 CDR Good.
(SPIDER)
03 20 50 49 CDR I can't see much except your nose, so - Right
(SPIDER) now, I can't even see that.
03 20 52 18 CMP I can see your skip rudder when I back off
(GUMDROP) just a bit.
03 20 52 21 CDR Roger.
(SPIDER)
03 20 52 42 CDR Okay, Dave. We can take over the station-
(SPIDER) keeping here.
03 20 52 48 CMP Okay.
(GUMDROP)
03 20 52 51 CMP I've got a slight up movement on you.
(GUMDROP)
03 20 52 54 CDR Okay.
(SPIDER)
03 20 52 56 CMP You've got the stationkeeping.
(GUMDROP)
03 20 52 57 CDR I have the stationkeeping.
(SPIDER)
03 20 53 00 CMP Did you say your COAS was out?
(GUMDROP)
03 20 53 01 CDR It's working; it's so dim I just can't see
(SPIDER) it.
03 20 53 06 CMP I got the same.
(GUMDROP)

MADRID (REV 59)

03 20 56 32 CC Okay, Spider/Gumdrop. We're going to lose
you here within a minute at Madrid. We'll
see you over Carnarvon around 23.
03 20 56 44 CMP Roger. Gumdrop copy. Carnarvon at 23.
(GUMDROP)
03 20 56 48 CC That's affirmative.

(GOSS NET 1)

Tape 60/6
Page 387

- 03 20 56 53 CMP Hey, Spider. On ... plane ...
(GUMDROP)
- 03 20 57 12 CC And, Gumdop, your vector is good. We've
looked at it; the computer is yours, of course,
and you can go BLOCK any time.
- CARNARVON (REV 59)
- 03 21 22 59 CC Gumdop/Spider, Houston through Carnarvon.
Standing by.
- 03 21 23 06 CMP Gumdop. Roger.
(GUMDROP)
- 03 21 23 08 CC Roger, Gumdop. Confirm the SEP burn.
- 03 21 23 11 CMP Roger. SEP burn on time. Good burn, and every-
(GUMDROP) thing's looking good.
- 03 21 23 16 CC Thank you.
- 03 21 23 33 CDR ... We finished marking Sirius, and we're on
(SPIDER) the fourth set on Atria.
- 03 21 23 38 CC Roger, Spider. You are loud and clear.
- 03 21 24 55 LMP Would you believe five zeros?
- (SPIDER)
- 03 21 24 56 CMP Beautiful.
(GUMDROP)
- 03 21 24 58 CC Roger, Spider.
- 03 21 25 30 CC That looks mighty pretty, Spider.
- 03 21 25 34 LMP Thank you.
(SPIDER)
- 03 21 26 30 CMP Spider, Gumdop. I can see your jets firing
(GUMDROP) just as clear as a bell.
- 03 21 26 35 CDR Roger. I was watching your light down there.
(SPIDER)
- 03 21 26 38 CMP You just gave a big burst, didn't you?
(GUMDROP)
- 03 21 26 40 CDR Roger.
(SPIDER)

(COSS NET 1)

Tape 60/7
Page 388

03 21 26 44 CMP It just lights up the whole sky.
(GUMDROP)
03 21 26 53 CC Gumdrop, Houston. Did you do a P52 there?
03 21 26 57 CMP Roger. And stand by, and I'll give you the
(GUMDROP) angles.
03 21 26 59 CC Roger.
03 21 27 05 CMP It will be about 5 minutes.
(GUMDROP)
03 21 29 26 CC Okay. Spider and Gumdrop, this is Houston.
And I'll lose you at Carnarvon in about a minute;
and bring up your S-band volumes about that
time. We'll have you at Honeysuckle.
03 21 29 37 CDR Okay.
(SPIDER)
03 21 29 40 CMP Gumdrop.
(GUMDROP)
03 21 31 47 CDR Are you firing a lot up there?
(SPIDER)
03 21 31 49 CMP Yes. I'm just - Yes. Roger.
(GUMDROP)
03 21 31 53 CDR That's going to put your light out. I can't
(SPIDER) even see it.
03 21 31 56 CMP Just pulsing.
(GUMDROP)

HONEYSUCKLE (REV 59)

03 21 32 10 CC Okay. Spider/Gumdrop, Houston. We've got
you through Honeysuckle now.
03 21 32 20 CMP Gumdrop monitors. Spider, do you have your
(GUMDROP) light on?
03 21 32 26 IMP On the cab.
(SPIDER)
03 21 32 32 CC And, Spider, when you've got a moment, I want
to pass on a little bit of info.

(GOSS NET 1)

Tape 60/8
Page 389

- 03 21 32 39 LMP Say you want to pass, Houston?
(SPIDER)
- 03 21 32 41 CC Roger. I want to update your red lines on the DPS: your oxidizer to fuel red line is 25 - 25 versus the 12 as shown on your checklist.
- 03 21 33 00 LMP Roger. Understand 25 percent on the red line for oxidizer.
(SPIDER)
- 03 21 33 05 CC No. It's a DELTA-P of 25 psi oxidizer to fuel.
- 03 21 33 13 LMP Okay. 25 DELTA-P oxidizer to fuel.
(SPIDER)
- 03 21 33 17 CC Roger. On the DPS.
- 03 21 33 18 LMP ... the line.
(SPIDER)
- 03 21 33 19 CC That's affirmative.
- 03 21 33 23 CC In other words, they are both 25 now.
- 03 21 33 29 CDR Roger. Got you.
(SPIDER)
- 03 21 33 33 CMP Houston, Gumdrop. I can give you those angles now.
(GUMDROP)
- 03 21 33 35 CC Go ahead.
- 03 21 33 37 CMP Roger. GET at 93 14 00, plus 00117, plus 00035, minus 00109.
(GUMDROP)
- 03 21 33 53 CC Roger. Copy. Thank you, Gumdrop.
- 03 21 33 56 CMP Roger.
(GUMDROP)
- 03 21 34 31 CC Spider and Gumdrop, this is Houston. You are GO for phasing.
- 03 21 34 35 CDR Roger, Houston. Understand we are GO for phasing.
(SPIDER)
- 03 21 34 37 CMP Gumdrop copies.
(GUMDROP)
- 03 21 34 47 CC And, Gumdrop, you might anticipate a MASTER ALARM on your H₂ tank pressure.

| (GOSS NET 1)

Tape 60/9
Page 390

03 21 34 52 CMP Roger.
 (GUMDROP)

03 21 35 46 CMP Spider, Gumdrop.
 (GUMDROP)

03 21 35 47 LMP Go ahead.
 (SPIDER)

03 21 35 48 CMP May I have this cross in link?
 (GUMDROP)

03 21 35 53 LMP Okay.
 (SPIDER)

03 21 36 00 CDR When your thrusters fire, it just puts out a
 (SPIDER) great big orange cloud I can see way back here.

03 21 36 04 CMP Yes. Yours too.
 (GUMDROP)

03 21 36 26 LMP Boy, I sure could use those 1 degree-per-second
 (SPIDER) rate needles, or at least some rate needles that
 were accurate.

03 21 36 53 CC Spider and Gumdrop. We are going to lose you
 at Honeysuckle in - within a minute, and we'll
 see you over the Mercury at 43.

03 21 37 01 CDR Roger.
 (SPIDER)

03 21 37 05 CDR Gumdrop, cut your lights down.
 (SPIDER)

MERCURY (REV 59)

03 21 43 23 CC Spider and Gumdrop, this is Houston through the
 Mercury. Standing by for your burn.

03 21 43 29 CMP Roger. Stand by.
 (GUMDROP)

03 21 43 33 CC And I'm reading you.

03 21 43 39 LMP Roger, Houston. This is Spider. How do you read?
 (SPIDER)

03 21 43 41 CC I'm reading you loud and clear, Spider.

(GOSS NET 1)

Tape 60/10
Page 391

- 03 21 43 48 LMP Roger. I'm right with you on horizontal crossing.
(SPIDER)
- 03 21 43 53 CMP Okay.
(GUMDROP)
- 03 21 45 29 CDR It will be 2 minutes on my Mark, Gumdrop.
(SPIDER)
- 03 21 45 36 CDR MARK.
(SPIDER)
- 03 21 45 37 CMP Right with you.
(GUMDROP)
- 03 21 47 00 CDR 35 seconds, Gumdrop.
(SPIDER)
- 03 21 47 03 CMP Roger.
(GUMDROP)
- 03 21 47 26 CDR 10 seconds.
(SPIDER)
- 03 21 48 13 CDR It was a good burn, Gumdrop.
(SPIDER)
- 03 21 48 15 CMP Okay. Good.
(GUMDROP)
- 03 21 48 18 CDR It got a little rough there when we throttled up.
(SPIDER)
- 03 21 48 21 CMP Well, you didn't have the Gumdrop with you.
(GUMDROP)
- 03 21 48 55 LMP Houston, the CAL coming up?
(SPIDER)
- 03 21 48 59 LMP Houston, Spider.
(SPIDER)
- 03 21 49 03 CC Go, Spider. Houston.
- 03 21 49 05 LMP Roger. The burn was a good one, and we are giving you CAL.
(SPIDER)
- 03 21 49 08 CC Roger. Thank you.
- 03 21 49 11 CDR At 500, 501, and 502, after trimming the PGWCS, we are reading 00 and minus 1.
(SPIDER)

(GOSS NET 1)

Tape 60/11
Page 392

03 21 49 18 CC Roger. Good work.

03 21 49 25 IMP ... Yes, I did. Landing radar open.
(SPIDER)

03 21 49 26 CMP Okay.
(GUMDROP)

03 21 49 44 IMP Okay. Engine gimbal to ENABLE.
(SPIDER)

03 21 49 47 CMP ... to ENABLE. Stand by.
(GUMDROP)

03 21 49 52 CC Everything looks good here, Spider. It was a
good burn.

03 21 49 55 IMP Okay. It was a little rough. It got a little rough
(SPIDER) and chuggy around 20 percent as I was throttling up.
I waited for it and then throttled up --

03 21 50 03 CDR ... throttle 1 OPEN.
(SPIDER)

03 21 50 04 CMP ... 1 OPEN.
(GUMDROP)

03 21 50 07 CC Roger. We're losing you at the Mercury, and
we will see you over Texas about 05.

03 21 50 13 IMP Okay. And you can debrief the burn.
(SPIDER)

03 21 50 14 CMP Okay. Got it?
(GUMDROP)

03 21 50 15 CDR Yes.
(SPIDER)

03 21 50 16 CMP Okay.
(GUMDROP)

03 21 50 43 CDR ... to pitch now on the ... I'm going to ...
(SPIDER)

TEXAS (REV 60)

03 22 05 03 CC Gumdrop, Houston through Texas. Standing by.

03 22 05 54 CC Spider/Gumdrop, Houston through Texas. Standing by.

(GOSS MET 1)

Tape 60/12
Page 393

- 03 22 05 57 LMP Hello, there, Houston through Texas standing by.
(SPIDER) How are you?
- 03 22 06 01 CC Oh, we're doing fine. Looks like you are doing great up there, also.
- 03 22 06 04 LMP Okay. Where are we over the ground?
(SPIDER)
- 03 22 06 07 CC Oh, you're just coming into Central America down here.
- 03 22 06 12 LMP Okay.
(SPIDER)
- 03 22 06 23 LMP I'll tell you one thing, this is really an ungainly beast with that big descent stage on it. With the - when you try to thrust laterally.
(SPIDER)
- 03 22 06 31 CC Roger. Copy.
- 03 22 06 40 CC Gumdrop, Houston. Like to verify H₂ tank 1 heater is AUTO.
- 03 22 06 46 CMP That is verified. H₂ tank 1 heater is AUTO, and I have the cryo light on.
(GUMDROP)
- 03 22 06 51 CC Understand.
- 03 22 06 54 CMP But the fuel cell light is off.
(GUMDROP)
- 03 22 07 09 CC Gumdrop, Houston. We'd like to have H₂ tank 2 heater to AUTO.
- 03 22 07 15 CMP H₂ tank 2 heater AUTO, now.
(GUMDROP)
- 03 22 07 19 CC Understand.
- 03 22 07 37 CDR Hey, Gumdrop. We'll be having our first solution here in a few seconds.
(SPIDER)
- 03 22 07 45 CMP Okay. I've already got mine, and I've got an elevation of 211.49.
(GUMDROP)
- 03 22 08 25 LMP Hey, Dave. We're plotting our relative position to you, and, man, we're right on the nominal.
(SPIDER)
- 03 22 08 30 CMP Hey, that's great!
(GUMDROP)

(GOSS NET 1)

Tape 60/13
Page 394

- 03 22 08 42 LMP We got it at 26 miles right now, if you are
(SPIDER) interested.
- 03 22 08 53 LMP And we got 30.59 for our first elevation angle
(SPIDER) solution.
- 03 22 09 05 CDR What did you get for yours, Dave?
- (SPIDER)
- 03 22 09 06 CMP Well, in your language it would be 31.49.
(GUMDROP)
- 03 22 09 10 LMP Oh, I didn't hear - I heard - I thought you
(SPIDER) said 211¹4 - -
- 03 22 09 13 CMP Wait a minute, 211¹49.
(GUMDROP)
- 03 22 09 15 LMP Okay. Fine.
- (SPIDER)
- 03 22 09 16 CMP Right now, I have you at 26.27 and 150.4.
(GUMDROP)
- 03 22 09 20 LMP Okay. I've got 26.27, and I'm at 155.5. That's
(SPIDER) on my radar. It's probably 5 feet off. Matter
of fact, it didn't agree with the tape's record
by a couple of feet per second.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 61/1
Page 395

TEXAS (REV 60)

- 03 22 13 42 CC Gumdrop, Houston.
- 03 22 13 44 CMP (GUMDROP) This is Gumdrop. Go.
- 03 22 13 47 CC Roger. We noticed you've gone to a four-jet roll authority. Unless you've got a good reason, we are recommending Baker Dog roll OFF.
- 03 22 13 57 CMP (GUMDROP) Roger. I'm running the DAP.
- 03 22 14 04 CMP (GUMDROP) And you can check the DAP. I'm using ... DAP.
- 03 22 14 14 CC Roger, Gumdrop. Copy
- 03 22 14 19 CMP (GUMDROP) There's the ED roll OFF.
- 03 22 14 22 CC Copy.
- 03 22 15 34 CC Spider, Houston.
- 03 22 15 35 CDR (SPIDER) Go ahead, Houston. Spider.
- 03 22 15 37 CC Roger. We would like to have the DFI OFF at this time, and we would like to have you verify the CO₂ sensor circuit breaker on panel 16 is IN.
- 03 22 15 48 CDR (SPIDER) Stand by.
- 03 22 15 50 CDR (SPIDER) Roger. It's closed.
- 03 22 15 51 CC Roger. Understand it's closed. And if you've got a minute, I want to give you an update on some bias times.
- 03 22 16 24 CDR (SPIDER) Okay. Houston, Spider. Be with you in just a second.
- 03 22 16 28 CC Roger. No sweat.
- 03 22 16 49 CMP (GUMDROP) Do you want to watch your radar now? Is it staying the same.

(GOSS NET 1)

Tape 61/2
Page 396

03 22 16 54 COR Go.
(SPIDER)

03 22 17 06 CMP No, I didn't need it.
(GUMDROP)

03 22 17 21 LMP Okay. Go ahead, Houston.
(SPIDER)

03 22 17 23 CC Roger. This is an update in your P32 program.
The TPI bias has changed from 3 minutes to 4 minutes. We want you to add 4 minutes on the TPI bias in your CSI P32 program.

03 22 17 48 LMP Roger. The CDH bias still 1 plus 45.
(SPIDER)

03 22 17 51 CC That is affirmative. The CDH bias is 1 plus 45.
We are only changing the TPI bias.

03 22 17 59 LMP Roger.
(SPIDER)

03 22 18 18 LMP Gumdrop, did you get that?
(SPIDER)

03 22 18 22 CMP Roger. I copied.
(GUMDROP)

03 22 18 23 LMP Good time for procedure changes, isn't it?
(SPIDER)

03 22 18 26 CMP Roger.
(GUMDROP)

03 22 18 27 CC Spider? Spider, Houston.

03 22 18 32 LMP Go ahead.
(SPIDER)

03 22 18 34 CC Roger. I - As you've probably figured out, this is due to the change in the orbit. We've got a little more eccentricity than we planned on.

03 22 18 43 CC And we are showing your orbit as 122 by 127.

03 22 18 47 LMP Okay.
(SPIDER)

03 22 20 23 CC Spider/Gumdrop, Houston. I have a TPI₀ PAD.

03 22 20 29 LMP Spider ready.
(SPIDER)

(GOSS NET 1)

Tape 61/3
Page 397

- 03 22 20 30 CMP Gumdrop's ready.
(GUMDROP)
- 03 22 20 37 CC Roger. Reading TPI₀: 094 57 5300, minus 202,
plus 004, minus 015 203 N slash A N slash A
3090, minus 1511, aft 168, right 003, up 113.
End of update.
- 03 22 21 31 IMP Okay. This is Spider. I missed the first digit
(SPIDER) in the aft.
- 03 22 21 38 CC Roger. Reading aft: 168.
- 03 22 21 45 IMP NOUN 42.
- 03 22 21 46 CC And NOUN 42 - I have no data - N slash A here.
- 03 22 22 00 CMP Roger, Spider. I got the whole thing. You want
(GUMDROP) to read something back?
- 03 22 22 04 IMP I don't know if Houston is reading me or not.
(SPIDER)
- 03 22 22 06 CC I'm reading you, Spider. Go ahead with the read-back.
- 03 22 22 10 IMP Okay. What's the last digit in the NOUN 42?
(SPIDER)
- 03 22 22 20 CC Okay. Are you asking for the last - Say again
what column it is, Rusty.
- 03 22 22 26 IMP Roger. The last digit in NOUN 42, DELTA-V_R.
(SPIDER)
- 03 22 22 32 CC Roger. DELTA-V_R is 203.
- 03 22 22 37 IMP Roger. And what is aft component, please?
(SPIDER)
- 03 22 22 40 CC Roger. The aft component is 168.
- 03 22 22 45 IMP Readback: 94 57 5300, minus 202, plus 004,
(SPIDER) minus 015 203 NA NA 3090, minus 1511, aft
168, right 003, up 113.
- 03 22 23 06 CC That is affirmative, Spider. Houston confirms
the update.
- 03 22 23 12 CMP And Gumdrop copies.
(GUMDROP)

(GOSS NET 1)

Tape 61/4
Page 398

- 03 22 23 15 CC Roger, Gumdrop.
- 03 22 23 35 LMP (SPIDER) Dave, this is Spider here.
- 03 22 23 38 LMP (SPIDER) No solution on that one.
- 03 22 23 41 CMP (GUMDROP) What do you need?
- 03 22 23 43 CDR (SPIDER) Nothing. I just wanted to tell you we got another solution on an elevation angle of 25.05.
- 03 22 23 47 CMP (GUMDROP) Okay. I've got another one with elevation angle of 27.26.
- 03 22 23 51 LMP (SPIDER) Okay.
- 03 22 23 53 CMP (GUMDROP) Beautiful.
- 03 22 23 55 LMP (SPIDER) Let's stick together.
- 03 22 23 57 CMP (GUMDROP) I'm with you.
- 03 22 24 54 CC Spider and Gumdrop, you are GO to go beyond TPI₀.
- 03 22 25 00 CDR (SPIDER) Roger. Spider here. Understand we're GO past TPI₀.
- 03 22 25 04 CMP (GUMDROP) Gumdrop copies.
- 03 22 25 05 CC Roger. Roger.
- 03 22 28 17 CDR (SPIDER) Hey, Dave, we are 49 miles, and we can still see you.
- 03 22 28 21 CMP (GUMDROP) Hey, that's pretty good.
- 03 22 28 26 CDR (SPIDER) Okay.
- 03 22 28 27 CC Spider/Gumdrop. Do you want our guesstimate at your point of closest approach?

(GOSS NET 1)

Tape 61/5
Page 399

03 22 28 33 CDR Roger. We'd like that.
(SPIDER)

03 22 28 35 CC Roger. It will be 2.7 and the time is 95 plus 17.

03 22 28 42 CDR Roger. 95 17.
(SPIDER)

03 22 28 45 CC That's affirmative. And I'll be losing you here shortly off Canaries, and we'll see you over Carnarvon at 57.

03 22 28 55 CDR Roger.
(SPIDER)

03 22 28 56 CMP Gumdrop.
(GUMDROP)

CARNARVON (REV 60)

03 22 56 32 CC Spider/Gumdrop, this is Houston through Carnarvon. Standing by. And I have an insertion PAD whenever you are ready to copy.

03 22 56 43 CMP Roger. Gumdrop will be about 20 seconds.
(GUMDROP)

03 22 56 47 CC Roger. No problem. This is a 7-minute pass, and we will have Honeysuckle shortly thereafter.

03 22 56 54 CMP Roger.
(GUMDROP)

03 22 57 08 CDR Spider is reading you. We are in the middle of our alignment.
(SPIDER)

03 22 57 14 CC Roger, Spider. Copy.

03 22 57 21 CMP Gumdrop is ready any time.
(GUMDROP)

03 22 57 23 CC Roger. I would like to hold it, Gumdrop. Spider is in the middle of their alignment.

03 22 57 28 CMP Roger. I'll wait for them. I'm ready whenever they are.
(GUMDROP)

03 22 57 30 CC Very good.

(GOSS NET 1)

Tape 61/6
Page 400

- 03 22 57 35 CMP In the meantime, I can give you gyro torqueing
(GUMDROP) angles if you like.
- 03 22 57 38 CC Okay. You cut me off by a few seconds; that was
my next question. Go.
- 03 22 57 43 CMP Okay. GET 94 57 00, plus 00083, plus 00008, minus
(GUMDROP) 00034.
- 03 22 57 58 CC Roger, Gumdop. Houston copies.
- 03 22 58 04 CMP Gumdop.
(GUMDROP)
- 03 23 01 55 CC And, Spider, this is Houston. I copy the angle.
- 03 23 02 01 CDR Roger. Spider.
(SPIDER)
- 03 23 02 10 CC Roger. Looks like things are going well, and you
might bring up your S-band volume. We'll be going
over the Honeysuckle in about 2 minutes.
- 03 23 02 22 CMP Gumdop.
(GUMDROP)
- 03 23 02 23 LMP ... this is the Spider.
(SPIDER)
- 03 23 02 56 LMP Two miles, Houston.
(SPIDER)
- 03 23 04 04 LMP Okay. Spider ready to copy the update.
(SPIDER)
- 03 23 04 06 CC Okay. We're going to hand off to Honeysuckle.
Let's - We'll have about a 30-second breakout,
and then we'll pick you back up again.
- 03 23 04 17 LMP We'll be standing by ...
(SPIDER)

HONEYSUCKLE (REV 60)

- 03 23 05 20 CC Spider/Gumdrop, Houston through Honeysuckle. How
do you read?
- 03 23 06 09 CC Okay, Spider/Gumdrop. I believe I've got you
through Honeysuckle, if you are ready to copy.

(COSS NET 1)

Tape 61/7
Page 401

03 23 06 14 LMP Okay. Spider ready to copy.
(SPIDER)

03 23 06 20 CC Gumdrop, are you with me?

03 23 06 22 LMP Gumdrop - He's on S-band.
(SPIDER)

03 23 06 27 CHP Okay.
(GUMDROP)

03 23 06 28 CC How do you read, Gumdrop?

03 23 06 34 LMP He doesn't have you latched up yet, Houston.
(SPIDER)

03 23 06 39 CC Okay. I'll give you about another 30 seconds
to a minute, and I'll read it.

03 23 06 45 LMP Okay.
(SPIDER)

03 23 07 52 CC Hello, Spider. Houston with your insertion
PAD. And, Gumdrop, if you can read.

03 23 08 00 LMP Gumdrop, are you reading Houston yet?
(SPIDER)

03 23 08 05 CC Hey, Rusty, I am going ahead and give it to you.

03 23 08 07 LMP Okay. Go ahead.
(SPIDER)

03 23 08 09 C Roger. Reading insertion: 095 39 0700, plus
00431 all zips, plus 00008 00431 000 104,
plus 00431 all zips, plus 00012. End of update.

03 23 08 56 LMP Roger. Readback - and, Gumdrop, you might get
(SPIDFR) this. 095 39 0700, plus 00431 all zips, plus
00008 00431 all zips 104, plus 00431 all zips,
plus 00012.

03 23 09 23 CC Okay, Spider. Your readback is correct.

03 23 09 29 LMP Gumdrop, did you copy?
(SPIDER)

03 23 09 51 LMP Hey, Dave, did you read Jim?
(SPIDER)

03 23 09 57 LMP Gumdrop, do you read Spider?
(SPIDER)

(GOSS NET 1)

Tape 61/8
Page 402

03 23 10 21 CC Spider, Gumdrop. We will probably lose you here at Honeysuckle in about a minute, and we will see you over the Mercury at 17.

03 23 10 31 LMP (SPIDER) Roger, Houston. This is Spider. Gumdop, do you read that?

03 23 10 37 LMP (SPIDER) Okay. Gumdop, be advised we can hear you transmitting, but your voice doesn't come through.

03 23 10 56 LMP (SPIDER) And, Gumdop, if you got the PAD, how about just giving a blip-blip on your microphone there?

03 23 12 16 CDR (SPIDER) Gumdop, how do you read Spider?

03 23 12 21 CDR (SPIDER) Reading you loud and clear, Dave. We really lost track of you before. Were you reading us at all?

03 23 12 26 CMP (GUMDROP) I was reading you, but I wasn't reading Houston. I missed the insertion PAD.

03 23 12 31 CDR (SPIDER) Okay. We copied. I'll have Rusty give it to you.

03 23 16 47 LMP (SPIDER) This is GET insertion in six parts.
Okay!

03 23 16 52 LMP (SPIDER) Okay. We're going to - We're waiting to do a VERB BD ... again.

03 23 16 56 CMP (GUMDROP) You're hot.

03 23 17 00 LMP (SPIDER) With a minus 8.

MERCURY (REV 60)

03 23 17 02 CC Spider/Gumdrop, we have you through the Mercury. You should be right at your point of closest approach, 1.9.

03 23 17 41 LMP (SPIDER) Houston, How do you read Spider?

03 23 17 43 CC Spider, I read you loud and clear. Did you copy my last transmission?

(GOSS NET 1)

Tape 61/9
Page 403

- 03 23 17 48 LMP (SPIDER) All I heard you say was we were at the point of closest approach, that was all. What else did you have to say?
- 03 23 17 52 CC That was it. And 1.9 miles. Gumdrop, do you read Houston?
- 03 23 17 58 CMP (GUMDROP) Roger, Houston. I read you five-by.
- 03 23 18 00 CC And you are five-square, Gumdrop.
- 03 23 18 04 CMP (GUMDROP) Okay. I never got a lockup over the Honeysuckle.
- 03 23 18 07 CC Roger.
- 03 23 18 12 CDR (SPIDER) Houston, Spider here. Our closest approach was 16 000 feet on the radar.
- 03 23 18 18 CC Roger. Copy. As you went over the hill at Honeysuckle I heard you reading the PAD to Gumdrop. You got it, didn't you, Dave?
- 03 23 18 25 CMP (GUMDROP) Roger. All squared away. Thank you.
- 03 23 18 27 CC Roger.
- 03 23 18 40 LMP (SPIDER) And, Houston, this is Spider. Did you get our torqueing angles on that last alignment?
- 03 23 18 44 CC That is affirmative. We copied them.
- 03 23 18 47 LMP (SPIDER) Okay. Fine.
- 03 23 18 48 CC Looks like things are going well.
- 03 23 18 51 LMP (SPIDER) Yes.
- 03 23 19 44 LMP (SPIDER) And, Gumdrop, let us know when you want the track align back.
- 03 23 19 47 CMP (GUMDROP) Okay. Stand by.
- 03 23 19 50 CDR (SPIDER) Houston, Spider. When are we going to get the GO for insertion?

(GOSS NET 1)

Tape 61/10
Page 404

- 03 23 19 54 CC Roger. You ought to have it within the next minute or two. We're looking - taking a look at the data. Everything's looking real good.
- 03 23 20 01 CDR (SPIDER) Okay. Fine. How are we doing on the RCS RED LINE?
- 03 23 20 05 CC You're real good. The LM is right on the predicted plot, and Gumdrop is in good shape.
- 03 23 20 14 CDR (SPIDER) Okay.
- 03 23 20 37 CC And, Spider and Gumdrop, this is Houston. You are GO for insertion.
- 03 23 20 42 CDR (SPIDER) Spider.
- 03 23 20 43 CMP (GUMDROP) Gumdrop.
- 03 23 21 59 CMP (GUMDROP) Okay, Spider. You can put your light back on. Thanks.
- 03 23 21 05 LMP (SPIDER) Roger. OM.
- 03 23 21 11 LMP (SPIDER) Okay.
- 03 23 21 12 CMP (GUMDROP) Okay.
- 03 23 21 32 CC Spider, this is Houston. After insertion, we would like to leave the DFI on for approximately 5 minutes. We'll give you a call when to turn it off.
- 03 23 21 42 LMP (SPIDER) Okay.
- 03 23 23 12 CC Spider/Gumdrop. About 30 seconds LOS Mercury. We may see you over Redstone around 31; if not, Guaymas at 35.
- 03 23 23 23 CDR (SPIDER) Okay.
- 03 23 23 24 CMP (GUMDROP) Gumdrop.

(GOSS NET 1)

Tape 61/11
Page 405

REDSTONE (REV 60)

03 23 31 47 CC Spider/Gumdrop, Houston. We have you through the Redstone. Standing by.

03 23 31 54 CDR (SPIDER) Right.

03 23 32 06 LMP (SPIDER) This LM DAP is really a nice flight control system, Houston.

GUAYMAS (REV 60)

03 23 35 39 CC Spider/Gumdrop. We got good solid lock; good data. Standing by.

03 23 35 46 CDR (SPIDER) Spider.

03 23 35 47 CMP (GUMDROP) Gumdrop.

03 23 36 04 CDR (SPIDER) Gumdrop, on my Mark it'll be 3 minutes.

03 23 36 06 CMP (GUMDROP) Okay.

03 23 36 09 CDR (SPIDER) MARK.

03 23 36 10 CMP (GUMDROP) Right with you.

03 23 36 11 CDR (SPIDER) Okay.

03 23 38 08 CDR (SPIDER) One minute.

03 23 38 09 CDR (SPIDER) MARK.

03 23 38 10 CMP (GUMDROP) Roger. Right with you, and ready to support.

03 23 38 13 CDR (SPIDER) Okay.

(GOSS NET 1)

Tape 61/12
Page 406

03 23 38 48 CDR Twenty seconds.
(SPIDER)

03 23 38 51 CMP Roger.
(GUMDROP)

03 23 39 14 CDR Okay. Starting.
(SPIDER)

03 23 39 15 CMP Okay.
(GUMDROP)

03 23 39 16 CDR Right.
(SPIDER)

03 23 39 34 LMP You're on ...
(SPIDER)

03 23 39 37 CDR It's a good burn, Dave.
(SPIDER)

03 23 39 38 CMP Very good. Thank you.
(GUMDROP)

03 23 40 24 CDR Houston, I'll give you R and D telemetry CAL now,
(SPIDER) and you can call me on the DFI power when you want it.

03 23 40 28 CC Roger, Spider. We'll do that. We copied your
burn; looked great. And saw your trimming ...

02 23 40 36 CDR Roger. Going to CAL now.

03 23 40 42 CC And, Spider/Gumdrop. Whenever you are ready I have
your CSI PAD.

03 23 40 52 CMP Gumdrop. Stand by.
(GUMDROP)

03 23 41 26 CDR CAL is OFF.
(SPIDER)

03 23 41 28 CC Roger. Copy. CAL is OFF.

03 23 42 17 CC Gumdrop, Houston. We're still showing all entry
batteries on the line.

03 23 42 21 CMP Roger. I haven't got to it yet. Thank you.
(GUMDROP)

03 23 42 23 CC Roger.

(GOSS NET 1)

Tape 61/13
Page 407

03 23 42 48 CMP How's that?
(GUMDROP)

03 23 42 51 CC Hey, that's pretty good.

03 23 42 55 CMP I've got to take care of the left side before I get
(GUMDROP) the right side.

03 23 42 59 CC Roger. I didn't know I was rushing you, Dave. I
just wanted to remind you.

03 23 43 03 CMP Okay. I like those reminders.
(GUMDROP)

03 23 43 05 CC Roger.

03 23 43 43 CC Gumdrop, Houston. At your convenience, if you want
to, before you start your Marks here, just turn on
the fan in H₂ tank 2.

03 23 43 52 CMP Roger. H₂ tank 2 fans ON. Now?

03 23 43 55 CC Roger. Thank you.

03 23 43 59 CMP Thank you.
(GUMDROP)

03 23 46 59 CMP Spider, Gumdrop. P20 has you right down the barrel.
(GUMDROP)

03 23 47 02 CDR Oh, boy!
(SPIDER)

03 23 47 05 CDR I wasn't able to do a visual lockon on you that time,
(SPIDER) David, but the range, or the signal strength on the
radar was well up.

03 23 47 10 CMP Okay. Good.
(GUMDROP)

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 62/1
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GUAYMAS (REV 61)

- -- -- -- LMP -- Where we can get out of range ... Good thing
(SPIDER) for the ... stability.
- -- -- -- CMP Yes, I bet it is.
(GUMDROP)
- -- -- -- LMP There's one nice thing to be said about optics,
(SPIDER) you can look through them and see if you --
- -- -- -- CMP Yes, sure can. You're still within range. I can
(GUMDROP) see your four feet.
- -- -- -- LMP Oh, you know the two parallel lines in the spectrum?
(SPIDER)
- -- -- -- CMP Yes.
(GUMDROP)
- -- -- -- LMP They are still there right now.
(SPIDER)
- -- -- -- CMP Those are the ones.
(GUMDROP)
- -- -- -- LMP No, not those. Not the two little specks inside;
(SPIDER) the one in the center of the reticle.
- 03 23 49 24 CC Spider, Houston. DFI OFF. And we are watching
your DSKY, wondering when you are going to VERB
93 it.
- 03 23 49 50 LMP Houston, if you are reading Spider, we would sure
(SPIDER) appreciate a guess at the CSI.
- 03 23 49 58 CC Spider, this is Houston. Say again, please.
- 03 23 50 03 LMP Roger. We would appreciate again the CSI time
(SPIDER) and also where we are going ... final crossing
over.
- 03 23 50 16 CC Okay, Spider. You are coming in real weak. I
have your whole CSI PAD, if you wish it. Your
CSI time is 096 16 0300.
- 03 23 50 36 LMP Spider is reading; waiting for the whole PAD.
(SPIDER)
- 03 23 50 41 CC Roger, Spider. How do you read Houston?

(GOSS NET 1)

Tape 62/2
Page 409

- 03 23 50 49 CMP Houston, Gumdrop is ready for the whole PAD, too.
(GUMDROP) I believe Spider is reading you. Aren't you,
Spider?
- 03 23 50 54 LMP Well, I was. I just broke lock on the S-band.
(SPIDER) I don't know if I'm getting him on VHF or not.
- 03 23 50 59 CC Spider, I'm reading you okay. Can you read me?
- 03 23 51 04 LMP Roger. I read you that time, Smokey.
(SPIDER)
- 03 23 51 08 CC Okay. Going with the CSI PAD: 096 16 0300 097
56 2300, minus 393 all zips 136, minus 392,
minus 007; and I want to remind you again of the
change in the TPI bias. It is now 4 minutes.
- 03 23 52 01 LMP Roger, Smokey. Sorry about that, but you broke
(SPIDER) up completely there. You are coming in very clear
when you come in, but you're just broken. Go
ahead and read through real fast now.
- 03 23 52 11 CC Roger. 096 16 0300 097 56 2300, minus 393 all
zips 136, minus 392, minus 007; and a reminder
that the TPI bias is now 4 minutes.
- 03 23 52 52 LMP Roger. Are you still with us, Houston?
(SPIDER)
- 03 23 52 57 CC That is affirmative, Spider. We've got you now.
- 03 23 53 03 LMP Okay, I'll read it back here. You are not coming
(SPIDER) through too well any more. 096 16 0300 097 56
2300, minus 393 all zips 136, minus 392, minus
007, and 4 minutes on the bias.
- 03 23 53 28 CC That is affirmative, Spider. Your readback is
correct. And our COMM will pick up shortly. We
will be going to Canaries.
- 03 23 53 36 LMP Roger.
(SPIDER)
- 03 23 53 38 CMP Gumdrop copies.
(GUMDROP)
- 03 23 53 46 CC Spider, Houston. We'd like to have descent
batteries 1 and 3 off the line.
- 03 23 55 00 LMP Houston, are you still reading Spider?
(SPIDER)

(GOSS NET 1)

Tape 62/3
Page 410

03 23 55 03 CC That's affirmative, Spider. We should have you here for about another 8 minutes.

03 23 55 09 LMP (SPIDER) Roger. Did you hear my request on the apsidal crossing? Please.

03 23 55 15 CC That is negative, Spider. I did not copy.

03 23 55 19 LMP (SPIDER) Roger. We would like your recommendation on first or second apsidal crossing.

03 23 55 29 CC Roger. We copy, Spider. Stand by.

03 23 55 53 CC Spider? Spider, Houston.

03 23 55 58 LMP (SPIDER) Go, Houston.

03 23 56 01 CC Roger. I'm reading you very weak, but we want the second apsidal crossing.

03 23 56 09 LMP (SPIDER) Understand. Second apsidal crossing.

03 23 56 12 CC That's affirm.

CANARY (REV 61)

03 23 58 15 CC And, Spider, this is Houston. Everything looks good for staging.

03 23 58 19 LMP (SPIDER) Roger, Houston. Spider here. Everything looks good on board.

03 23 58 23 CC Roger. Copy.

03 23 58 31 CC Go ahead.

03 23 59 59 CMP (GUMDROP) Spider, Gumdrop.

04 00 00 01 LMP (SPIDER) Go ahead.

04 00 00 02 CMP (GUMDROP) I get you 0.4 feet per second out of plane at this time.

04 00 00 07 LMP (SPIDER) Okay. Fine. Thank you.

(COSS NET 1)

Tape 62/4
Page 411

04 00 00 10 CC And, Spider and Gumdrop, this is Houston. We have an update to your CSI PAD. It is the DELTA-V_y component now reading plus 006.

04 00 00 26 LMP (SPIDER) Roger. DELTA-V_y. Understand plus 006. Is affirmative?

04 00 00 32 CC That is affirmative, Spider.

04 00 00 36 LMP (SPIDER) Thank you.

04 00 01 33 CC Okay, Spider and Gumdrop. We'll lose you in about a minute and a half off Canary. If you want to talk to me anytime within the next 10 minutes, tell ARIA 5 to go REMOTE.

04 00 01 43 CMP (GUMDROP) Okay. We'll do it. Gumdrop.

04 00 01 54 CC And we'll see you over Tananarive at 16.

04 00 01 58 CMP (GUMDROP) Roger.

04 00 02 47 CC Spider. Disregard.

04 00 02 53 LMP (SPIDER) Houston, did you want Spider?

04 00 02 55 CC Disregard, Spider.

04 00 02 58 LMP (SPIDER) Okay.

ARIA 5 (REV 61)

04 00 06 50 CC Fifty seconds. ARIA 5, this is Houston CAP COMM. Go REMOTE.

04 00 07 16 CC Hello, Spider. This is Houston. Do you read?

04 00 07 21 CMP (GUMDROP) Spider, Gumdrop. Did you have anything out of plane?

04 00 07 32 CC Gumdrop, Houston. How do you read?

04 00 09 27 CC Okay. ARIA 5, this is Houston. Go LOCAL.

(COSS NET 1)

Tape 62/5
Page 412

04 00 11 31 CC Hello, Spider/Gumdrop. This is Houston. How do you read?

04 00 11 38 CC ARIA 5. Do you read? ARIA 5, this is Houston CAP COMM. Go REMOTE.

04 00 11 47 CC ARIA 5, Houston CAP COMM. Go REMOTE.

04 00 12 04 CC Spider/Gumdrop, this is Houston. How do you read?

04 00 16 58 CC Spider, this is Houston. Did you burn?

TANANARIVE (REV 61)

04 00 17 41 CC Tananarive M&O, this is Houston CAP COMM. Do you read?

04 00 17 45 CT Houston CAP COMM, Tananarive. Roger.

04 00 17 47 CC Okay. Have you heard any transmission from the spacecraft?

04 00 17 51 CT That's a negative.

04 00 17 54 CC Are you locked on?

04 00 17 55 CT That's affirmative.

04 00 17 58 CC Spider/Gumdrop. Houston through Tananarive.

04 00 18 44 CMP (GUMDROP) Thank you.

04 00 18 49 CC Spider/Gumdrop, Houston. Do you read?

04 00 19 00 CC Tananarive M&O, Houston CAP COMM. Go MANUAL key procedure.

04 00 19 05 CT Roger.

04 00 19 07 CC And, Spider - Spider, this is Houston. How do you read?

04 00 19 19 CC Gumdrop - Gumdrop, this is Houston. How do you read?

04 00 20 22 CC And, Tananarive M&O, Houston CAP COMM. Let me know of any transmission you hear between the two spacecraft.

(GOSS NET 1)

Tape 62/6
Page 413

04 00 20 28 CT Roger.

04 00 21 42 CC Tananarive M&O, Houston CAP COMM. I think someone there has an open mike.

04 00 21 47 CT Houston CAP COMM, Tananarive.

04 00 21 51 CC Go ahead.

04 00 21 53 CT Roger. We heard one transmission from the space-craft which said, "Go ahead."

04 00 22 01 CC Okay. Thank you.

04 00 22 02 CC And, Spider. Spider, this is Houston. We'll see you over Carnarvon at 32.

CARNARVON (REV 61)

04 00 32 35 CC Hello, Spider/Gumdrop. Houston through Carnarvon. How did it go?

04 00 32 40 LMP (SPIDER) Houston, this is Spider. How do you read?

04 00 32 41 CC I'm reading you five-square, Spider.

04 00 32 45 LMP (SPIDER) Hey, let me give you the CDH time. It is 96 58 14.

04 00 32 52 CC Roger. Copy 96 58 plus 14, and that is a bias time. Affirmative?

04 00 32 58 LMP (SPIDER) Affirmative. That's the actual time we will perform CDH.

04 00 33 03 CC Roger. Copy.

04 00 33 05 CDR (SPIDER) Houston, this is Spider. How do you read me?

04 00 33 09 CC I'm reading you loud and clear, Jim.

04 00 33 11 CDR (SPIDER) Okay. The staging went okay. We are staged. However, Gumdrop can't find us in his optics any longer, and we may have knocked out our tracking light.

04 00 33 23 CC Roger, Spider. Copy.

(GOSS NET 1)

Tape 62/7
Page 414

- 04 00 33 27 CDR (SPIDER) Before, we could see it flashing out on our quads out here, and I don't see it flashing now, although the flash may have been reflected off something on the descent stage.
- 04 00 33 37 CC Roger. Understand, Spider.
- 04 00 33 42 LMP (SPIDER) Okay. And, Houston, this is Spider. I forgot what I was going to ask you.
- 04 00 33 51 CDR (SPIDER) Houston, I know what I want to tell you. That burn we made was 40 feet per second; 40.0, in case you are interested.
- 04 00 34 01 CC Roger, Spider. Could you give me TIG and DELTA-V_y?
- 04 00 34 08 LMP (SPIDER) Roger. The TIG of the burn was the TIG that you passed us on the PAD for CSI and DELTA-V_y was 0.
- 04 00 34 21 CC Roger, Spider. Thank you very much.
- 04 00 34 24 LMP (SPIDER) Roger. And our first solution after CDH, we have a 4-second-early TPI.
- 04 00 34 34 CC Copy, Spider.
- 04 04 34 40 CMP (GUMDROP) Houston, Gumdrop is reading you but very weak.
- 04 00 34 43 CC You are coming loud and clear to me, Gumdrop.
- 04 00 34 47 CMP (GUMDROP) Okay.
- 04 00 34 59 CC And, Spider, this is Houston. The first cut at it, your CDH time looks real good. And could you give me an onboard RCS quantity?
- 04 00 35 08 LMP (SPIDER) Roger. Onboard RCS is reading 85 and 77.
- 04 00 35 15 CC Roger. 85, 77. Thank you.
- 04 00 35 49 LMP (SPIDER) Hey, Gumdrop, Spider.
- 04 00 35 52 CMP (GUMDROP) Go.
- 04 00 35 53 LMP (SPIDER) Roger. Our staging works better than your undocking.

(GOSS NET 1)

Tape 62/8
Page 415

04 00 35 57 CMP Ah ha.. You're one up on me.
(GUMDROP)

04 00 36 10 CC Spider, you had better wait until you get back
before you start that.

04 00 36 14 CDR You haven't heard me say anything.
(SPIDER)

04 00 37 03 CC Okay, Spider/Gumdrop. We are about 30 seconds
LOS Carnarvon. There will be about a 2-minute
break. We will see you over Honeysuckle with
your S-band volumes up.

04 00 37 12 CDR Roger.
(SPIDER)

04 00 37 13 CMP Gumdrop.
(GUMDROP)

HONEYSUCKLE (REV 61)

04 00 38 23 CMP Spider, Gumdrop. How about a range and range
(GUMDROP) rate reading?

04 00 38 28 CDR Okay. We are at 98.5 miles at 10 feet per second.
(SPIDER)

04 00 38 44 CMP Roger. I did. That's pretty good.
(GUMDROP)

04 00 38 49 CMP Yes. If you can just see me, right?
(GUMDROP)

04 00 39 37 LMP Oh, about 10 minutes before the burn. About 10
(SPIDER) or 12 minutes before the burn.

04 00 39 45 LMP You can hold off if you want, but I would like
(SPIDER) your solution as soon as you can give it to me.

04 00 39 54 CDR Well, don't hold off until ...
(SPIDER)

04 00 39 58 CMP Oh, don't worry.
(GUMDROP)

04 00 40 38 CMP Spider, Gmdrop. Seven minutes is a little late.
(GUMDROP) I've got to make a 140-degree maneuver at that
time.

(GOSS NET 1)

Tape 62/9
Page 416

04 00 40 43 LMP Okay, Dave. Go when you have to.
(SPIDER)

04 00 40 46 CMP Okay.
(GUMDROP)

04 00 40 56 CDR Did you get our CDA time?
(SPIDER)

04 00 40 58 CMP Roger. I have the time, but I haven't received
(GUMDROP) any PAD yet. Have you?

04 00 41 02 CDR Negative.
(SPIDER)

04 00 41 03 CMP Okay.
(GUMDROP)

04 00 41 04 CMP They just said that they thought the time looked
(GUMDROP) pretty good.

04 00 41 06 CDR Okay.
(SPIDER)

04 00 41 09 CC Spider/Gumdrop, Houston. We're working on the
PAD. We've got about 4 minutes LOS here. We'll
try to have it.

04 00 41 21 CMP You probably didn't hear him, but he said he's
(GUMDROP) working on it, and they'll probably have it
before the LOS in 4 minutes.

04 00 41 35 CDR Roger. We're not reading him.
(SPIDER)

04 00 41 37 CMP Okay. I'll pick it up for you. I might as well
(GUMDROP) do something.

04 00 42 01 CDR I can have him do a lot of good tracking when it
(SPIDER) gets daylight.

04 00 42 05 CMP But that's what we're built for.
(GUMDROP)

04 00 43 26 LMP Gumdrop, Spider.
(SPIDER)

04 00 43 28 CMP Go ahead.
(GUMDROP)

(GOSS NET 1)

Tape 62/10
Page 417

04 00 43 30 LMP Roger. In case I can't hear him on S-band, you
(SPIDER) might copy down the whole PAD this time. It's
only three more lines past when you normally get.

04 00 43 39 CMP Okay. I've been doing that all the way, anyway.
(GUMDROP)

04 00 43 41 LMP Okay. Thank you.
(SPIDER)

04 00 43 44 CMP Roger.
(GUMDROP)

04 00 43 49 CC Spider/Gumdrop, Houston. We're about a minute
from LOS, so we'll try to pick up our PAD over
the Huntsville at around 47.

04 00 44 01 CMP Roger, Houston. Gumdrop copies. PAD over
(GUMDROP) Huntsville at 47, and can you transmit to Gumdrop
from ...

04 00 44 14 CC Gumdrop, transmit to Gumdrop now?

HUNTSVILLE (REV 61)

04 00 47 36 LMP Gumdrop, Spider.
(SPIDER)

04 00 47 38 CMP Go.
(GUMDROP)

04 00 47 39 LMP Okay. Here is the burn: minus 39.2, plus 0.1,
(SPIDER) and minus 13.7.

04 00 47 56 CMP Roger. Minus 39.2, plus 0.1, and minus 13.7.
(GUMDROP)

04 00 48 03 LMP That's Charlie.
(SPIDER)

04 00 48 05 CC Spider, this is Houston. Do you read me?

04 00 48 09 LMP Roger, Houston. Spider copies.
(SPIDER)

04 00 48 10 CC Roger. I just copied your solution. I have one
that's pretty close to it, if you'd like to copy
a CDK PAD.

(GOSS NET 1)

Tape 62/11
Page 418

04 00 48 18 LMP Roger. Go.
(SPIDER)

04 00 48 20 CMP Go. Gumdrop.
(GUMDROP)

04 00 48 21 CC Roger. And Roger, Gumdrop. 096 58 1400, minus 382, minus 009, minus 151 305, minus 381, minus 153. End of update.

04 00 48 56 LMP Roger. 096 58 1400, minus 382, minus 009, minus 151 305, minus 381, minus 153.
(SPIDER)

04 00 49 12 CC Spider, that is affirmative. Your readback is correct.

04 00 49 21 CMP Spider, Gumdrop here. I did not copy the update ... I got the ground PAD ... did ...
(GUMDROP)

04 00 49 29 LMP That's affirmative ...
(SPIDER)

04 00 49 31 CMP Okay. I've got the ground PAD now, and I'll monitor it ... 1 minute late.
(GUMDROP)

04 00 49 37 LMP Okay. Very good.
(SPIDER)

04 00 49 53 CDR Do you have all of our solution here, Dave?
(SPIDER)

04 00 49 58 CMP Yes, minus 13.7.
(GUMDROP)

04 00 50 01 CDR Okay. That's plus 0.1.
(SPIDER)

04 00 50 04 CMP 0.1.
(GUMDROP)

04 00 50 06 CDR Alrighty.
(SPIDER)

04 00 52 49 CC Spider/Gumdrop, we'll see you over the Redstone at about 03.

04 00 52 58 CMP Roger. Gumdrop copies. Redstone, 03.
(GUMDROP)

(GOSS NET 1)

Tape 62/12
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REDSTONE (REV 61)

- 04 01 03 00 CDR Attaboy. Remember that beer we were talking about
(SPIDER) the other night? I'll buy you one, Dave.
- 04 01 03 10 CC Spider/Gumdrop, Houston standing by. How did it
go?
- 04 01 03 15 CDR Well, it's sort of a kick in the fanny by comparison
(SPIDER) to the DPS, but it went all right. Good friend over
there in the Gumdrop can see me again. I'm off at
daylight.
- 04 01 03 27 CC Very good. Understand.
- 04 01 03 41 CC Spider, Houston. We are still showing the APS
ARMED. Can you verify that?
- 04 01 03 47 CMP Oh, gee.
(GUMDROP)
- 04 01 03 50 CDR Yes. Thank you very much. Thank you, Houston.
(SPIDER)
- 04 01 03 53 CC Roger. You're welcome.
- 04 01 04 06 CC Spider, this is Houston. Did you burn the solution
that I heard you pass to Gumdrop?
- 04 01 04 13 CDR I burned the PGNCS solution, which is the one that
(SPIDER) I passed to Gumdrop.
- 04 01 04 18 CC Very good. Understand you burned it and on the
time.
- 04 01 04 22 CDR That's affirmative.
(SPIDER)
- 04 01 04 47 CMP ... I don't know.
(GUMDROP)
- 04 01 04 49 CDR Gumdrop, why don't you give me your message, and
(SPIDER) we will relay it to them.
- 04 01 04 56 CMP Okay. Wait just a minute.
(GUMDROP)
- 04 01 10 45 CDR And, Gumdrop, Spider. Anytime you want to check
(SPIDER) your range or range rate, just let us know.
- 04 01 10 52 CMP Okay. Stand by.
(GUMDROP)

(GOSS NET 1)

Tape 62/13
Page 420

04 01 12 51 LMP Houston, Spider.
(SPIDER)

04 01 12 55 CC Go, Spider. This is Houston.

04 01 12 57 LMP Okay. Onboard RCS 12 and 75.
(SPIDER)

04 01 13 03 CC Roger. Copy. Thank you very much, Spider.

04 01 13 24 CMP Spider, Gumdrop.
(GUMDROP)

04 01 13 26 CDR Go ahead, Gumdrop.
(SPIDER)

04 01 13 28 CMP I've got 67 miles and 112 feet per second.
(GUMDROP)

04 01 13 32 CDR Okay. We have 67 miles and 107 feet per second.
(SPIDER)

04 01 13 37 CMP How about that.
(GUMDROP)

04 01 13 38 CDR Now wait a second; you're still 5 feet per second off. You're going to have to shape that up.
(SPIDER)

04 01 13 42 CMP Well, let me take some more Marks and I'll get it squared away.
(GUMDROP)

04 01 13 44 CDR Right.
(SPIDER)

04 01 21 20 CDR Gumdrop, Spider. For your information, we've got a TPI time. It's 1 minute late right now.
(SPIDER)

04 01 21 26 CMP Okay. I've got a couple of solutions and I've got 98 03 and 98 04.
(GUMDROP)

04 01 21 32 CDR Roger. 97 57 33.
(SPIDER)

04 01 21 39 CMP 97 57 33. Okay.
(GUMDROP)

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 63/1
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CANARY (REV 62)

- 04 01 23 37 CC And, Spider/Gumdrop, this is Houston. I have a ground solution when you are ready to copy.
- 04 01 23 42 CDR (SPIDER) Spider here. Just a moment.
- 04 01 23 43 CC Roger. We're going to have you in contact for about another 12 minutes.
- 04 01 23 47 CDR (SPIDER) Okay. Spider is here. Ready to copy.
- 04 01 23 53 CC Roger, Spider. Can you take it now, Gumdrop?
- 04 01 23 57 CMP (GUMDROP) Roger. All set. Go ahead.
- 04 01 24 09 CC Roger. Reading TPI: 097 57 4500, plus 196, plus 001, minus 105 223, no roll or pitch, 2670, minus 1010; forward 223 all zips, up 003. End of update.
- 04 01 24 36 CDR (SPIDER) Roger. Understand. 097 57 4500, plus 196, plus 001, minus 105 223 zips and zips 2670, minus 1010, forward 223 zips, and up 003. And did you count our DSKY on our last recycle?
- 04 01 25 03 CC That is affirmative, Spider. Looks like we're shaping up.
- 04 01 25 08 CDR (SPIDER) Looks that way.
- 04 01 25 10 CMP (GUMDROP) Gumdrop. Copy.
- 04 01 25 12 CC Roger, Gumdrop.
- 04 01 26 51 CC Spider and Gumdrop, that was our last update. We are going to GO with that PAD.
- 04 01 27 00 CDR (SPIDER) Spider here. Roger.
- 04 01 27 01 CMP (GUMDROP) Gumdrop. Roger.
- 04 01 27 06 LMP (SPIDER) Hey, Smokey, is Dave Reed smiling?

(COSS NET 1)

Tape 63/2
Page 422

- 04 01 27 09 CC Well - yes; he's pretty happy, but he's not going to relax until you've finished burning.
- 04 01 27 17 LMP Better not.
(SPIDER)
- 04 01 27 47 CDR Gumdrop, Spider.
(SPIDER)
- 04 01 27 50 CMP Go ahead.
(GUMDROP)
- 04 01 27 51 LMP Roger. As soon as we get into the dark, give me a look-see. If you don't see any tracking light - which I guess you won't - we'll put the docking lights on and you might be able to get a Mark on those.
(SPIDER)
- 04 01 28 01 CMP Okay. Might be able to do that at that range.
(GUMDROP)
- 04 01 28 04 LMP Right.
(SPIDER)
- 04 01 28 07 LMP At that range with that big eyeball you've got.
(SPIDER)
- 04 01 28 09 CMP Roger.
(GUMDROP)
- 04 01 31 04 CDR Houston, this is Spider.
(SPIDER)
- 04 01 31 05 CC Go, Spider. This is Houston, here.
- 04 01 31 08 CDR Roger. Concerning the episode we had coming off the probe, and some little VTO's, we have had after we get back up there, I think it might be wise to go ahead and dock when we get there without waiting until almost dark.
(SPIDER)
- 04 01 31 26 CC Roger, Spider. We copy, and sounds like a pretty good idea.
- 04 01 31 32 CDR Why don't you go through those VTO's and see if there is anything that's really important there, and if so we'll try to get it for you, but otherwise I think we might see if that probe is going to work.
(SPIDER)
- 04 01 31 41 OC Roger. Understand. We've got that in work.

(GOSS NET 1)

Tape 63/3
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- 04 01 32 45 CMP Spider, Gumdrop.
(GUMDROP)
- 04 01 32 47 CDR Go ahead. Gumdrop, Spider.
(SPIDER)
- 04 01 32 48 CMP Okay. Mine's conversion now. I've got 9758 on
(GUMDROP) my current solution.
- 04 01 32 55 CDR Very good; very good. Ours is now within about
(SPIDER) 3.7 seconds of the ground's. ... 5741, I think.
- 04 01 33 01 CMP I've got 97 58 19.
(GUMDROP)
- 04 01 33 05 CDR Okay; very good. Sounds like we'll all be together
(SPIDER) then.
- 04 01 33 12 CMP How about that!
(GUMDROP)
- 04 01 34 09 CC Spider/Gumdrop, this is Houston. We're about a
minute or so LOS from Canaries. There is an ARIA,
if you need it, up to about 42; we'll see you at
Carnarvon at 06, and Dave Reed is smiling now.
We might catch you at Tananarive at 49, but we
haven't had much luck yet.
- 04 01 34 33 CDR Okay.
(SPIDER)
- 04 01 34 48 CC And, Spider, this is Houston. Did you - Did
either vehicle read over Tananarive the last pass
when we were calling?
- 04 01 35 00 CDR Houston, this is Spider. I don't remember. We've
(SPIDER) been over so many stations so many times, I couldn't
tell you.
- 04 01 35 08 CC Okay. It was at around CSI, right - immediately
after your CSI burn.
- 04 01 35 14 CDR I read you twice, but it was pretty bad.
(SPIDER)
- 04 01 35 18 LMP We called the ... down to you, too, but didn't get
(SPIDER) any reply.
- 04 01 35 23 CC Okay. Thank you.
- 04 01 35 27 CMP Gumdrop doesn't remember whether he heard you or
(GUMDROP) not.

(GOSS NET 1)

Tape 63/4
Page 424

1
04 01 35 31 CC Okay.

ARIA (REV 62)

- 04 01 42 49 CMP Okay, Spider. I still have you against the earth
(GUMDROP) background.
- 04 01 42 52 LMP Great.
(SPIDER)
- 04 01 42 57 CMP This thing is really tracking.
(GUMDROP)
- 04 01 43 00 LMP Do you have a light?
(SPIDER)
- 04 01 43 02 CMP No. It's still daylight to me; you're little
(GUMDROP) black spots; dark on a light background.
- 04 01 43 17 LMP Okay. We've got about 1425 now.
(SPIDER)
- 04 01 43 20 CMP Okay.
(GUMDROP)
- 04 01 44 18 CDR Okay. Gumdrop, this is Spider. Our time - ready
(SPIDER) to copy?
- 04 01 44 23 CMP Go ahead.
(GUMDROP)
- 04 01 44 28 CDR Gumdrop, are you ready?
(SPIDER)
- 04 01 44 31 CMP Roger. Standing by. Go ahead and read it.
(GUMDROP)
- 04 01 44 33 CDR Okay. 97:57:79.
(SPIDER)
- 04 01 44 40 CMP Okay; good. My last time was 97:58:08.
(GUMDROP)
- 04 01 44 46 CDR Roger.
(SPIDER)
- 04 01 44 47 CMP That's great.
(GUMDROP)

(GOSS NET 1)

Tape 63/5
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04 01 44 57 CMP Ready ... staying in there. ... my mode for a
 (GUMDROP) 4 ... for a 304 read. I want it for a plus point.

04 01 45 05 CMP Okay. It's 31.9 no - 34 miles - 3.9.
 (GUMDROP)

04 01 45 22 CDR All right. Okay?
 (SPIDER)

04 01 45 42 CDR Okay. We're right on the plot.
 (SPIDER)

04 01 45 59 CMP Seven --
 (GUMDROP)

04 01 46 04 CDR I don't know; 81 and - unless you call into them.
 (SPIDER)

04 01 46 10 CDR Dave, here are our DELTA-V's.
 (SPIDER)

04 01 46 13 CMP Good. I'm ready to copy.
 (GUMDROP)

04 01 46 14 LMP Roger. Plus 19.4, plus 0.4, minus 9.7.
 (SPIDER)

04 01 46 24 CMP Roger. Plus 19.4, plus 0.4, minus 9.7.
 (GUMDROP)

04 01 46 31 CDR Roger. That's correct.
 (SPIDER)

04 01 46 33 CMP Good.
 (GUMDROP)

04 01 46 39 CMP Good. Do you want to compare now?
 (GUMDROP)

04 01 46 45 CDR 19.4; I got 19.6.
 (SPIDER)

04 01 46 50 CMP Hello. Spider, Gumdrop.
 (GUMDROP)

04 01 46 53 CDR Go ahead, Gumdrop.
 (GUMDROP)

04 01 46 54 CMP You got a ...
 (GUMDROP)

TANANARIVE (REV 62)

04 01 50 05 CC Spider and Gumdrop, Houston through Tananarive. Standing by. I did copy your final solution; sounds great.

04 01 50 13 CDR (SPIDER) Roger. Spider.

04 01 50 26 CC Spider, Houston. The only one I wasn't sure of was your DELTA-V_X. I read it as 197.

04 01 56 17 CC Spider/Gumdrop, this is Houston. We will see you over Carnarvon at 06.

04 02 03 46 LMP (SPIDER) Yes, I know it.

04 02 03 49 CMP (GUMDROP) Are you all set up for the docking?

04 02 03 52 LMP (SPIDER) Roger.

CARNARVON (REV 62)

04 02 04 09 CMP (GUMDROP) Okay.

04 02 04 12 LMP (SPIDER) I want to get of that ...

04 02 04 14 CMP (GUMDROP) Roger.

04 02 05 02 CDR (SPIDER) Okay, Dave. We're calling for our first midcourse.

04 02 06 07 CDR (SPIDER) Okay, Dave. I've got our DELTA-V's for you.

04 02 06 10 CMP (GUMDROP) Go ahead.

04 02 06 11 CDR (SPIDER) X is minus 1.0, Y is 0 - is minus 0.3, and Z is plus 0.9.

04 02 06 25 CMP (GUMDROP) Well, you can't hardly argue with that.

(GOSS NET 1)

Tape 63/7
Page 427

- 04 02 06 27 CDR No, I think I'll go ahead and burn them here.
(SPIDER)
- 04 02 08 29 CMP Did you finish?
(GUMDROP)
- 04 02 08 30 CDR Okay. Midcourse is complete?
(SPIDER)
- 04 02 08 31 CMP Roger.
(GUMDROP)
- 04 02 11 45 CC Spider/Gumdrop, Houston. We're about one minute
LOS Carnarvon. We'll see you over the Huntsville
in about 8 minutes.
- 04 02 11 50 CDR Okay, Houston. What have you decided about that
(SPIDER) post - or after I get up there? Should I go ahead
and dock or not?
- 04 02 11 56 CC Okay, Jim. We're looking through here and there
are a couple of things we really would like to have
and that's some pictures taken of the ascent engine
area, and we would like to get the rendezvous radar
corona test.
- 04 02 12 12 CDR Okay. Depends on when I break out of sunlight,
(SPIDER) what I can do for you.
- 04 02 12 15 CC Okay; very good.
- 04 02 12 19 CDR And I'm going to go into darkness; wondering how
(SPIDER) we're going to get the probe fixed.
- 04 02 12 22 CC Okay; we understand. And have you talked this
over with Dave? We haven't heard his comments on
the probe.
- 04 02 12 33 LMP Dave, can you hear him?
(SPIDER)
- 04 02 12 39 CMP Roger, Houston. You copy Gumdrop?
(GUMDROP)
- 04 02 12 41 CC We've got Gumdrop here, but I'm going to lose you
in just a few seconds. We'd like to have your
comments on the probe, too, over Huntsville up
here.
- 04 02 12 50 CMP Okay, and be ready to give me a GO for the PYRO
(GUMDROP) ARM there too, please.

(GOSS NET 1)

Tape 63/8
Page 428

04 02 12 54 CC Okay; very good.

HUNTSVILLE (REV 62)

04 02 19 49 LMP Okay; about 15 seconds ago, Dave.
(SPIDER)

04 02 19 52 CMP Roger.
(GUMDROP)

04 02 20 04 CMP Hey, Rusty.
(GUMDROP)

04 02 20 21 LMP Okay ... we will.
(SPIDER)

04 02 20 24 CMP Okay.
(GUMDROP)

04 02 20 30 CMP What kind of range rate do you have?
(GUMDROP)

04 02 20 32 LMP I have 18 700. Right now, it's 42 feet per second.
(SPIDER)

04 02 20 39 CMP All right. I've got 3.0 miles at 43 feet per
(GUMDROP) second.

04 02 20 44 LMP Okay.
(SPIDER)

04 02 20 46 CMP What's your pitch angle?
(GUMDROP)

04 02 20 48 LMP It's about 86 degrees - something like that.
(SPIDER)

04 02 20 53 CMP Okay.
(GUMDROP)

04 02 21 24 LMP You can let -
(SPIDER)

04 02 21 35 LMP Dave, do you want to get some pictures of the
(SPIDER) ascent engine area?

04 02 21 40 CMP Roger. I got that. Thanks.
(GUMDROP)

04 02 21 42 LMP Okay.
(SPIDER)

04 02 21 45 CMP Oh, I see you out there coming in the sunlight.
(GUMDROP)

04 02 21 48 LMP Great.
(SPIDER)

04 02 21 51 CMP You're the biggest, friendliest, funniest looking spider I've ever seen.
(GUMDROP)

04 02 22 01 CC And, Spider/Gumdrop, Houston. We are copying you through the Huntsville - next five minutes.

04 02 22 06 LMP Okay.
(SPIDER)

04 02 22 09 CC And, Gumdrop, in regards to your last request, we have no TM here at the Huntsville in regards to that PYRO ARM.

04 02 22 20 CMP Roger. Understand.
(GUMDROP)

04 02 22 42 CMP Houston, Gumdrop.
(GUMDROP)

04 02 22 49 CC Go, Gumdrop. Houston.

04 02 22 53 CMP Roger. We've got a bird here. The only thing I could think of on that probe is that my fingers slipped off of the switch before it got all the way out. Other than that I just can't think of a thing.
(GUMDROP)

04 02 23 04 CC Roger. That's about the only thing we can come up here with - that you didn't hold the switch long enough, Dave. I guess - How do you feel about it? You think it's anything - any problem?

04 02 23 23 CMP No, I really don't. I went back to see if they ... a way out to retract, and I had the barber poles which said they had extended all the way. Then I went up to extend again and it dropped right off.
(GUMDROP)

04 02 23 35 CC Roger, Gumdrop. Copy.

04 02 24 30 CDR Dave, I think what we'll do is come on up and stop out front there and pitch over so you can look at our ascent engine, then pitch back around.
(SPIDER)

(GOSS NET 1)

Tape 63/10
Page 430

- 04 02 24 19 CMP Okay.
(GUMDROP)
- 04 02 24 26 CMP I agree. We ought to get on with it.
(GUMDROP)
- 04 02 24 28 CDR Yes.
(SPIDER)
- 04 02 24 38 CMP What kind of range do you have now?
(GUMDROP)
- 04 02 24 40 CDR I have 9800 feet and a range rate of 32-1/2 feet
 per second.
- 04 02 24 45 CMP Thank you.
(GUMDROP)
- 04 02 24 47 CDR I have just a little bit of line-of-sight rate up.
(SPIDER)
- 04 02 24 51 CMP Roger.
(GUMDROP)
- 04 02 24 53 CMP I have just about 9000 feet and 33.
(GUMDROP)
- 04 02 24 55 CDR Okay.
(SPIDER)
- 04 02 25 22 CDR Okay. I'll turn on my line-of-sight rate now,
 Dave.
- 04 02 25 25 CMP Okay.
(GUMDROP)
- 04 02 26 51 CDR Okay. I just went to 6000 feet at 30 feet per
 second.
- 04 02 26 54 CMP Okay.
(GUMDROP)
- 04 02 27 05 CC Okay. We copy you. Right on the breaking schedule,
 Spider. And we'll see you over Hawaii in about 3
 minutes.
- 04 02 27 38 CDR Okay, Dave. I can see you.
(SPIDER)

(GOSS RET 1)

Tape 63/11
Page 431

HAWAII (REV 62)

04 02 29 53 CDR Boy, are you bright, Dave. I'm not sure I'm going
(SPIDER) to be able to see to dock with this COAS I have.

04 02 30 38 CDR Okay. I'm at 950 feet, 14 feet per second.
(SPIDER)

04 02 30 41 CMP Okay. Sounds pretty good.
(GUMDROP)

04 02 30 49 CC Spider/Gumdrop, we've got you through Hawaii now
good and solid, and I copied your last transmission;
sounds great.

04 02 30 55 CDR Roger.
(SPIDER)

04 02 31 07 CMP Your thrusters are little yellow dots.
(GUMDROP)

04 02 31 09 CDR Yes. They're really throwing a lot of stuff off.
(SPIDER)

04 02 31 18 CDR Okay. We're 5 feet per second, about 610 feet.
(SPIDER)

04 02 31 24 CMP Okay.
(GUMDROP)

04 02 31 29 CMP Bit you are upside down, again.
(GUMDROP)

04 02 31 31 CDR Yes. I was just thinking one of us isn't right-
(SPIDER) side up.

04 02 31 39 CMP Boy, you've got contraptions hanging out all over.
(GUMDROP)

04 02 31 44 CDR That's show biz.
(SPIDER)

04 02 32 16 CDR Okay. I have us about 370 feet.
(SPIDER)

04 02 32 19 CMP Okay. Looks closer than that.
(GUMDROP)

04 02 32 21 CDR Doesn't it, though?
(SPIDER)

(GOSS NET 1)

Tape 63/12
Page 432

- 04 02 32 33 CDR Okay. Got your camera out so you can take a
(SPIDER) picture of my bottom half?
- 04 02 32 36 CMP Roger. Why don't you come all the way in and
(GUMDROP) stop and then pitch over?
- 04 02 32 40 CDR Yes, that's what we're doing. We come on in and
(SPIDER) stop, and then you're going to take over station-
keeping and I'll pitch around.
- 04 02 33 09 CMP Give me a Mark next time you turn your thrusters
(GUMDROP) on.
- 04 02 33 12 CDR Okay, 3, 2, 1.
(SPIDER)
- 04 02 33 14 CDR MARK.
(SPIDER)
- 04 02 33 17 CMP Thank you.
(GUMDROP)
- 04 02 33 23 CC How does that sports car handle, Jim?
- 04 02 33 26 CDR Pretty nice.
(SPIDER)
- 04 02 33 50 CDR Okay, Davey. It says 100 feet on the radar tape.
(SPIDER) It looks a little closer to that to me, but what
do you say we stop here?
- 04 02 33 58 CMP Okay. That's a good idea.
(GUMDROP)
- 04 02 34 04 CDR Okay. I'll get a STOP and STABILIZE and then
(SPIDER) give it to you.
- 04 02 34 28 CMP Okay. That looks pretty good to me.
(GUMDROP)
- 04 02 34 30 CDR Okay, good.
(SPIDER)
- 04 02 34 34 CDR Let me take a couple of pictures of your nose; then
(SPIDER) I'll start pitching around.
- 04 02 34 37 CMP All right.
(GUMDROP)
- 04 02 34 42 CMP Okay. You tell me while I guide it, okay?
(GUMDROP)

04 02 34 46 CDR Okay, babes. You've got it now.
(SPIDER)

04 02 34 48 CMP Alrighty; I've got it.
(GUMDROP)

04 02 35 14 CDR I don't even see you in there, David.
(SPIDER)

04 02 35 16 CMP Oh, I'm here.
(GUMDROP)

04 02 35 23 CMP I've been waiting for you to bring that good
(GUMDROP) water back.

04 02 36 20 LMP Okay, Dave. We're going to start up on AUTO
(SPIDER) MANEUVER here, and we're going to pitch up; then
you can take a picture of our bottom.

04 02 36 26 CMP Alrighty.
(GUMDROP)

04 02 36 27 LMP Here we go. 2 degrees per second.
(SPIDER)

04 02 36 29 LMP Okay, half-degree per second.
(SPIDER)

04 02 36 32 CMP That's a little better.
(GUMDROP)

04 02 37 21 CMP It's quietened down a little bit if it looks funny.
(GUMDROP)

04 02 37 23 LMP I'm - We're looking at you.
(SPIDER)

04 02 38 36 CMP Looks like a big black hole where an engine used
(GUMDROP) to fire.

04 02 38 39 LMP Okay. Get a picture of it, I guess.
(SPIDER)

04 02 38 45 CMP I've got a couple. Why don't you just keep going
(GUMDROP) the way you're going?

04 02 38 48 LMP Okay.
(SPIDER)

04 02 38 51 CMP You've got another 20 degrees to go.
(GUMDROP)

(COSS NET 1)

Tape 63/1b
Page 434

- 04 02 39 42 CMP (GUMDROP) Okay. I can see injectors. As a matter of fact, I can even see the chamber right now.
- 04 02 39 48 LMP (SPIDER) Okay, fine. Let's take another picture there, and we're going to maneuver back around.
- 04 02 39 53 LMP (SPIDER) Okay. This will be 2 degrees per second.
- 04 02 39 55 CMP (GUMDROP) Okay. Go ahead; I've got the pictures.
- 04 02 40 06 CMP (GUMDROP) How fast you going to do this one?
- 04 02 40 07 LMP (SPIDER) 2 degrees a second.
- 04 02 40 11 CMP (GUMDROP) Okay.
- 04 02 40 46 CMP (GUMDROP) Say a Mark before you start, will you?
- 04 02 40 48 LMP (SPIDER) Okay.
- 04 02 41 01 LMP (SPIDER) I'll maneuver now, Dave. You ready?
- 04 02 41 04 CMP (GUMDROP) Go.
- 04 02 41 16 LMP (SPIDER) Houston, for your information we could never get the radar to unlock, so we couldn't ...
- 04 02 41 25 CC Roger. Understand. The rendezvous radar stayed locked.
- 04 02 42 21 CMP (GUMDROP) Okay. I guess the next order of business is to get set up.
- 04 02 42 25 LMP (SPIDER) Roger. Get set up and let's get on with the docking.
- 04 02 42 29 CMP (GUMDROP) Okay. Do you want to stationkeep on me?
- 04 02 42 31 LMP (SPIDER) I've got it.

(GOSS NET 1)

Tape 63/15
Page 435

04 02 42 32 CMP You've got it.
(GUMDROP)

04 02 42 41 CC Gumdrop, Houston. We're standing by for your logic and PYRO ARM.

04 02 42 46 CMP Roger, Houston. Thank you. Logic on my Mark: 3, 2, whoops! Stand by. Okay, 3, 2, 1.
(GUMDROP)

04 02 42 55 CMP MARK.
(GUMDROP)

04 02 42 57 CC Roger. Copy.

04 02 43 08 CC And, Gumdrop, Houston. You are GO for PYRO ARM.

04 02 43 11 CMP Roger. Understand. GO for PYRO ARM. Pyros arming now.
(GUMDROP)

GOLDSTONE (REV 62)

04 02 43 34 CMP Okay. Houston, this is Gumdrop here. I've got the full-extend/retract switch in RETRACT. I've got two barber poles. Should have a couple of grey, I believe.
(GUMDROP)

04 02 43 50 CC Roger, Gumdrop. We copy.

04 02 44 13 LMP When did they go on barber pole, Dave?
(SPIDER)

04 02 44 17 CMP Well, when I checked them for full extension before, they were barber pole.
(GUMDROP)

04 02 44 38 CMP Roger. Maybe that's right, huh?
(GUMDROP)

04 02 44 44 CMP Okay. Now, I went - now, I cycled again out to EXTEND and now back to RETRACT, and I've got two grey.
(GUMDROP)

04 02 44 50 LMP Okay.
(SPIDER)

04 02 44 51 CMP So I think we're all right now.
(SPIDER)

04 02 44 53 LMP Yes. Let's get on with it and see if we really are.
(SPIDER)

(GOSS NET 1)

Tape 63/16
Page 436

- 04 02 44 55 CMP Okay. Do you want to try AUTOMATIC RETRACT?
(GUMDROP)
- 04 02 44 57 LMP Let's try AUTOMATIC RETRACT just like we talked
(SPIDER) about it.
- 04 02 45 01 CMP Okay.
(GUMDROP)
- 04 02 45 04 CDR Why don't you do your roll? When you do that,
(SPIDER) then I'm - How's the sun? Would you be able to
dock on top of me if I can't see you?
- 04 02 45 13 CMP I'm in good shape sunwise.
(GUMDROP)
- 04 02 45 15 CDR Okay. Fine.
(SPIDER)
- 04 02 45 16 CMP Maybe we ought to not try AUTOMATIC RETRACT,
(GUMDROP) because what if I - There's something sort of
worrying me. If I hit the RETRACT now, it
might go.
- 04 02 45 25 CDR Okay; fine. That's a good idea - excellent ide
(SPIDER) Let's leave it where it is, and when I punch in
you pull me in.
- 04 02 45 31 CC Spider, Houston.
- 04 02 45 33 CDR Go ahead.
(SPIDER)
- 04 02 45 34 CC Roger. Would you verify your DAP load prior to
this docking?
- 04 02 45 39 CDR Roger. The DAP's four balls 2.
(SPIDER)
- 04 02 45 42 CC Okay. Thank you very much.
- 04 02 45 55 CMP Houston, Gumdrop.
(GUMDROP)
- 04 02 45 57 CC Go, Gumdrop..
- 04 02 45 59 CMP I think we're okay on the probe now. Do you
(GUMDROP) concur?
- 04 02 46 04 CC Roger. It sounds like it's okay now, Dave. Yes
we concur.

(G)SS NET 1)

Tape 63/17
Page 437

04 02 46 09 CMP Okay.
 (GUMDROP)

04 02 46 15 CMP Okay, Spider, I'll do stationkeeping when you turn around.
(GUMDROP)

04 02 46 19 CDR Why don't you do your roll first, Dave?
(SPIDER)

04 02 46 21 CMP Alrighty. Here we go.
(GUMDROP)

04 02 46 22 CDR ... window over on the other side.
(SPIDER)

04 02 46 25 CMP Rolling left 60.
(GUMDROP)

04 02 46 26 CDR Roger.
(SPIDER)

04 02 47 24 CMP Okay. I'm holding now, 60-degree left roll.
(GUMDROP) Could you stand by 1 second while I turn the docking light on for you?

04 02 47 30 CDR Sure.
(SPIDER)

04 02 48 02 CDR Okay. I've got it, Dave - very faintly.
(SPIDER)

04 02 48 06 CMP Okay. Stand by.
(GUMDROP)

04 02 48 26 CMP Okay. All set. Tighten that band and the whole works.
(GUMDROP)

04 02 48 29 CDR Okay, Dave. You stationkeep and I'm going to pitch over.
(SPIDER)

04 02 48 33 CMP Okay.
(GUMDROP)

04 02 49 19 CMP Hey, you've still got the target.
(GUMDROP)

04 02 49 21 CDR Good.
(SPIDER)

04 02 49 30 CMP And the drogue.
(GUMDROP)

04 02 49 46 CMP Right there looks pretty good.
(GUMDROP)

04 02 49 52 CMP Okay. You've got it?
(GUMDROP)

04 02 49 54 CDR Not yet.
(SPIDER)

04 02 49 55 CMP Okay.
(GUMDROP)

04 02 50 04 CDR Okay. I can't see my COAS against you right now;
(SPIDER) let me get up closer.

04 02 50 09 CMP All right. Okay. You've got the stationkeeping,
(GUMDROP) right?

04 02 50 12 CDR I've got it.
(SPIDER)

04 02 50 13 CMP All right.
(GUMDROP)

04 02 50 36 CDR I've got to look through the top of my helmet.
(SPIDER) Am I beaded up?

04 02 50 40 CMP You've got to come back quite a ways, to your
(GUMDROP) rear.

04 02 50 51 CMP Easy does it.
(GUMDROP)

04 02 50 55 CMP Whoops! Too far.
(GUMDROP)

04 02 50 57 LMP Yes, I know.
(SPIDER)

04 02 51 04 CMP It looks like a sporty little machine.
(GUMDROP)

04 02 51 07 LMP It's not even going in the right direction.
(SPIDER)

04 02 51 33 CMP Houston, Gumdrop. What time is sunset?
(GUMDROP)

04 02 51 40 CC It's 99:15, Gumdrop.

04 02 51 44 CMP Okay. We got about 25 minutes.
(GUMDROP)

04 02 51 47 CC That's affirmative.

04 02 51 53 CDR (SPIDER) I just can't even see the COAS, Dave. I don't know exactly where you are with respect to it.

04 02 51 58 CMP (GUMDROP) Okay. You want me to do it?

04 02 52 00 CDR (SPIDER) No. Let me work my way in here a little closer.

04 02 52 02 CMP (GUMDROP) Okay.

04 02 54 06 LMP (SPIDER) Dave, I just can't see it. Let me get in a little closer.

04 02 54 09 CMP (GUMDROP) You're coming fine. Just keep coming easy like that. Looks like you are coming from an angle, but you are coming in with the right attitude. You ought to go forward and to your right a little bit, relative to your body.

04 02 55 14 CMP (GUMDROP) You're fine.

04 02 55 23 CMP (GUMDROP) Right there.

04 02 55 25 LMP (SPIDER) That doesn't look like it to me.

04 02 55 28 CMP (GUMDROP) You get to come in from an angle anyway, so you're doing good.

04 02 55 35 CMP (GUMDROP) Your yaw is off about 2 degrees.

04 02 55 47 CDR (SPIDER) I just can't see the darn COAS. I can't see what my attitude is.

04 02 55 51 CMP (GUMDROP) Yes.

04 02 56 15 CDR (SPIDER) Okay. I'm lined up in translation, but I can't tell what my attitude is, Dave.

04 02 56 20 CDR (SPIDER) If I don't see it - There it is, there.

04 02 56 24 CMP Now you're coming in.
(GUMDROP)

04 02 56 27 CMP That's looking better.
(GUMDROP)

04 02 56 30 CMP There you go.
(GUMDROP)

04 02 56 32 CMP I think you've got a handle on it now.
(GUMDROP)

04 02 56 34 CDR It keeps disappearing.
(SPIDER)

04 02 56 39 CMP Okay. Now you're looking pretty good.
(GUMDROP)

04 02 56 59 CMP Okay. You're moving into the boundary. You're
(GUMDROP) inside the capture boundary now.

04 02 57 13 CMP You're okay.
(GUMDROP)

04 02 57 18 CMP Looking good.
(GUMDROP)

04 02 57 22 CDR Okay. I can see it now.
(SPIDER)

04 02 57 33 CDR Thing's really sporting.
(SPIDER)

04 02 57 34 CMP Sure is; I can tell. You are looking good.
(GUMDROP)

04 02 57 46 CMP Keep it coming.
(GUMDROP)

04 02 57 55 CMP Almost there.
(GUMDROP)

04 02 58 08 CMP Okay. You are about there.
(GUMDROP)

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(COSS NET 1)

Tape 64/1
Page 441

ASCENSION (REV 63)

- — — — SC ... about here.
- — — — CMP (GUMDROP) Yes.
- — — — CMP (GUMDROP) I have capture.
- — — — CDR (SPIDER) Very good!
- — — — LMP (SPIDER) Great!
- — — — CMP (GUMDROP) Okay. Let's get her lined up.
- — — — CDR (SPIDER) Okay. Why don't you do it? I can't tell where it is. We're in FREE now.
- — — — CC Good show, Spider.
- — — — LMP (SPIDER) Roger. Our onboard fuel reading: 65 and 65 - Make it 55 and 55.
- — — — CC Roger. 55 and 55. Thank you, Rusty.
- — — — CMP (GUMDROP) Retract.
- — — — CMP (GUMDROP) Did you get the latches?
- — — — CMP (GUMDROP) Hang on.
- — — — SC ...
- — — — CDR (SPIDER) Whew! I haven't heard a sound like that in a long time!
- — — — CMP (GUMDROP) And it's a very nice docking.
- — — — CDR (SPIDER) ... That wasn't a docking; that was an eye test!
- — — — CDR (SPIDER) Okay, Houston. We're locked up.

(COSS NET 1)

Tape 64/2
Page 442

- CC Sounds like you passed the 20-10, Jim. That sounded real beautiful. Good show.
- 04 03 00 07 CMP (GUMDROP) Okay, Spider. I'm in FREE and you're in FREE, and you may proceed into the tunnel here when I get squared away.
- 04 03 00 15 CDR (SPIDER) Okay, Dave. We'll start getting ready for the unmanned APS.
- 04 03 00 22 CMP (GUMDROP) Okay. Why don't you take a break for a while?
- 04 03 00 24 LMP (SPIDER) No, we've still got a lot to do.
- 04 03 00 26 CDR (SPIDER) Man, when I take a break, I'm going to bed for three days.
- 04 03 00 29 CMP (GUMDROP) Roger.
- 04 03 00 31 CDR (SPIDER) Houston, did you get that?
- 04 03 00 32 CC Roger, Spider. Houston copies.
- 04 03 00 41 CC We concur. Three days off.
- 04 03 00 44 CDR (SPIDER) What is that? Saturday and Sunday and Christmas?
- 04 03 00 55 CC That was a hard day's work; and it looked real good, troops.
- 04 03 01 00 CDR (SPIDER) Thank you, Smokey. I may ...
- 04 03 01 05 CDR (SPIDER) -- Smokey, you still there?
- 04 03 01 07 CC Yes, Jim. We've still got you for about another minute here.
- 04 03 01 11 CDR (SPIDER) Okay. Listen, I hope the whole world's listening, but I tell you I think we got greatest set of flight controllers that we've - is anywhere that can be found. I'd like to thank you all, and I'm sure that the rest of the guys up here would too.
- 04 03 01 25 CC Roger, Spider. We copy. Thank you very much.

(COSS NET 1)

Tape 64/3
Page 443

04 03 02 36	CT	Go ahead.
04 03 02 43	CT	...
04 03 03 37	CC	ARIA 6, this is Houston CAP COMM.
04 03 03 42	CT	Houston CAP COMM, ARIA 6.
04 03 03 44	CC	Roger. Do you hear anything from the spacecraft?
04 03 03 49	CT	That's negative at this time. We don't have an S-band signal.
04 03 03 53	CC	Okay. If you get a lockup, would you call me on air-to-ground here? I'd like to talk to them.
04 03 03 59	CT	That's roger.

ARIA 6 (REV 63)

04 03 05 38	CC	Roger.
04 03 06 07	CT	Houston, this is ARIA 6. Is two-way lock modulation ON?
04 03 06 12	CC	Roger, ARIA 6. Go REMOTE.
04 03 06 15	CT	Roger. We're REMOTE.
04 03 06 19	CC	Hello, Spider/Gumdrop. This is Houston through ARIA 6. How do you read?
04 03 06 41	CC	Spider, this is Houston through ARIA 6. Do you read?
04 03 07 14	CC	Okay, ARIA. You can go LOCAL. I guess we aren't going to get them. We'll try them through Ascension. Thank you.

ASCENSION (REV 63)

04 03 07 19	CDR (SPIDER)	Go ahead, Houston. You just came in.
04 03 07 22	CC	Roger. Spider, we are curious about the option on the ACT star alignment. Are you going to do that?

(GOSS NET 1)

Tape 64/4
Page 444

- 04 03 07 48 CDR Houston, I don't know - how long do you have we
(SPIDER) have until that docked - that on-band APS burn,
now?
- 04 03 07 57 CC Stand by.
- 04 03 07 59 CDR I've got my flight plan tucked under my belt
(SPIDER) right now.
- 04 03 08 26 CMP And, Houston, anytime you've got it, we'll take
(GUMDROP) the update on the P30 for the APS burn.
- 04 03 09 07 CT Roger. Over and out.
- 04 03 09 09 CC Spider, Houston.
- 04 03 09 12 CDR Go ahead.
(SPIDER)
- 04 03 09 14 CC Roger. The first opportunity we have, that we
feel we can make, is about 102 hours; it's 101:52.
- 04 03 09 26 CDR Okay. I'm just wondering about our difficulty
(SPIDER) in trying to clean up big messes when we're moving
things back and forth; and if we take too
much time out, I was concerned about getting the
thing ready. We'll see how things go here. Okay?
- 04 03 09 45 CC Okay. There is - The first opportunity is a little
over an hour from now, and I didn't even want
to pass that on to you. It's your decision, but
I don't think you can make that one.
- 04 03 09 57 CDR Yes. I kind of doubt it, too.
(SPIDER)
- 04 03 10 01 CC Okay. We concurred to not even shoot for that
one, and we're looking now at 101:52.
- 04 03 10 11 CC Gumdron, do you call Houston?
- 04 03 10 15 CMP Houston, do you call Gumdrop?
(GUMDROP)
- 04 03 10 18 CC Roger. If we are going to do the AOT star alignment - I guess it'll depend on how things go, but I have some gimbal angles you'll need for that. I can give them to you anytime you want, if you want them at all.

(COSS NET 1)

Tape 64/5
Page 445

- 04 03 10 32 CMP Well, why don't you give them to me? Let me get
(GUMDROP) a piece of paper, here, and we'll have them if
we can use them.
- 04 03 10 37 CC Okay.
- 04 03 10 50 CMP Gumdrop is ready to copy.
- (GUMDROP)
- 04 03 10 52 CC Roger. For star 15: roll 35 36 32 81 365; and
star 25: 34 74 26 61 35 97.
- 04 03 11 23 CMP Roger. Copy. For star 15: 35 36 32 81 365;
(GUMDROP) for star 25: 34 74 26 61 35 97.
- 04 03 11 37 CC Roger. That is confirmed, Gumdrop. And one fast
question: did you ever see the tracking light on
Spider?
- 04 03 11 44 CMP No; it was out when he got here.
(GUMDROP)
- 04 03 11 46 CC Understand.
- 04 03 11 54 CMP But the way this navigation works in here, you
(GUMDROP) hardly need a nightside pass.
- 04 03 12 00 CC Gumdrop, Houston copies. Sounds great.
- 04 03 12 04 CMP ... go next flight.
(GUMDROP)
- 04 03 14 43 CC Spider, Houston.
- 04 03 14 55 CC Spider, Houston.
- 04 03 15 00 CMP Houston, Gumdrop. Go.
(GUMDROP)
- 04 03 15 01 CC Gumdrop, would you relay to Spider that we would
sure like to have him check that OPS heater again
before he stows that OPS that had failed? I'm
going to lose you here, and we'll try to talk to
you over Tananarive at around 25.
- 04 03 15 16 CMP Roger. Understand. Spider, they want you to
(GUMDROP) check the OPS heater, the one that failed, before
you put it away.
- 04 03 15 25 CDR Okay.
(SPIDER)

(GOSS NET 1)

Tape 64/6
Page 446

04 03 15 27 CMP They got it, Houston.
(GUMDROP)

04 03 15 29 CC Roger, Gumdrop. Copy. And I copied Spider there.

TANANARIVE (REV 63)

04 03 25 28 CC Spider/Gumdrop, this is Houston through Tananarive Standing by.

04 03 25 48 CDR Gumdrop, are we in any kind of - -
(SPIDER)

04 03 26 01 LMP I fired that one, Dave. Hey, right now we are in
(SPIDER) the right kind of attitude.

04 03 26 08 LMP Hey, listen. Maybe if you went to FREE, and we
(SPIDER) took control here, we could just jockey around and do it.

04 03 26 20 LMP We have it.
(SPIDER)

04 03 26 44 SC ...

04 03 26 47 CC Spider/Gumdrop, Houston through Tananarive.

04 03 27 46 CC Spider/Gumdrop, this is Houston transmitting in the blind. I'm not picking you up. We would like to recommend you use the LM RCS just as much as possible. We used just a little more command module CSM RCS there than we'd predicted on the rendezvous.

04 03 28 10 CDR Okay, Houston. This is the Spider here. We're using our RCS thrusters.
(SPIDER)

04 03 28 14 CC Okay. Real good.

CARNARVON (REV 63)

04 03 40 20 CC And, Spider/Gumdrop, this is Houston through Carnarvon.

04 03 40 28 CMP Roger, Gumirop.
(GUMDROP)

(GSS NET 1)

Tape 64/7
Page 447

- 04 03 41 08 CC And, Spider, do you read Houston. Are you too -
Gumdrop, if they're too busy to answer, let me
know.
- 04 03 41 18 CMP Go ahead. Houston, Gumdrop.
(GUMDROP)
- 04 03 41 20 CC Roger. Do you know if Spider's reading me or
is just too busy - can't answer me?
- 04 03 41 27 CDR We were reading you; we were kind of busy, Stu.
(SPIDER)
- 04 03 41 30 CC Okay, Gumdrop. At a convenient time, would like
for you to pass to them this - We want to do a
couple of steps on that AGS system troubleshoot -
that warning light - prior to them doing the AGS
give align and update.
- 04 03 41 51 CMP Okay. We'll do that.
(GUMDROP)
- 04 03 41 53 CC Okay.
- 04 03 42 17 CC Gumdrop, Houston. We're noticing your surge tank
down a little.
- 04 03 42 22 CMP Roger. That could be from the tunnel PRESS.
(GUMDROP)
- 04 03 42 26 CC Roger.
- 04 03 42 36 CMP Boy, it is down a little, isn't it?
(GUMDROP)
- 04 03 42 40 CC That's roger.
- 04 03 42 42 CMP Okay. Spider, Gumdrop.
(GUMDROP)
- 04 03 42 46 CDR Go ahead.
(SPIDER)
- 04 03 42 47 CMP Hey, listen, we're dropping off quite a bit on
our surge tank, and I think it might be either
the tunnel or you. The latches look good; I
think we've got a good seal. How are you doing
over there?
- 04 03 43 09 LMP Okay. We got our cabin pressure way up to -
(SPIDER) We're 5.9. In fact, we're going to relieve it
in a minute here.

(GOSS NET 1)

Tape 64/8
Page 448

- 04 03 43 14 CMP Okay. Listen, maybe you ought to open that door.
(GUMDROP) The surge tank is down to 400, and we ought to
 do something here pretty quick.
- 04 03 43 22 CDR Roger.
(SPIDER)
- 04 03 43 25 CC Gumdrop, Houston. Could you check your cabin air
 return valve?
- 04 03 43 33 SC How about that.
- 04 03 43 36 CDR Is the tunnel okay, Dave? I'll open up the door.
(SPIDER)
- 04 03 43 40 CMP Yes. I've got the probe out.
(GUMDROP)
- 04 03 43 45 CDR Okay. Open the hatch.
(SPIDER)
- 04 03 43 54 CC And, Gumdrop, that's the suit return valve we'd
 like to have you take a look at.
- 04 03 43 59 CMP Roger. You're right. That one was still closed.
(GUMDROP)
- 04 03 44 05 CMP I had just taken my helmet and gloves off after
(GUMDROP) going into the tunnel, and I hadn't opened that.
- 04 03 44 16 CMP Okay, Houston. I see it. Surge tank's going
(GUMDROP) back up.
- 04 03 44 18 CC Okay. Thank you, Gumdrop.
- 04 03 44 22 CMP Thank you, Smokey.
(GUMDROP)
- 04 03 44 24 CC Roger.
- 04 03 45 16 LMP Houston, here's your dock alignment. Do you have
(SPIDER) the star angle difference?
- 04 03 45 25 CC Stand by, Spider, just one.
- 04 03 45 28 LMP Okay. It's 5 zeros - give you the torque --
(SPIDER)
- 04 03 45 35 CDR Hi, Dave!
(SPIDER)

(GOSS NET 1)

Tape 64/9
Page 449

04 03 45 36 LMP Houston, are you ready to copy torqueing angles?
(SPIDER)

04 03 45 38 CC Okay. I have them now.

04 03 45 41 LMP Okay. Understand you've got the torqueing angles.
(SPIDER)

04 03 45 45 CC Affirmative, Spider. I have the torqueing angles.

04 03 45 48 LMP Okay.
(SPIDER)

04 03 45 50 CC And that's pretty good on that star angle difference. Way to work, big team!

04 03 45 58 LMP Yes. Crazy? It's a little longer.
(SPIDER)

04 03 46 02 CC Yes. It's real swinging, and we're about to lose you at Carnarvon in 30 seconds, and we'll see you over Hawaii at 04.

04 03 46 10 LMP Roger. Will you have a PAD by that time?
(SPIDER)

04 03 46 13 CC That's affirmative. I have the PAD in my hand now.

04 03 46 18 LMP Okay. We'll see you at Hawaii with it.
(SPIDER)

04 03 46 20 CC Roger.

HAWAII (REV 63)

04 04 04 40 CC Spider/Gumdrop, this is Houston through Hawaii.

04 04 04 44 CMP Hello, Hawaii, Gumdrop. We're making progress.
(GUMDROP)

04 04 04 49 CC Roger. Understand. And whenever you all are ready, I have your APS depletion PAD and your LM jettison attitude.

04 04 05 00 CDR -- Rusty!
(SPIDER)

04 04 05 01 CMP Stand by.
(GUMDROP)

(COSS NET 1)

Tape 64/10
Page 450

- 04 04 05 02 CC Roger.
- 04 04 05 21 CC And, Spider, Houston. We'd like to uplink your state vector. I noticed you are in POO now. We can go if you will give us permission.
- 04 04 05 31 CMP Is that for Spider or Gumdrop?
(GUMDROP)
- 04 04 05 34 CC That was for Spider.
- 04 04 05 36 CDR Roger, Houston. Say again. This is Spider.
(SPIDER)
- 04 04 05 39 CC Roger, Spider. You are in POO. We'd like to up-link you a state vector.
- 04 04 05 43 LMP Okay. Go ahead. And I am ready to copy your PAD.
(SPIDER)
- 04 04 05 48 CC Okay. And are you ready - Okay. Here is the APS depletion: 101 52 4400, plus 52356, minus 52682, plus 00520 74275 314 023. Guess you really didn't need those, did you? Okay. Plus 48549, minus 52675, plus 19626. That's the end of the APS depletion PAD. And your LM weight: 9549.
- 04 04 07 13 LMP Okay. On the readback I got 101 52 4400, plus 52356, minus 52682, plus 00520 74275 314 023, plus 48549, minus 52675, plus 19626; and LM weight: 9549.
(SPIDER)
- 04 04 07 46 CC Roger. And for the jettison attitude, I have angles for either the CSM or the LM, if you wanted to maneuver with the LM - save a little command module CSM RCS fuel.
- 04 04 08 03 LMP Okay. Go ahead with them. I don't know which one we'll do.
(SPIDER)
- 04 04 08 06 CC Okay. Reading the angles for the LM: roll 314, pitch 023, yaw 011; and the CSM angle: 318.5, 282.0, 044.7. And we are through with the computer.
- 04 04 08 35 LMP Roger. I understand that you are through with the computer. Be advised our docking ring angle now has changed, and therefore, I think, probably the CSM angles will have to be modified to a certain extent. Docking ring angle is now minus 0.2.
(SPIDER)

(COSS NET 1)

Tape 64/11
Page 451

- 04 04 08 53 CC Roger. Understand docking ring is minus 0.2. How come you were so sloppy in roll there?
- 04 04 09 03 CDR (SPIDER) I don't think I'll say anything to that.
- 04 04 09 05 CC (Laughter)
- 04 04 09 23 CC Okay. And, Rusty, we've got a little trouble-shooting, here, on the AGS - we'd like to do on that warning light. We don't know if you want to take the time or not.
- 04 04 09 49 CC Spider, this is Houston. Do I still have you?
- 04 04 09 53 LMP (SPIDER) All right. Go ahead, Houston.
- 04 04 09 56 CC Roger. We've got a procedure here that we'd like to do concerning the AGS, and it's that caution light - We'd like to have you do this procedure prior to the AGS update in your checklist.
- 04 04 10 10 LMP (SPIDER) Roger.
- 04 04 10 12 CC Are you ready to copy?
- 04 04 10 15 LMP (SPIDER) Stand by. How long is it?
- 04 04 10 17 CC It's about five steps.
- 04 04 10 19 LMP (SPIDER) Okay. Stand by.
- 04 04 10 23 LMP (SPIDER) Okay. Go ahead.
- 04 04 10 29 LMP (SPIDER) All right, Houston. Go ahead.
- 04 04 10 31 CC Roger. Step 1 is: perform normal turn-off procedure. Verify the AGS caution light goes out. Open, then close the caution CWEA circuit breaker. Perform the normal turn-on procedure. And then, after you have done this, why, reset the AGS time and update and align as normal checklist.
- 04 04 11 12 LMP (SPIDER) Okay. You want a normal AGS turnoff. You want to verify the AGS caution light out. Open and

(GOSS NET 1)

Tape 64/12
Page 452

close CWEA breaker, perform a normal turn-on and update and align the AGS.

04 04 11 23

CC

That is affirmative, Spider.

04 04 11 51

LMP
(SPIDER)

Hey, Jim. Are you going to do that checklist?

04 04 11 56

LMP
(SPIDER)

Okay. Seems to me there's one more thing I have got to get down here; I can't think of what it is ...

REDSTONE (REV 64)

04 04 12 24

CC

Spider, Houston. We should have you through the Redstone now.

04 04 12 32

CT

Redstone here.

04 04 12 34

CC

Roger. Rusty, we also would like to request that you bring the LM COAS back into the CSM.

04 04 12 44

LMP
(SPIDER)

Roger. Do you have data at the Redstone here, Houston?

04 04 12 49

CC

That's affirmative.

04 04 12 51

LMP
(SPIDER)

Roger. Do you want me to go through that procedure right now?

04 04 12 54

CC

On the AGS? Yes, let's do.

04 04 12 59

LMP
(SPIDER)

Coming up.

04 04 13 04

CMP
(GUMDROP)

Houston, Gumdrop.

04 04 13 06

CC

Go ahead, Gumdrop.

04 04 13 08

CMP
(GUMDROP)

Roger. Do you have any suggestions on anything else we might leave in the LM to lighten up the command module?

04 04 13 17

CC

We copy that. Stand by. We'll put that in work. We'd like to have you turn off the fan in H₂ tank 2.

04 04 13 25

SC

All right.

(COSS MET 1)

Tape 64/13
Page 453

- 04 04 13 34 LMP (SPIDER) The light is still on. ... caution light came on when I went to STANDBY on the powerup again, and it stayed on after pushing in the AEA breaker and going to OPERATE.
- 04 04 13 52 CC Roger. We copy.
- 04 04 14 01 CC Okay. We have no more questions. Rusty, if we could get you to cycle the track light on and off, we've got data now. Could you do that for us?
- 04 04 14 13 LMP (SPIDER) Spider. Track light on; track light off.
- 04 04 14 25 CC Okay. Rusty, could you do that for us once more? On your Mark.
- 04 04 14 30 LMP (SPIDER) Roger. 3, 2, 1.
- 04 04 14 32 LMP (SPIDER) MARK.
- 04 04 14 33 LMP (SPIDER) Track light on. Let me know when you want it off.
- 04 04 14 36 CC Okay. Turn it off on your Mark.
- 04 04 14 39 LMP (SPIDER) Roger. 3, 2, 1.
- 04 04 14 41 LMP (SPIDER) MARK.
- 04 04 14 42 LMP (SPIDER) Track light off.
- 04 04 14 46 CC Okay. Thank you very much. And one other change to your checklist: in the closeout here, we want you to change - Put the S-band antenna on the number 2 AFT position. This is rendezvous, page 41, step 10.
- 04 04 15 08 LMP (SPIDER) Roger. S-band antenna to AFT.
- 04 04 15 16 CC And, Spider, one other thing. We would like to -- This is on rendezvous-42, step 5. Do not ascent feed system A. Leave system A in NORMAL and system B to ASCENT FEED INTERCONNECT.

(COSS NET 1)

Tape 64/14
Page 454

- 04 04 15 41 LMP Understand. Do not ASCENT INTERCONNECT SYSTEM
(SPIDER) ... Gumdrop, did you get that?
- 04 04 15 55 CDR Yes. He didn't want one of the ascents interconnected,
(SPIDER) but I don't know whether it was A or B.
- 04 04 16 00 CC Spider, it is do not connect - interconnect system
Alfa. Interconnect system Baker only.
- 04 04 16 08 CDR Roger. Bravo only; and negative on the Alfa inter-
(SPIDER) connect.
- 04 04 16 12 CC Very good. Thank you.
- 04 04 16 24 SC ...
- 04 04 16 26 CC Okay. Rusty, one other thing: we want you to
leave the track circuit breaker open.
- 04 04 16 39 LMP Roger. Is that the track light circuit breaker?
(SPIDER)
- 04 04 16 42 CC That is affirmative. Your track light circuit
breaker. It's rendezvous-43; step 3. We would
like that open.
- 04 04 16 49 LMP It's open now.
(SPIDER)
- 04 04 16 50 CC Very good. Thank you.
- 04 04 16 57 LMP Okay, Jim.
(SPIDER)
- 04 04 17 04 LMP Commander.
(SPIDER)
- 04 04 17 07 CDR Roger. Do you read?
- (GUMDROP)
- 04 04 17 08 LMP Roger. How I do.
(SPIDZR)
- 04 04 17 09 CDR Commander's suit isolation with suit disconnect;
(GUMDROP) connect the LM hoses and stow; CDR transfer to the
CSM with the ISA and the CDR rendezvous checklist -
I've done that - We've got the index, and we've
got the PLSS cartridge over here.
- 04 04 17 25 CDR And do you have PLSS stowed now?
(GUMDROP)

(COSS NET 1)

Tape 64/15
Page 455

- 04 04 17 27 LMP Roger. Go ahead. I have everything stowed on the
(SPIDER) floor. Go ahead and read it.
- 04 04 17 30 CDR Okay. LM switch closeout for jettison ordeal;
(GUMDROP) lighting off.
- 04 04 17 33 LMP Lighting off.
(SPIDER)
- 04 04 17 34 CDR Master arm OFF.
(GUMDROP)
- 04 04 17 36 LMP Master arm OFF?
(SPIDER)
- 04 04 17 38 CDR OH, I mean. Master arm ON.
(GUMDROP)
- 04 04 17 40 LMP OH. Okay.
(SPIDER)
- 04 04 17 42 SC ...
- () 04 04 17 43 CDR Audio, commander: S-band T/R OFF.
(GUMDROP)
- 04 04 17 45 LMP OFF.
(SPIDER)
- 04 04 17 46 CDR Relay OFF.
(GUMDROP)
- 04 04 17 48 LMP Relay OFF?
(SPIDER)
- 04 04 17 49 CDR Roger. S-Band T/R OFF, relay OFF.
(GUMDROP)
- 04 04 17 51 LMP Roger.
(SPIDER)
- 04 04 17 52 CDR Next step. Guidance control PGHCS.
(GUMDROP)
- 04 04 17 55 LMP Guidance control PGHCS.
(SPIDER)
- 04 04 17 56 CDR Channel control AUTO.
(GUMDROP)

(GOSS NET 1)

Tepe 64/16
Page 456

- 04 04 17 58 LMP Mode control —
(SPIDER)
- 04 04 18 01 CDR -- negative. Throttle control AUTO.
(GUMDROP)
- 04 04 18 03 LMP Throttle control AUTO.
(SPIDER)
- 04 04 18 07 CDR Manual throttle COMMANDER.
(GUMDROP)
- 04 04 18 08 LMP Manual throttle COMMANDER.
(SPIDER)
- 04 04 18 10 CDR Engine arm OFF.
(GUMDROP)
- 04 04 18 14 LMP Engine arm OFF.
(SPIDER)
- 04 04 18 15 CDR Ascent helium REG's 1 and 2 tb - grey.
(GUMDROP)
- 04 04 18 18 LMP Ascent helium REG's 1 and 2 grey.
(SPIDER)
- 04 04 18 20 CDR Abort stage flush and guarded.
(GUMDROP)
- 04 04 18 23 LMP Roger. Your first word is cutting out every time.
(SPIDER) Abort and abort stage flush and guarded.
- 04 04 18 29 CDR I'm using the mike button. Can you hear me
(GUMDROP) now? Okay. Next step. System A and B ascent
fuel and ascent oxidizers (4) tb - barber pole.
- 04 04 18 38 LMP -- barber pole.
(SPIDER)
- 04 04 18 39 CDR System A and B quad 1, 2, 3, 4, (8) tb - grey.
(GUMDROP)
- 04 04 18 43 LMP Roger. I verify it.
(SPIDER)
- 04 04 18 44 CDR CRSFD - tb - barber pole.
(GUMDROP)
- 04 04 18 47 LMP CRSFD tb - barber pole.
(SPIDER)

(GOSS NET 1)

Tape 64/17
Page 457

- 04 04 18 49 CDR System A and B main shutoff valve tb - grey.
(GUMDROP)
- 04 04 18 53 LMP A and B shutoff, grey.
(SPIDER)
- 04 04 18 56 CDR Attitude monitor to AGS.
(GUMDROP)
- 04 04 19 01 LMP Attitude monitor to AGS.
(SPIDER)
- 04 04 19 05 CDR Think that must be your ball. Right?
(GUMDROP)
- 04 04 19 07 LMP Yes. It's on the LMP side.
(SPIDER)
- 04 04 19 09 CDR Glycol to pump 1.
(GUMDROP)
- 04 04 19 12 LMP Glycol to pump 1.
(SPIDER)
- 04 04 19 14 CDR O₂ H₂O quantity monitor - caution and warning RESET.
(GUMDROP)
- 04 04 19 19 LMP -- RESET.
(SPIDER)
- 04 04 19 21 CDR Next step. Attitude control (3) to MODE CONTROL.
(GUMDROP)
- 04 04 19 25 LMP In MODE CONTROL.
(SPIDER)
- 04 04 19 27 CDR MODE CONTROL, ATT hold.
(GUMDROP)
- 04 04 19 30 LMP MODE CONTROL, ATT hold.
(SPIDER)
- 04 04 19 32 CDR RCS system A/B-2, quad 1, 2, 3, 4; AUTO.
(GUMDROP)
- 04 04 19 37 LMP AUTO.
(SPIDER)
- 04 04 19 38 CDR Exterior lighting OFF, they have here. Where do
(GUMDROP) they want it, TRACK or OFF?
- 04 04 19 41 LMP OFF.
(SPIDER)

(COSS NET 1)

Tape 64/18
Page 458

- 04 04 19 47 CDR ACA/4 jet (2), ENABLE.
(GUMDROP)
- 04 04 19 52 LMP Roger. ENABLE.
(SPIDER)
- 04 04 19 53 CDR TTCA/TRANSLATION (2), ENABLE.
(GUMDROP)
- 04 04 19 55 LMP TTCA/TRANSLATION (2), ENABLE.
(SPIDER)
- 04 04 19 57 CDR Inverter to number 2.
(GUMDROP)
- 04 04 20 00 LMP Inverter is on 2.
(SPIDER)
- 04 04 20 01 CDR BATT 5 and 6 backup feed (2) - ON tb - grey.
(GUMDROP)
- 04 04 20 06 LMP Backup feed's on tb - grey.
(SPIDER)
- 04 04 20 08 CDR BATT 5 and 6 normal feed (2) OFF/RESET, tb -
(GUMDROP) barber pole.
- 04 04 20 13 LMP OFF/RESET, tb - barber pole.
(SPIDER)
- 04 04 20 18 CDR Here's something I can't read. Audio --
(GUMDROP)
- 04 04 20 24 CC Jim, that's audio LMP.
- 04 04 20 28 CDR Thanks. Audio LMP. S-band T/R, OFF.
(GUMDROP)
- 04 04 20 35 LMP S-band T/R - bye bye, Houston, OFF.
(SPIDER)
- 04 04 20 39 CDR Relay, OFF.
(GUMDROP)
- 04 04 20 40 LMP Relay, OFF.
(SPIDER)
- 04 04 20 41 CDR S-band - PM prim prime, OFF. PCM, range OFF, HI.
(GUMDROP)
- 04 04 20 52 LMP Got it.
(SPIDER)

(GOSS NET 1)

Tape 64/19
Page 459

- 04 04 20 53 CDR Tape, OFF - tb barber pole. Hey, we didn't get ...
(GUMDROP)
- 04 04 20 56 LMP Okay. I got it.
(SPIDER)
- 04 04 20 57 CDR Did you get the tape off of there?
(GUMDROP)
- 04 04 20 59 LMP I'll get it.
(SPIDER)
- 04 04 21 00 CDR Okay. Why don't you get it and throw it in here
(GUMDROP) now so that we won't forget it?
- 04 04 21 03 LMP S-band AFT.
(SPIDER)
- 04 04 21 04 CDR FORWARD or AFT.
(GUMDROP)
- 04 04 21 09 CC That was a change. We want that on number 2 AFT.
- 04 04 21 14 CDR Okay. S-band 2 AFT.
(GUMDROP)
- 04 04 21 17 LMP Jim, you'll have to say that one again. I missed
(SPIDER) it after we talked about the tape recorder. You bypassed me there.
- 04 04 21 23 CDR Okay. S-band number 2 AFT.
(GUMDROP)
- 04 04 21 26 LMP Roger. Got it.
(SPIDER)
- 04 04 21 28 CDR Next step: suit gas diverters go to EGRESS.
(GUMDROP)
- 04 04 21 31 LMP Suit gas diverters, fully egressed.
(SPIDER)
- 04 04 21 33 CDR Cabin REPRESS: CLOSE.
(GUMDROP)
- 04 04 21 36 LMP Cabin REPRESS is in CLOSE.
(SPIDER)
- 04 04 21 39 CDR PLSS fill, CLOSE.
(GUMDROP)
- 04 04 21 40 LMP PLSS fill, CLOSE.
(SPIDER)

(COSS NET 1)

Tape 64/20
Page 460

04 04 21 42 CDR Descent O_2 , CLOSE.
(GUMDROP)

04 04 21 45 LMP Is that descent, Jim?
(SPIDER)

04 04 21 46 CDR Descent. Descent O_2 , CLOSE.
(GUMDROP)

04 04 21 48 LMP Roger. Got you.
(SPIDER)

04 04 21 50 CDR Ascent number 1 O_2 , CLOSE.
(GUMDROP)

04 04 21 55 LMP I think that was ascent number 1 O_2 , CLOSED.
(SPIDER) I don't know why you're cutting out, but the first words are cutting out, Jim.

04 04 22 00 CDR Just a second. Let me check some of the switches.
(GUMDROP)

04 04 22 06 CDR Yes. These are the same kind I've always used.
(GUMDROP) Let me check another lead here.

04 04 22 12 CC Rusty, how do you read Houston?

04 04 22 14 LMP You're five-square, Houston.
(SPIDER)

04 04 22 16 CC Do you want me to read the list?

04 04 22 19 LMP No. That's okay.
(SPIDER)

04 04 22 20 CC Okay.

04 04 22 21 CDR Houston, how do you read me?
(GUMDROP)

04 04 22 22 CC I read you loud and clear, Jim.

04 04 22 24 CDR Okay. I guess we're incompatible up here.
(GUMDROP)

04 04 22 27 CDR Okay. That's ascent number 1 O_2 closed.
(GUMDROP)

04 04 22 32 LMP Roger. Ascent number 1 O_2 closed.
(SPIDER)

(GOSS NET 1)

Tape 64/21
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- 04 04 22 34 CDR Ascent number 2 O₂, OPEN.
(GUMDROP)
- 04 04 22 37 LMP Ascent number 2 O₂, OPEN.
(SPIDER)
- 04 04 22 39 CDR Suit isolation (Commander), SUIT DISCONNECT.
(GUMDROP)
- 04 04 22 42 LMP SUIT DISCONNECT.
(SPIDER)
- 04 04 22 44 CDR Suit circuit relief, AUTO.
(GUMDROP)
- 04 04 22 46 LMP Circuit relief, AUTO.
(SPIDER)
- 04 04 22 48 CDR Cabin gas return to EGRESS.
(GUMDROP)
- 04 04 22 50 LMP Cabin gas return going EGRESS.
(SPIDER)
- 04 04 22 52 CDR Cabin relief and dump (2) to AUTO.
(GUMDROP)
- 04 04 22 56 LMP Cabin relief and dump: the forward is AUTO, and
(SPIDER) I'll put the upper in AUTO.
- 04 04 23 02 CDR Okay. DFI primary, ON; secondary, OFF.
(GUMDROP)
- 04 04 23 06 LMP DFI, DFI primary, ON; secondary, OFF.
(SPIDER)
- 04 04 23 11 CDR Okay. LMP transfer to the CSM umbilicals. We'll
(GUMDROP) send them down to you in just a minute.
- 04 04 23 16 LMP Okay.
(SPIDER)
- 04 04 23 18 CC Hey, Rusty. Houston. I want to remind you again
that you're going to have to put new time in the
AGS. That procedure we gave you wiped the time out
of the AGS.
- 04 04 23 27 LMP Roger, Houston. Thank you.
(SPIDER)
- 04 04 23 57 CC And, Rusty. Want to remind you again of that
new LM weight we passed you.

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- 04 04 24 05 LMP Roger. Understand.
(SPIDER)
- 04 04 25 43 LM ... there it goes. That was some state VEC you
(SPIDER) gave me. It integrated forever.
- 04 04 25 52 CC Roger. Understand.
- 04 04 27 33 CDR Hey, Rusty, are you still up there?
(GUMDROP)
- 04 04 27 35 LMP Yes.
(SPIDER)
- 04 04 27 37 CDR Okay. Are you switched over to the umbilical yet?
(GUMDROP)
- 04 04 27 39 LMP No. I'm loading the AGS here, Jim; just a minute.
(SPIDER)
- 04 04 27 41 CDR Okay.
(GUMDROP)
- 04 04 28 31 LMP Okay. Want me to transfer over now?
(SPIDER)
- 04 04 28 38 CDR ...
(GUMDROP)
- 04 04 28 44 CDR Are you still on LM COMM, or on our COMM?
(GUMDROP)
- 04 04 28 46 LMP I'm on LM COMM.
(SPIDER)
- 04 04 28 47 CDR Okay.
(GUMDROP)
- 04 04 28 49 LMP Stand by. I'll switch it over.
(SPIDER)
- 04 04 28 51 CDR ... CSM umbilicals. And when you do that, we'll
(GUMDROP) turn your suit flow on, and we'll turn your audio power off over here so we can switch over to it.
- 04 04 28 59 LMP ... Okay. Dave?
(SPIDER)
- 04 04 29 14 LMP ... Boy, sure getting a bunch of noise.
(SPIDER)

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04 04 29 30 LMP Dave?
(SPIDER)

04 04 29 56 LMP Okay. You can turn on my suit flow, Jim.
(SPIDER)

04 04 29 59 CDR Okay.
(GUMDROP)

04 04 30 02 CDR Okay. Your suit flow is on.
(GUMDROP)

04 04 30 05 LMP Okay. And I'm going to be disconnecting the COMM
here; and give me about a minute and you can connect
up there.
(SPIDER)

04 04 30 10 CDR Okay. Just a minute.
(GUMDROP)

04 04 32 12 CC And, Gumbrop, this is Houston. At any convenient
time - Stand by one, Gumbrop. Disregard that.

04 04 32 22 CDR Okay. We will disregard your message.
(GUMDROP)

04 04 32 24 CC Roger. Understand.

04 04 32 53 CC Okay. Gumbrop, Houston. If you've got one of
the troops in there with a spare hand to write,
I could give you your block data now. That would
be one thing out of the way for tonight.

04 04 33 05 CDR Okay. Just a minute.
(GUMDROP)

04 04 33 07 CC Roger.

END OF TAPE

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ANTIGUA (REV 64)

- CC Houston. If you've got one of the troops there with a spare hand to write, I could give you a block data. That would be one thing out of the way tonight.
- CDR Okay. Just a minute.
(GUMDROP)
- CC Roger.
- 04 04 33 42 LMP Houston, this is Spider, I guess.
(SPIDER)
- 04 04 33 48 CC Roger, Spider I guess. This is Houston, I know.
- 04 04 33 53 LMP Okay. If you can see the DSKY right now, you'll notice that the angles for MOUN 18 do not correspond with what you passed me on the data.
(SPIDER)
- 04 04 34 05 CC Okay, Rusty. That's something that I was wanting to get to you. The angles that I passed you were FDAI angles.
- 04 04 34 10 LMP Roger. That's what I'm looking at, FDAI angles. However, yaw is not constrained, and it's a possibility that if we went to a right yaw angle that the pitch and roll would come in.
(SPIDER)
- 04 04 34 27 CC Roger. We agree with that, and we're having guidance reconfirm these angles now, Spider.
- 04 04 34 47 CMP Houston, go ahead with the block data if you like.
(GUMDROP)
- 04 04 34 50 CC Okay. I've got about a minute here; I'll start reading: 065 4 Baker, plus 338, minus 1699; and Spider, we're saying if you do go to those angles - if you yaw, do that 011. That way we will have the right angles.
- 04 04 35 17 LMP Okay.
(SPIDER)
- 04 04 35 19 CC I'm going to lose you here, Gumdrop. I'll finish up this block data over Ascension, and we'll hit Ascension at 42.
- 04 04 35 28 CMP Understand, 42.
(GUMDROP)

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ASCENSION (REV 64)

04 04 42 30 CC Apollo 9, Houston.
04 04 42 49 CC Apollo 9, Houston.
04 04 43 23 CC Apollo 9, Houston through Ascension.
04 04 43 26 CMP (GUMDROP) Hello, Houston. This is Apollo 9. The Gumdrop ... right now, and we seem to not have the right angles on our DSKY ...
04 04 43 58 CC Apollo 9, this is Houston. You sort of dropped out on me. We're showing the right angles on the LM DSKY. Are you saying your angles are not correct in the command module?
04 04 44 48 CC Apollo 9, Houston.
04 04 45 04 CC Apollo 9, Houston. If you read us, we are showing both vehicles in the proper attitude - proper angles.
04 04 45 46 LMP (SPIDER) Hey, Houston, this is Spider.
04 04 45 49 CC Go, Spider.
04 04 45 51 LMP (SPIDER) Roger. I want to notify you that on the AGS all day long, 407 has been jumping to a plus 1. I'm going to set it back to zero here, but there isn't a snowball's chance it's going to stay there until the burn time.
04 04 46 10 CC Roger. Copy. Understand.
04 04 46 17 CMP (GUMDROP) And, Houston, this is Gumdrop here. Do you want us to be in minimum deadband to hold this thing here now?
04 04 46 26 CC Stand by, Gumdrop.
04 04 47 29 CC Gumdrop, Houston.
04 04 47 40 CC Gumdrop, this is Houston. If you read, we recommend in the CSM in MIN deadband.
04 04 47 47 CMP (GUMDROP) Okay.

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04 04 49 00 CC And Gumdrop/Spider, we'll see you over Carnarvon at 14, if you read.
04 04 49 09 CMP 14.
(GUMDROP)
04 04 49 17 LMF Hey, Houston, Spider.
(SPIDER)
04 04 49 19 CC Go ahead, Spider.

CARNARVON (REV 64)

04 05 14 00 CMP Houston, Apollo 9.
04 05 14 02 CC Houston. Roger. We're standing by for your logic switches.
04 05 14 07 CMP Okay. Before that, do you have a separation attitude for us?
04 05 14 12 CC Affirmative. SEP attitude: roll, 137.4; pitch, 092.5; yaw, 021.9. And note your TIG is 101 plus 32 plus 44.
04 05 14 40 CMP Okay. 137.4, 092.5, 021.9, at a TIG of 101 32 44. You're right there today.
04 05 14 52 CC Yes. Roger.
04 05 14 57 CMP Okay. What's our jettison time to get off the LM?
04 05 15 10 CMP Houston, we're ready to ... update.
04 05 15 16 CC Okay. We're standing by for your logic.
04 05 15 25 CMP All right. Logic bus ON at this time.
04 05 15 38 CC Apollo 9, Houston. You have a GO for PYRO ARM.
04 05 15 43 CDR Roger.
04 05 15 44 CMP Houston, one other question: what time do you want us to jettison the LM - What time do you want us to get off the LM? Do you have any preference?
04 05 15 52 CC Roger. Ten minutes prior to your SEP maneuver or at 22.
04 05 15 56 CMP Okay. Understand 22.

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04 05 17 07 LMP Houston, Apollo 9.
04 05 17 08 CC Houston. Go.
04 05 17 10 LMP Roger. Just to clarify one thing in the procedure, there, in exiting the LM. We left the ascent interconnects on system Alfa CLOSED and on Bravo OPEN. We also ran the same configuration on the main shut-off valve; that is, we closed the main shut-off valve in system Bravo and left it open in Alfa. Hopefully, that's what you wanted.
04 05 17 39 CC 9, Houston. Affirmative; that's good.
04 05 17 43 LMP Okay; thank you.
04 05 18 26 CC 9, Houston. Thirty seconds to LOS. Guam at 25, and it's looking good.
04 05 18 32 CDR Okay; fine. Thank you.
04 05 18 56 CC 9, Houston. Just as a reminder, we didn't see your pyros on yet.
04 05 19 01 CMP Okay. I'll get them on in just another minute or two.

GUAM (REV 64)

04 05 25 15 CC Apollo 9, Houston through Guam. Standing by.
04 05 26 00 CC Apollo 9, Houston.
04 05 26 02 CDR Okay. Stand by, Houston.
04 05 26 04 CC Roger.
04 05 32 08 CC 9, Houston. Thirty seconds LOS; Hawaii in about 39.
04 05 32 12 CDR Roger.
04 05 32 27 CC 9, Houston. Recommend limit cycle OFF.
04 05 32 31 CMP Say it again.
04 05 32 32 CC Recommend limit cycle OFF.

HAWAII (REV 64)

04 05 39 45 CC Apollo 9, Houston through Hawaii.

04 05 39 48 CMP Hello, Houston. This is Apollo 9. We were able to get that SEP maneuver off in the direction that we had intended. We did an automatic maneuver in the PGNCS that very carefully placed us gimbal lock, so we thrusted out to the side of it, and we have it in sight. We're all clear.

04 05 40 06 CC Roger. Understand you are well clear and we have a GO, then, for the LM maneuver.

04 05 40 12 CMP Affirmative.

04 05 40 13 CC Roger.

04 05 40 54 LMP Houston, Apollo 9.

04 05 40 56 CC Houston. Go.

04 05 40 57 LMP Roger. Could you refresh us on the burn time?

04 05 41 01 CC Roger. The burn time is at 52 plus 44.

04 05 41 05 LMP Thank you.

04 05 41 36 CC 9, Houston. The burn time is really 53 plus 14. I can give you a clock time here at 11 minutes, or do you want it?

04 05 41 47 CDR Okay.

04 05 42 00 CC 15 seconds to 11 minutes.

04 05 42 02 CDR Okay.

04 05 42 11 CC 4, 3, 2, 1.

04 05 42 15 CC MARK.

04 05 42 16 CC Eleven minutes.

04 05 42 17 CDR Roger.

04 05 43 02 CC 9, Houston. The LGC is all set up, and the engine is ARMED.

04 05 43 07 CDR Roger. Very good.

(GOSS MET 1)

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GOLDSTONE (REV 64)

04 05 51 17 CC Apollo 9, Houston. About 2 minutes to go; do you still feel comfortable in your position?

04 05 51 22 CDR Oh, yes. We're well clear.

04 05 51 23 CC Roger.

04 05 53 27 CDR He's burning like mad, Houston. Looks real nice.

04 05 53 31 CC Very good; it's looking good down here.

04 05 53 34 LMP Hey, it's really moving out.

04 05 54 23 CMP Houston, that engine's still burning away like mad.

04 05 54 27 CC Very good. We've got about 4-1/2 more minutes, and it looks like about the only thing we got is a very slight pitch oscillation.

04 05 55 03 CDR We can still see him out there, Houston. He's really a long ways away.

04 05 55 07 CC Okay.

04 05 55 11 CDR I hope I didn't forget anything onboard it.

04 05 55 14 CC We do, too.

04 05 55 18 CC Did you get the LMP?

04 05 55 20 CDR No. I didn't forget him. I left him there on purpose. (Laughter)

04 05 55 24 CC Okay.

04 05 55 38 CMP And, Houston, we have fuel cell 2 warning light on.

04 05 55 43 CC Roger.

04 05 55 44 LMP ... C E, Houston.

04 05 55 47 CC Roger. It looks like condenser exhaust.

04 05 55 50 LMP Yes.

04 05 55 51 CMP Roger. It's the same thing we've been seeing all day.

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TEXAS (REV 65)

04 05 59 14	CDR	Hey, Houston. Do you read Apollo 9?
04 05 59 17	CC	Houston, Roger. We've got about 45 seconds yet. We just had shutdown.
04 05 59 20	CMP	Roger. He put out a big cloud of white stuff.
04 05 59 25	CC	Roger. Copy.
04 05 59 27	LMP	He's sure a long ways away.
04 06 00 08	CDR	Houston, Apollo 9.
04 06 00 09	CC	Houston. Go.
04 06 00 10	CDR	Roger. What time do you expect to give us the block data?
04 06 00 14	CC	Roger. I'll give it over MILA at 57.
04 06 00 21	CDR	Okay. 102 57.
04 06 00 24	CC	Roger. Negative. 101 57.
04 06 00 29	CDR	Alrighty. ... 200.
04 06 00 30	CC	Wait a minute. I've got the wrong data here.
04 06 00 43	CC	Be at MILA at 22.
04 06 00 45	CDR	Roger. 22.

ANTIGUA (REV 65)

04 06 04 57	CC	Apollo 9, Houston through Antigua.
04 06 05 08	CC	Apollo 9, Houston through Antigua.
04 06 05 46	CC	Apollo 9, Houston through Antigua.
04 06 06 07	LMP	Houston, Apollo 9.
04 06 06 12	CC	9, Houston. I'll give you a couple of block datas here, and then we'll recompute them and give you everything with block data 12.

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04 06 06 21 CDR Okay.

04 06 06 29 LMP You're free to read them.

04 06 06 30 CC Okay. 065 4 Bravo, plus 338, minus 1699 102
56 23 4825; 066 3 Alfa, plus 312, plus 1446
104 20 28 4824.

END OF TAPE

TANANARIVE (REV 65)

04 06 36 58 CC Apollo 9, Houston through Tananarive.

04 06 37 02 CDR Houston, Apollo 9. How do you read?

04 06 37 05 CC Oh, not too bad. Same thing from Tananarive. We'll try it, though.

04 06 37 10 CDR We've got a couple of questions for you.

04 06 37 13 CC Roger. Go.

04 06 37 15 CDR Okay. First, fuel cell 2 seems to be slipping down the power curve there; we're about 2 AMPS low on it. The PTU is still running high and kicking on the MASTER ALARM every once in a while. The other question is H₂ pressures. Tank 1 is now registering about 261 or so and - oh, yes - 275. Tank 2 is about - Tank 1 is about 262, and tank 2 is about 275.

04 06 37 56 CC Okay. I think that last thing you were talking about was H₂ tank pressures, and if it's gone up above 260, go ahead and turn them off. We plan to pump them up again tonight and let them decay while you are sleeping.

04 06 38 17 CMP Roger. We cut the heaters off on the H₂ cryo.

04 06 38 41 CC 9, Houston. Are you still with me?

04 06 38 46 CMP Houston, 9. We're broken. We've got the H₂ heaters ... off at the present time.

04 06 38 52 CC Roger. Copy. We'll delete BATT A charge tonight.

GUAM (REV 65)

04 06 59 39 CC Apollo 9, Houston through Guam.

04 06 59 45 LMP Roger. Hello. Houston, Apollo 9. Go ahead.

04 06 59 48 CC Roger. We have your state vector; we request POO and ACCEPT.

04 06 59 55 LMP Okay. You have POO in ACCEPT.

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- 04 06 59 58 CC Roger.
- 04 07 00 01 CMP We didn't copy much over Pretoria and Tananarive. Will you say again what you were talking about on the fuel cells and the cryos?
- 04 07 00 10 CC Okay. I think you turned the H₂ heaters off there, I hope.
- 04 07 00 16 CDR That's affirmed.
- 04 07 00 17 CC And when you turned them off, did you go from the ON position, or from the AUTO position to OFF?
- 04 07 00 23 CDR We went from AUTO to OFF.
- 04 07 00 25 CC Okay; afraid of that.
- 04 07 00 28 CDR Didn't like that, huh?
- 04 07 00 29 CC No.
- 04 07 00 33 CDR Pressures were getting up pretty high. Do you want to go to ON now?
- 04 07 00 36 CC Okay. Let me tell you our plans now. What we'd like to do is take them on up to 275-270, sorry - by your MANUAL cycle and then heaters and fans OFF. We'd like to do that just as late as we can prior to your rest cycle.
- 04 07 00 55 CDR Okay. We'll run them up to 270 and then turn them off and leave the heaters and fans off, too; is that right?
- 04 07 01 02 CC Yes; for the night. And we're hoping we can get a 12-hour decay there before we hit the MASTER ALARM again.
- 04 07 01 09 CDR Okay; but you want to leave everything off overnight. Is that right?
- 04 07 01 12 CC That is affirmative.
- 04 07 01 14 CDR Okay.
- 04 07 01 20 CC Hey, you might tell Jim we got a - Papa Alpha Tango and about three little ones here really proud of today's operations.
- 04 07 01 31 CDR What did you say, Ron?
- 04 07 01 33 CC I said we've got Papa Alpha Tango back there in the back room and three little ones, and they are really proud of today's operations.

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- 04 07 01 41 CDR Say hello to those four, would you, please?
- 04 07 01 45 CC Will do.
- 04 07 01 46 CDR On second thought, I'll say hello. Hello, there.
- 04 07 01 55 CC Okay, 9. We'd like to delete the BATT A charge.
- 04 07 02 01 CDR Very well.
- 04 07 02 04 CC Okay. For RETRO's needs down here, he would like to know - We'd like to get a list of the non-checklist items that you left in the LM and also the non-checklist items that you might have brought back from the IM.
- 04 07 02 23 CDR Okay. Stand by one.
- 04 07 02 31 CMP And while you're standing by, how about the fuel cell, what do you think about that?
- 04 07 02 35 CC Okay. On the fuel cell, what we're hoping is that as soon as we power down, the exhaust temperature - It should come down, and also it ought to even up the load again.
- 04 07 02 46 CMP Okay.
- 04 07 02 48 CC We're not too hot about doing an H₂ purge because - of course - it uses is little bit of hydrogen there.
- 04 07 02 56 CMP Yes, that's true. Do you want to do any O₂ purges tonight?
- 04 07 03 00 CC Whatever's on the flight plan.
- 04 07 03 02 CMP Okay. We'll do an O₂ purge.
- 04 07 03 06 CDR Ron?
- 04 07 03 07 CC Go.
- 04 07 03 08 CDR We left a great big bag - temporary storage bag - it's about 3 feet long and a foot wide and a foot thick over on the IM, and it was full of garbage; food wrappers and things like that. It didn't weigh very much, but it probably must have weighed 10 pounds or so. We didn't bring anything significant back with us in the way of weight.

We do have a lithium hydroxide canister out of the ... and that's probably the heaviest item that we have, and we haven't found a place to stow it yet. Let me - It's probably ... down somewhere on the aft bulkhead. Probably down towards the lower equipment bay.

- 04 07 03 44 CC Okay. We copy that.
- 04 07 03 51 CC Apollo 9, Houston. How about the COAS - LM COAS, did it come back?
- 04 07 03 56 CDR Oh, Roger. I got the LM COAS.
- 04 07 03 57 CC Okay. Good.
- 04 07 04 04 CDR I don't think we have anything that weighs anything, though. I tell you what we'll have to do, Ron. We brought the books back. We got all the checklist stuff back with us, but we didn't have time to sort out the numbers so we have two whole - That probably weighs another 5 or 8 pounds.
- 04 07 04 21 CC Okay. We understand that.
- 04 07 04 23 CDR And we'll have to rearrange some of the things on the spacecraft, and we'll let RETRO know where we put them. Okay?
- 04 07 04 29 CC Okay. Good idea.
- 04 07 04 41 CC 9, Houston. You've got it up there and we've checked and compared. So I've got a NAV check, but I don't think you'll need it.
- 04 07 04 50 CMP Oh, if you say it's a good one, it's a good one. We'll take what we got.
- 04 07 04 54 CC Roger. Jim, a question to you. Did you do another OPS check, and if so, any results?
- 04 07 05 03 CDR I checked the OPS again, and the light still didn't come on.
- 04 07 05 07 CC Roger. Copy.
- 04 07 05 09 CDR Yesterday Rusty checked it and he couldn't get - The light didn't come on. I went over and checked it again and it came on fine. As a matter of fact, they came on four or five times. Then I went ahead and left it there, didn't say anything about it;

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I just thought we hadn't done it right. Went back over there today and they didn't work at all for either one of us.

04 07 05 26	CC	Okay.
04 07 05 42	CDR	Houston. Check your middle gimbal.
04 07 05 46	CDR	Roger. We see. We're going to power down the platform here in a minute.
04 07 05 49	CC	Okay.

HAWAII (REV 65)

04 07 15 18	CC	Apollo 9, Houston through Hawaii.
04 07 15 23	CMP	Roger. Houston, Apollo 9. Go.
04 07 15 25	CC	Roger. Got you loud and clear, now. Dave, while I've got you there, we haven't had any EKG on you all day, so when you - You might do a little troubleshooting here this evening sometime.
04 07 15 38	CMP	I'll tell you one reason you don't have it right now, is that I'm not plugged in.
04 07 15 42	CC	Yes, but we didn't have any all day long on you, just on the EKG part of it. We had the respiration.
04 07 15 51	CMP	Let's square away the block data first, though.
04 07 15 53	CC	Okay. We're working on the block data, and we should have it before we leave here.
04 07 16 01	CMP	Okay. I'll be all set.
04 07 16 04	CC	By the way, our LOS of Texas is about 30.
04 07 16 09	CMP	Okay.
04 07 16 13	CC	We're curious if you might have any additional comments on the LM jettison there.
04 07 16 20	CDR	No. It went off pretty clean. We had a bang like a regular pyro, and pushed us back with a - I guess something like 4/10 of a foot per second. It's sort of hard to tell, but that's what it felt like; it was supposed to be. It looked like a clean separation, the docking ring looked clean, and we

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couldn't see too much of it because it went away pretty fast. And gosh, we must have been a mile and a half away when it finally burned.

- 04 07 16 47 CC Okay.
- 04 07 16 49 CDR The maneuver to the separation attitude didn't work out so good. I guess we never tried it in a simulator. We sort of slipped into gimbal lock, but I think we got to the right position.
- 04 07 17 03 CC Okay.
- 04 07 17 06 CC Okay. And by the way, the IM is in an orbit 37 - about 3750 miles by 125.
- 04 07 17 14 CMP Oh really?
- 04 07 17 15 CC Yes.
- 04 07 17 22 CC 9, Houston. We could also use some dosimeter readings.
- 04 07 17 25 CMP We thought you'd probably ask for that.
- 04 07 17 27 CC Roger.
- 04 07 17 36 CMP Okay. Rusty's was 8012, and mine and Jim's are packed way down on the bottom of somewhere.
- 04 07 17 44 CC I understand. 8012. Your waste water is up to about 90 percent now, so you may be wanting to dump that a little bit early.
- 04 07 17 52 CMP Okay. We were going to do it at 104, but I guess we can do it here in a jiffy. Thank you.
- 04 07 18 51 CC Apollo 9, Houston. You might tell Jim that his guests can hear him now. They didn't hear him before.

COLDSTONE (REV 65)

- 04 07 21 41 CC Apollo 9, Houston. I have your block data when you're ready to copy.
- 04 07 22 06 CMP Go ahead, Apollo 9.
- 04 07 22 13 CC 9, Houston. You ready to go for block data on REV 66?
- 04 07 22 20 CMP Roger. You ready?
- 04 07 22 21 CC Roger. You ready?

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- 04 07 22 23 CMP I guess you didn't read me for a minute there. Okay. Go ahead; I'm ready.
- 04 07 22 27 CC Okay. 066 3 Alfa, plus 312, plus 1446 104 20 28 4824; 067 3 Bravo, plus 338, plus 1485 105 54 57 4816; 068 3 Alfa, plus 317, plus 1446 107 27 50 4789; 069 Charlie Charlie, plus 268, plus 1390 109 03 44 4768; 070 Charlie Charlie, minus 231, minus 1600 110 53 53 4540; 071 Charlie Charlie, minus 313, minus 1600 112 27 57 4310; 072 Alfa Charlie, plus 133, minus 0330 113 03 29 4748; 073 2 Alfa, plus 261, minus 0310 114 39 06 4827; 074 Alfa Charlie, plus 322, minus 0320 116 12 55 4859. And SPS trim: pitch, minus 0.89; yaw, minus 1.12. Over.
- 04 07 26 15 CMP Roger. I missed the first two lines of the one that came after area 069 Charlie Charlie - the next area.
- 04 07 26 26 CC Okay. Area 070 Charlie Charlie latitude: minus 231.
- 04 07 26 40 CMP And the longitude?
- 04 07 26 41 CC Longitude: minus 1600.
- 04 07 26 47 CMP Okay. You ready to have them come back?
- 04 07 26 50 CC Roger. Go.
- 04 07 26 51 CMP 066 3 Alfa, plus 312, plus 1446 104 20 28 4824; 067 3 Bravo, plus 338, plus 1485 105 54 57 4816; 068 3 Alfa, plus 317, plus 1446 107 27 50 4789; 069 Charlie Charlie, plus 268, plus 1390 109 03 44 4786; 070 Charlie Charlie, minus 231, minus 1600 110 53 53 4540; 071 Charlie Charlie, minus 313, minus 1600 112 27 57 4310; 072 Alfa Charlie, plus 133, minus 0330 113 03 29 4748; 073 2 Alfa, plus 261, minus 0310 114 39 06 4827; 074 Alfa Charlie, plus 322, minus 0320 116 12 55 4859, with a pitch trim of minus 0.89 and a yaw trim minus 1.12.
- 04 07 28 32 CC Hey, good job.
- 04 07 28 35 CMP You guys are getting more of these every day.
- 04 07 28 38 CC That's a good long one, there.
- 04 07 28 40 CMP You must think we're going to stay up here forever.
- 04 07 28 47 CDR Hey, speaking of staying up here forever, what time are you going to wake us up in the morning?

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04 07 28 52 CC That's just what we're talking about here. We're just thinking maybe we'll let you know and we'll give you a call. You know.

TEXAS (REV 66)

04 07 29 00 CDR That sounds like a good idea.

04 07 29 03 CC Okay. That's all we'll do. We'll just let you sleep, and we'll give you a call - or you give us a call whenever you want to, if we don't call you.

04 07 29 10 CDR (Laughter) How about 3047 Alfa Charlie?

04 07 29 15 CC Okay. By that time for sure. And just out of curiosity here, seeming you all sound pretty chipper up there.. How you doing?

04 07 29 25 CDR We're pretty good. As a matter of fact, none of us had anything to eat all day long except for the breakfast we had which was like 30 hours ago, I think. We're all in pretty good shape.

04 07 29 41 CDR I think Rusty and I had an advantage over Dave because the water in the IM tastes better than the water in the command module.

04 07 29 46 CC Roger. And I guess no medication is on the thing. We've got about 30 seconds here - 10 seconds LOS and if you can give us the consumables through Tananarive, fine; otherwise forget it.

END OF TAPE

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TANANARIVE (REV 66)

- 04 08 08 08 OC Apollo 9, Houston through Tananarive.
- 04 08 09 53 CC Apollo 9, Houston.
- 04 08 09 58 CMP Houston, 9.
- 04 08 10 00 CC Roger, Dave. We showed a CMC restart between our last state vector update and the Redstone pass. Did you power it down and then back up?
- 04 08 10 14 CMP Yes. We had it in STANDBY and we had our gimbal lock on which had our PGNCS on, and we decided to go back to power everything up so we could get the IMU coarse aligned out of gimbaled lock so we wouldn't have our lights on during the night. Did we bomb you?
- 04 08 10 29 CC Roger. But we're satisfied now with the restart then.
- 04 08 10 34 CMP Okay. We didn't get our restart light, though.
- 04 08 10 40 CC Roger. It's normal. It just adds our counter down here when you power up.
- 04 08 10 45 CMP Yes; that's right. You have our reading on. Okay.
- 04 08 10 52 CC On the R_2 pressures, if it looks like it's going to trigger the MASTER ALARM, we'll wake you up for a manual REPRESS, and then you can go back to sleep. We don't expect it, though.
- 04 08 12 26 CC Apollo 9, Houston. Congratulations from the Gold Team; it was a very fine day. We'll see you in the morning.
- 04 08 12 35 CMP Thank you very much, Gold Team. You guys did a very fine job, too.
- 04 08 12 40 CC Roger.
- 04 08 12 42 CMP Somebody else wants to make a comment.
- 04 08 13 19 CDR Hello, Houston.
- 04 08 13 20 CC Houston. Go.

(COSS NET 1)

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04 08 13 25 CC Apollo 9, Houston. Go.

04 08 13 30 CDR That was a great job you all did today.

04 08 13 34 CC Thank you.

04 08 13 39 CDR I thought the higher ground team was about as good as anything I've ever seen or ever hope to see. I want to congratulate you all.

04 08 13 48 CC Roger. Thank you very much.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(COSS MET 1)

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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

() (GOSS NET 1)

Tape 69/1
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REST PERIOD - NO COMMUNICATIONS

Apollo 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 70/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND TRANSCRIPTION

(COSS NET 1)

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ASCENSION (REV 70)

- 04 14 11 31 CC Apollo 9, Houston.
- 04 14 11 37 CMP Houston, Apollo 9.
- 04 14 11 38 CC Roger. Did you just waken up there, Dave?
- 04 14 11 42 CMP Roger ...
- 04 14 11 46 CC Apollo 9, Houston. I understand you got - Looks like we're seeing a MASTER ALARM down here. You've got a condenser exhaust temperature low on fuel cell 2, and we've got some recommended switching for you.
- 04 14 11 59 CMP Okay. I've been watching that. Go ahead.
- 04 14 12 02 CC Okay, Dave. What we'd like you to do is put the CMC to OPERATE, and once you're in OPERATE, go to P00 and turn inverter 3 - place inverter 3 - on MAIN A.
- 04 14 12 16 CMP Okay. Bring CMC up to P00 and put inverter 3 on MAIN A.
- 04 14 12 20 CC That's firm, Dave.
- 04 14 13 26 CC Apollo 9, Houston.
- 04 14 13 34 CMP Go.
- 04 14 13 35 CC Roger. Apollo 9, Houston. While we've got you up, we're having a little trouble getting some down range. We'd like you to place the S-band at normal transponder, switch to OFF for 4 seconds, then to SECONDARY.
- 04 14 13 53 CMP Roger. S-band normal transponder to OFF, then into SECONDARY.
- 04 14 13 59 CC Roger.
- 04 14 14 39 CMP Okay, Houston. We've got inverter 3 on MAIN A, and we're in P00.
- 04 14 14 44 CC Roger. Apollo 9, Houston. Thank you very much.
- 04 14 14 48 CMP Thank you.

(GOSS NET 1)

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04 14 14 58 CMP How's everything doing down there?

04 14 15 01 CC Oh, pretty smooth down here except for watching condenser exhaust temperature vary a little bit on us. Sorry that you had to get awakened with the MASTER ALARM.

04 14 15 10 CMP At least you're watching for us.

04 14 15 12 CC We're watching you.

04 14 15 15 CMP Okey-doke.

04 14 16 58 CC Apollo 9, Houston.

04 14 17 02 CMP Roger. Go ahead.

04 14 17 04 CC Roger. We're having some difficulty commanding downlink, and so we'd like you to go PCM bit rate to HIGH, and we'll just leave it that way for the rest of the night.

04 14 17 17 CMP All right, Houston. HIGH.

04 14 17 24 CMP ...

04 14 17 27 CC Alrighty. Thank you, sir.

04 14 17 30 CMP Roger.

END OF TAPE

Apollo 9 Air-to-Ground Voice Transcription

(GOSS NET 1)

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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 73/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Dape 74/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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CANARY (REV 74)

- 04 20 30 15 CC Apollo 9, Houston.
- 04 20 30 33 CC Apollo 9, Houston.
- 04 20 30 39 SC Houston, this is Apollo 9.
- 04 20 30 43 CC Good morning, Apollo 9.
- 04 20 30 50 CC Apollo 9, Houston. You're getting a little low on the H₂ cryo tanks pressure. We'd like you to turn the H₂ number 2 fan on, and the configuration for H₂ tank 1 would be fans OFF, and 1 and 2 heaters OFF.
- 04 20 31 11 CMP ... I missed the first part of that. Would you start over again, please?
- 04 20 31 15 CC Roger. Dave, turn the H₂ tank 2 fan on and leave the H₂ tank 1 fan off and the 1 and 2 heaters off.
- 04 20 31 28 CMP Okay. H₂ fan 2 is ON; 1 is OFF; both heaters for H₂ are OFF.
- 04 20 31 39 CC Roger.
- 04 20 31 41 CMP And my tank ...
- 04 20 33 03 CMP Houston, Apollo 9.
- 04 20 33 05 CC Apollo 9, Houston. Go.
- 04 20 33 07 CMP What do you want to do about our switch configuration when we get powered up? Do you want to go back to sort of nominal switch configuration, or do you want to leave that inverter on and the S-band in SECONDARY?
- 04 20 33 19 CC Apollo 9, Houston. Stand by. We'll get a reading on that for you.
- 04 20 33 22 CMP Okay. Thank you.
- 04 20 33 45 CC Apollo 9, Houston.
- 04 20 33 47 CMP Go ahead, Houston.

(COSS NET 1)

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04 20 33 48 CC Roger. You can leave the S-band in SECONDARY for now and go ahead and turn the inverter off.

04 20 33 54 CMP Okay. I'll leave the S-band in SECONDARY, and the inverter's coming off.

04 20 33 57 CC Roger.

04 20 36 57 CC Apollo 9, Houston.

04 20 37 00 CMP Go ahead.

04 20 37 01 CC Roger, Dave. I've only got a minute left here at Canaries. We'll start today for you at Carnarvon with the updates and the plan for the day.

04 20 37 11 CMP Okay. What time will that be? How long from now?

04 20 37 13 CC Roger. That will be about a half hour, 17 05.

04 20 37 17 CMP All right. Thank you. You're all set.

04 20 37 19 CC Roger. See you then.

04 20 37 20 CMP Okay.

MADRID (REV 74)

04 20 39 07 CMP Houston, Apollo 9.

04 20 39 11 CC Apollo 9, Houston. Go.

04 20 39 18 CC Apollo 9, Houston ...

04 20 39 25 CMP Houston, Apollo 9.

04 20 39 28 CC Apollo 9, Houston.

CARNARVON (REV 74)

04 21 07 12 CC Apollo 9, Houston.

04 21 07 25 LMP Go, Houston. This is Apollo 9.

04 21 07 28 CC Roger, Apollo 9. If you've got a pencil ready, we will start on the update.

(GOSS NET 1)

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- 04 21 07 35 IMP Roger. How do you read me?
- 04 21 07 38 CC I'm reading you loud and clear, Dave.
- 04 21 07 41 CDR Okay. That's Rusty. And good morning there, Sonny.
- 04 21 07 44 CC Good morning, Jimmy. You ready to copy some updates?
- 04 21 07 49 CDR All set.
- 04 21 07 50 CC Okay, we'll give you the flight plan updates first. At 117 55, begin BATT A charge. That's BATT Alfa charge; 118 00, CO₂ filter change number 10; fuel cell O₂ purge. At approximately 119 30, after breakfast, chlorinate potable water.
- 04 21 08 57 CC Delete 113 118 40, P51.
- 04 21 09 13 CMP You want to delete that P51 at 118 40?
- 04 21 09 18 CC That is affirmative. At 120 02, P51 and P52 to preferred.
- 04 21 09 37 CMP Okay.
- 04 21 09 38 CC 121 40 end BATT Alfa charge. SPS-6, TIG is 121 48 58. 122 00 begin BATT A charge. Delete 125 30 S065; add landmark tracking. Perform P52, that's P52, to nominal alignment at 124 35. Time of align to be updated. Add 128 50, waste water dump. Note: first S065 exercise remains as scheduled and --
- 04 21 11 14 CMP Wait.
- 04 21 11 15 CC Roger. Go ahead.
- 04 21 11 23 CC Note number 2: the landmark tracking is for practice and will be only one landmark. And before we get to Honeysuckle, you can turn up your S-band volume.
- 04 21 11 49 CMP Okay, Sonny. I'll read most of that back to you now. I've got a 117 55 begin BATT A charge. 118 00 CO₂ filter change number 10 and fuel cell number O₂

(GOSS NET 1)

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purge. At about 119 30, after breakfast, chlorinate the potable H₂O. There was something at 118 40 that I missed. How about giving me that one?

- 04 21 12 15 CC Roger. At 118 40, delete P51.
- 04 21 12 22 CMP Okay. And I've got perform P51 and P52 at 120 50.
- 04 21 12 30 CC That's perform P51 and P52 at 120 02.
- 04 21 12 39 CMP Okay. P51 and P52 to perferred at 120 02. End the BATT A charge at 120 40. At 121 48 56, SPS-6 TIG. At 122 00 resume BATT A charging. 123 40 delete 5065; in its place add landmark tracking with tracking on one landmark for drill, and P52 to a nominal alignment; then you are going to update the T-align. And that will be done at about 124 30; and at 128 50, a waste water dump.
- 04 21 13 26 CC Roger. That's correct, Apollo 9. And you can turn up your S-band now. We're coming up on Honeysuckle.
- 04 21 13 34 CMP Roger.
- 04 21 13 42 CC And, Apollo 9, Houston. Just to warn you. We've had a little trouble with S-band. We might not pick you up here.

HONEYSUCKLE (REV 74)

- 04 21 14 29 CC Apollo 9, Houston through Honeysuckle.
- 04 21 15 00 CC Apollo 9, Houston.
- 04 21 15 16 CC Apollo 9, Houston.
- 04 21 15 20 CMP Hello, Houston. Apollo 9.
- 04 21 15 21 CC Roger. There you are.
- 04 21 15 24 CMP I have a question on S065 on this update.
- 04 21 15 28 CC Roger. Go ahead.
- 04 21 15 30 CMP Okay. You still want us to do the S065 that we unstow for and we are supposed to do at 124 00. Is that correct?

(COSS NET 1)

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D 04 21 15 43 CMP And you want us to delete the one at 125 30?
04 21 15 49 CC Apollo 9. Let me get the words on that, and I will call you back.
04 21 15 53 CMP Okay.
04 21 15 55 CC Let me give you the consumables update in the meantime.
04 21 16 04 CC You ready to copy?
04 21 16 06 CMP Ready to copy.
04 21 16 08 CC Okay. At 117: 47 20 55 26 49 27 50 27 402 3233 2939. And I'd like to give you the service module DAP redline: quad A, 36; quad B, 47; quad C, 49; quad D, 49. Over.
04 21 17 13 CMP Okay. We got 117: 47 20 55 26 49 27 50 27 402 3233 2939. Service module DAP redline: A, 36; B, 47; C, 49; D, 49.
04 21 17 36 CC Roger. Apollo 9, Houston. Copy. That's correct.
J 04 21 17 47 CMP Bankers' hours today, right?
04 21 17 51 CC Oh, we watched you while you were sleeping.
04 21 17 58 CMP How did we look?
04 21 18 04 CC You're looking pretty good.
04 21 18 10 CMP Hey, we finally got to bed last night at 107 hours and something. I figure we had a nice 26-hour day yesterday.
04 21 18 17 CC You had nice 10-hour night, too.
04 21 18 19 CMP Yes.. That was a lot of fun, too.
04 21 18 22 CC Sorry we had to wake you up. Incidentally, on that K₂ tank - There are no plans today to do anything about the tank. We are just going to watch it.
04 21 18 33 CMP Okay. That's tank number 1, the low one?
04 21 18 35 CC Roger. Tank number 1.

(COSS NET 1)

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04 21 18 42 CMP Roger. Houston, you might comment on the status of the high bit rate, too. Whether you want it to stay in HIGH, or if you want to try to switch it again, or what.

04 21 18 49 CC Roger. When you get over the States, we've got a troubleshooting routine here we want go through to see if we can figure out what the problem is, but we won't tackle that until we get to the States.

04 21 19 02 CMP Okay.

04 21 19 04 CC Okay. Are you ready for a block update number 13?

04 21 19 10 CMP Give me about 2 seconds here.

04 21 19 12 CC All right.

04 21 19 33 CMP Okay. Go ahead.

04 21 19 37 CC Roger. Block update number 13. We probably won't be able to get all of it. We will go as far as we can. 075 1 Alfa, plus 290, minus 0682 117 36 36 4092; 076 2 Bravo, plus 307, minus 0330 119 17 43 4092; 077 2 Bravo, plus 227, minus 0329 120 52 15 4092; 078 1 Alfa, plus 280, minus 0690 122 17 41 4092; 079 - Roger. Okay.

MERCURY (REV 74)

04 21 26 13 CMP Houston, Apollo 9. We have a good lock on that. How do you read?

04 21 26 17 CC Apollo 9, Houston. Loud and clear.

04 21 26 21 CMP Okay. First - -

04 21 26 25 CC Go ahead.

04 21 26 26 CMP Start with a longitude, the third line in 076 2 Bravo.

04 21 26 34 CC Roger. We'll start out with longitude in block 076 2 Bravo. That's minus 0330 119 17 43 4092; 077 2 Bravo, plus 227, minus 0329 120 52 15 4092; 078 1 Alfa, plus 280, minus 0690 122 17 41 4092; 079 4 Alfa, plus 318, minus 1705 125 02 53 4343; 080 4 Bravo, plus 337, minus 1705 126 16 09 4343;

(COSS NET 1)

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081 4 Alfa, plus 310, minus 1705 128 09 44 3343;
082 Delta Charlie, plus 179, minus 1600 129 46 43
3343. The SPS gimbal trim for REV 75 1 Alfa
through 78 1 Alfa: pitch, minus 0.89; yaw, minus
1.12. For REV 79 4 Alfa through 82 Delta Charlie,
trim angles are pitch, minus 0.89; and yaw, minus
1.15. Over.

- 04 21 30 57 CMP Okay. Just - You ready to read back, Al?
- 04 21 31 04 CC Roger, Apollo 9. Go ahead.
- 04 21 31 07 CMP Okay. I'll read it back pretty fast here. 075
1 Alfa, plus 290, minus 0682 117 36 36 4902;
076 2 Bravo, plus 307, minus 0330 119 17 43 4092;
077 2 Bravo, plus 227, minus 0329 120 52 15
4092; 078 1 Alfa, plus 280, minus 0690 122 17
41 4092; 079 4 Alfa, plus 318, minus 1705 125 02
33 3343; 080 4 Bravo, plus 337, minus 1705 126
36 09 3343. Turn the page, and then it's 081
4 Alfa, plus 310, minus 1705 128 09 44 3343; 082
Delta Charlie, plus 179, minus 1600 129 46 43
3343. SPS trim for 75 and 78: pitch, minus
0.89; yaw, minus 1.12. REV 75 through 82: pitch,
minus 0.89; minus 1.15.
- 04 21 32 59 CC Roger. Apollo 9, Houston. Copy correct, and the
answer to your question on S065 at 124 is yes.
Perform the S065 at 124. It's just deleted at
125 30, and we have a question for you. Did you
leave the selectable meter in position battery
bus A overnight?
- 04 21 33 25 CMP Stand by.
- 04 21 33 42 CMP Okay. The answer is probably yes.
- 04 21 33 45 CC Roger. Understand the answer is yes.

TEXAS (REV 74)

- 04 21 47 52 CC Apollo 9, Houston.
- 04 21 47 58 CMP Roger. Houston, Apollo 9.
- 04 21 48 00 CC Roger, Apollo 9. Got a couple things here for
you, prior to SPS-6.
- 04 21 48 10 CMP Okay. Go.

(GOSS NET 1)

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- 04 21 48 11 CC Okay. Before SPS-6, turn quad C and D off on AUTO RCS selects in adapt - and in the DAP - I'm sorry. Use BD - Baker, Delta - two-jet ullage for SPS-6 for 18 seconds. Use BD roll for SPS-6 and subsequent activities. Post-SPS-6, you may return to normal two-jet authority.
- 04 21 49 12 CC And, Apollo 9, Houston. When you get a chance, we'd like to get the condition on the windows. And prior to S065 we'd like you to try and get a picture of the hatch window. Over.
- 04 21 49 31 CMP Okay. Hold it Al, that was a bunch. Let me get the first part of that again. For SPS-6 you want us to disable A and C, quads A and C and also A and C in the DAP. And you want us to use B and D ullage for 18 seconds, two jets, and B and D roll for SPS-6 and subsequent roll control. Post-SPS-6 you want us to return to normal two-jet authority.
- 04 21 50 06 CC Roger, Apollo 9. The last three items were correct. The first one, for your pre-SPS-6 activities, turn quads Charlie and Delta off on the AUTO RCS select and in the DAP. That's pre-SPS-6.
- 04 21 50 29 CMP Okay. Understand. Pre-SPS-6 you want us to turn Charlie and Delta off on the AUTO RCS select and also in the DAP.
- 04 21 50 37 CC That's affirmative, Apollo 9.
- 04 21 51 02 CMP Okay. And understand you want to know what the windows look like, and also you want a picture of the hatch window prior to performing S065.
- 04 21 51 12 CC Apollo 9, Houston. That's correct.
- 04 21 51 23 CMP Okay. This is kind of a subject of evaluation, but it seems to me that all the windows are really pretty good when you're looking at the ground or anything that is lighted. If you look at the sky, you can see some smudges on some of the windows, the number two window.
- 04 21 51 46 CMP Stand by just a moment.
- 04 21 51 48 CC Roger.
- 04 21 51 55 CMP Okay. When you look up at the sky, I get sunlight on the number two window. It's kind of hazy or foggy, but when you are looking at the ground, it appears

(GOSS NET 1)

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1
okay. So it's a fairly light coating. Also, on the hatch window, from time to time, there appears to be a circular area right in the middle of it about 4 or 5 inches in diameter that appears to be foggy. But again, looking at the ground through it, it doesn't seem to be too noticeable.

04 21 52 27	CC	Roger. Understand.
04 21 52 43	CDR	Houston, Apollo 9.
04 21 52 46	CC	Apollo 9, Houston. Go.
04 21 52 47	CDR	Okay. One question on the DAP configuration after SPS-6. You want to go to two quads?
04 21 53 19	CC	Apollo 9, Houston. You can go back to normal - two-jet authority - after SPS-6.
04 21 53 28	CMP	Okay. I guess I understand. You want to use six jets for attitude control total, and when we run the DAP, I guess we use two adjacent quads, is that what you want?
04 21 53 40	CC	Affirmative, Apollo 9.
04 21 53 42	CMP	Okay. Thank you.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(COSS SET 1)

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TEXAS (REV 75)

- 04 21 55 47 CC Apollo 9, Houston.
- 04 21 55 49 LMP Go ahead, Houston.
- 04 21 55 53 CC Roger. We would like to continue on with some troubleshooting on the telemetry command. We would like you to place the up-telemetry data to UP-VOICE BACKUP.
- 04 21 56 09 LMP Roger. Going to UP-VOICE BACKUP.
- 04 21 56 12 CC Roger. And we may have to use VHF for COMM, and we will send you a command tone.
- 04 21 56 20 LMP Be advised I have a tone right now, Houston.
- 04 21 56 39 LMP Houston, Apollo 9.
- 04 21 56 42 CC Roger. Apollo 9, Houston. We just sent you a command.
- 04 21 56 48 LMP Roger. From the time I went to UP-VOICE BACKUP, I had a steady tone at that time, and it's still the same.
- 04 21 56 57 CC Roger. We'll send you another command.
- 04 21 57 16 CC Apollo 9, Houston. You should get some variations on that steady tone you were hearing when the command is sent.
- 04 21 57 26 LMP Roger. I've got my S-band up louder now. Go ahead and send another command.
- 04 21 57 31 CC Roger. We're sending another command. On my Mark.
- 04 21 57 34 CC MARK.
- 04 21 57 39 CC MARK.
- 04 21 57 40 LMP Okay. I got a very slight beep on it.
- 04 21 57 46 CC Roger. We sent you three commands.
- 04 21 58 00 CC Apollo 9, Houston. We sent you three commands. Could you distinguish variation in your tone on three occasions?
- 04 21 58 09 LMP Negative. How do you read, Al?

04 21 58 11 CC I'm reading you loud and clear, Rusty.

04 21 58 14 LMP Okay. I was commenting there and didn't hear any response. When you said 3, 2, 1, Mark - About 3 seconds after that, I got a slight interruption in the steady tone. That happened only one time. When you came back on and told me that you sent three commands, in the middle of telling me that, I got another interruption in the tone. And that's all I've heard.

04 21 58 42 CC Roger, Rusty. We'll send you one more command on my Mark. 3, 2, 1.

04 21 58 50 CC MARK.

04 21 58 55 LMP Nothing.

04 21 58 57 CC Roger. Understand; nothing.

04 21 59 03 CC Apollo 9, Houston. We will digest that a little bit and call you back.

04 21 59 09 LMP Okay.

04 21 59 24 LMP Houston, I just got another little beep in it.

04 21 59 29 CC Roger. Apollo 9, Houston. Understand.

04 21 59 36 CC Apollo 9, Houston.

04 21 59 38 LMP Go ahead.

04 21 59 39 CC Roger. We would like you to verify the following: flight and postlanding BATT bus A OPEN.

04 21 59 53 LMP Flight and postlanding BATT bus A -

04 22 00 09 LMP Roger. It's OPEN now. Thank you.

04 22 00 12 CC Roger. And on panel 8, we would like for you to verify: SPS pitch 1, yaw 1, OPEN; and EDS, all three OPEN.

04 22 00 40 LMP Okay. The two SPS's were CLOSED; we opened them. The EDS's were all OPEN.

04 22 00 46 CC Roger, Rusty. Understand. And was the flight and postlanding BATT bus A OPEN when you called? Had it been OPEN before then?

04 22 00 55 CDR Negative. It was CLOSED.

(GOSS SET 1)

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04 22 00 58 CC Roger. Understand CLOSED.
04 22 01 40 LMP Houston, we've got a question on the fuel cell purge.
04 22 01 44 CC Roger, Apollo 9. Go.
04 22 01 47 LMP Roger. Yesterday, when fuel cell 3 - rather fuel cell 2 had the high TCE - After we purged it, it dropped way down in performance, and it's still below 1 and 3. We would like to verify that you really want to purge that. We are concerned that it may drop it off the bottom of TCE.
04 22 02 12 CC Roger, Apollo 9. Stand by. We will get an answer on that.
04 22 02 16 LMP Okay.

CANARY (REV 75)

04 22 05 56 CC Apollo 9, Houston.
04 22 06 00 LMP Roger. Go ahead.
04 22 06 01 CC Roger. Apollo 9, Houston. While we've got a minute here, we would like to get a crew status report from you.
04 22 06 15 CC If you are ready, the first question is regarding any illness. How are you feeling now? And next to know what medication you took yesterday and today on all three, and especially what you took yesterday morning, Rusty.
04 22 06 34 LMP Okay. Everybody is feeling fine, and stand by on the medication.
04 22 06 37 CC Roger.
04 22 06 55 CDR Hello, Al. This is Jim.
04 22 06 57 CC Roger, Jim.
04 22 06 59 CDR Roger. I didn't take anything yesterday or today. I've got some information for METRO. They wanted to know last night where we were going to stow some things. I've worked out a plan here, if you are ready to copy it down.

- 04 22 07 10 CC Roger. Go.
- 04 22 07 11 CDR Okay. We are going to have one suit underneath the left-hand seat, have two suits underneath the center seat. We are going to take the compartment B-1 - We are going to move all the food out of that and use it as a garbage bin, so the density will be much less than it was before. We are going to take the LCG's, the ones that Rusty had been wearing, and fasten them to the floor in the lower equipment bay on top of the lithium hydroxide canisters. We will take the lithium hydroxide canister that we've brought back from the LM and put it on the floor in the lower equipment bay up underneath the suit. And the rest of the stowage will remain essentially the same.
- 04 22 08 08 CC Roger, Jim. Copy. You are going to put one suit under the left-hand seat; you are going to put two suits under the center seat; you are going to take the food out of B-1 and use it as a garbage bin; you are going to stow one LCG on the floor in the LEB around the lithium hydroxide canisters; you are going to stow the lithium hydroxide canister you brought back from the LM on the floor under the suit; and the rest remains the same.
- 04 22 08 34 CDR Roger. We will probably make some other changes, but have them base the weights and CG on that for a while.
- 04 22 08 40 CC Roger. We got that.
- 04 22 08 42 CDR Okay.
- 04 22 08 43 LMP Okay, Al. This is Rusty again. Yesterday morning I didn't take anything. Last night before I went to bed I took an Actifed and a Seconal.
- 04 22 09 13 CC Roger, Rusty. Understand you. Last night - You didn't take anything yesterday morning, and last night you took one Actifed and one Seconal.
- 04 22 09 22 LMP That's affirmative. And Dave didn't take anything at all yesterday.
- 04 22 09 28 CC Roger. Okay. Ready for the next question: how much sleep did you all get last night?

(GOSS NET 1)

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- 04 22 09 40 CDR Dave said he got about eight; I got about eight.
- 04 22 09 47 LMP Okay. And Rusty - I got eight, also.
- 04 22 09 51 CC Roger. Copy. You all got 8 hours.
- 04 22 09 55 CC Okay. We'd like you to do some troubleshooting on the BIOMED harness. We would like each of you to check your sensors. Dave, we didn't get any ECG on you last night. We'd like you to check your sterile sensor in the grounds for a loose sensor, and, if the sensors are secure, to replace the external leads and sensor with a spare.
- 04 22 10 31 CDR Okay. We'll do some troubleshooting on the sensors. Dave had his sensors all plugged in last night. I guess you still weren't getting anything. Is that right?
- 04 22 10 38 CC That's affirmative, Jim. And we'd like you - We've got no respiration on you. We'd like to check your axillary sensors.
- 04 22 10 44 CDR Okay. I'll check those, and right now neither Dave or I are plugged into the BIOMED. I don't know about Rusty.
- 04 22 10 49 LMP Yes, I'm plugged in. How do mine look? Do you want any troubleshooting on mine, Al?
- 04 22 10 54 CC Okay. Stand by one, Rusty.
- 04 22 10 57 CDR And Dave and I will get plugged in as soon as we get through doing some chores here.
- 04 22 11 05 CC Roger, Rusty. We're not getting anything on you.
- 04 22 11 12 LMP Okay. Be advised I can give you a little bit of information on mine right now. I've had to take mine off four or five times here in getting into the two LCG's and back into the constant-wear garment and things like that. But I've noticed that the yellow signal conditioner connector does not seem to go all the way in any more. I'll look at it and see if I can do anything with it, but it may be that.
- 04 22 11 36 CC Roger, Rusty. Understand. Would you switch the up-telemetry data switch to DATA now, please?

04 22 11 46 LMP Roger. Up-telemetry back to DATA.
04 22 11 49 CDR Al, Dave went through all his BIOMED harness last night. He unscrewed it and screwed it back in, pushed down on all the sensors, checked the connections, and everything looked all right. Is there anything else you wanted done?
04 22 12 07 CC Let us think about it for a little, Jim, and we'll give you a call back. We weren't reading anything on him last night.
04 22 12 14 CDR Okay.

CARNARVON (REV 75)

04 22 40 51 CC Apollo 9, this is Houston through Carnarvon. Standing by.
04 22 40 56 LMP Good morning, Smokey. How are you?
04 22 40 58 CC Oh, good morning, fearless leader. I'm just fine.
04 22 41 03 LMP Oh, no. This is fearless number 3.
04 22 41 05 CC Oh, okay. Hey there, Rusty. Sound awful chipper.
04 22 41 11 LMP Yes. It's middle of breakfast time here. It's tasting good.
04 22 41 22 LMP Hey, Smokey. How about asking Sir John how my BIOMED service went out?
04 22 41 30 CC Okay. Stand by one, Rusty.
04 22 41 42 CC It's still not coming through at all, Rusty. We're not getting any BIOMED's from anybody.
04 22 41 54 CC But stand by on any troubleshooting you have up there. Let us work our site out here. We might have a ground problem.
04 22 42 05 LMP Okay.
04 22 45 02 CC Hey, Rusty. Houston here. I realize you are at breakfast there, but if - Could you move a couple of switches for us? We are still trying to troubleshoot this command system.

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04 22 45 15 LMP Sure can. Go ahead.

04 22 45 21 CC Okay. We'd like to have the up-telemetry command switch to RESET, then OFF, and then NORMAL.

04 22 45 32 LMP Okay. Up-telemetry command going to RESET. 3, 2, 1.

04 22 45 36 LMP MARK.

04 22 45 37 LMP Okay. And back to OFF, and now back to NORMAL.

04 22 45 47 LMP Okay. We are in NORMAL.

04 22 45 48 CC Okay. Understand. Thank you. And we might have a couple more here.

04 22 46 43 CC And, Apollo 9, we are going to lose you at Carnarvon here in a few seconds. Bring up your S-band volume, and we'll see you over Honeysuckle in about a minute.

04 22 46 52 LMP Okay. We're with you.

HONEYSUCKLE (REV 75)

04 22 48 00 CC Apollo 9, Houston through Honeysuckle. How do you read?

04 22 48 57 CC Apollo 9, Houston through Honeysuckle. How do you read?

04 22 49 02 LMP Oh, you're coming in five-square there, Smokey.

04 22 49 04 CC Okay, hasty. Looks like we have got our command system back again, and we are going to be transmitting an abort command, so you should see the light here. And it'll be on for about a minute.

04 22 49 22 LMP Okay. What should we see?

04 22 49 24 CC You should see the abort light.

04 22 49 25 LMP Okay. Stand by.

04 22 49 33 LMP Okay. We got our eye on it.

04 22 49 35 CC Okay.

04 22 50 03 CC MARK.

04 22 50 05 CC You should have the light.

04 22 50 08 LMP MARK.

04 22 50 09 LMP We don't.

04 22 50 10 CC Okay. We'll try again.

04 22 50 15 CC How now?

04 22 50 20 LMP Still the same. I wonder if we may have to get some circuit breakers or something closed for you?

04 22 50 31 CC That's a negative, Rusty. We should be getting in.

04 22 50 37 LMP Okay. We don't need the EDG power ON?

04 22 50 43 CC Stand by.

04 22 50 57 CC Did you get it then, Rusty?

04 22 51 00 LMP That's a negative.

04 22 52 14 CC Okay, Apollo 9. We're still troubleshooting on that one. You all made all the headlines on that rendezvous; it was mighty pretty. I see here that they are cooking you a 350-pound cake aboard the Guadalcanal that you'll have to eat when you get down there.

04 22 52 35 LMP Listen; we're ready, man - We're ready. With the amount of time we've had to eat in the last few days, we are going to eat it.

04 22 52 42 CC Roger.

04 22 52 45 CDR Hey, Stu. I don't know if you guys got my message yesterday because we were scrambled and getting ready for the APS burn, but I would like to thank you all for the tremendous job that you did. All that practice that we did in those simulations really paid off, and I think that, as I said yesterday, we've got the world's greatest set of controllers.

04 22 53 04 CC Thank you, Jim. That makes us all feel real good, and the whole control center here appreciates that.

04 22 53 12 CDR Yes. And that's what it goes for. It goes for all those guys down there in the pit, up there in the balcony, even the guys in the viewing room and running the computers and all those kind of things. I want to include them all.

04 22 53 26 CC Roger.

04 22 53 27 LMP That goes for all of us, too, Smokey. We all agree.

04 22 53 31 CC Roger. I tell you, you all really put on a show for us. That was fantastic.

04 22 53 37 CDR Hey, I don't know if you had a chance to plot it out, but I don't think we got more than a pencil-width off the nominal line the whole time we were on.

04 22 53 44 CC No - it - You were right on all the way around, and it was phenomenal the way all three solutions were coming together. It was beautiful.

04 22 53 53 CDR Wasn't that something.

04 22 53 56 LMP Might give you the impression that it might work.

04 22 53 58 CC Yes. (Laughter) It sure does.

04 22 54 27 CC Hey. And, Apollo 9 - Jim, when you and - Just stand by.

04 22 54 40 CC And when Dave plugs in the BIOMED, why we'd appreciate a call, just so we'll be sure we're getting the data. We're about 30 seconds LOS off Honeysuckle here. We'll see you over Mercury about on the hour.

04 22 55 09 CC And, Apollo 9, if you can still read me, we would like to have you look in your logs, and we're going to be asking you for the time of your last two fuel cell purges.

MERCURY (REV 75)

04 23 00 59 CC Apollo 9, this is Houston through Mercury. We will have you for about 5 minutes. And we're looking at the fuel cell here, Apollo 9. We would like, if possible, to get the time of the last two fuel cell purges, if you could give us that some time.

04 23 01 19 CDR Stand by.

04 23 01 21 CC Roger.

04 23 02 05 CMP Houston, Apollo 9.

04 23 02 09 CC Good morning, Dave. Go ahead.

04 23 02 11 CMP Roger. How are you?

04 23 02 13 CC Real fine.

04 23 02 15 CMP We purged yesterday at approximately 8 hours when we started the day. And then last night we purged it about - just about what it says on the flight plan, at 102 - probably 102 50. And we did all three fuel cells' 0₂ for 2 minutes.

04 23 02 39 CC Roger. Copy. Thank you very much. That will help us out here.

04 23 02 44 CMP Okay. And I wasn't on the horn there on your last pass, but I would also like to express my appreciation to all you guys for doing an outstanding job. I tell you, it's sure nice when you are driving this thing around alone to know you guys are on the horn watching.

04 23 02 59 CC Thank you, Dave. We all appreciate that. And just to prove that I can follow instructions here, I've got a ball score. The Astros lost to the Los Angeles Dodgers 8 to 1 in the spring exhibition opener at Cocoa Beach.

04 23 03 22 CMP Hey, we're holding true to form.

04 23 03 24 CC Roger.

04 23 03 30 LMP Hey, is the University of Houston still playing basketball?

04 23 03 39 CC Roger. Chris wanted to pass on to you that Virginia Tech beat them in their last game.

04 23 03 48 LMP Oh, you're kidding. I don't believe it.

04 23 03 55 LMP If that's true, I'm going to have to go have a talk with a couple of people...

04 23 04 00 CC (Laughter) Roger.

(GOSS NET 1)

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04 23 04 02 CDR Hey, since we didn't get to launch on the right day, is Chris there?

04 23 04 07 CC That is affirmative.

04 23 04 09 CDR Okay. We've got a message for him.

04 23 04 11 CC Okay. He is on the loop.

04 23 04 15 CDR
CMP
LMP Okay. Happy birthday to you, happy birthday to you, happy birthday dear Christopher, happy birthday to you. (Sung to the tune of "Happy Birthday.")

04 23 04 35 CC That was magnificent, there. The only thing - You may even overshadow the rendezvous with performances like that.

04 23 04 45 LMP Listen, we have two more choruses of that. Is Deke there?

04 23 04 49 CC That's negative.

04 23 04 51 CDR Okay. When he comes in, let us know. I want to give him one, too. And, also, when Charlotte shows up, if she ever does.

04 23 04 57 CC All right. Fine. We will let you know.

04 23 05 48 CC And, Apollo 9, Houston. We will be coming off the Mercury in about 30 seconds. We will see you over Redstone about 14.

04 23 06 01 CMP Roger.

04 23 06 07 CC And, Dave, when you plug in your BIOMED, we would like a call, just to make sure our system is working.

04 23 06 13 CMP Okay. I'll do it right now.

04 23 06 15 CC Okay. Thank you.

04 23 06 18 CDR Houston. Are you getting my respiration now? This is Jim.

04 23 06 22 CC That's affirmative, Jim. The last word I have here, you were coming through.

04 23 06 28 CDR Okay. I haven't done anything to it as far as the BIOMED sensors themselves. All I've done is plug and unplug the COMM lead a few times when I changed configuration.

(GOSS NET 1)

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04 23 06 37 CC Okay, Jim. I was in error. We are getting your EKG; we are not getting your respiration.

REDSTONE (REV 75)

04 23 14 25 CC Apollo 9, Houston through the Redstone. Standing by.

04 23 14 31 CDR How about a map update?

04 23 14 37 CC Roger, Apollo 9. In work.

04 23 14 41 CDR Today, we are going to have time to look out, and man, I'm going to look out.

04 23 14 45 CC Okay. And to the question back on the fuel cells: we've looked at our performance plot versus the time of the purges and so forth, and we saw no change in the performance - no drop - and we are recommending a purge on all three fuel cells.

04 23 15 13 CMP Okay. Very good. We'll purge all three.

04 23 15 20 CC And we're saying that the load sharing went down because of the high temperature on the condenser exhaust there and not the purge.

04 23 15 33 CMP Okay.

04 23 15 52 CC And, Apollo 9, I have your map update.

04 23 15 56 CDR Roger. Go ahead.

04 23 16 00 CC Okay. REV 75 is GET 119 10 01, right ascension 1642, longitude 143 27 west.

GUAYMAS (REV 75)

04 23 17 57 CC And, Apollo 9, Houston. We got you through Guaymas, now. Did you get your map update through the Redstone, Jim?

04 23 18 05 CDR Roger. It was REV 75, GET 119 10 01, 1642 right ascension, 143 27 west.

04 23 18 17 CC That is affirmative.

04 23 18 18 CDR Roger. Thank you.

(COSS NET 1)

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04 23 18 19 CC Roger.

04 23 18 21 CMP And, Houston. You getting any BIOMED on the CMP now?

04 23 18 32 CC Dave, we're getting the respiration, no EKG. On Jim, we're getting EKG and no respiration, and Rusty's coming through on both of them. The only thing that we could suggest was if whenever you have the time, try the spare sensors there. Take and - Dave, replace his sternal lead to the blue ones; and Jim, replace his yellow leads from the spare some time when you get around to it.

04 23 19 12 CMP Okay. We'll try and do that.

04 23 19 15 CC Okay.

04 23 19 16 CDR We'll let Dave breathe, and we'll let my heart beat.

04 23 19 19 CC All right. (Laughter) Very good.

04 23 21 57 CC And, Apollo 9, this is Houston. We would like to have you go POU in ACCEPT. We'll be uplinking to you through MILA here in about a minute and a half or so.

04 23 22 08 CMP Okay. We'll POU in ACCEPT.

04 23 22 11 CC Roger.

04 23 22 14 CC And you should just about be on landfall coming across now.

04 23 22 19 CMP Roger. We just passed over it. ... We're - Stand by. We'll find out.

END OF TAPE

APOLLO 9 AIR-TU-GROUND VOICE TRANSCRIPTION

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CANARY (REV 76)

04 23 32 19 CC Apollo 9, Houston. I have SPS-6 PAD when you are ready to copy.

04 23 32 33 CMP Roger. Stand by one.

04 23 32 36 CC Standing by.

04 23 32 53 CMP Okay, Houston. Go ahead.

04 23 32 55 CC Roger. Reading SPS-6: 121 48 5760, minus 00369 all zips, minus 00 204 00422 00273 0016 27010, minus 089, minus 113 12 35440 23600, and I'm going to have to give you a time on your NAV check here since TIG is so far ahead. The time of this NAV check: 120 30 00, minus 1918, plus 16492 1203. End of update.

04 23 34 54 CMP Okay. Six readback: 121 48 5760, minus 00369 all zips, minus 00204 00422 00273 0016 27010, minus 089, minus 113 12 35440 23600. The time of the NAV check: 120 30 00, minus 1918, plus 16492 1203.

04 23 35 38 CC Roger. Apollo 9, your readback is correct.

04 23 35 48 CC And, Apollo 9, the computer is yours. We have uplinked the state vector and a target load.

04 23 35 57 CMP Roger. State vector and target load.

04 23 45 28 CC Apollo 9, Houston. We're about 30 seconds from LOS Canary. We'll see you over Tananarive at around 59. You have a GO for 93 dash 1.

04 23 45 44 CMP Roger. GO for 93 dash 1.

TANANARIVE (REV 76)

05 00 00 51 CC Apollo 9, Houston. We should have you through Tananarive for about another 5 minutes.

05 00 00 57 CLR Okay, Houston. Apollo 9 reads.

05 00 01 00 CC Boy, I'm reading you loud and clear.

05 00 03 00 CMP Houston, this is Apollo 9.

- 05 00 03 04 CC Go, Apollo 9. This is Houston.
- 05 00 03 11 CMP Houston, we are having a little optics problem again. It seems that the shaft is hanging up, and now it's hanging up around at about 100 - It will come closer to about 230 degrees. We are still going through a little troubleshooting here, trying to figure out how to get it out. Yesterday it worked just fine all day long, and I'm not sure whether it's - We're trying to fix it. We had one little ... early in the morning, and then it seemed to work fine the rest of the day, and I'm not sure whether it's an early morning problem or just exactly what.
- 05 00 03 42 CC Roger. Apollo 9, Houston. We copy that. We are not getting any data here. Maybe over Carnarvon we can have some words on it, and we'll go to work on it.
- 05 00 03 57 CMP You might start thinking about some changes in the flight plan here; we may not be able to get this one working here.
- 05 00 04 02 CC Roger. Understand.
- 05 00 04 04 CMP So we won't be able to ... SPS-6 on time.
- 05 00 04 09 CC Roger. Copy.
- 05 00 04 53 CMP Houston, Apollo 9.
- 05 00 04 57 CC Go, Apollo 9, Houston.
- 05 00 05 00 CMP Okay. I've got it running again by breaking the shaft loose - not breaking it, but loosening the mechanical drive on the shaft, and driving it with the E-2 mechanically across the sticky part and then, with power off, turning the optics power back on and turning it through and turning it back to zero. So I think anyway, temporarily at least, we're out of the problem.
- 05 00 05 26 CC Roger, Apollo 9. Understand. Sounds like you're doing some good troubleshooting there, I'm about to lose Tananarive. Carnarvon at 15.
- 05 00 05 50 CC And, Apollo 9, Houston. If I still have you, one other thing we'd like to have is, from now on out, we'd like the time of each fuel cell purge whenever you do the purges.

CARNARVON (REV 76)

05 00 15 55 CC Apollo 9, Houston through Carnarvon. Standing by. Have you about 5 minutes.

05 00 16 00 CMP Okay.

05 00 16 04 CMP As you can see, we're working on 52 now. We had the optics hang up a couple more times here.

05 00 16 11 CC Understand.

05 00 16 35 CC Go.

05 00 17 09 CC Apollo 9, Houston. On the fuel cell purges, we would like to know the time of the purges from now on and also we would like to have your opinion of how today's purge went, what effect it had, and how did it compare with yesterday?

05 00 17 25 IMP Okay, Houston. We purged 2 minutes just after you gave us the word that you thought the purge was a good thing to do. I checked them a few minutes ago and the fuel cells all looked very well balanced. I'm checking them right now, and they are very well balanced. Stand by one; let me look at the fuel cell performances.

05 00 17 54 IMP Okay. The TCE is up a little bit again on fuel cell 2. It's not off the top yet, but it is higher than fuel cell 1 and 3 and it's drawing about the same load.

05 00 18 07 CC Roger, Apollo 9. Understand.

05 00 18 11 CC And we thank you for that info.

05 00 18 15 IMP Roger.

05 00 18 32 CC And just for your info, it will be sunrise in about 19 minutes.

05 00 18 38 IMP Okay. Thank you.

05 00 19 30 CC And, Apollo 9, Houston. We'll be picking up Honeysuckle in about 2 minutes; put your S-band volume up, please.

05 00 19 39 IMP Okay.

HONEYSUCKLE (REV 76)

05 00 22 06 CC And, Apollo 9, Houston. I copy your DSKY.

05 00 23 04 CMP Houston, Apollo 9.

05 00 23 06 CC Go, Apollo 9.

05 00 23 10 CC Apollo 9, this is Houston. I'm reading you loud and clear.

05 00 23 15 CAP Okay. Did you get the gyro torqueing?

05 00 23 19 CC That is affirmative, Dave. I copied plus 119, minus 1277, plus 503. We had a data dropout; I'm not sure I got the time.

05 00 23 31 CMP Okay. Those are the right numbers at 120 23 00.

05 00 23 37 CC LOS in about 20 seconds. Thank you for the time.

05 00 23 40 CMP Roger. Thank you.

05 00 24 12 CC Okay, Dave. When you get the chance with it fresh in your mind, we would like to have you run through the trouble that you are having. It appears to us that it's sticking in more than one place.

05 00 24 25 CAP Yes; that's right. Let me run back through it, the history of the thing. I guess I told you the other day, the T pack is hung up in 64 point, and the tenths roller goes all the way around. It rolls all the time, and I can't move the T pack on the manual readout out of 64 manually or electrically. And it seems to hang up almost on multiples of 64, plus and minus 64, and around the 180 side, also. And when it hangs up, you can't move the shaft in any mode coupling speed at all. So what I've been doing is turning the optics off and breaking out the T pack with the manual dial - the manual crank there to where it looks like it's loose, at least a tenth slower and then turn the optics back on and go into zero. And that will zero it up, and then it seems to work for a little while until I get to that plus or minus 64 area, and then it all seems to hang up and nothing will bring it out, not even the AUTO drive, today.

[05 00 25 43 CC Okay, Dave. That's a real good rundown. We appreciate that and I'm going to lose you here at Honeysuckle probably in about a minute, and Huntsville at 30.

05 00 25 54 CMP Roger. Understand.

05 00 25 56 CC And we sure appreciate those comments.

05 00 25 57 CMP Okay. I'd appreciate those smart optics guys coming up with an answer.

05 00 26 03 CC Roger. We will give it a bloody go.

05 00 26 06 CMP Maybe we need to oil it.

05 00 26 13 CC Dave, is it just the telescope? Have you noticed any trouble with the sextant?

05 00 26 19 CMP It's - Well, to tell you the truth, I think the sextant hangs up, too. I couldn't be certain because I only notice it in the telescope and I haven't been able to get a star into the sextant with a stuck telescope to look through the sextant, but I'll check it next time.

[05 00 26 36 CC Okay; thank you. That's a pretty pertinent question. We would like to have the info.

05 00 26 41 CMP Okay. It's not stuck now, so I think I will stick to it to find out.

05 00 26 46 CC Okay.

HUNTSVILLE (REV 76)

05 00 35 13 CC And, Apollo 9, Houston through Huntsville. We'd like to have PCM bit rate LOW. We've got our command troubles, also.

05 00 35 22 CMP Okay. We're LOW.

05 00 35 25 CC Okay. Understand. We'll see you over Hawaii at 43.

05 00 35 32 CMP Roger. While you are waiting I'm trying the sextant and it seems to work fine in all modes - hand feed, MANUAL, AUTO, ZERO, and in any combination thereof, only the telescope gets hung up.

(GOSS NET 1)

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05 00 35 44 CC Roger. Understand. Copy, Dave; thank you very much.

05 00 35 51 CMP Roger.

HAWAII (REV 76)

05 00 42 08 CC And, Apollo 9, Houston through Hawaii. Standing by.

05 00 42 13 CDR Go ahead, Houston. You're a little broken again.

05 00 42 16 CC Roger. You're coming in okay, Apollo 9. We're on a low elevation here and we'll have continuous coverage on across the States, now.

05 00 42 26 LMP Oh, very good.

05 00 42 35 CDR Houston, Apollo 9. By the way, we did get a good alignment for the burn.

05 00 42 40 CC Roger. Copy. Understand.

REDSTONE (REV 76)

05 00 47 05 CC Apollo 9, Houston. We'd like to have H₂ tank 2 fan OFF, please.

05 00 47 12 CDR Roger, H₂ tank 2 fan OFF.

05 00 47 17 CC Thank you.

05 00 48 02 CDR Houston, are you still there?

05 00 48 06 CC Roger, Apollo 9. We're still here. We got good solid lock on you now. Go ahead.

05 00 48 12 CDR We have really been having some peculiar spacecraft rates. You know, when we go to bed at night, we try to damp the rates down to near zero so we don't have a lot - Running the clock will spin us up during the night. And every morning we get up and the rates are down around a tenth of a degree per second or something like that. Here in the last hour or so we've been trying to do this alignment and the rates keep building up. And I just - When

Dave finished I let them build up and they went up to about two tenths of a degree per second in pitch, and now that we're going along here without any jet firings, they've gradually dropped back down to they're almost zero. It looks like we're trying to stabilize the spacecraft at a certain fixed position which right now happens to be command module down towards the Earth.

- 05 00 49 01 CC Roger, Apollo 9. Copy. That's very interesting, thank you. We'll ponder that a while.
- 05 00 49 07 CDR Okay.
- 05 00 49 09 CDR Could you explain to me when I get down on the ground just exactly how you ponder?
- 05 00 49 21 CC Yes, sir; I'll do that.
- 05 00 49 24 CDR It sounds like so much fun I don't want to miss it.
- 05 00 49 35 CC Yes, copy that. Sounds like y'all are having a ball up there. Wish I could swap.
- 05 00 49 42 CMP Yes, I wish you could too. You work so hard I'd like to see you up here right now.
- 05 00 49 45 CC Thank you.
- 05 00 53 26 CC Apolio 9, Houston. You are coming up over Baja California now.
- 05 00 53 30 LMP Oh, yes; there it is down there.

TEXAS (REV 76)

- 05 00 57 56 LMP Houston, this is Apollo 9.
- 05 00 57 58 CC Go ahead. Apollo 9, Houston.
- 05 00 58 00 LMP Coming across here, looks like we're going to have an awful lot of cloud cover over the States. Where do you want to go to S065? That was supposed to be across the southwest U.S., wasn't it?
- 05 00 58 15 CC Stand by, Apollo 9.
- 05 00 58 17 LMP Okay.

(GOSS NET 1)

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05 00 58 31 CC Roger, Apollo 9. We'll give you a Mark on when to start, and we are looking at this.

05 00 58 40 LMP Okay.

MILA (REV 76)

05 01 00 37 LMP Okay. We're going across Atlanta, Georgia, right now, and we can see Dobbins Air Force Base and the whole city.

05 01 00 42 CC Sounds great.

05 01 00 45 LMP Okay. We got a couple of pictures for the folks.

05 01 00 49 CC Real good.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

] (GOSS NET 1)

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CANARY (REV 77)

- 05 01 11 18 CC Apollo 9, Houston. Dave, that switch you made on the BIOMED harness is working real well. We're getting good data.
- 05 01 11 26 CDR Okay, but this is Jim. I'm on Dave's lead now. He's not plugged in yet. Did you get mine? You get my respiration count?
- 05 01 11 37 CDR Houston, Apollo 9.
- 05 01 11 38 CC Roger, Apollo 9. Copy, and we are getting it.
- 05 01 11 43 CDR Okay. Ask those doctors if they can tell when we switch COMM leads.
- 05 01 11 49 CC Okay.
- 05 01 11 52 CDR 'Cause if they can't they are sure going to have some screwy data.
- 05 01 12 08 CDR Just as a matter of interest, Dave is working on his right now, too. So as soon as he gets plugged back in, you want to call us and let us know whether his are fixed?
- 05 01 12 17 CC Okay, Jim. We sure will.
- 05 01 12 24 CDR He's going to be on the left hoses for awhile.
- 05 01 12 29 CC Roger. Houston understands.
- 05 01 15 28 CC Apollo 9, this is Houston. You are GO for SPS-6. I'd like to toss in a reminder about the pitch 1, yaw 1 circuit breakers are OUT.
- 05 01 15 37 CDR Okay; fine. Thank you. Why did you want those circuit breakers OUT this morning?
- 05 01 15 41 CC Roger. It was working on the BATT A problem.
- 05 01 15 47 CDR Okay. You don't want them on any longer, then, do you?
- 05 01 15 53 CC We'd like to have them IN for the burn, and then pull them out after the burn again.
- 05 01 16 00 CDR Okay.

(GOSS NET 1)

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05 01 16 05 CDR You have to keep reminding us about them, then.
05 01 16 25 CC And, Apollo 9, Houston. I'm going to lose you in about a minute here off of Canaries. If you could, we'd like to have an estimate of when you closed the flight and postlanding battery bus A circuit breaker, and - This is just for our power consumption.
05 01 16 54 CDR Houston, I don't think we have any idea when that thing got closed. It must have got closed earlier at night.
05 01 17 00 CC Okay, Apollo 9. Understand.
05 01 17 05 CC We'll see you over Tananarive around 33.
05 01 17 10 CDR Roger.

TANANARIVE (REV 77)

05 01 35 01 CC Apollo 9, Houston through Tananarive. How do you read?
05 01 35 06 CMP Stand by, Houston.
05 01 35 09 CC Okay. When we pick you up over Carnarvon you are going to be rocking right on the burn time. We are afraid we won't get the command in. We'd like to have you go PCM bit rate HIGH at 43. That will be approximately 5 minutes prior to the burn.
05 01 35 29 CMP Okay. PCM bit rate HIGH at 43.
05 01 35 33 CC Roger. That's correct. Thank you.
05 01 35 36 LMP Are you through with your troubleshooting on the batteries? We'd like to get the circuit breakers set for the SPS.
05 01 35 46 CC Roger. Go ahead and put in the circuit breakers.
05 01 35 51 LMP Okay. Thank you.
05 01 38 32 CC And, Apollo 9, Houston. We're coming off Tananarive. We'll see you over Carnarvon right at your burn.
05 01 38 39 CDR Roger.
05 01 38 40 CMP Roger.

CARMARVON (REV 77)

05 01 48 41 CMP Village.

05 01 49 14 CMP Houston, Apollo 9.

05 01 49 16 CC Go, Apollo 9.

05 01 49 18 CMP Okay. We got no ullage that time, so we aborted the burn; we'll regroup here and try to figure it out.

05 01 49 28 CC Roger. We copy, Apollo 9. Check Charlie Delta in the DAP.

05 01 49 44 CC Apollo 9, Houston. We'll be looking one REV later for the burn.

05 01 49 49 CMP Okay.

05 01 50 05 CMP Roger, Houston. We see CD OFF which means we shouldn't - But I had just reset the DAP to turn it back on about 7 or 8 minutes ago.

05 01 50 21 CC Okay, Apollo 9. Roger. We copy. And there - We really didn't get our data until your ignition time and your next - A rough cut at the next ignition is 123 plus 28.

05 01 50 38 CMP Okay. 123 plus 28.

05 01 50 45 CC We'll be taking a look at our data and looking at the DAP here, see if we can psych this out.

05 01 50 52 CMP Okay. We even have a cross-check on setting the DAP, and thought we had it all squared away.

05 01 50 59 CC Understand, Apollo 9.

05 01 52 42 LMP Houston, 9.

05 01 52 45 CC Go, Apollo 9.

05 01 52 47 IMP Roger. You want us to go back to low bit rate?

05 01 52 54 CC That's affirmative, Apollo 9. Thank you.

05 01 52 58 IMP Okay.

(GOSS NET 1)

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05 01 55 34 CC Apollo 9, Houston. We'll see you over the Huntsville around 03.

05 01 55 40 CDR Roger. Have you had a chance to look at anything yet?

05 01 55 43 CC We don't have any good word yet for you, Apollo 9. Maybe over Huntsville here we will pass some words of wisdom.

05 01 55 51 CDR Okay.

HUNTSVILLE (REV 77)

05 02 03 05 CC Apollo 9, this is Houston through Huntsville.

05 02 03 24 CC Roger.

05 02 03 27 CDR Hello, Houston. Apollo 9, here.

05 02 03 30 CC Roger, Apollo 9. This is Houston through Huntsville. How do you read?

05 02 03 35 CDR ...

05 02 03 42 CC Okay. Apollo 9, this is Houston. I think you're reading me. You're not coming back too steriling. We are looking at the - at the DAP playing the data back. We will have some words on that. I'd like to post you on something; am I getting through at all?

05 02 04 02 CDR You're coming through very weak.

05 02 04 27 CDR Houston, this is Apollo 9. We're reading you weakly but clearly. Go ahead.

05 02 04 31 CC Okay. I think we've got good solid two-way lock, now. How me?

05 02 04 36 CDR You're still weak but clear.

05 02 04 37 CC Okay. What we're thinking of here, this S065 pass as scheduled is a prime one; there is a front moving in that will probably have it blanked out tomorrow. We do have aircraft out off of Los Angeles and around Tucson showing the cloud cover is good. You're only going to have about 32 minutes from

the SPS-6 until the time we want the first picture taken, and if we get you all your PADS and give you warning, do you think you can get configured for that in 32 minutes after the burn?

- 05 02 05 21 CDR I think your ques ... in 32 minutes after ... is that the question?
- 05 02 05 31 CC That is the question and our COMM here is pretty bad. We'll have Hawaii at 14. We'll still be on here for about another 4 minutes but you're breaking up badly coming in here. But you do have my right question. Can you be prepared to take your first pictures 32 minutes after the burn?
- 05 02 05 50 CDR Roger. I believe that we can ...
- 05 02 05 53 CC Okay; copy. Thank you, and we'll really go to work and have everything rocking on ready.
- 05 02 05 59 CDR Okay.

HAWAII (REV 77)

- 05 02 14 03 CC Apollo 9, Houston. We have you through Hawaii.
- 05 02 14 06 CMP Roger.
- 05 02 14 09 CDR We are getting that S065 checked out right now.
- 05 02 14 11 CC Okay. Real good, and a question, Dave. When you said you had cross-checked it, did it mean that after you had gone through the VERB 48, you recalled VERB 48 and checked the load?
- 05 02 14 24 CMP No. As we were going through, both of us - Two of us watched us do it.
- 05 02 14 30 CC Okay. Roger. We are going to take another look at the data, but also wondering about after loading up R1, R2 proceed vice ENTER ...
- 05 02 14 43 CMP No; I proceeded through it to check the weight and the pitch trim, yaw trim again.
- 05 02 14 51 CC Okay. I guess what I'm saying is after you did get in the DAP load, maybe you missed an ENTER

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there before you proceeded on through to the weight.

- 05 02 15 06 CMP Roger. I understand what you mean.
- 05 02 15 08 CC And our data - We're trying to take a look at it, but we really can't psych anything out yet, and I was just wondering if you had recalled it to verify that it was actually in.
- 05 02 15 24 CMP No. We didn't go back and recall it again.
- 05 02 15 26 CC Okay. Thank you.
- 05 02 23 02 CC Apollo 9, this is Houston. I know you are real busy. You're coming up on a long pass here. We'll have you for about the next 20 - 22 minutes, and I have SPS-6 PAD anytime you are ready.
- 05 02 23 13 CMP Okay. Stand by, please.
- 05 02 23 16 CC Roger.
- 05 02 23 36 CMP Okay. Houston, 9. Go ahead with the PAD.
- 05 02 23 39 CC Roger. Reading SPS-6: 123 25 0590, minus 00388 all zips all zips 00388 00240 0014 27010, minus 089, minus 113 12 35500 23400, minus 0646, minus 01109 1269. End of update.
- 05 02 25 15 CMP Roger. Copy. 123 25 0590, minus 00388 all zips all zips 00388 00240 0014 27010, minus 089, minus 113 12 35500 23400, minus 0646, minus 01109 1 ...

REDSTONE (REV 77)

- 05 02 25 58 CC Apollo 9, Houston. I think we are in the middle of a handoff here. Let's stand by for about 10 seconds.
- 05 02 26 04 CMP Roger.
- 05 02 26 07 CC Okay. I've got you now. You dropped out on a couple of those, Dave. Would you read me DELTA-V_C, trunnion, and the latitude and altitude?
- 05 02 26 21 CMP Okay. On DELTA-V_C, 0020; trunnion, 23400; longitude, minus 01109; and the altitude, ... 0.9.

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05 02 26 38 CC Roger. Copy that. I am showing latitude 0646.
05 02 26 44 CMP Roger. 06 ...
05 02 26 46 CC Okay. Very good. You have the PAD.
05 02 26 49 CMP Thank you.
05 02 26 55 CMP I guess we'll assume that the DAP's working all right. And we'll run through it.
05 02 27 02 CC That's our assumption. Let's assume that right now, Apollo 9. We are looking at it.
05 02 27 07 CMP Okay.
05 02 27 55 CC Apollo 9, Houston. We'd like to have POO in ACCEPT. We'll give you a state vector and a target load.
05 02 28 06 CMP Okay. You have POO in ACCEPT.
05 02 28 09 CC Roger. Understand. We'll be shipping it up.
05 02 29 08 CC Apollo 9, it will be about another minute before we start shipping to you. We are getting a dump.
05 02 34 28 CC Apollo 9, Houston. The computer is yours. The vector compare looks real good.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

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VANGUARD (REV 78)

05 02 41 07 CC Apollo 9, Houston. We've got about 3 minutes left in this pass. I have your S065 update when you are ready.

05 02 41 18 CDR Stand by one.

05 02 41 19 CC If we don't get it here, it will be no sweat. We will have Ascension at 51.

05 02 41 25 IMP Okay. About 10 seconds.

05 02 41 26 CC Okay.

05 02 41 33 IMP Go ahead, Houston.

05 02 41 35 CC Okay. S065 update: 18000 32750 000 123 55 20, N flash A; the next block - I want this ORB RATE; your first area is southwest U.S., 124 00 20 06 25. We would like to have a second area, which will be Houston, 124 05 15 06 03. Also, now, with the hand-held camera, I would like to give you a time here of 124 plus 03 plus 28. We would like to have about four pictures looking north of the ground track with the hand-held camera. This is just about as far north as we've come in any of the orbits. We would just like to have some pictures up there. I would like to make a comment on this southwest U.S. pass. The weather is clear from Los Angeles to Tucson. You will be just past Tucson when you have had exposure 15. As you come into El Paso, if it looks like it's completely socked over, you can terminate, but we want to keep going up through 15.

05 02 43 48 IMP Okay. Want a readback? Do we have time?

05 02 43 52 CC We've got about 30 seconds. Go ahead.

05 02 43 53 IMP Okay. 180 327 and a half 0123 55 20 NA; ORB RATE. Southwest U.S., 124 00 20 06 25; Houston, 124 05 15 06 03.

ASCENSION (REV 78)

05 02 50 43 CC Apollo 9, this is Houston through Ascension. And Rusty, I got the readback all the way through the

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S065. I just wanted to make sure that you got my additional comments.

- 05 02 50 57 LMP Okay. The addition comments: The weather is clear from LA to Tucson, and you figure that we'll get to Tucson about the 15th exposure; and using our judgment, if beyond that it looks now like it's clobbered in, to go ahead and forget them. Understand that at 124 03 28, with a hand-held camera, you'd like pictures looking north of the orbit track. And I wonder if you could give us an orbit rate?
- 05 02 51 26 CC Okay. Stand by.
- 05 02 51 30 CDR Degrees per second.
- 05 02 51 31 LMP Okay. We'd like it in degrees per second.
- 05 02 51 34 CC Roger. Understand.
- 05 02 53 24 LMP Houston, this is Apollo 9.
- 05 02 53 26 CC Go ahead, Apollo 9. This is Houston.
- 05 02 53 28 LMP Roger. These angles that you sent us, are those inertial angles or those local vertical angles? This is for S065.
- 05 02 53 42 CC Roger. Those are your ORB RATE angles. Now, it - on your FDAI.
- 05 02 53 51 CDR Roger. Do you have a corresponding set of inertial angles that we can have?
- 05 02 53 55 CC Stand by.
- 05 02 54 52 CMP Houston, Apollo 9.
- 05 02 54 53 CC Go ahead, Apollo 9.
- 05 02 54 55 CMP Okay. One more question on that. If you will check the checklist, CMP 3-15, there is an ORB RATE column there, and it goes 0, 90, 180, and 270 degrees. Could you give us a word on that? What those are?
- 05 02 55 14 CC Roger. Copy, Apollo 9. Stand by.
- 05 02 55 17 CMP Okay.

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05 02 56 28 CC Apollo 9, this is Houston. You are GO for SPS-6, and we are working on your question.

05 02 56 34 CDR Roger. GO for 6; thank you.

05 02 57 49 CC Apollo 9, Houston. About 30 seconds LOS Ascension. We'll see you at Tananarive about 09, if we can talk to you.

05 02 57 57 LMP Okay. I've got a quick question. All these angles that you are going to get us are based on the REFSMMAT that we had in there for the previous burn, right?

05 02 58 05 CC That is affirmative, Apollo 9.

05 02 58 08 LMP Okay.

05 02 58 10 CC And on your attitudes for the burn, you will be about two-tenths off. I didn't bother passing those. It's essentially 000.

05 02 58 20 LMP Okay. Very good.

05 02 58 22 CMP Come on; you are falling down on the job.

05 02 58 26 CC Okay. Sorry about that.

05 02 58 33 CDR Houston.

05 02 58 35 CC Go ahead.

TANANARIVE (REV 78)

05 03 08 40 CC Apollo 9, Houston through Tananarive. Do you read?

05 03 09 08 CC Apollo 9, this is Houston through Tananarive. I am not reading you; your ORB RATE is 0.067.

05 03 10 17 CC Apollo 9, this is Houston. We'll see you over Carnarvon at about 22, just before your burn.

05 03 10 25 LMP Carnarvon 22.

05 03 10 32 CC And, Apollo 9, I'm not getting you back. You're busting up. Your ORB RATE is 0.067, and we'll have the rest of your angles for you after your burn.

05 03 10 43 CDR Thank you.

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- 05 03 10 56 CC Dave, if you can read me, I'll pass this to you now. The checklist there on CMP 315 - Those values are to be used; those are your roll angles. In other words, in this one, where you're at 180 degree roll, you would use that column versus your ORE RATE of 0.067 to get those values to load in for the procedures.
- 05 03 11 39 CC Those are your outer gimbal angles, Dave. I'll cover this with you again because I may not be getting through.

CARNARVON (REV 78)

- 05 03 22 47 CC Apollo 9, Houston through Carnarvon. Standing by for your burn.
- 05 03 22 51 CMP Roger. And I think the DAP is squared away. What does it look like down there?
- 05 03 22 57 CC We don't have data yet, Apollo 9.
- 05 03 23 01 CMP Okay.
- 05 03 23 02 CC Roger. It is GO.
- 05 03 23 05 CMP Okay. Thank you.
- 05 03 25 43 LMP Houston, this is Apollo 9.
- 05 03 25 45 CC Go ahead, Apollo 9.
- 05 03 25 47 LMP Got our residuals for you: plus 1.2, minus 0.4, and minus 0.3; DELTA-V counter is minus 13.1.
- 05 03 25 59 CC Roger. Copy. Plus 1.2, minus 0.4, minus 0.3, and minus 13.1.
- 05 03 26 06 LMP Roger. And that pitch attitude: 35¹/₂ degrees.
- 05 03 26 15 CC Roger. Copy.
- 05 03 26 18 LMP That one g you earthlings have down there is quite a sensation.
- 05 03 26 24 CC Roger. And Dave thanks you from the bottom of his computer for that pitch angle.
- 05 03 26 31 LMP Roger.

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05 03 26 44 CC Okay. Apollo 9, Houston. We're going to have you here for about another two and one-half minutes at Carnarvon. I believe you got your ORB RATE, 0.067, over Tananarive. And that page 3 dash 15, what that is telling you is your outer gimbal - That's your roll angle. We are going to have you with a roll of about 180, so you will use that column versus your ORB RATE to get your parameters to load in the procedure.

05 03 27 14 CMP Okay. Fine, then. I copied your whole transmission over Tananarive and I think we've got it in hand. Thank you.

05 03 27 19 CC Roger. And I'll have you some inertial angles here at the start of your ORB RATE shortly.

05 03 27 27 CMP Okay. Thank you.

05 03 28 32 CC Apollo 9, Houston with your inertial angles.

05 03 28 40 CMP Go ahead, Houston.

05 03 28 41 CC Roger. Roll, 0; pitch, 332.4; yaw, 359.5; and the time of this will be 55 plus 20.

05 03 29 04 CMP Roger. Understand. Roll, 0; pitch, 332.4; yaw, 359.5; and the time is 55 plus 20.

05 03 29 14 CC Roger.

05 03 29 24 CC And we are going to lose you here at Carnarvon. We'll probably see - see you at Hawaii around 48. We'll have a low pass on Guam this time.

05 03 29 33 CDR Okay. Fine.

05 03 29 34 CC Roger.

GUAM (REV 78)

05 03 36 39 CC Apollo 9, Houston through Guam. Do you read?

05 03 36 43 LMP Roger, Houston. Reading you five-by.

05 03 36 46 CC Okay. I'm reading you a little weak. But Dave, I don't know if I've confused you on this page 315 or not, but that top column is your outer

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gimbal angle. Use the value for your outer gimbal angle when you are at the proper pitch for this photography.

05 03 37 05 CMP Okay. I was just going to ask you about that. You gave him some roll of zero degrees so that's our attitude.

05 03 37 11 CC Roger. That zero degree inertial looks - looks good, and so that top column is your outer gimbal angle.

05 03 37 19 CMP Okay; very good. Thank you.

05 03 37 21 CC Roger.

05 03 39 03 CC Apollo 9, Houston. If you read me, the roll on our S065 PAD where we gave you 180 should be zero.

05 03 39 12 CMP Oh, okay. The roll on the S065 PAD should be zero. Understand.

05 03 39 16 CC Roger.

HAWAII (REV 78)

05 03 48 59 CC Apollo 9, this is Houston through Hawaii. Standing by.

05 03 49 04 CMP Roger. We're getting set up.

05 03 49 06 CC Very good.

05 03 49 09 LMP When we come over, I want you to smile now, Stu.

05 03 49 11 CC Okay. And we've sent somebody outside, said it was clear out here.

05 03 49 17 LMP Is it clear?

05 03 49 19 CC Yes it is, here.

05 03 51 56 CC Apollo 9, Houston.

05 03 51 59 CDR Go ahead, Houston.

05 03 52 01 CC Roger. We would just like to remind you, when you get into the checklist on S065, and you disable jet A3, to reenable quad C in the DAP.

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05 03 52 15 CDR Houston, we have elected to go on and use A and - A and B here.

05 03 52 23 CC Roger. Understand, Apollo 9.

05 03 52 29 CDR We - When you get the redlines, C is by far the lowest, and we didn't figure we were going to be firing that many pulses as we went along here. The chance of us firing a pulse at the time we took a picture is rather remote.

05 03 52 42 CC Roger, Apollo 9.

05 04 00 00 CMP Houston, this is Apollo 9.

05 04 00 03 CC Go, Apollo 9.

05 04 00 04 CMP Listen, this technique isn't working; we're driving the wrong way or something up here, and we're not going to be vertical - it doesn't look like. You want us to just take over and try to fly it around manually or skip it?

05 04 00 18 CC Roger. We copy, Apollo 9.

05 04 00 21 CMP Better hurry up; we gotta start taking pictures right now.

05 04 00 25 CC Roger. We'd like you to take over and do it manually.

05 04 00 28 CMP Okay.

TEXAS (REV 78)

05 04 04 13 LMP Houston, Apollo 9.

05 04 04 15 CC Go, Apollo 9.

05 04 04 17 LMP Hey, Houston, we still have the three to take over Houston, haven't we?

05 04 04 30 CC I didn't copy that; you busted out, Apollo 9.

05 04 04 34 CDR Roger. We have the three pictures to take over Houston. We had better get those procedures squared away.

05 04 04 40 CC Roger.

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05 04 05 13 CC Okay. You ought to be coming over about now, Apollo 9, snapping away.

05 04 05 18 CDR Yes. It's quite a sight.

05 04 05 26 CMP Clear as a bell down there.

05 04 05 28 CC Okay. We won't move.

05 04 05 30 CMP Don't move. Smile.

05 04 05 38 CC And did you get a good picture of the oil slick off the coast?

05 04 05 50 CMP Houston, Apollo 9.

05 04 05 52 CC Go, Apollo 9.

05 04 05 53 CMP This is the uncertain angle ... I took seven pictures instead of three.

05 04 06 01 CC Roger. Copy. You took seven instead of three.

05 04 06 05 CMP ...

05 04 06 10 CC And, Jim, you're breaking up and Dave is coming through loud and clear.

05 04 06 30 CDR ... Did you take into account the fact that ...

05 04 06 42 CDR Houston?

05 04 06 45 CC Apollo 9, this is Houston. You're breaking up quite badly. I can not read you.

05 04 06 48 CMP Roger. Thank you.

05 04 07 09 CMP Houston? You still with us?

05 04 07 10 CC Roger. We show you - We still should have good lock on you; however, you are breaking up quite badly, Apollo 9.

05 04 07 17 CMP Okay. How about now? You read us now?

05 04 07 20 CC That's loud and clear.

05 04 07 21 CMP Okay. I guess we have some question about the platform alignment, too, since we have aligned retrograde. The uprate technique with the DAP works real well; it just looked like we were going the wrong way.

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05 04 07 35 CC Roger. Copy. And GNC here has a lot of good words to say about that. Sounds like you are absolutely right.

05 04 07 48 CMP Okay. Then maybe we can get them squared away for next time.

05 04 07 54 CC Roger. It looks like we went V cross R instead of R cross V.

05 04 08 00 CMP Roger. At least fundamental.

05 04 08 06 CDR It's not all at first, either.

05 04 08 10 CC Roger.

05 04 08 31 CMP Anyway, next time we try it, how about when you give us the update, give us the PAD with the inertial gimbal angles on it, and add to it the ORB RATE, and we can probably go from there and set this thing up pretty good.

05 04 08 46 CC Roger. We'll do that. We'll have inertial angles and ORB RATE on the next PAD.

05 04 08 53 CMP Okay; thank you. You might also have the orbit rate angle, too, because we could monitor that on the ORB RATE ball.

05 04 09 03 CMP Roger. Understand.

05 04 09 07 CDR Houston. How do you read me now?

05 04 09 09 CC You're loud and clear, Jim.

05 04 09 11 CDR Okay.

ANTIGUA (REV 78)

05 04 10 12 CC And, Apollo 9, Houston. Show you coming across the Caribbean. We'll have you for about another 8 minutes.

05 04 10 20 CMP Okay.

05 04 11 24 CMP Houston, this is Apollo 9.

05 04 11 26 CC Go, Apollo 9.

[(GOSS NET 1)

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- 05 04 11 27 CMP Okay. According to this flight plan update you gave us this morning, you were going to give us a time for a nominal F52 alignment. Do you have that data for us yet?
- 05 04 11 35 CC Roger. It's in work. We'll have it here before we lose Antigua.
- 05 04 11 40 CMP Okay. When are you going to send us the PAD for landmark tracking?
- 05 04 11 44 CC Say again, Apollo 9.
- 05 04 11 47 CMP When are you going to send us the PAD for landmark tracking?
- 05 04 11 50 CC Roger.
- 05 04 11 56 CC Stand by. We'll try to have that over Ascension, Apollo 9.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

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ANTIGUA (REV 79)

- 05 04 12 29 CC Okay, Apollo 9. I have your time for the nominal alignment.
- 05 04 12 35 CMP Okay. Go ahead.
- 05 04 12 37 CC Roger. 125 plus 03 plus 00.
- 05 04 12 45 CMP Roger. 125 plus 03 plus 00.
- 05 04 12 48 CC That's affirmative.
- 05 04 16 04 CC Apollo 9, this is Houston. We would like to have a voice check here to check our S-band. That's what was breaking up on the pass over the last site.
- 05 04 16 13 CMP Okay. Voice check: 1, 2, 3, 4, 5, 5, 4, 3, 2, 1. Apollo 9.
- 05 04 16 18 CC Oh, that's beautiful! Loud and clear.
- 05 04 16 20 CMP Okay.
- 05 04 16 24 CDR Houston, I might make a comment on this S065. It seems to have worked very well. It's easy to put together, and it seems to take pretty good pictures. I don't know about the quality, but it's easy to operate.
- 05 04 16 34 CC Okay. Copy. How did it look from Tucson to El Paso, Jim? Did you take those pictures?
- 05 04 16 41 CDR Roger. We took the pictures, but I couldn't tell exactly what the cloud cover was. Let me let Dave answer you.
- 05 04 16 49 CMP It was a scattered deck, you know, like probably 2000 feet or so. Other than that it was pretty good, but ... soon as we got to within about a couple or 3 minutes of Houston, it broke out in the open.
- 05 04 17 04 CC Okay. Real good. That was our report according to aircraft from Los Angeles. Tucson was supposed to be clear, and I think with the scattered deck it should still be good with the word I had. I'm glad you took them.
- 05 04 17 19 CDR Better to take them today, than to not take them tomorrow.

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05 04 17 23 CC That's right. And we're going to lose you in about 20 seconds here. We'll see you at Ascension at 26.
05 04 17 31 CMP Okay.

ASCENSION (REV 79)

05 04 27 37 CC Apollo 9, Houston through Ascension.
05 04 27 41 CDR Roger, Houston. Apollo 9, here.
05 04 27 44 CC Roger. Good evening.
05 04 27 46 CDR Hi. How are you?
05 04 27 47 CC Good shape; good shape. About ready for our evening fireside chats again, looks like.
05 04 27 52 CDR Yes. When you said good evening I was absolutely amazed. I looked at my watch; it says 3:30 down at the Cape.
05 04 27 57 CC That's right.
05 04 28 00 CDR How are you there, Mr. Ron?
05 04 28 02 CC Good shape; good shape. We're working on our landmark tracking PAD. We should have that before we finish up here, I hope.
05 04 28 10 CDR Okay. I want you people to realize that we are having this trouble with the shaft on the telescope, and we may not be too successful with this thing.
05 04 28 23 CC Roger. We understand that.
05 04 28 25 CDR Alrighty.
05 04 29 38 CC Apollo 9, Houston. Have your landmark update.
05 04 29 43 CDR Let me get set.
05 04 29 52 CC Apollo 9, Houston.
05 04 29 54 CDR Roger, Houston. Go ahead.

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05 04 30 01 CC Okay. You're real weak there. I'll go ahead and read. Your landmark ID 011: your GET, 125 32 1600; and you'll be 60 miles north of track.

05 04 30 30 CC We have about 30 seconds to LOS; probably Carnarvon at 57.

05 04 30 36 CMP Roger. Say again the roll, pitch, yaw, shaft, and trunnion?

05 04 30 41 CC Roger. We don't have that now; NA.

05 04 30 46 CMP Okay. I missed the number. Was it 011?

05 04 30 48 CC Affirmative. Landmark ID is 11.

05 04 30 51 CMP Thank you, and 125 32 1600.

05 04 30 55 CC Roger.

CARNARVON (REV 79)

05 04 57 41 CC Apollo 9, Houston through Carnarvon. Standing by.

05 04 57 45 LMP Roger, Houston. Apollo 9, here.

05 04 57 49 CC Roger. I just wanted to make sure that you got the word that that landmark is 60 miles north of your track.

05 04 57 56 LMP Roger. Sixty miles north; thank you.

05 05 00 01 CC Apollo 9, Houston. Thirty seconds LOS; Guam at 07.

05 05 00 06 CDR All right. Very good.

GUAM (REV 79) -

05 05 07 43 CC Apollo 9, Houston through Guam.

05 05 07 47 CDR Go ahead, Houston. This is Apollo 9.

05 05 07 50 CC Roger, Jim. If you have got time - a minute, we've got a PUGS switch test we'd like to have you copy and perform. If you don't have time here, we can do it later, but - -

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05 05 08 03 CDR Houston, Apollo 9 here. I'm having a pretty tough time reading you.

05 05 08 08 CC 9, Houston. How now?

05 05 08 11 CDR That's much better.

05 05 08 12 CC Okay, Jim. We have a PUGS switch test we would like to have you perform if you have time.

05 05 08 21 CDR Okay. Just a minute.

05 05 08 26 CDR Okay. You want us to copy this thing down, or you want us to do it just as we are talking to you?

05 05 08 32 CC You can do it, but it will take SPS-13 malfunction procedure.

05 05 08 40 CDR Okay. Stand by one.

05 05 09 01 CC 9, Houston. I can probably read it to you as we go.

05 05 09 05 LMP Okay. Go ahead; I've got the SPS-13 out end up.

05 05 09 09 CC Okay. SPS gaging to AC-1.

05 05 09 15 LMP Roger. Gaging to AC-1.

05 05 09 16 CC SPS heaters and gaging, main A and main B, CLOSED.

05 05 09 24 LMP Stand by.

05 05 09 35 LMP Roger. They're CLOSED.

05 05 09 37 CC PUGS mode switch to NORMAL.

05 05 09 41 LMP Roger. PUGS mode to NORMAL.

05 05 09 43 CC And test switch to POSITION 2 for 8 seconds.

05 05 10 04 LMP Roger. It was there for 8 seconds.

05 05 10 08 CC Roger. PUGS mode switch to AUXILIARY.

05 05 10 12 LMP Roger. PUGS mode to AUXILIARY.

05 05 10 15 CC Okay. Do SPS-13, box 2 and 4, and let us know of any results.

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- 05 05 10 21 LMP Okay.
- 05 05 10 32 CC We would like the quantity readings and the unbalance meter before and after each activation of the test switch.
- 05 05 10 44 LMP Okay. You were a little late on that request. I'm not sure where it started. I just finished Test 1 for 10 seconds, and they're reading 24.9 and 23.4, and the unbalance is reading 400-INCREASE.
- 05 05 11 07 CC Roger.
- 05 05 11 43 LMP Okay. I have gone to 2 for 10 seconds, and they read 23.5 and 22.0.
- 05 05 11 52 CC Roger.
- 05 05 11 56 LMP And the unbalance is 380 - again on the increase side.
- 05 05 12 03 CC Roger. 380-INCREASE.
- 05 05 12 15 LMP Okay. And you also want block 4, right?
- 05 05 12 17 CC Affirmative; block 4.
- 05 05 13 06 LMP Okay. And I just performed - Are you still with me, Houston?
- 05 05 13 09 CC Affirmative.
- 05 05 13 10 LMP Okay. Just performed block 4, and after the initial jumpback on the normal systems, it was reading 23.1, 21.1, INCREASE-500, and it remained there all through block 4. No change.
- 05 05 13 27 CC Okay. We copy.
- 05 05 13 29 LMP Although the caution warning light did come on after about 5 to 6 seconds.
- 05 05 13 36 CC Okay.
- 05 05 14 10 CC 9, Houston. We'd like to verify that you are in PRIMARY and not NORMAL when you went through block 4.
- 05 05 14 18 LMP I beg your pardon; I was in NORMAL.
- 05 05 14 22 CC Okay.
- 05 05 14 26 LMP That's PRIMARY and do it for you.

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05 05 14 25 CC Roger.
05 05 14 52 CC 9, Houston. If you can hold off there, we're about LOS. We'll catch you first time in Hawaii on that.
05 05 15 01 LMP Roger.
05 05 15 10 CC Will be Hawaii at 22.

HAWAII (REV 79)

05 05 22 43 CC Apollo 9, Houston through Hawaii.
05 05 22 48 CMP Roger. Houston, Apollo 9.
05 05 22 49 CC Roger. Loud and clear. On this PUGS switch test, we'll let you continue with your landmark tracking there, and we'll check back over Guam the next rev.
05 05 23 03 LMP Okay.
05 05 23 47 CC 9, Houston. We're watching your middle gimbal angle for you, and we'll keep you advised.
05 05 23 52 CDR Roger.
05 05 23 54 CMP I'm keeping a pretty close eye on it, too.
05 05 23 56 CC I would assume so.

TEXAS (REV 79)

05 05 36 55 CMP Houston, Apollo 9.
05 05 36 57 CC Houston. Go.
05 05 36 58 CMP Okay. Everything was working good in the optics until I went out of AUTO optics and started trying to track it manually, and the shaft and telescope hung up again.
05 05 37 10 CC Great.
05 05 37 13 CMP And I tried to get it unstuck there by releasing it manually, and finally got it to move again, but then got a POO's NO-GO at the Mark program alarm, so I guess it was probably out of sync.

(GOSS NET 1)

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- 05 05 37 33 CC Roger. Understand.
- 05 05 37 46 CMP Houston, generally it looked like this roll technique - yaw and then roll technique looks pretty good. The roll rate was such that I would not have had to use hardly any drive on the optics to take the Marks, except I could not get any shaft, and that's what wiped me out.
- 05 05 38 05 CC Okay. Very fine.
- 05 05 38 07 CMP If somebody could figure out a way to unstick this shaft, you know, like permanently, I think we'd be in good shape.
- 05 05 38 14 CC Okay. We're tearing one apart over here now, and trying to take a look at it to see if we come up with anything.
- 05 05 38 19 CMP Okay. I'm sure you are.
- 05 05 38 50 CC Apollo 9, Houston. If you are through with the computer there, we'd like to have you go to POO and look at your REFSMMAT some time before we leave Texas.
- 05 05 38 57 CMP Okay. Stand by.
- 05 05 40 52 CC 9, Houston. We only have about 1 more minute here at Texas, and then Tananarive at 16.
- 05 05 41 05 CMP Roger. You've got POO in ACCEPT as soon as - I guess - the computer gets through integrating forward.
- 05 05 41 11 CC Roger. We don't need ACCEPT.
- 05 05 41 19 CC Be advised your sweet little secretary will be listening, probably over Tananarive - if we can get you.
- 05 05 41 26 CDR Very good. Give us a holler.
- 05 05 41 29 CC Okay.
- END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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TANANARIVE (REV 80)

- 05 06 16 37 CC Okay. Apollo 9, Houston through Tananarive.
- 05 06 16 40 LMP Hello, Houston. Apollo 9, here. Is she there?
- 05 06 16 43 CC Roger. Loud and clear, now.
- 05 06 16 47 LMP Roger. Is Charley there?
- 05 06 16 52 CC Affirmative.
- 05 06 16 57 LMP Okay. Stand by, Charley.
- 05 06 17 00 CDR Happy birthday to you, happy birthday to you,
CMD happy birthday, dear Charley, happy birthday
LMP to you.
- 05 06 17 20 CC She's getting a great kick out of it and says,
"Thank you."
- 05 06 17 25 CDR Okay. Sorry we didn't have time to celebrate
before the launch.
- 05 06 17 35 CC She said it was beautiful.
- 05 06 17 39 CDR Okay. We think she is, too.
- 05 06 17 43 CC Roger.
- 05 06 17 47 CC When you get a chance there, we could use the
number of frames used on S065.
- 05 06 17 56 CMP Okay. We used what we were supposed to from
California on over toward Texas and used seven
frames across Houston. We used one frame to check
the thing out when we put it up in the window to
make sure that all of the film magazine ... and
we used one additional frame.
- 05 06 18 26 CC Roger. One additional, one to start, seven over
Texas, and seven somewhere else. Is that correct?
- 05 06 18 35 CMP You broke up a little there. There was one to
check ... there was one accidental one, seven -
I say, there was seven over Houston and there was
25 - 25 across southwest U.S.
- 05 06 18 51 CC Roger. Copy the 25 and the rest of them.

(GOSS NET 1)

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Page 545

05 06 18 56 CMP Okay-dokey.
05 06 19 05 CMP Houston.
05 06 19 07 CC Houston. Go.
05 06 19 09 CMP We were supposed to wind one film - each film pack forward one frame forward by hand, so that one is also gone.
05 06 19 17 CC Roger. Understand. You wound one frame by hand.
05 06 19 22 CMP Roger.
05 06 19 36 LMP Houston, this is Apollo 9.
05 06 19 37 CC Houston. Go.
05 06 19 40 LMP We are IMU DOWN. All we're doing is spinning through, keeping it out of gimbal lock, and we don't need it anymore.
05 06 19 53 CC Roger. Stand by. We're checking it.
05 06 20 06 CC Apollo 9, Houston. Affirmative. IMU to STANDBY.
05 06 20 11 LMP Say again, please.
05 06 20 19 CC Apollo 9, Houston. IMU to STANDBY. We still need the CMC.

GUAM (REV 80)

05 06 41 51 CC Apollo 9, Houston through Guam.
05 06 42 17 CC Apollo 9, Houston through Guam.
05 06 43 08 CC Apollo 9, Houston through Guam.
05 06 43 12 CDR Hello, Houston through Guam. This is Apollo 9.
05 06 43 15 CC Roger. If you have got the time there, we would like to go through that PUGS switching test again.
05 06 43 21 CDR Alrighty. We will get the PUGS switcher up in the seat.
05 06 43 24 CC Okay.

(GOSS MET 1)

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- 05 06 43 28 LMP Houston, this is Apollo 9. I've got some data for you from that last one, if you would like that.
- 05 06 43 36 CC Okay. I think I copied the data. I didn't have what your readings were before you started the test 1 position, though, before you started the malfunction procedures.
- 05 06 43 50 LMP Okay. That - I didn't either. That is whatever it was after that last burn when we shut it off. I think we read that down some time, but why don't we just do it again.
- 05 06 43 59 CC Okay. Let's do it again. Just PUGS mode to AUXILIARY and then go through SPS-13, boxes 2 and 4, and give us your readings before you start and after each test position.
- 05 06 44 09 LMP Okay. How much time do we have in this pass?
- 05 06 44 14 CC Roger. We've got 2 more minutes - 3 more minutes.
- 05 06 44 18 LMP Roger. And, Ron, how about the IMU? Did you say go ahead and power it down or not?
- 05 06 44 23 CC Affirmative. You can fire down the IMU, and if you have POO in ACCEPT, we will give you state vector now.
- 05 06 44 28 LMP Okay. POO and ACCEPT - You have it.
- 05 06 44 33 LMP Okay. And, Ron, we have 24.9 and 21.2, and the oxidizer unbalance and OFF SCALE HIGH. Okay?
- 05 06 44 45 CC Roger. Copy.
- 05 06 44 47 LMP Okay. I'm in AUXILIARY.
- 05 06 45 08 LMP Okay. After 10 seconds in AUXILIARY, it's - the oxidizer unbalance is INCREASE - 400, and the quantities are reading 25.2 and 23.6.
- 05 06 45 20 CC 25.2 and 23.6.
- 05 06 45 24 LMP Roger.
- 05 06 45 44 LMP Okay. And after going to test 2, we have 430 pounds increase, 23.8 and 22.1.
- 05 06 45 59 CC Roger. 23.8, 22.1.

* (GOSS NET 1)

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05 06 46 03 LMP Okay. Going to PRIMARY.
05 06 46 23 LMP Okay. Now, Ron, after I went to PRIMARY, I went to test 1. The OX increased, the oxidizer unbalanced, jumped right away to FULL SCALE HIGH, and stayed there. Its final readings are 28.6 and 21.8. I am going to test 2 now.
05 06 46 40 CC Roger. And we didn't quite get your load in the computer, so we will finish it at Hawaii.

HAWAII (REV 80)

05 06 57 24 CC Apollo 9, Houston through Hawaii.
05 06 57 29 CDR Roger. Houston, Apollo 9.
05 06 57 32 CC Roger, Jim. If Rusty's got just the readings from that test 2 position - I didn't get those.
05 06 57 41 LMP Okay, Ron. The final readings were FULL SCALE HIGH increase on the UNBALANCE, and 27.1 to 21.4 OX and fuel.
05 06 57 53 CC Roger. FULL SCALE HIGH 27.1 and 21.4.
05 06 57 58 LMP And the MASTER ALARM came on in all - on all the tests and after about 6 or 7 seconds.
05 06 58 05 CC Roger.
05 06 58 15 CDR And, Houston, Apollo 9. We went over the hill with the VERB 33 cell so we have to proceed for you.
05 06 58 24 CC Roger.
05 06 58 29 CDR Do you want to check anything before we power it down?
05 06 58 33 CC Affirmative. If you'll stand by we'll do it down here for you.
05 06 58 36 CDR Alrighty.
05 06 58 41 CC Dave, on your EKG - We still don't have one down here, so what we're recommending is that you switch out your blue sternal lead there with that spare set.

(GOSS EET 1)

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05 06 58 51 CMP Roger. Understand the blue sternal suit leads to the spare set. Okay. I've taken the thing all apart again so I guess that must be it.

05 06 58 59 CC Okay, because we still aren't getting any.

05 06 59 08 CC 9, Houston. I've got a target of opportunity at about 126 plus 13 if you want it.

05 06 59 15 LMP Roger. 126 plus 13?

05 06 59 18 CC I'm sorry. 127 13.

05 06 59 21 LMP Okay.

05 06 59 32 LMP Go ahead.

05 06 59 34 CC Roger. And we need a VERB 66 on the computer, also.

05 06 59 39 LMP I've got a VERB 66 coming up.

05 06 59 46 CC Your targets of opportunity are Galapagos Islands, it's south of track about 15 degrees elevation angle. And start at 127 plus 13 plus 23. Try five exposures, 6 seconds apart.

05 07 00 16 LMP Okay. The Galapagos, south of track 15 degrees elevation angle, 127 13 23; five exposures, 6 seconds apart.

05 07 00 26 CC Roger.

05 07 00 30 LMP Houston, Apollo 9.

05 07 00 32 CC Houston. Go.

05 07 00 39 CC 9, Houston. Go.

REDSTONE (REV 80)

05 07 02 29 CC Apollo 9, through Houston - through Redstone this time.

05 07 02 34 CDR Houston, Apollo 9.

05 07 02 35 CC Houston. Go.

05 07 02 37 CDR Roger. I have a couple of questions. Do you want us to use any fuel to take that picture,

(COSS MET 1)

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the target of opportunities picture? And the second thing I just wanted to tell you, we have four or five 16-millimeter magazines of film left for exterior and we were planning on putting the 75-millimeter lens on and shooting some targets across the ground. You might sort of put that into the flight planners' minds and see if they have anything in particular they would like me to take a picture of.

- 05 07 03 05 CC Will do.
- 05 07 03 35 CC Apollo 9, Houston. Negative on the fuel for that target. If you can see it, okay. If you can't, fine.
- 05 07 03 43 CDR Okay. Very good.
- 05 07 03 46 CC And vector compares good. However, leave the computer going; I think this is one thing we might want to keep powered up this evening.
- 05 07 03 56 CDR Okay. Very good.
- 05 07 06 18 CC Apollo 9, Houston. We've come up with a cryo plan here, if you'd like to copy some of the things down.
- 05 07 06 44 CC Apollo 9, Houston.
- 05 07 06 48 CDR Go ahead, Houston.
- 05 07 06 49 CC Roger. I have a cryo plan, if you'd like to copy some of these things down for the power down.
- 05 07 06 57 CDR Okay. Just a minute, and let us get a piece of paper.
- 05 07 06 59 CC Roger.
- 05 07 07 02 CC We'll hope it works tonight.
- 05 07 07 05 CDR That's okay. So do we.
- 05 07 07 11 CMP Go ahead.
- 05 07 07 14 CC Okay. Allow both H₂ tanks to decrease until both tanks are 200 psi or below. Maintain 190 to 200 by cycling H₂ tank heaters or fans as required. Maintain the pressure at, but not above, 200 psi.

(GOSS NET 1)

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- 05 07 08 15 CMP Are you still with us, Ron?
- 05 07 08 17 CC Okay. Fuel cell purges may be used to decrease this pressure as required to 200.
- 05 07 08 27 CDR Fuel cell purges to decrease the hydrogen pressure?
- 05 07 08 31 CC Affirmative.
- 05 07 08 33 CC If you - If you need to get it down to below 200.
- 05 07 08 39 CDR Okay. And then I guess you want us to keep it all night below 200 by cycling the heaters or the fans, right?
- 05 07 08 48 CC No; I don't want it to start creeping up and we're hoping that it won't creep up above the caution and warning limits prior to morning.
- 05 07 08 56 CDR But it's all right to let it go ahead on up above 200 after we go to bed?
- 05 07 09 00 CC Affirmative. After you go to bed.
- 05 07 09 03 CDR Okay.
- 05 07 09 06 CC Okay. At your normal powerdown time we want you to perform the following: IMU to STANDBY - you already have that - SCS electronics power switch to OFF; the AUTO RCS selection switches, OFF; the rate control power, OFF; translation control power, OFF; and leave all other equipment powered up. Over.
- 05 07 09 55 CMP Okay. Copy. IMU, STANDBY; SCS electronics power, OFF; auto RCS, OFF; rotational control power, OFF; translational control power, OFF; everything else, ON. Is that correct?
- 05 07 10 09 CC That's correct.
- 05 07 10 10 CMP Okay. Let me go back to the H₂ again. You want us to get - Let both H₂ tanks go to 200 or below, and then keep it between 190 and 200 by cycling the tanks and fans as required, and not to let it get above 200 before we go to bed, then let it go.
- 05 07 10 29 CC That's correct.
- 05 07 10 33 CMP Okay. I guess we got that straight.

* (GOSS NET 1)

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- 05 07 10 34 CC Yes, and before you - Before you go to bed we'll have you turn the tank 2 fans ON.
- 05 07 10 41 CMP Okay.
- 05 07 10 44 CC And we're testing this type thing; we hope it works. If it doesn't and we see a good trend in the early part of your rest cycle, we'd just as soon call you then, rather than in the middle of the night.
- 05 07 11 58 CMP You're fading out. Would you say the last part again, please?
- 05 07 12 01 CC Roger. We'd just as soon call you early in your rest cycle, rather than in the middle of the night.
- END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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TANANARIVE (REV 81)

- 05 07 50 12 CC Apollo 9, Houston through Tananarive.
- 05 07 50 45 CC Apollo 9, Houston through Tananarive.
- 05 07 50 51 CMP Houston, Apollo 9.
- 05 07 50 53 CC Roger. I have you.
- 05 07 50 56 CMP Say, did you have anything between the discussion on the H₂ and the -
- 05 07 51 20 CC 9, Houston. Are we with you now?
- 05 07 52 17 CC Apollo 9, Houston.
- 05 07 52 21 CMP -- answer. You are coming through loud and clear now. Did you have anything that you gave us between the discussion of the H₂ and the powerdown?
- 05 07 52 34 CC The only thing on - discussion on the H₂, I said that if, for some reason, you can't get it down to 200 psi before you retire, you can go ahead and do a fuel cell purge to decrease the pressure.
- 05 07 52 48 CMP The next thing I heard was to - the powerdown. You ordered me to stand by and that sort of thing, and I thought maybe you said something in between.
- 05 07 52 56 CC Negative.
- 05 07 53 02 CMP Okay. If you say it is all right to purge number 2.
- 05 07 53 10 CC Stand by.
- 05 07 53 11 CMP Okay. In other words, can we purge all three fuel cells?
- 05 07 53 25 CC Apollo 9, Houston. You can purge all three, if necessary.
- 05 07 53 30 CMP Okay. And then overnight, do you want us to leave the fans on AUTO or OFF on the cryos?
- 05 07 53 36 CC On the cryos, we want the H₂ tank 2 fan on.
- 05 07 53 45 CMP Roger. Understand. H₂ tank 2 fan on.
- 05 07 53 52 CC Roger.

▼ (GOSS NET 1)

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05 07 53 54 CMP Okay. Thank you.

05 07 53 55 CC And I have - We have no site coverage for REV 83, and I have the ARIA AOS - LOS times in case you want to call us. Over.

05 07 54 10 CMP Okay. Go ahead.

05 07 54 12 CC Roger. ARIA 6 130, plus 42 2130, plus 53. ARIA 2 131, plus 35 2131, plus 44. Over.

05 07 54 38 CMP Roger. ARIA 6 130 42 to 130 53: ARIA 2 131 35 through 131 44.

05 07 54 50 CC 9, Houston. Affirmative.

05 07 55 04 CC Apollo 9, Houston. About LOS. Stand by for block data at Hawaii, and I will also give you a consumables update at Hawaii.

05 07 55 14 CMP Roger. Understand. Block data and consumables at Hawaii.

HAWAII (REV 81)

05 08 29 29 CC Houston, Apollo 9 through Hawaii.

05 08 29 33 CDR Hello, Hawaii. Apollo 9.

05 08 29 35 CC Roger. Loud and clear. On that H₂ purge, if it is necessary, and if you haven't already done it, we had just as soon do it on fuel cell 2 only.

05 08 29 46 CDR Oh, you would like to do it on fuel cell 2 only. Okay. Very good. It looks like we are still going to have to do it, Ron. We are still running about 215 in tank number 2.

05 08 29 55 CC Roger. We copy.

05 08 29 57 CDR Okay. We will do it all on fuel cell 2.

05 08 30 02 CC Okay. And your consumables downdate - downlink plus dosimeter readings, when you get a chance, and then I'll have the block data whenever you are ready to copy.

(COSS NET 1)

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- 05 08 30 19 CDR Okay. Why don't you go ahead with the block data, Ron, and we are getting the other data in the meanwhile.
- 05 08 30 25 CC Okay. Block data: 083 Charlie Charlie, plus 302, plus 1480 131 08 49 3592; 084 Charlie Charlie, plus 262, plus 1380 132 4027 3592; 085 Charlie Charlie, minus 245, minus 1610 134 32 19 3592; 086 Alfa Charlie, plus 031, minus 0280 135 05 33 3592; 087 Alfa Charlie, plus 156, minus 0320 136 40 09 3592; 088 2 Alfa, plus 275, minus 0300 138 15 36 3592; 089 2 Bravo, plus 329, minus 0300 139 49 30 3592; 090 1 Bravo, plus 303, minus 0660 141 14 42 3592; pitch, minus 0.89: yaw, minus 1.15. Over.
- 05 08 33 47 CDR Okay. How much more time do we have, Ron?
- 05 08 33 50 CC Roger. Still have about 2 minutes.
- 05 08 33 53 CDR Okay. You want the systems data first or the readback?
- 05 08 33 58 CC No. Let's get the systems data.
- 05 08 34 01 LMP Okay. Service module A is 54, B 62, C 52, and 55 on Delta.
- 05 08 34 22 CC Roger. Fifty -
- 05 08 34 24 LMP Okay. And BATT C is 36.9, pyro A is 371, B 371.
- 05 08 34 32 CC Roger. Copy.
- 05 08 34 35 LMP Okay. All of the command module RCS injector temps are OFF SCALE HIGH, except 6 Charlie, which was 4.7.
- 05 08 34 47 CC Roger.
- 05 08 34 49 CDR Okay. What do we start with on that block data?
- 05 08 34 54 CC Start from 083. Let's hold off on that; I've got a little DSE thing I would like to get to you.
- 05 08 35 01 SC Okay.
- 05 08 35 02 CC On this DSE voice playback - It has a lot of background noise on it. However, the voice seems to be okay. ... When you are transmitting to us over a station, but it kind of fades away to unreadable when you are just talking between stations. So, it looks like, if you want to record any data on the DSE, you must talk directly into the mike and in a loud and clear voice. What I would like to do is after Redstone LOS, give us a test report or something like that, and we will play it back and see if it is

(GOSS NET 1)

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- 05 08 35 57 IMP Roger. Understand you want us to give you a test count on the DSE sometime when we are not over a station. Do you have any particular time you want it for a dump or what?
- 05 08 36 05 CC Affirmative. Just after Redstone LOS. It will be about 128 plus 45 or somewhere in there.
- 05 08 36 13 IMP Okay. Understand 125 plus 45 you want us to give you a test count on the DSE and see how that works out.
- 05 08 36 19 CC Roger.
- 05 08 36 22 IMP Okay. Okay. Do you want the readback?
- 05 08 36 31 CC Roger. Go ahead and readback.
- 05 08 36 34 IMP Okay. 083 Charlie Charlie, plus 302, plus 1480 131 08 49 3592; 084 Charlie Charlie, plus 260, plus 1380 132 40 27 3592; 085 Charlie Charlie, minus 245, minus 1610 134 32 19 3592; 086 Alfa Charlie, plus 031, minus 0280 135 05 33 3592; 087 Alfa Charlie, plus 156, minus 0320 136 40 09 3592; 088 2 Alfa, plus 275, minus 0300 138 15 36 3592; 089 2 Bravo, plus 329, minus 0300 139 49 30 3592; 090 1 Bravo, plus 303, minus 0660 141 14 42 3592; pitch, minus 0.89, yaw, minus 1.15.
- 05 08 38 14 CC Apollo 9, Houston. Your readback is correct. A couple of items. We would like for you to terminate BATT A charge just prior to retiring. Also, put inverter 3 on MAIN A.
- 05 08 38 34 IMP Roger. Terminate battery charge just before retiring and put inverter 3 on MAIN A.
- 05 08 38 40 CC Roger.
- 05 08 38 48 CC And I guess we need to verify the CO₂ canister change and also that you are going to perform a waste water dump.
- 05 08 38 59 IMP Roger. Will verify this time the canister change, and we will be dumping waste water before retiring.
- 05 08 39 07 CC Roger. And, 9, Houston. We show your downlinking both SIMPLEX Alfa, and Bravo, so it's just SIMPLEX Alfa for the night, I guess.

(GOSS NET 1)

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05 08 39 21 LMP Roger. We're listening to the tower over Guam, or Vietnam, or wherever it is.

05 08 39 26 CC Okay.

05 08 39 39 CC 9, Houston. We could use the PR - the dosimeter readings if they are available. Also, to give you a warm feeling, I can give you a consumable update.

05 08 39 54 CDR Okay. We're ready. We always want a warm feeling. Let's get out the PAD.

05 08 39 58 CC Okay. GET --

05 08 40 00 CDR Wait a second. Wait a second.

05 08 40 01 CC Okay. Hold on.

05 08 40 05 CDR Let us get out the PAD first.

05 08 40 06 CC Roger.

05 08 40 08 CDR Hey, are Al or Dick or Pete there?

05 08 40 12 CC Not right now. I can pass it on to them.

05 08 40 15 CDR No. Just tell them I said hello.

05 08 40 17 CC Will do. They will be in again tomorrow.

05 08 40 22 LMP Okay. Ready to copy.

05 08 40 24 CC Okay. GET 127 44 13 50 16 48 17 47 17 392 30 26 26 39, and just jot down now your service module RCS. DAP redlines are good tonight. A, 29 percent; Bravo, 37; Charlie, 39; Delta, 39.

05 08 41 14 LMP Okay, Ron. Let me get the second line there. System A - service module RCS to A PU.

05 08 41 22 CC Roger. 44 percent PU, 13 percent hybrid DAP.

05 08 41 28 LMP Okay. Here we go. 127 44 13 50 16 48 17 47 17 392 30 26 26 39, and then the redlines 29, 37, 39, 39.

05 08 41 45 CC Dosimeter readout.

05 08 41 47 CC Roger. Dosimeter readout. We got it all.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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HAWAII (REV 82)

05 10 04 24 LMP Houston, Apollo 9.

05 10 04 28 CC Houston. Go.

05 10 04 30 LMP Roger. I got a couple of dosimeter readings for you.

05 10 04 34 CC Beautiful. You're making the doctor very happy.

05 10 04 38 LMP Okay. It's great to make the guy that sticks needles in you happy. Jim is 31.14, and mine is 80.14; that's 80.14, and Dave's is kind of stuck away somewhere. We'll try to pick that up again tomorrow.

05 10 05 00 CC Roger.

05 10 05 08 LMP Dave is in the process of contributing to medical science in a different fashion here.

05 10 05 15 CC Okay. Understand. When you take your battery charger off the line, note the time on it and give it to us tomorrow.

05 10 05 23 LMP Okay. Tell you what, we're just about to sack out; why don't I just take it off right now.

05 10 05 29 CC Affirmative. You can go ahead.

05 10 05 32 LMP Okay. How about a 3, 2, 1.

05 10 05 34 LMP MARK.

05 10 05 39 CC We got it.

05 10 05 44 LMP Okay. And I'm just about to purge fuel cell 2. Hydrogen 2.

05 10 05 50 CC Roger.

05 10 05 58 LMP There you go.

05 10 07 45 CC Apollo 9, Houston. About a minute and a half to LOS. We'd like to have the inverter 3 on MAIN A over the site here, if possible.

05 10 07 58 LMP Say that one again, Ron.

(GOSS NET 1)

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05 10 08 00 CC Roger. Request inverter 3 on MAIN A.
05 10 08 07 LMP Okay. 3, 2, 1.
05 10 08 09 LMP MARK.
05 10 08 10 LMP Inverter 3 on MAIN A.
05 10 08 13 CC Roger. That's part of your sleep power configuration there.
05 10 08 18 LMP Roger.
05 10 08 37 LMP And, Houston, we got a message from the CMP; he says to tune in to his EKG next pass.
05 10 08 47 CC Will do. Very good.
05 10 09 08 CC 9, Houston. Have a good night. We'll see you tomorrow.
05 10 09 14 LMP Guten abend.
END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

**Tape 85/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

1 (COSS NET 1)

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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(COSS NET 1)

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GRAND BAHAMA (REV 89)

- 05 19 55 26 CC Apollo 9, this is Houston.
- 05 19 55 39 CC Ring-a-ring-a-ring! The alarm clock has just gone off, Apollo 9.
- 05 19 55 45 CDR ... Roger, Houston.
- 05 19 55 49 CMP This is Apollo 9.
- 05 19 55 50 CC Roger. We're reading you loud and clear.
- 05 19 55 53 CMP Very well.
- 05 19 55 55 CC And a cheery good morning.
- 05 19 56 02 LMP Houston, how do you read me?
- 05 19 56 04 CC I read you loud and clear.
- 05 19 56 06 LMP Okay.
- 05 19 56 10 CMP Well, we're with you. What would you like to do first?
- 05 19 56 14 CC Okay. I've got some block data; I've got a short consumables PAD; and I've got some changes to the flight plan. So, your choice.
- 05 19 56 28 CMP Well. I've got the consumables sitting in front of me. Why don't you do that one?
- 05 19 56 32 CC Okay. And the - I'm not reading any of the quads; that's the same thing as I gave you last night. I'm starting on the cryo O₂. That is 365, and if you compare the one you had before you'll see that you didn't really use that much. That was a mistake on the other one. H₂: 28 36 26 39.
- 05 19 57 10 CMP Okay. 365 28 36 26 39.
- 05 19 57 18 CC Okay. That's good.
- 05 19 57 23 CMP Okay. Let me flip the page here and look at the flight plan.
- 05 19 57 23 CC Okay.
- 05 19 57 40 CMP Okay. Go ahead.

(GOSS NET 1)

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- 05 19 57 42 CC Okay. This is the flight plan, right, Dave?
- 05 19 57 45 LMP Right. Flight plan.
- 05 19 57 46 CC Okay. Just a reminder on your CO₂ filter. If you'll note the clock, we've let you sleep a little later. And you can turn on the H₂ heaters now for a purge that's coming up.
- 05 19 58 04 CMP You want the H₂ tank heaters on, or do you want the H₂ heaters for a purge?
- 05 19 58 08 CC We want the H₂ purge heaters on now.
- 05 19 58 15 CMP Okay. That fellow's on.
- 05 19 58 18 CC Okay. And we're recommending that you wait until after breakfast to chlorinate the water instead of the time shown in the flight plan. And I'm going to pass you a time for your nominal alignment.
- 05 19 58 34 CMP Go ahead.
- 05 19 58 35 CC 14 142, plus 46, plus 44. And that is for your alignment at 142 45.
- 05 19 58 48 CMP Okay. And gee, about the water, we might talk about that. We chlorinated it last night just before we went to bed because the thing didn't taste very good for quite awhile, so it seems like maybe if we could chlorinate it before we go to bed normally and keep some sort of system like that --
- 05 19 59 07 CC Okay. Copy. We'll give you some words on that.
- 05 19 59 11 CMP Okay. I got the nominal alignment at 142 46 44.
- 05 19 59 16 CC Okay. And at 143 plus 45, where you are doing a P52 alignment in there, we'd like - we'd recommend that you do this one using the planet option with Jupiter.
- 05 19 59 34 CMP That sounds like a fine recommendation. All right. We'll do that with Jupiter.
- 05 19 59 38 LMP ... Right?
- 05 19 59 41 CC Say the last again?

(GOSS NET 1)

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- 05 19 59 44 LMP Roger. That's ... REFSMMAT. Is that right?
- 05 19 59 46 CC That is the REFSMMAT using Jupiter.
- 05 19 59 50 CMP Okay. Incidentally, found Jupiter in the sextant the other day, and you can see four moons around Jupiter.
- 05 19 59 57 CMP Beautiful. Okay. And on this landmark tracking, we're saying there'll be two landmarks per rev. And also, for today we're recommending trying the sextant vice the telescope.
- 05 20 00 15 CMP Okay. We'll give that a try. Two landmarks per rev with the sextant.
- 05 20 00 19 CC Okay. And on over here at 144 25, where we show this landmark tracking, essentially we're substituting S065 for this landmark tracking in here, so at - You can delete the P52 realign at 144 25.
- 05 20 00 47 CMP Okay. Understand. Delete the P52 realign at 144 25, so we can do an S065 instead on the landmark tracking. Right? ... don't show a realign at 144 25; 144 25 is the ...
- 05 20 00 58 LMP ...
- 05 20 01 13 CC Okay. All right. Well, we had one back over here. Stand by one.
- 05 20 01 27 CC Okay. Well, yes, you're right, Dave. But anyway, this pass - this landmark tracking pass, in here, at about 144 hours - over here, 145 - We're scrubbing that out. And we'll do an S065, and on that, we'd like to pass you the times. At 145 25 unstow and install your S065.
- 05 20 02 04 CMP ... Stu?
- 05 20 02 06 CC Yes.
- 05 20 02 07 CMP Is this at 145 25, unstow the S065?
- 05 20 02 12 CC That is affirmative.
- 05 20 02 18 CMP Wait a second. I thought you just said to do the unstowing at 144 25?
- 05 20 02 31 CC Wait a minute. No. Okay. Somehow or another I got a bed time slipped in here on me, but what

(GOSS NET 1)

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I'm saying is this pass here at - Starting at about 145 hours you are now showing, now, with the realignment and the landmark and so forth, we are scrubbing that out. And we're deleting that alignment there as shown in your landmark tracking. At 145 25 you can unstow and install your S065. And 145 plus 50 will be the approximate time of the S065 pass. Of course, we'll have you a PAD on this later.

END OF TAPE

APOLLO 9 AIR-TO-GROUND TRANSCRIPTION

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MERCURY (REV 89)

- 05 20 03 31 CMP When you said 145 50 you dropped out, and we didn't catch what you said after that.
- 05 20 03 37 CC Okay. 145 50 will be the time that you'll begin the S065. That's the approximate time, and we'll have your PAD for you; but that will be the time you'll - the approximate time you'll start your S065 pass.
- 05 20 04 16 CC Okay. Understand S065. And you'll give us a PAD, and it'll be approximately 145 50. I still have another question in that - the landmark tracking that started at 144 30. That's still in there; is that correct?
- 05 20 04 25 CC Yes. That's affirmative, Dave.
- 05 20 04 25 CC Did you copy? That is still in there at 144 40.
- 05 20 04 56 CC Apollo 9, Houston. Do you read me?
- 05 20 04 58 CMP Houston, 9. What else do you have?
- 05 20 05 01 CC Okay. And you might start fishing through your - dragging out your block data PAD there ... and just so we're squared away here; and on over at about 147 35 you'll have another S065 pass.

CANARY (REV 89)

- 05 20 05 49 CC Apollo 9, Houston. How do you read?
- 05 20 06 25 CC Apollo 9, Houston. Do you read?
- 05 20 06 29 CMP Roger. We've got you now. You read us?
- 05 20 06 31 CC Roger. I'm reading you real good. And at 147 35, you'll have another S065 pass.
- 05 20 06 48 CMP Roger. We got that. Is that in lieu of the landmark tracking in that orbit?
- 05 20 06 53 CC That is affirmative. On that rev, we're substituting S065 in lieu of the landmark tracking.

(GOSS NET 1)

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05 20 07 02 CMP Okay. We got that. You're not going out.

05 20 07 06 CC Okay. And one other item. We'd like to have a check made of the optic sun filter whenever it's convenient.

05 20 07 14 CMP All right. We'll pick that up as we go along. Any particular procedures you want?

05 20 07 21 CC No. That's negative.

05 20 07 24 CMP Okay. We'll check it.

05 20 07 25 CC Okay. And we'd also like to turn inverter 3 off.

05 20 07 35 CMP All right. Inverter 3 is off.

05 20 07 38 CC Okay. And we'd like to use Baker Dog roll today.

05 20 07 45 CMP Okay. BD roll.

05 20 07 52 CC And we'd like to have a status report at your convenience. How much sleep you got and so forth.

05 20 07 59 CMP Okay. Gee, I got about 7-1/2 hours, I guess.

05 20 08 17 CDR This is Jim, and I got about 8.

05 20 08 20 CC Okay. I understand Dave 7-1/2; Jim about 8.

05 20 08 26 CDR Rusty said he got about 8-1/2.

05 20 08 30 CC Roger. Copy 8-1/2. And we're on this S065 now. The checklist ORB RATE maneuver should work today. We should have the platform pointed in the right direction and all of the vectors crossed right. So we're saying that it will go today.

05 20 08 54 CDR Very good.

05 20 08 59 CC And another word on the status report; the medication.

05 20 09 08 CDR Rusty took an Actifed and Seconal before he went to bed. I had a vitamin pill.

05 20 09 16 CMP This is Dave. I had a vitamin pill.

05 20 09 18 CC Okay.

05 20 09 19 CDR Rusty said he had a vitamin pill, too.

(COSS NET 1)

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- 05 20 09 24 CC Okay. I understand. Thank you. And that takes care of everything except the block data.
- 05 20 09 33 CDR Okay. Go ahead.
- 05 20 09 37 CC And reading block data number 15. 091 1 Baker, plus 335, minus 0680 142 44 15 2844; 092 1 Baker, plus 318, minus 0625 144 19 36 2844; 093 1 Alfa, plus 269, minus 0680 145 52 18 2844; 094 4 Baker, plus 329, minus 1649 148 36 40 2844; 095 4 Baker, plus 333, minus 1640 150 10 27 2844; 096 4 Alfa, plus 291, minus 1650 151 44 00 2844; 097 Charlie Charlie, plus 174, minus 1610 153 19 44 2844; 098 Charlie Charlie, plus 095 - And insure your S-band volume is up please - minus 1710 154 51 55 2844. And your trim angles: pitch, minus 0.89; yaw, minus 1.15. End of update.
- 05 20 13 45 CMP Okay. Coming back, if you're ready?
- 05 20 13 48 CC Go ahead. Let her rip.
- 05 20 13 51 CMP 0911 Bravo, plus 331, minus 0680 142 44 15 2844 09 - We got a little dropout there. Are you still there?
- 05 20 14 07 CC Roger. I'm still with you, and we should have about another 2 minutes.
- 05 20 14 13 CMP Okay. 092, plus 318, minus 0625 144 19 36 2844; 09 ... 148 36 40 ... 095 4 Bravo, plus 33 ... 0 ... 150 ... plus 291, minus 1650 151 44 00 2844; 097 Charlie Charlie, plus 174, minus 1610 153 19 44 2844; 098 Charlie Charlie, plus 095, minus 1710 154 51 55 2844; with a pitch trim, minus 0.89, and yaw trim of minus 1.15.
- 05 20 15 33 CC Okay, Dave. On the second line, it's plus 335.
- 05 20 15 41 CMP Okay. You were sort of garbled there. 335. Okay.
- 05 20 15 46 CC Okay. And I'm - You're going to have to read the second and third blocks again to me. We had a lot of static; I couldn't get them.
- MADRID (REV 89)
- 05 20 15 59 CMP Okay. Here comes the second one. 092 1 Bravo, plus 318, minus 0625 144 19 36 2844; 093 1 Alfa, plus 269,

(GOSS KET 1)

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minus 0680 145 52 18 2844.

05 20 16 24 CC Roger. Copy. And your longitude and the next block under 0944 Baker: the longitude is minus 1649; if you just verify that. And the longitude in the next block is minus 1640.
05 20 16 43 CMP Roger. Verify both of those.
05 20 16 45 CC Okay. Real good. And we'll see you over Carnarvon at about 43.
05 20 16 51 CMP And, Houston, Apollo 9. I'd like to have a map update.
05 20 17 08 CC Okay. We've lost you, Apollo 9. We'll see you at Carnarvon at 43. We'll have your map update.

CARNARVON (REV 89)

05 20 46 01 CC Apollo 9, Houston through Carnarvon. And I have a map update.
05 20 46 08 CMP Okay. Just a minute, Houston. We'll copy down.
05 20 46 13 CC Roger.
05 20 46 36 CMP Okay, Houston. Go ahead with the map update.
05 20 46 39 CC Okay. Map update. You're on REV 89; time, 141 17 38; the longitude, 123 degrees west; and if you want to use the star chart there, you're right ascension 1614.
05 20 47 08 CMP Okay. REV 89; 141 17 38; 123 west. Thank you.
05 20 47 14 CC Roger. And we'd like to have the H₂ tank 2 fan off at this time.
05 20 47 23 CMP Roger. H₂ tank 2 fan off.
05 20 47 28 CC That's affirmative. And in regard to the question about the interior film, just a couple of thoughts. You've probably got as good an idea as we have, but if you want to take some of the CO₂ filter change on that couch folding and stowage - that's about the only two items we can kick in at this time. And the - the hatch during the daylight sometime when you've got the S065 out of it, while the sun angle's changing on it.

(GOSS NET 1)

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- 05 20 48 07 CMP Okay. We also have a lot of exterior film. We have about four rolls of exterior film, and we're going to take some pictures of the ground. I just wondered if you had any particular subjects on the ground that you wanted a picture taken of. We'll probably put the 75mm lens on it and let it run for awhile.
- 05 20 48 24 CC Okay. We'll work on that. And we're wanting you to keep, if possible, some of that 368 film and take some photographs during entry, if you want to kick that one around.
- 05 20 48 39 CMP Roger. We already have planned for that, and we have four or so rolls of film in addition to that one.
- 05 20 48 46 CC Okay. Real good; and we'll see if we can think up some good subjects.
- 05 20 48 52 CMP All right. How about the beach of the Riveria?
- 05 20 48 58 CC Hey! That'd be good.
- 05 20 48 22 CC Apollo 9, Houston. We'll be dropping Carnarvon and picking up Honeysuckle in about one minute. S-band up.
- 05 20 48 30 CMP Okay. Fine.
- 05 20 51 19 CC And, Apollo 9. We get you through Honeysuckle in about 7 minutes.

HONEYSUCKLE (REV 89)

- 05 20 57 14 CC And, Apollo 9. We're losing Honeysuckle. We'll see you over Mercury in about 5 minutes.

MERCURY (REV 89)

- 05 21 03 37 CC Apollo 9, Houston through Mercury. Have you about 7 minutes.
- 05 21 03 41 LMP Okay, Houston.
- 05 21 03 56 LMP Hey, Smokey! I've got a good one for you here.
- 05 21 03 59 CC Okay. Go ahead.
- 05 21 03 62 LM? I wonder if you can get one of those guys like the ones we saw in the film to figure out the relative

(GOSS NET 1)

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right ascension declination where the gegenschein is.

- 05 21 04 34 CC Hey. That sounds great. By gosh, we'll locate the gegenschein.
- 05 21 04 21 IMP Okay. We'll try and identify it after you locate it.
- 05 21 04 24 CC Okay. Very good.
- 05 21 05 20 SC Hey, Houston, 9.
- 05 21 05 24 CC Go ahead, 9.
- 05 21 05 26 CMP I've got some gyro torqueing angles for you for the nominal on the time, and we'll do a realign, if you like, on the next pass, also, after you update the state vector. We went through a P52 just to check out the optics, and, if you've got a pencil, I'll give you the numbers.
- 05 21 05 42 CC I'm standing by to copy.
- 05 21 05 45 CMP Okay. GET of 140 57 00, plus 00630, plus 00557, minus 00093. And looks like the telescope's working okay this morning.
- 05 21 06 05 CC Roger. I copy your times and copy the bit about the telescope. Real good.
- 05 21 06 11 CMP So far.
- 05 21 06 14 CC Roger. Understand.
- 05 21 06 45 CC And, Apollo 9, Houston. We would like to start a charge on battery Baker at about 141 plus 25, and we will be putting about 5 AMP-hours back in it.
- 05 21 07 03 CDR Okay.
- 05 21 07 04 CMP Roger. Battery charge on Bravo at 141 25.
- 05 21 07 10 CC That's right. Thank you.
- 05 21 09 40 CC Apollo 9, Houston. 1 minute LOS. We'll see you through Texas about 24.
- 05 21 09 45 CDR All right.
- 05 21 10 01 CC Apollo 9, Houston. I have the right ascension declination on gegenschein.

(GOSS NET 1)

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05 21 10 07 CMP Okay. Go ahead.
05 21 10 08 IMP Okay. Go ahead.
05 21 10 09 CC Roger. 11 hours 16 minutes and plus 4 degrees.
05 21 10 17 CMP Okay. 11 hours 16 minutes and plus 4 degrees.
 Thank you.
05 21 10 21 CC Roger.
05 21 10 27 CMP That's pretty fast gegenschein computations.
05 21 10 31 CC Thank you.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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TEXAS (REV 90)

- — — — CC Apollo 9, Houston. We've got you through the Texas sight. You're coming up on the lower end of Mexico.
- — — — LMP Roger. Just about time to take some pictures of it.
- — — — CMP Okay.
- 05 21 27 12 CC Apollo 9, Houston. At your convenience, we'd like to have POO in ACCEPT for a state vector.
- 05 21 27 20 CMP Roger. Got POO in ACCEPT.
- 05 21 27 24 CC Okay. And anytime at your convenience - no hurry - I've got your landmark tracking updates.
- 05 21 27 33 CMP Okay. Just a minute.
- 05 21 27 35 CC Roger.
- 05 21 28 24 CMP Houston, Apollo 9.
- 05 21 28 27 CC Go ahead. Apollo 9, Houston.
- 05 21 28 29 CMP Roger. You can go ahead with your update.
- 05 21 28 33 CC Okay. I'll be giving you four sites here. This is a landmark tracking update: 021 142 56 1700, and this one is 3 miles south of track. Your next ID: 207 143 14 5800, and this one is 30 miles south of track. Your next ID: 010 144 26 1900, and this one is 60 miles south of track. Your last one: 042 144 34 0400, and this one is 13 miles north of track. End of update.
- 05 21 30 02 CMP Roger, Houston. Do you read Apollo 9?
- 05 21 30 04 CC That's affirmative, Apollo 9.
- 05 21 30 06 CMP Okay. I've just been having some trouble getting you on this mike. Okay. The first landmark is 021 142 56 1700, 3 miles south. Next is 207 143 14 5800, 30 miles south. Next one is 010 144 26 1900, 60 miles south - That's 60 miles south. Next one, 042 144 34 0400, 13 north of track.
- 05 21 30 56 CC That's affirmative, Apollo 9. Houston confirms the update.

(GOSS NET 1)

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05 21 30 59 CMP Roger.

05 21 31 05 CC And, Apollo 9, this is Houston. We can't uplink at this time. Would you clear the DSKY and then give us the ACCEPT again?

05 21 31 13 CMP Roger.

05 21 31 23 CMP Okay. Go ahead.

05 21 31 24 CC Okay. We'll try shifting it.

05 21 31 34 CC And, Apollo 9, Houston. I have a NAV check to go along with the state vector.

05 21 31 42 CMP Okay. Go ahead.

05 21 31 44 CC Roger. Reading NAV check. 142 16 4400, minus 2902, plus 09800 1137. And under comments: Good morning from your smiling FIDO and GUIDO.

05 21 32 17 CMP Roger. Under comments: Good morning to them. And my little ol' NAV check is 142 16 4400, minus 2902, plus 09800 1137.

05 21 32 35 CC Roger. Houston confirms the update.

05 21 32 39 CDR I didn't realize FIDO's and GUIDO's smiled.

05 21 32 46 CC Yes. They been smiling pretty good.

05 21 32 50 CDR Alrighty.

05 21 32 54 CDR How's RETRO doing? Does he still look worried?

05 21 32 59 CC Roger. Copy.

05 21 33 08 CC And, Apollo 9. RETRO's only comment: said he would smile if he knew exactly where all that stuff was located.

05 21 33 16 CDR Okay. Listen, tell RETRO I haven't forgotten him. The thing that I told him yesterday still applies. Everything is right where we said it was yesterday, but we are going to have to move it around. And ask him when he needs to have that information for a reentry.

05 21 33 32 CC Okay. We'll do that.

05 21 33 39 CC And, Apollo 9, Houston. Fine computer is yours. You have state vectors in both slots.

(GOSS NET 1)

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05 21 33 45 CMP Roger. Thank you.

05 21 35 04 CC Apollo 9, Houston. We are recommending Charlie and Delta AUTO RCS select switches OFF, and Alfa ON.

05 21 35 16 CMP Say that again, Houston.

05 21 35 18 CC Roger. We are recommending Charlie and Delta AUTO RCS select switches OFF, and Alfa switches ON.

05 21 35 29 CMP Okay. You want Alfa, Charlie, and Delta OFF.

05 21 35 33 CC That's a negative. We want Charlie and Delta OFF, and Alfa ON.

05 21 35 38 CMP Okay. Roger. All I have on right now are B - Baker.

05 21 35 45 CC Roger. Copy. We confirm.

05 21 35 52 CC And, Apollo 9, you can go back to BLOCK at your convenience.

05 21 36 49 CC Apollo 9, Houston. We'd like to start a charge on battery B at your convenience.

05 21 36 57 CMP Okay. We're going to start charge on BATT B now.

05 21 37 01 CC Okay.

CANARY (REV 90)

05 21 47 27 CC Apollo 9, Houston. One minute LOS Canaries. We will see you at Carnarvon at 17.

05 21 47 39 CMP Roger, Houston.

CARNARVON (REV 90)

05 22 17 09 CC Apollo 9, Houston through Carnarvon. Standing by. We'll have you about 6 minutes.

05 22 17 14 CMP Roger, Houston. We have a question here on the fuel cell purge this morning. I take it that you want us to do a hydrogen purge as well as an oxygen purge this morning?

(GOSS GET 1)

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- 05 22 17 28 CC Roger. That's affirmative, Apollo 9.
- 05 22 17 33 CMP Okay. Fine. We'll start that right now.
- 05 22 17 35 CC Okay.
- 05 22 18 18 CC And, Apollo 9, Houston. I've got a couple of targets of opportunity here we'd like to shoot with the 16mm.
- 05 22 18 32 LMP Okay. Stand by. We'll copy that down in just a second.
- 05 22 18 36 CC Roger. No problem.
- 05 22 19 20 LMP Okay, Stu. Go ahead with those targets.
- 05 22 19 22 CC Okay. The first one here is a thunderstorm over West Africa. We'd like to have you to start the exposure at 1 $\frac{1}{4}$ plus 55 plus 45. You'll be shooting northeast of the ground track. Let it run 5 minutes at 1 frame per second. Use the 16mm camera with the 75mm lens and the film CEX 368.
- 05 22 20 09 LMP Okay - Excuse me - 1 $\frac{1}{4}$ 55 45, thunderstorm West Africa, northeast of ground track, 1 frame a second, 16mm camera CEX with a 75, CEX 368 with the 75mm lens.
- 05 22 20 23 CC That's affirmative. And your other one is at GET 152 06 08 using the same camera, same lens, and shooting S0368 film. We would like to have you shoot southwest of ground track for 5 minutes at 1 frame per second, and this is Hawaii. Now, it's about a 300-mile range, but the purpose of this second one is to study the effects the islands have on the weather and jet stream and so forth.
- 05 22 21 08 LMP Okay. Would you say again how long you want it to run from the time, Stu?
- 05 22 21 13 CC Okay. Five minutes at 1 frame per second. You're shooting southwest of the ground track.
- 05 22 21 19 LMP Okay. Right. 152 06 08, same camera lens and film, southwest of ground track for 5 minutes, and we're photographing the weather formations and stuff around Hawaii.
- 05 22 21 30 CC Okay. On the film, in this second one over Hawaii, we'd like to have - The film is S0368.

(GOSS NET 1)

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05 22 21 40 LMP Yes. That's CEX 368, same thing.
05 22 21 44 CC Okay. I didn't do my homework.
05 22 22 07 CC And, Apollo 9, you are GO for 108-1. We'll be picking up at Honeysuckle in about 2 minutes with S-band volumes up.
05 22 22 19 LMP Okay.

HONEYSUCKLE (REV 90)

05 22 26 39 LMP Houston, Apollo 9.
05 22 26 40 CC Go, Apollo 9.
05 22 26 46 LMP Roger. Do we assume that on all these targets of opportunity that these are zero fuel opportunities?
05 22 26 57 CC Roger, Apollo 9. Copy. Stand by.
05 22 27 14 CC Apollo 9, this is Houston. What we'd like to do, as we've done it here, is give you the data early and let you - if you can just move over there real slowly and get in that area so that you can photograph it. But just minimum usage is the way I'm wanting to term it.
05 22 27 41 LMP Okay. Understand. Minimum usage on that.
05 22 27 51 CMP Houston, Apollo 9. Did you get the gyro torque-ing angles that time?
05 22 27 58 CC Apollo 9. Stand by.
05 22 28 06 CC That's affirmative; we got them, Apollo 9.
05 22 28 09 CMP Okay. Thank you.
05 22 28 12 CC Roger. Thank you.
05 22 30 13 CC Apollo 9, Houston. One minute LOS Honeysuckle. See you Mercury 37.
05 22 30 18 LMP Roger.
05 22 30 38 CC And, Apollo 9, Houston. No need to answer this, but USC beat UCLA last night, 46 to 44.

(COSS NET 1)

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05 22 30 49 CDR Wow! Say, isn't that something!

05 22 30 55 CC Yes. That's the second loss in 90 games.

MERCURY (REV 90)

05 22 37 21 CC Apollo 9, this is Houston through Mercury. Standing by. I'll have you about 5 minutes.

05 22 37 26 CDR Roger.

05 22 41 44 CC Apollo 9, Houston. One minute LOS Mercury. Redstone 50.

05 22 41 50 CMP Roger, Houston.

REDSTONE (REV 90)

05 22 52 07 CC Apollo 9, Houston. We have you; good solid lock now. Standing by.

05 22 52 12 CDR Roger. Houston, Apollo 9.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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GUAM (REV 90)

05 22 55 13	CC	Apollo 9, this is Houston. Did you call?
05 22 55 16	CMP	Negative. Houston, Apollo 9.
05 22 55 18	CC	Okay. I'm sorry.
05 22 55 27	CMP	Houston, when you get a chance, you might give us our inclination.
05 22 55 32	CC	Roger. Sure will.
05 22 55 43	CC	And, Apollo 9, this is Houston. Your inclination is 33.63.
05 22 55 49	CMP	Roger. Thank you.
05 22 56 27	CMP	Houston, Apollo 9.
05 22 56 29	CC	Go ahead, Apollo 9.
05 22 56 31	CMP	Okay. I'm wondering about the time on this particular landmark. I've got 142 56 17, and we're past it already, and we are apparently not yet near the landmark.
05 22 56 47	CC	Okay. That time should be when Corpus Christi comes over the horizon.
05 22 56 54	CMP	Okay. Very good. I think Corpus Christi is coming over the horizon.
05 22 56 59	CC	Okay.

TEXAS (REV 90)

05 23 01 46	CMP	Houston, Apollo 9.
05 23 01 48	CC	Go ahead, Apollo 9.
05 23 01 50	CMP	Okay. Same story; the telescope hung up again. I went to the sextant and was able to find in the sextant; took five Marks. So I have to proceed to do the program to see what they did, but I got a 121 alarm, which is the same thing I got yesterday when the telescope hung up. CDU's NO-GO at the mark.

(GOSS NET 1)

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- 05 23 02 13 CC Roger, Apollo 9. I was copying that alarm. We copied your info and understand you got five Marks on it with the sextant with no problem.
- 05 23 02 24 CMP Roger. But I'm not sure the Marks went in, although it indicates that it did go into the program.
- 05 23 02 30 CC Roger. Understand.
- 05 23 02 48 CMP And, Dave, if you want any other time on these landmarks, just let me know. We can give you any time you want, when it's 30 degrees down or anything. The time we are passing you is the time that it'll snap over the horizon.
- 05 23 03 02 CMP That's a fine time, Stu. We'll use that one; that's good.
- 05 23 03 06 CC Okay. Very good.
- 05 23 03 07 CMP It looked like I got one CDU NO-GO before I completed the Marks, because my second program alarm was MARKS NOT DESIRED. So apparently I got the Marks in all right. I don't know what the CDU NO-GO is going to do to it, but we'll take a look as we go through the program.
- 05 23 03 29 CC Okay. Real good. Copied. Thank you.
- 05 23 03 32 LMP Stu, I'd like the time - I'd like the time that we're going to be at the closest point to the target. It helps me judge the roll rate that I'm putting in here.
- 05 23 03 41 CC Okay. We'll pass the time coming over the horizon and the time of closest approach.
- 05 23 03 48 LMP Roger.
- 05 23 06 57 CMP Houston, Apollo 9.
- 05 23 06 59 CC Go, Apollo 9.
- 05 23 07 00 CMP Okay. I guess none of the Marks got in that time. My DELTA-R DELTA-V for the change in the state vector is zero, and I doubt if my first Mark was perfect. Also, my Mark counter is zero, so I guess we still got some sort of problem. We'll run through it again on the next landmark.

(GOSS NET 1)

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05 23 07 17 CC Roger. Copy. You had a perfect Mark there, and evidently they didn't get in. Thank you.

05 23 07 24 CMP Well, that's not exactly what I said, but it sounds pretty good.

05 23 07 29 CC Roger. Well, I was just helping you out a little bit there.

05 23 07 32 CMP Thanks. I'll take all I can get.

05 23 07 34 CC Okay.

05 23 07 36 CMP But we're learning how to do it, anyway.

05 23 07 40 CC Roger. Sounds great. I thought you might have more trouble with the sextant than it sounds like you're having.

05 23 07 46 CMP Well, I did too, as a matter of fact. But AUTO optics did pretty fair, and I could see where it was relative to the telescope on the AUTO drive. And then when I went to the sextant, it was pretty clear. Of course, Corpus Christi's not a hard thing to identify, either.

05 23 08 01 CC Roger.

05 23 08 10 CC Roger. We'll see how you make out here with pumar-dumford.

05 23 08 15 CMP Yes. That ought to be a trick.

05 23 08 16 CDR Hey, keep it clean will you, Stu?

05 23 08 19 CC (Laughter) Okay.

05 23 08 52 CC And, Apollo 9, Houston. I have your time for closest approach on landmark 207.

05 23 08 58 CDR Go ahead.

05 23 09 00 CC Roger. 143 plus 18 plus 42.

05 23 09 08 CDR Thank you.

05 23 09 10 CC Roger.

05 23 09 11 CDR You are absolutely a wealth of information, today. I can't believe it.

(GOSS NET 1)

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05 23 09 17 CC Boy! Wish I had this many people funnel me info all the time.

05 23 09 35 CMP Houston, Apollo 9.

05 23 09 38 CC Go ahead, Apollo 9.

05 23 09 39 CMP Roger. Since you located the gegenschein for us, can you locate the trojan point?

05 23 09 46 CC Roger. We'll go to work on the trojan point.

05 23 09 49 CMP Okay.

05 23 09 56 CDR Hey, after you do that, could you find out who's going to win the NCAA basketball championship.

05 23 10 02 CC Roger. Couple of scores on the regional quarter finals. Davidson beat Villanova 75 to 61, and Miami of Ohio beat Notre Dame 63 to 60.

05 23 10 16 CDR Listen, I'm not going to be able to live with my wife. You know she is from Miami.

05 23 10 21 CC Ah so.

05 23 12 09 CC And, Apollo 9, Houston. Ohio State beat Michigan 95 to 66.

05 23 12 14 CDR Ah boo.

05 23 12 22 CDR Listen, if Michigan got beat, Miami of Ohio won - I'm in trouble when I get home.

05 23 12 29 CC Well, that's the way it shapes up unless we can fix the scores here.

05 23 12 34 CDR Hey, you've fixed everything else so far, how about fixing that?

05 23 12 38 CC Roger. In work.

05 23 12 41 CDR Rusty also wants you to get us a fix for the CDR's.

CAMARY (REV 91)

05 23 18 00 CC And, Apollo 9, Houston. You'll be getting a MASTER ALARM shortly. TCE on fuel cell 2.

05 23 18 06 CMP Okay. Thank you. We got it this time.

(COSS MET 1)

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05 23 20 22 CDR Houston, Apollo 9.
05 23 20 23 CC Go ahead, Apollo 9.
05 23 20 26 CDR Roger. It went a lot better that time by using the point of time closest to approach. I'll let Dave tell you about the rest of it.
05 23 20 35 CMP Okay. The telescope and sextant both seemed to work that time. I left the telescope early and went to the sextant, and I was able to track him all the way across the nadir and back off on the other side. And our roll rate was something like - I guess, 6/10 of a degree per second. It seemed to be real good. I took the Marks early, probably earlier than I should have, in order to get them before we had a problem. So next time, I think, it'll work out pretty good.
05 23 21 03 CC Roger. Sounds great.
05 23 21 07 CMP Your times, and everything - They are real good. And AUTO optics seems to be doing real good.
05 23 21 12 CC Okay. Copy. I'm going to lose you in about 30 seconds off Canary. We'll see you at Tananarive at 35.
05 23 21 20 CMP Okay.

TANANARIVE (REV 91)

05 23 35 55 CC Apollo 9, Houston through Tananarive.
05 23 35 59 CMP Hello. Houston, Apollo 9.
05 23 36 01 CC Roger. I have an update to your landmark tracking update.
05 23 36 10 CMP Stand by one.
05 23 36 12 CC Okay.
05 23 36 23 CMP Okay. Go ahead with it.
05 23 36 25 CC Okay. For landmark number 10, your next one coming up, your time of closest approach is 144 30 07. And now the east coast is overcast, so you're not going to be able to get your Carolina pass in there. Your fourth landmark will be number 212. The time over the horizon:

(GOSS NET 1)

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144 50 36 00; time of closest approach 144 54 10.
And since we have moved it, we want to delete
that 16mm film of the thunderstorm over Africa.
We will get something on that later.

05 23 38 08 CC Okay, Apollo 9. Situation is normal here at Tananarive. I'm not reading you, and we will see you at Carnarvon at 51. We will still be here for about another 3 minutes, but Carnarvon at 51.

05 23 38 21 CMP Roger. Houston, Apollo 9. Do you read?

05 23 38 23 CC Roger. Reading you loud and clear.

05 23 38 26 CMP Okay. Landmark 212, north or south of track?

05 23 38 30 CC I'm sorry. It's 34 miles south of track.

05 23 38 36 CMP Okay. Readback: 212 144 50 36 34 south, closest approach 144 54 10. Closest approach for landmark 10 is 144 30 07.

05 23 39 02 CC Roger. Your readback is correct. We are deleting the 16mm film of the African thunderstorm.

05 23 39 09 CMP Okay. Delete 16mm film.

05 23 39 13 CC Okay. And your readback is correct. Thank you.

05 23 40 38 CC And, Apollo 9, Houston. If you are still reading me, there is a transducer that is slightly erratic on your helium pressure on quad Baker. It will not affect our gaging or our predictions. I just want to let you know this in case you see some funny readings.

CARNARVON (REV 91)

05 23 52 38 CC Apollo 9, Houston through Carnarvon. Standing by.

05 23 52 42 CMP Roger. Houston, Apollo 9.

05 23 53 01 CC And, Apollo 9, Houston. I have several comments on how we are set up on this landmark tracking, when you are ready to talk.

05 23 53 12 CMP Okay, Smokey. One question first.

05 23 53 15 CC Go.

) (GOSS NET 1)

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- 05 23 53 17 CMP What was our GMT at liftoff?
- 05 23 53 21 CC Okay. We'll get it.
- 05 23 53 24 CMP Okay. Thank you.
- 05 23 53 25 CC And could you give us POO in ACCEPT? We'd like to uplink you a state vector.
- 05 23 53 32 CMP Roger. POO in ACCEPT.
- 05 23 53 34 CC Understand. POO in ACCEPT.
- 05 23 54 08 CC And, Apollo 9, Houston. Time 16 plus 00 plus 01.
- 05 23 54 19 CMP Roger. 16 plus 00 plus 01. Gee, we were a little late.
- 05 23 54 24 CC Yes. Just a tad there. And, Dave, there are a couple of comments about this NOUN 71 setup, and a couple of other things I'd like to talk with you.
- 05 23 54 36 CMP Roger. Go ahead.
- 05 23 54 38 CC Okay. Your Mark counter will not update in this P22. Now we have a display on it, and we are showing that your Marks are getting in. We show 5 on the first pass just as you stated. And so that's one thing that you can expect. Okay. Under NOUN 49 your DELTA-R DELTA-V is going to read zero in this P22. And the reason for this is the W-m is initialized to accept Marks for LATS, LONG, at altitude only; so you're going to see zero on the DELTA-R DELTA-V.
- 05 23 55 20 CMP Okay. That was a real puzzler. We've been sitting here trying to figure out why that didn't give us anything, and we were absolutely stumped.
- 05 23 55 27 CC Okay. Now one other thing. Down here - I'm looking at your procedures book - under your NOUN 71 where it says that your last two digits can either be 00 or C1 for earth orbit, we should restrict that to 00 for earth orbit. It's not set up to accept that lunar landmark stowage. So we'd like to have that NOUN 71 as either 10 000 or 20 000, and since we're working on known landmarks, we're saying 10 000.

(GOSS NET 1)

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05 23 56 09 SC Okay. I understand that. I was planning not to use that 01 anyway, because we weren't going to the same landmark. But okay; we'll use 10 000 all the way through.

05 23 56 19 CC Okay.

05 23 56 30 CC And, Apollo 9, let's bring up S-band volume. We'll be seeing you at Honeysuckle here within a minute.

05 23 57 19 CC Apollo 9, this is Houston. The computer is yours. I have a NAV check to go along with the state vector. You have been uplinked state vectors in both slots.

HONEYSUCKLE (REV 91)

05 23 58 45 CC Apollo 9, this is Houston. I should have you at Honeysuckle. Do you read?

05 23 59 14 CC Apollo 9, this is Houston. I should have you through Honeysuckle now. The computer is yours. I have a NAV check to go along with the state vectors that have been uplinked.

05 23 59 23 CMP Roger. Stand by just one.

05 23 59 25 CC Roger.

05 23 59 42 CMP Okay. Go ahead.

05 23 59 44 CC Roger. Reading NAV check: 144 05 0069, minus 2027, plus 16071 1177. End of update.

06 00 00 21 CMP Roger. Readback: 144 05 0069, minus 2027, plus 16071 and 1177.

06 00 00 32 CC That is affirmative. Houston affirms the update. And did you talk to me over Tananarive about your pressure transducer on quad Baker?

06 00 00 43 CDR Roger. We did.

06 00 00 46 CC Okay. And one other comment. The 121 alarm that you got back there, Dave, is not connected with the optics problem.

06 00 00 56 CMP Okay. Thank you. What is it connected with?

(GOSS NET 1)

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- 06 00 01 00 CC Well, everybody here agrees that it is not unreasonable to see that that alarm is a reasonable test on the CDU's; and at the time you sampled it, it flashed you that. But it's not connected now with the sticking of the optics.
- 06 00 01 20 CMP Okay. Maybe all this will make sense in a couple of more revs.
- 06 00 01 25 CC Roger. And that alarm is the platform CDU's, Dave. I guess that will clarify for you.
- 06 00 01 35 CMP Okay. Well, I just had a quick gouge up here on the alarms and CDU's, and it didn't specify.
- 06 00 01 41 CC Roger. Understand. I was thumbing through my book here trying to see what the alarm was. I was watching you go through that, but I've got a couple of more rooms of brains back here that you don't have.
- 06 00 01 55 CMP It's nice to have them back there, isn't it?
- 06 00 01 57 CC Boy, it sure is.
- 06 00 02 51 CC Apollo 9, Houston. We are about to lose you at Honeysuckle. I see you working on your realignment there. We'll see you at Huntsville at 06.
- HUNTSVILLE (REV 91)
- 06 00 06 45 CC And, Apollo 9, Houston through Huntsville. Standing by. And I'm real curious how old Jupiter worked out.
- 06 00 08 36 CC And, Apollo 9, Houston through Huntsville. Standing by. We'll have you about another 3-1/2 minutes.
- 06 00 08 44 CDR Say again. Houston, Apollo 9.
- 06 00 08 46 CC Roger. We've got you at the Huntsville now. Should have you for about another 3 minutes; and I'm curious how old Jupiter went.
- 06 00 08 54 CDR Say again about Jup --
- 06 00 08 56 CC -- Roger. How did the alignment go on Jupiter there?

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06 00 09 00 CDR We're still tracking him down, here.
06 00 09 03 CC Okay.
06 00 09 10 CDR We just found him.
06 00 11 02 CMP Hey, Smokey. Is this the ninth?
06 00 11 06 CC Hey, that's affirmative. It is the ninth.
06 00 11 09 CMP Thank you. Sort of lost track here.
06 00 11 12 CC Roger. I can understand that.
06 00 12 14 CC Apollo 9, Houston. See you at Hawaii 18.
06 00 12 18 SC Roger.

HAWAII (REV 91)

06 00 18 50 CC Apollo 9, this is Houston through Hawaii. Standing by.
06 00 18 55 CDR Roger, Houston.
06 00 18 58 CMP And, Houston. The P52 with Jupiter didn't work out very well. I stuck in the numbers I had in the checklist for the days we asked you to check on and got about a 67-degree star-angle difference. And I used Jupiter and *Crux*, which are pretty familiar figures, so we'll have to regroup on that one.
06 00 19 23 CC Roger. Copy. Understand.
06 00 19 26 CMP And we did not torque the platform, by the way.
06 00 19 29 CC Good thinking. And show you - about 7 minutes, old Punta Willard ought to be coming over your horizon.
06 00 19 38 CMP Okay.
06 00 21 46 CMP Houston, Apollo 9.
06 00 21 48 CC Go ahead, Apollo 9.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

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MIRA (REV 92)

- 06 00 35 02 LMP Houston, this is Apollo 9. You are still around, aren't you?
- 06 00 35 05 CC Apollo 9, Houston. Say again.
- 06 00 35 08 LMP Roger. Houston, Apollo 9. Had a little trouble with the clouds that time. I wasn't able to recognize it until we got about 30 seconds from overhead, and then I'm not sure because of the cloud cover. But I got three Marks in with the sextant, and the AUTO optics seemed to work pretty good.
- 06 00 35 26 CC Roger. Copy. And that CDU alarm, we feel, at that time was caused by the roll rate.
- 06 00 35 36 CDR Okay. Very good. And you just about have to have that kind of roll rate to stay on it with the sextant.
- 06 00 35 45 CDR What's the roll rate limit that causes that?
- 06 00 35 48 CC We're working on that right now.
- 06 00 38 09 CDR Houston, Apollo 9.
- 06 00 38 11 CC Go ahead, Apollo 9.
- 06 00 38 13 CDR Did you get my question about what roll rate causes the CDU warning light to come up?
- 06 00 38 18 CC That's affirmative, Jim. We're working on that. We're trying to find out what limits you have in there now, and, also, we may be able to change it - change the limit. And just for your info, too, when you do get that alarm, it will reject that Mark. It won't accept it with that Mark, so we'll try to have you a roll rate limit here.
- 06 00 38 44 CDR Okay, Stu. Just as you say. Just for your information, you cut out. What was for my information?
- 06 00 38 50 CC Okay. That when it flashes that CDU alarm, it will reject that Mark.
- 06 00 38 58 CDR Okay. It rejects one mark, but not the whole string of Marks; is that right?
- 06 00 39 03 CC That's affirmative.

06 00 39 05 CDR Okay. Thank you.

06 00 39 08 CMP And, Stu, I got another question on this new program we're working with here. It doesn't seem to allow us to proceed out of the flashing 51 as we do in the other programs.

06 00 39 22 CC Okay. I copy. We'll try to get you an answer.

06 00 39 26 CMP Okay.

06 00 39 48 CDR Hey, Houston. This is Apollo 9.

06 00 39 50 CC Go ahead, Apollo 9.

06 00 39 51 LMP Hey, did all that work that Dave did on his KG last night fix it?

06 00 39 57 CC That's affirmative. It's coming through loud and clear, and the surgeon says, "Thank you."

06 00 40 02 CMP Dr. Scott appreciates his thank you.

06 00 40 07 CC Roger.

06 00 40 09 CMP I've been thinking of looking for a new job.

06 00 40 15 CC The surgeon says they'll put you to work.

06 00 40 20 CMP They've been doing that for several years.

06 00 40 22 CC Very good.

06 00 40 37 CC And, Apollo 9, Houston. I can just see the headlines now: "Scott Quitting Space Program."

06 00 40 46 CMP Yes. I hope we see those, huh?

06 00 40 48 CC Yes.

06 00 40 49 CDR All right, you guys.

06 00 41 00 CC And, Apollo 9, Houston. Dave, you could proceed on that flashing 51, if you could get one valid Mark into the computer. But that's what's hanging up on the flashing 51 there.

06 00 41 14 CMP Okay. Well, I thought I got a couple; I got three there, and I didn't get the program alarm. I don't think --

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| 06 00 41 21 CC Okay. We'll check that. --
06 00 41 22 CMP Okay. ... --
06 00 41 23 CC The info I had was --
06 00 41 24 CMP ... I was looking through the tube there and didn't see the ... we got on the first one.
06 00 41 34 CC Okay. And we did see the three alarm.
06 00 41 39 CMP Okay. We'll slow down the roll rate.

VANGUARD (REV 92)

06 00 46 19 CC Apollo 9, Houston.
06 00 46 21 CMP Go ahead.
06 00 46 22 CC Okay. I guess you've got somebody eyeing the middle gimbal, and I realize that it's less than 4 minutes before 712 is coming over the horizon. We can go into the erasable memory with the address I can give to you, and we can double the rate that's in there. Right now it's six-tenths of a degree CDR rate. Now we don't have that info translated into a body rate, yet.
06 00 46 51 CMP Okay. Why don't we just go slower on this one, Houston, and not try and do that now, because we are coming up on the target. And I think - You know the summation of all this is - It's probably designed for the lunar orbital case where you have a lot more time and you're going a lot slower. That's probably what the problem is.
06 00 47 09 CC Roger. That's - We understand and concur with not changing it. We don't have to let out - I thought we might want to try it on this last one here today. And really, we're proving the technique; sounds like you've really got the technique swinging.
06 00 47 26 CMP Oh, yes. And I'm surprised even the sextant is as easy as it is. Once we get the high spacecraft rates it's pretty easy to track it with the sextant.
06 00 47 37 CDR Stu, if we do any of these things tomorrow, we might jack up the rate in that erasable load.

(GOSS NET 1)

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06 00 47 44 CC Okay. Real good, Jim.
06 00 48 21 CMP And, Houston, on this next night pass, we'll do that P52 to Jupiter again.
06 00 48 28 CC Roger. Understand. Maybe by then we'll have somebody look at those half unit vectors and ...

CANARY (REV 92)

06 00 52 49 CMP Houston, 9.
06 00 52 50 CC Go ahead, 9.
06 00 52 52 CMP Roger, Houston. Have you got into degrees per second yet?
06 00 52 57 CC That's negative. I'm sorry; we don't have it.

TANANARIVE (REV 92)

06 01 09 11 CC Apollo 9, Houston through Tananarive.
06 01 09 28 CC Apollo 9, this is Houston. I am not reading you. I may be coming through to you. If so, on the P52 alignment, I'd like to have you check the unit vectors for Jupiter on the last page of section 7.
06 01 10 04 CMP We got the numbers on that.
06 01 10 08 CC Okay, Apollo 9. I got that transmission.
06 01 12 16 CC And, Apollo 9, this is Houston. Our OMW is pretty bad. I'm going to wait until over Carnarvon to give you your S065 PAD; and that will be Carnarvon about 24.

CARNARVON (REV 92)

06 01 25 23 CC And, Apollo 9, Ecuson through Carnarvon. How do you read?
06 01 25 26 LMT Five-by, Houston.
06 01 25 30 CC Okay. I have your S065 PAD.

- 06 01 25 34 IMP Roger. Ready to copy.
- 06 01 25 37 CC Okay. I'm going to give you your inertial angles first: 18000 27320 all zips 145. I'm giving you now the GET; I'll give you your ORB angles in a minute. I'm now on the GET: 145 57 00. This is ORB RATE. Your first area is the Salton Sea: 146 02 21 08 06. Your second area is in New Mexico: 146 04 59 08 03. The next area is the Mississippi River: 146 08 07 08 04. And your ORB RATE is 0.068. And now on your ORB RATE angles: I'm not sure - I think this is what you were wanting, Jim, but you're reading 180 degrees of roll, and with the local vertical, you are 32-1/2 degrees pitch; yaw, 0.
- 06 01 27 43 IMP Stu, I think that we're probably pitch down there 32. Would you confirm that?
- 06 01 27 48 CC That's affirmative. You're pitch down 32-1/2 degrees below the local horizontal.
- 06 01 27 57 IMP Okay.
- 06 01 28 01 IMP Okay. Readback, then: 18000 27320 all zips 145 57 00; ORB RATE. First area, Salton Sea: 146 02 21 08 06. New Mexico, second site: 146 04 59 08 03. Mississippi River: 146 08 07 08 04. ORB RATE is 0.063, and the orbit to level vertical angle would be 180 and whatever 360 minus 32 is, and zero.
- 06 01 28 48 CC That's affirmative. I confirm that, and we have interpolated off of that chart there. We want to save you all the mental gymnastics to get your VWXY parameter.
- 06 01 29 06 CMP All right. Go ahead.
- 06 01 29 07 CC Okay. You want me to read those then? Is that affirmed?
- 06 01 29 14 IMP Stand by just one.
- 06 01 29 16 CC Okay.
- 06 01 29 42 IMP Okay. Go ahead, Smokey.
- 06 01 29 44 CC Okay. Reading: V as in Victor, 77775; W as in Whiskey, 61331; X-ray, all zips; Y, 65732; and then Zebra, 54142.

(GOSS NET 1)

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06 01 30 23 LMP Okay. Got 7775, 61331, all zips, 65732, and 54142.
06 01 30 38 CC Okay. And the order of that is V, W, X, Y, Z.
06 01 30 45 LMP Roger. We got that. Flight B chart is onboard.
That even agrees with the Z-component of preflight
calculation. Okay. Thank you very much.
06 01 30 55 CC Roger.
06 01 30 59 LMP Okay. I can give you a quick rundown on Jupiter,
now that we've done it.
06 01 31 04 CC Okay.
06 01 31 08 CC We're about 10 seconds to LOS here. We'll catch
you over the Huntsville at 39.
06 01 31 15 LMP Okay. Very good.

HUNTSVILLE (REV 92)

06 01 38 59 CC Apollo 9, Houston through the Huntsville. Standing
by.
06 01 39 08 CMP Roger. Houston, Apollo 9. How do you read?
06 01 39 12 CC You're coming in loud and clear, Dave.
06 01 39 16 CMP Okay. Stand by a minute, and I'll give you a
rundown on Jupiter alignment.
06 01 39 21 CC Roger. We've taken a look at some of the data,
and it looks swell.
06 01 39 31 CMP Roger. And I've got a couple of comments on it;
just a second. Okay. ... I ran it two times
to get some repeatability on the numbers we had
to put in, in the - Star angle difference was
0.04 on the first one and 0.03 on the second one.
And did you get the torqueing angles?
06 01 40 03 CC That is affirmative, Apollo 9.
06 01 40 07 CMP Okay. It seems to work real well. The planet
fills up the whole inside of the sextant in between
the reticle lines. It's about the size of the -
guess it's about 40 odd seconds ... and one thing
was noticed in the program is that when you load
those unit vectors for the planet and then let

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AUTO OPTICS drive do it, then take the Marks, the Mark wipes out the load that you put in, and you have to reload those unit vectors again. Now that might be an early thing for - You might care to think of in Comanche, because it takes a lot of time to reload those vectors.

- 06 01 40 50 CC Roger, Dave. Copy. A real good observation.
- 06 01 40 56 CMP Ann, other than that, it works real well. The torqueing angles were small, and the planets were easy to find. I think that'd be a fine thing to use if you couldn't see the stars in the day-time.
- 06 01 41 08 CC Hey, that sounds real great, and that was an extremely good summary.
- 06 01 41 15 CMP And on the last landmark track, I think we got the hang of the whole thing. We had cloud coverage again, and we had to reject the first part because I just couldn't see it clearly. We got almost overhead, and I got two real good Marks. I think we've got that one nailed and can get a clear target load.
- 06 01 41 35 CC Okay, Dave. Understand.
- 06 01 41 42 CMP ... and we're getting ready for S065 right now.
- 06 01 41 45 CC Real good.
- 06 01 41 58 CC And if you've got time for a question, Dave, just help me out. Jim asked specifically for this yesterday, that the ORB RATE angle - and to make sure that I'm giving you what you want - Is that what you want, your relation to the local vertical?
- 06 01 42 16 CDR Roger, Stu. We have what we want here.
- 06 01 42 19 CC Okay. Real good.
- 06 01 42 21 CDR We wanted the inertial angles to maneuver to, and we wanted the relative local vertical ... attitudes to stay at.
- 06 01 42 28 CC Okay. Real good. Well, we will flip it to you.
- 06 01 43 47 CMP Houston, Apollo 9.
- 06 01 43 49 CC Go ahead, Apollo 9.

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06 01 43 51

CMP

One thing I forgot to mention on that alignment, the way we got the unit vectors was to interpolate between the times that we had on the charts on board, and so we tried to take the five-digit numbers and get as close as we could to the time - the GMT that we had right now. So I guess we - The repeatability really is a function of those numbers that you had there - that we had on the chart ... and that we interpolated with.

06 01 44 15

CC

Okay, Dave. Understand. We're about 1 minute LOS Huntsville. We'll see you Hawaii in about 5 minutes at 49.

06 01 44 25

CMP

49 Hawaii.

HAWAII (REV 92)

06 01 50 16

CC

Apollo 9, Houston through Hawaii. Standing by.

06 01 50 21

CMP

Roger.

REDSTONE (REV 92)

06 01 54 02

CC

Apollo 9, Houston.

06 01 54 05

CMP

Houston, Apollo 9. We're with you.

06 01 54 07

CC

Okay, Apollo 9. Looks like we are about to make a mistake here. I've got to give you new numbers. You loaded the ones we gave you, but those aren't right. We have got to use the complement of those. Are you ready to copy?

06 01 54 21

CMP

Roger. Go ahead.

06 01 54 22

CC

Roger. 00 002 J6 446. Stand by.

06 01 54 38

CC

Okay. And X is all zips; Y, 12045; and Z is good as is. I'm sorry about that.

06 01 54 59

CMP

No sweat. We'll get it.

06 01 55 11

CC

I thought I had them signed in blood.

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06 01 55 30 CCR You watch these as they go in. Okay?

06 01 55 32 CC Okay. I'm watching.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

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TEXAS (REV 93)

- 06 02 09 01 LMP Houston, Apollo 9.
- 06 02 09 03 CC Go ahead, Apollo 9.
- 06 02 09 04 CMP Roger. We just completed the S065 pass.
- 06 02 09 10 CC Roger. And how did the cloud cover look?
- 06 02 09 13 CDR Really neat. There weren't any clouds all along the way. It looked very, very nice.
- 06 02 09 18 CC Oh, real good. And we noticed you're torqueing the right way, and we just about fouled you up there.
- 06 02 09 24 CDR Hey, but you didn't. You're right on time. That's very good. You're getting a little drama into the game, Stu.
- 06 02 09 31 CC That's right. We've got everybody awake, anyway.
- 06 02 09 40 CDR Say, you know on this ORB RATE torqueing, I don't think we had a jet firing the whole time after it started the rates going.
- 06 02 09 49 CC Roger, G&C says there were very few of them, but there were some.
- 06 02 09 54 CDR Okay. We just didn't hear any of them go, and it seemed to be real smooth.
- 06 02 09 58 CMP Yes, we went to FREE some time ago, and we're still at an inertial altitude of 328.
- 06 02 10 07 CC Very good.
- 06 02 11 23 CDR Houston, Apollo 9 ... That was a most enjoyable trip across the States, there.
- 06 02 11 30 CC I'm sorry, Apollo 9. I didn't catch it. Say again.
- 06 02 11 34 CDR Roger. I said that was a most enjoyable trip across the United States.
- 06 02 11 38 CC Roger. Copy.

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ANTIGUA (REV 93)

06 02 13 29 CC Apollo 9, Houston.
06 02 13 32 CDR Go ahead.
06 02 13 33 CC Roger. I'd like to read you a little blurb out of the newspapers here. It's - byline Newark, New Jersey. "McDivitt Honored. The ancient order of Hibernians, representing 250 000 Irishmen across the country, voted Saturday to honor Apollo 9 Astronaut James A. McDivitt for his achievements. The executive board of the Hibernians voted unanimously" - stumbled over that one - "to award McDivitt the John F. Kennedy Medal for National Civic Service. McDivitt will receive the medal at the Hibernian dinner in Newark on May 10th, a spokesman said."
06 02 14 15 CDR Roger. I wish to thank my fellow Hibernians for that honor. And you might also mention that I am flying with green handles on my seat.
06 02 14 25 CC Okay. Copy.

ASCENSION (REV 93)

06 02 27 08 CC Apollo 9, Houston. Good afternoon. Through Ascension.
06 02 27 22 CMP Houston, Apollo 9.
06 02 27 24 CC Roger. Loud and clear this time, Dave.
06 02 27 28 CMP Okay. I've got some gyro torqueing angles for you.
06 02 27 31 CC Roger. Ready to copy.
06 02 27 33 CMP Okay. A GET of 146 27 00, plus 00100, minus 00050, plus 00006.
06 02 27 53 CC Roger. We copy. Thank you.
06 02 27 56 CMP Roger. See you pretty good in the daytime.
06 02 27 59 CC Yes. Amazing what it's like in the daytime.

(GOSS NET 1)

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06 02 28 04 GMP Roger.
06 02 32 31 CC Apollo 9, Houston. One minute LOS; Tamanarive at 44.
06 02 32 38 COR Roger.

CARNARVON (REV 93)

06 02 57 38 CC Apollo 9, Houston through Carnarvon with your S065 update.
06 02 57 45 LMP Roger, Houston. All set to copy. Stand by; my pen's not there.
06 02 57 52 CC Roger. Standing by.
06 02 57 57 LMP Roger. Got the pen now.
06 02 58 00 CC Okay. I'll give you inertial angles first: 18000 25280 and all zips. Your ORB RATE ball angles: 180, 327.5, and zero. Your GET: 147 30 27; NA on your T align; you'll be ORB RATE; the rate is 0.068. The first sight: Salton Sea, 147 35 40 08 05; Tucson, 147 37 12 06 09. Matagorda will be a site: 147 40 42 06 03. I can go ahead and give you your ORB RATES for loading the DAP. I'll give them Victor through Zulu. Victor, 00002; Whiskey, 16446; X-ray, all zips; Yankee, 12045; Zulu 54142; and you can read back if you want to.
06 03 00 44 LMP Okay. Coming back in the same order, Ron. 18000 25280 all zips; 147 30 27; NA; ORB R/TB 0.068. Salton Sea, 147 35 40 08 05; Tucson, 147 37 12 06 09; Matagorda, 147 40 42 06 03; I guess I forgot the vertical angles: 180 327.5 0. And then, going on Victor through Zulu, 00002 16446 all zips 12045 54142.
06 03 01 33 CC Roger. Your readback is correct. And I've got your points where Achilles chased Hector around the walls of Troy.
06 03 01 42 LMP Okay.
06 03 01 46 CC First point: right ascension, 12 hours 10 minutes; declination, minus 1 degree. Second point: right ascension, 19 hours 50 minutes; declination, minus 26 degrees.

(GOSS NET 1)

Tape 94/4
Page 603

06 03 02 27 LMP Okay. 12 hours 30 minutes, minus 1 degree; 19 hours 50 minutes, minus 26 degrees.

06 03 02 34 CC Roger. And that will be at a GEM of 146 plus 00.

06 03 02 43 LMP Okay. By the way, looking for the Gegenschein I was sort of all dark-adapted on the pass that Dave worked on Jupiter and was not able to see anything.

06 03 02 55 CC Roger. No Gegenschein.

06 03 03 04 CC 9, Houston. On your pass over Ascension we noticed the surge tank was dropped about 100 pounds, and then it's coming back up. Was this filling the EXPRESS?

06 03 03 13 LMP Roger.

06 03 03 14 CC Roger. Thank you.

06 03 03 18 LMP We may give it a couple of more shots here just to tweak it all the way up.

06 03 03 23 CC Roger. Concur.

06 03 04 03 CC Apollo 9, Houston. Thirty seconds LOS; Guam at 11.

06 03 04 09 LMP Roger.

GUAM (REV 93)

06 03 13 11 CC Apollo 9, Houston. Two minutes to LOS; Hawaii at 23.

06 03 13 17 CMP Roger.

HAWAII (REV 93)

06 03 26 05 CC Apollo 9, Houston. Standing by through Hawaii.

06 03 26 08 CDR Roger, Houston. Apollo 9.

06 03 26 11 CC Roger.

END OF TAPE

(COSS NET 1)

Tape 95/2
Page 605

06 03 50 25 CC Houston. Go.

06 03 50 26 CDR Could you find out how many frames are on those small 70-millimeter Hasselblad film packs? I think there's 60, but I'm not really sure.

06 03 50 35 CC Roger. We'll check it.

06 03 50 37 CDR I know that there's 150 in the big ones, but I don't know what there are in the little ones.

06 03 50 42 CC Roger.

06 03 50 55 LMP Ron, I think they are in MAGS F and G.

06 03 50 59 CC Okay. MAGS F and G.

06 03 51 15 CC Apollo 9, Houston.

06 03 51 17 CMP Go.

06 03 51 18 CC Roger. You can terminate BAIT B charge, and if you do it after 52, just let us know the time at Ascension.

06 03 51 26 CMP 3, 2, 1.

06 03 51 28 CMP MARK.

06 03 51 30 CC Roger. We got it.

06 03 52 06 CC Apollo 9, Houston. About 30 seconds LOS. And you have a GO to chlorinate prior to sleeping tonight, if you want.

06 03 52 15 CMP Okay; fine. Thank you. We'll do that before we go to bed.

06 03 52 17 CC Roger.

ASCENSION (REV 94)

06 04 01 19 CC Apollo 9, Houston through Ascension.

06 04 01 22 CDR Hello. Houston, Apollo 9.

06 04 01 25 CC Roger. Looks like you have 65 frames in those small 70mm packs.

(COSS NET 1)

Tape 95/3
Page 606

- 06 04 01 32 CDR Okay. Very good. Thank you.
- 06 04 01 39 CC And, 9, Houston. Looks like our cryo plan is about the same as last night. If you still have that one, it is the same - unless you want me to read it up again and remind you.
- 06 04 01 52 CDR No, I believe it's to turn the heaters and fans off now, and let the hydrogen pressure drop down to between 190 and 200. And then, just before we go to bed, we're going to turn H₂ fan number 2 on.
- 06 04 02 06 CC Okay. We'll use number 1 fan tonight. H₂ tank 1 fan ON just before you go to bed.
- 06 04 02 12 CDR Okay. H₂ tank 1 fan ON just before we go to bed.
- 06 04 02 16 CC And we'll - Put inverter 3 on MAIN A just before you go to bed.
- 06 04 02 22 CDR Okay. And we've been running all day long without either heaters or fans on the H₂, and tank 1 is reading about 208 or so, but tank 2 is all the way up to 220. We're going to have to do a lot of purging to get it down.
- 06 04 02 44 CC Roger. If a purge is required, which it looks like it may be, go ahead and purge fuel cell 2.
- 06 04 02 52 CDR Okay.
- 06 04 03 13 CDR And, Houston, this is Apollo 9.
- 06 04 03 15 CC Houston. Go.
- 06 04 03 17 CDR On our powerdown, do you want us to just power down the things we powered down last night, and not power down completely?
- 06 04 03 22 CC Affirmative. That'll be SCS electronics power OFF, the AUTO RCS switch is OFF, rote control power switch is OFF, and the translation control power OFF. The rest of them - powered up.
- 06 04 03 38 CDR Okay. Very good.
- 06 04 03 53 CC 9, Houston.

(GOSS NET 1)

Tape 95/4
Page 607

06 04 03 57 CDR Go ahead.
06 04 03 58 CC Roger. We wanted to get a couple of frames for hydrology and oceanography there at Matagorda.
06 04 04 06 CMP Oh, very good. Well, that's what you got.
06 04 04 10 CC Okay.
06 04 04 16 CC Apollo 9, Houston. We're coming up on LOS. Low pass at Tananarive and Carnarvon; probably Guam at 42.
06 04 04 25 CMP Alright.

GUAM (REV 94)

06 04 42 52 CC Apollo 9, Houston through Guam.
06 04 42 55 CMP Roger. Houston, Apollo 9. Go.
06 04 42 58 CC Roger. Request an E memory dump, VERB 74, when you get a chance. And, give us a Mark.
06 04 43 05 CMP Roger. Here we go. VERB 74: 3, 2, 1.
06 04 43 12 CMP MARK.
06 04 43 16 CC Roger.
06 04 43 48 CMP Houston, did you say you wanted POO in ACCEPT, also?
06 04 43 50 CC Stand by. We are verifying the E memory first.
06 04 44 23 CC Apollo 9, Houston. The E memory dump is complete. Request POO in ACCEPT. We'll give you a state vector.
06 04 44 29 CMP Roger. Stand by one.
06 04 44 40 CMP Okay. You have POO in ACCEPT.
06 04 44 44 CC Roger.
06 04 47 03 CC Houston. We have sent the state vector up; we've checked it. It all looks good.

(COSS NET 1)

Tape 95/5
Page 608

06 04 47 11 CMP Okay.. Thank you very much. I just went into the DSKY there. I hope you had the thing in; I'd forgotten.

06 04 47 18 CC Roger. We had it in.

06 04 47 21 CMP Okay. Thanks.

06 04 47 24 CC And you might stick those PRD's on the wall somewhere. We're going to be calling for readout one of these passes there.

06 04 47 32 CMP Stick what on the wall?

06 04 47 34 CC Those dosimeters.

06 04 47 35 CC Oh, yes. We'll do that. Man, we've got our dosimeters out. We've been waiting all day for you to ask us.

06 04 47 41 CC Okay.

06 04 47 49 CC Roger. You can go to BLOCK on the computer.

06 04 47 52 CMP Okay. Thank you.

06 04 48 53 CC 9, Houston. In about 30 seconds, LOS; Hawaii at 57.

06 04 48 58 CMP Roger. Hawaii at 57.

06 04 49 00 CC By the way, I don't think we ever told you - Your DSE is good when you are talking into the mike. It's real good.

06 04 49 07 LMP All right --

06 04 49 09 CMP -- Oh, okay. Good. We'll try and stay close to the mike, then.

06 04 49 11 CC Roger.

HAWAII (REV 94)

06 04 58 44 CC Apollo 9, through Hawaii. I've got a couple of flight plan updates and targets of opportunity for you.

06 04 58 50 CMP Roger. Go ahead.

(COSS NET 1)

Tape 95/6
Page 639

06 04 58 54 CC Roger. ARIA 5 at 154 plus 19, to 154 plus 29.
ARIA 2, 155 plus 13, to 155 plus 22. Here come
some targets of opportunity.

06 04 59 28 CMP Go ahead.

06 04 59 30 CC 149 08 46. It's Guadalupe, weather, three frames,
60-second intervals, on track. 149 14 00, Chapingo,
Mexico, geology, 10 frames, 6-second intervals,
40 degrees off nadir south. 149 16 57, San Salvador,
geology, 10 frames, 6-second intervals, 30 degrees
off nadir south. 149 19 43, Gulf of Panama,
oceanography, five frames, 6-second intervals, 10
degrees off nadir north. 149 20 42, Columbia,
geology, 10 frames, 6-second intervals, on track.
149 21 57, Venezuela, weather, six frames, 30-
second intervals, high oblique to north. And,
over.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION
(GOSS NET 1)

Tape 96/1
Page 610

HAWAII (REV 94)

06 05 04 05 CC Apollo 9, Houston.
06 05 04 09 CDR Go ahead, Houston.
06 05 04 11 CC Roger. Where did I leave off - cut off on the targets of opportunity, there?
06 05 04 27 CDR Stand by just a minute.
06 05 05 05 CMP Okay. Just you on the 149 21 57 Venezuelan weather, but we're almost up to the first one right now. Do you want to try to pick up from there?
06 05 05 12 CC That was it; there was only Venezuelan weather, six exposures, 50-second intervals, and a high oblique to the north.

REDSTONE (REV 94)

06 05 05 24 CMP Okay. It looks like we are only oriented so we can see south, so we will try and pick up the ones that are off to the south.
06 05 05 32 CC Roger.
06 05 05 38 CMP And I'll give you a readback on the ARIA, since you might want to know if we got that right or not. ARIA 5, 154 19 through 154 29; and ARIA 2, 155 13 through 155 22.
06 05 05 51 CC Roger. And we know that your optics are still on MANUAL, and request ZERO if you are not going to use them any more.
06 05 05 56 CMP Roger. We were just using them to take a look out front to see where we were going.
06 05 06 01 CC Okay; good.
06 05 09 40 CC Apollo 9, Houston.
06 05 09 43 CDR Go ahead.
06 05 09 44 CC Roger. Just a comment. Are the cabin fans on now, or what are you generally doing with the cabin fans?

(COSS NET 1)

Tape 96/2
Page 611

- 06 05 09 49 CDR We had the cabin fans OFF until today, and we had run it with one cabin fan ON today.
- 06 05 09 55 CC Roger.
- 06 05 10 00 CC And, in general, on cycling or storing the H₂ cryo's there, are you doing this at any time other than when we request same?
- 06 05 10 08 CDR Negative.
- 06 05 10 09 CC Roger.
- 06 05 10 12 CMP Yes we have, Ron. We've been doing it every morning - on wakeup checklist.
- 06 05 10 18 CC Okay. That's good.
- 06 05 10 25 CDR Yes, that's called out on the flight plan, though.
- 06 05 11 07 CC And, Apollo 9, Houston. I have the block data here. I can either give it here or else over Guam.
- 06 05 11 16 LMP Okay. Stand by.
- 06 05 11 52 CDR Okay, Houston. Go ahead.
- 06 05 11 59 CC Roger. Block data: Area 099 Charlie Charlie, plus 231, plus 1430 156 15 41 3343; 100 Charlie Charlie, minus 253, minus 1610 158 06 17 3343; 101 Alfa Charlie, plus 029, minus 0300 156 40 36 3842; 102 Alfa Charlie, plus 166, minus 0320 160 15 37 3842; 103 2 Alfa, plus 231, minus 0300 161 50 48 3842; 104 1 Bravo, plus 255, minus 0595 163 17 18 3842. Pitch trim: minus 0.88. Yaw: minus 1.08. Over.
- 06 05 14 43 LMP Roger. 099 Charlie Charlie, plus 231, plus 1430 156 15 41 3343; 100 Charlie Charlie, minus 253, minus 1610 158 06 17 3343. You still with me?
- 06 05 15 18 CC Affirmative. You can go a little faster.
- 06 05 15 21 LMP 101 Alfa Charlie, plus 029, minus 0300 156 40 36 3842; 102 Alfa Charlie, plus 166, minus 0320 160 15 37 3842; 103 2 Alfa, plus 231, minus 0300 161 50 48 3842; 104 1 Baker, plus 255, minus 0595 163 17 18 3842. Pitch: minus 0.88. Yaw: minus 1.88.

(GOSS NET 1)

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06 05 16 14 CC Houston. Your readback is correct. Tananarive at 50.

06 05 16 21 CMP Roger. Tananarive at 50.

TANANARIVE (REV 95)

06 05 52 01 CC Apollo 9, Houston through Tananarive.

06 05 52 06 CMP Roger. Houston, Apollo 9.

06 05 52 08 CMP Houston, Apollo 9.

06 05 52 13 CC Roger. We got a lot of static here. Do you read me okay?

06 05 52 17 CMP We're reading you loud and clear.

06 05 52 20 CC Roger. I have some targets of opportunity - about three - and then one flight plan update.

06 05 52 31 CMP Okay. Go ahead.

06 05 52 34 CC Roger. 150 51 27, Galapagos Islands, geologic, eight frames, 6 seconds, on track.

06 05 52 58 CC At 150 57 07, Peru coastline, eight frames, 8 seconds on track.

06 05 53 19 CMP Okay.

06 05 53 22 CC 9, Houston. Let me correct that one. It's four frames instead of eight frames.

06 05 53 29 CMP Peru coastline, 4 frames.

06 05 53 32 CC Okay. At time 151 47 17, Formosa Strait, oceanography, five frames, 8 seconds, on track.

06 05 53 55 CMP Okay.

06 05 54 02 CMP Okay. We got all those; do you want us to read them back to you?

06 05 54 07 CC Let me give you a correction there, Dave, again. On the second one for the Peru coastline, the time is 150 55 07.

06 05 54 25 CMP Okay. 150 55 07. We got all those; thank you.

(GOSS NET 1)

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Page 613

06 05 54 30 CC Okay. Then I've got a waste water dump for you.

06 05 54 34 CMP Go ahead.

06 05 54 35 CC About 151 50, waste water dump. Listening to the DSE last night, you may want sunrise time, 151 38. Sunset, 152 30. Over.

06 05 55 10 CMP Okay. We have that.

06 05 55 12 CC Okay.

06 05 55 16 CDR For you.

06 05 55 17 LMP You're a sweetheart.

06 05 55 21 CC It sounded like it was great.

GUAM (REV 95)

06 06 17 47 CC Apollo 9, Houston through Guam.

06 06 17 51 CDR Hello, Houston through Guam. Apollo 9.

06 06 17 54 CC Roger. Loud and clear. Jim, we need some things here. They may be on the DSE and if it is on the DSE, just say so and we will dig it out there. What were the results of the optics sun filter evaluation?

06 06 18 11 CDR Okay, Ron. I guess we never got to that. We were really sort of busy most of the day and just fixing to take a look at some of that stuff on our next day pass.

06 06 18 20 CC Oh, okay; good. And, for future planning purposes down here, how many magazines of CEX 368 70 millimeter film are left?

06 06 18 33 LMP We have about 250 usable frames.

06 06 18 37 CC Roger. And, then on your targets of opportunity, did you get some of those or most of them on this or the DSE? Okay? If not, can you let us know?

06 06 18 45 LMP Yes; we got most of those when we went across south of Mexico, there.

(GOSS NET 1)

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Page 614

06 06 18 55 CC Okay.

06 06 18 56 LMP So far today, we've taken a sizable number of 70 millimeter frames of the ground; southern United States, some of Mexico, some across Africa, and a bunch down through Cuba, the islands down through the Caribbean.

06 06 19 17 CC Roger. Thank you.

06 06 19 27 CDR We filled our daily quota of 70 millimeter frames today.

06 06 19 33 CC Say again.

06 06 19 35 CDR Said we filled our daily quota of 70 millimeter frames. I figured we had to take about 200 a day, so we are - we're well up on it.

06 06 19 43 CC Very good; thank you. I guess you still owe us a powerdown consumables onboard readout.

06 06 19 51 CDR We don't have those available for you yet; we will get them for you in just a minute.

06 06 19 55 CC Okay. No hurry.

06 06 19 57 CDR And in another half hour or so, I'll probably have some more data for RETRO on where things are.

06 06 20 04 CC Roger.

HAWAII (REV 95)

06 06 31 31 CC Apollo 9, Houston through Hawaii. Standing by.

06 06 31 41 LMP Okay, Houston. We've got some data here for you.

06 06 31 44 CC Very good; ready to go.

06 06 31 48 LMP Okay. Service module, A, B, C, D: 53 58 52 56. Battery C power, A, and B: 36.9, 37.1, 37.1.

06 06 32 06 CC Roger. Copy.

06 06 32 07 LMP Temperatures are all OFF SCALE HIGH, PRD: the commander, 3114; the LMP, 2015; and CMP is unknown.

06 06 32 24 CC Roger.

(GOSS NET 1)

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Page 615

06 06 38 30 IMP Houston, Apollo 9.
06 06 38 36 CC Apollo 9, houston. Go.
06 06 38 39 IMP Roger. We have CMP dosimeter reading.
06 06 38 42 CC Hey, I thought it was on the LM.
06 06 38 46 IMP No, he's got a 6115.
06 06 38 50 CC Roger. Thank you.
06 06 38 55 CDR Houston, Apollo 9, here.
06 06 38 56 CC Houston. Go.
06 06 38 59 CDR Hey, just as a matter of interest, all our windows are staying very clean. That lefthand rendezvous window looks like it stopped getting that white film all over it and has remained the same. All the rest of them are quite clear.
06 06 39 14 CC Very good; thank you.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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HAWAII (REV 95)

- 06 06 39 16 CDR They get an occasional little bit of what looks like maybe frost or moisture between the panes, but it goes away. They are quite good.
- 06 06 39 28 CC That makes us feel a lot better.
- 06 06 40 12 LMP Houston, Apollo 9.
- 06 06 40 13 CC Houston. Go.
- 06 06 40 14 LMP Roger. For RETRO's information, the equipment that we brought back from the LM with us - the checklist and things like that - are stowed down in the - one of the compartments on A-8, the compartment largest and closest to the lower equipment bay.
- 06 06 40 35 CC Okay. That sounds good.
- 06 06 40 47 LMP The equipment that was in there didn't weigh very much. There was some underwear and some things like that. We moved that up to the top compartment in A-8 and we moved the one heavy piece of equipment, the tool kit, down into A-5.
- 06 06 40 57 CC Roger. Tool kit is in A-5 now.
- 06 06 41 10 LMP And the distripper bracket which was off on the A-8 has been moved down to A-5.
- 06 06 41 16 CC Roger.
- 06 06 41 23 CDR As a matter of interest here, we brought all the LM books back with us except for the malfunctions procedures and the systems book. So we brought all the checklists back and the cards, plus another 3 or 4 pounds of loose pieces. I think, altogether, we have something on the order of 10 pounds in that box.
- 06 06 41 44 CC Okay; sounds good.
- 06 06 41 48 LMP Including an ascent engine in A-7.
- 06 06 41 51 CC Okay. (Laughter)
- 06 06 42 47 LMP Houston, Apollo 9.
- 06 06 43 49 CC Houston. Go.

(COSS NET 1)

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- 06 06 43 50 LMP One other item: that lithium hydroxide canister that we brought was supposed to be stored in A-1, and it is. I guess we ought to tell RETRO that, too.
- 06 06 44 02 CC Roger. I understand that it is in A-1 where it belongs, now. Right?
- 06 06 44 06 LMP That's correct.
- 06 06 44 07 CC Okay.
- 06 06 44 11 CC 9, Houston. We're about to lose you here. I guess you still owe us a CO₂ canister change.
- 06 06 44 19 LMP Okay. We'll get to it.
- 06 06 44 22 CC Roger.
- 06 06 44 39 CC 9, Houston.
- 06 06 44 42 CDR Go ahead.
- 06 06 44 44 CC Roger. What do you want me to put on your steak that I'm going to have for you tonight?
- 06 06 44 49 CDR Nothing; just eat it just raw. Well, not raw; just medium rare. Don't put anything on it;; you'll ruin the taste.
- 06 06 44 55 CC Okay. (Laughter)
- 06 06 44 58 CMP But taste it good for us, will you?
- 06 06 45 00 CC Will do.
- 06 06 45 01 CC You can put your knife and fork on it.
- 06 06 45 03 CC (Laughter)
- 06 06 45 09 CDR Listen, you may be having steak, but I have a larger choice of things right here. I have day 6, meal C; I have day 6, meal C; I have day 6, meal C; and I even have day 6, meal D.
- 06 06 45 25 CC Hey, that sounds great; perfect selection.

(COSS NET 1)

Tape 27/3
Page 618

TANANARIVE (REV 96)

06 07 24 23 CC Apollo 9, Houston.
06 07 24 27 CDR Go ahead.
06 07 24 29 CC Roger, Apollo 9. Just wanted to let you know that you can rest easy tonight; the National Guard is on the duty.
06 07 24 36 CDR Oh, very good. I'm very glad to hear that.
06 07 24 43 CC Hey, Jim. We would like you to check to make sure that you deactivated the DAP.
06 07 24 48 CDR Okay. We will take a quick look and deactivate it.
06 07 24 53 CC Alrighty.

HAWAII (REV 96)

06 08 04 33 LMP Houston, Apollo 9.
06 08 04 38 CC Apollo 9, Houston. Go.
06 08 04 43 LMP Roger. I'd like to inform you we did the fuel cell O₂ purge at 151 48, and we'll take away purging fuel cell 2 with fuel and hydrogen, and we're just about to stop. We started that purge at 152 01 30.
06 08 05 10 CC Roger. Apollo 9, Houston. Copy.
06 08 05 14 CDR Houston, this is Apollo 9. How do you show us on hydrogen quantities remaining for the rest of the flight? How are we following the curve? I show us a little low on the curve but holding steady.
06 08 05 27 CC Roger, Apollo 9. Houston copies. Stand by.
06 08 06 14 LMP Houston, we just purged fuel cell 2 for 1/2 minutes with H₂.
06 08 06 21 CC Roger, Rusty. We copy that.
06 08 08 05 CC Apollo 9, Houston.
06 08 08 10 CDR Go ahead, Houston.
06 08 08 11 CC Roger, Jim. Got some numbers on the hydrogen remaining. It looks like we have CM/DM 1000, 1110.

surplus of 193 pounds, 1-9-3 pounds of O_2 and 12 pounds of H_2 . That may not correlate with the curves you have on board exactly because your curves were not corrected for the loaded condition.

06 08 08 36 CDR Okay. Can you tell me what those numbers are in percent remaining indicated?

06 08 08 46 CC Apollo 9, Houston. Say again.

06 08 08 49 CDR Roger. Can you tell me what number percent remaining indicated on the gage?

06 08 08 55 CC Roger. Stand by.

REDSTONE (REV 96)

06 08 12 43 CC Apollo 9, Houston.

06 08 12 46 CDR Go ahead, Houston. Apollo 9.

06 08 12 47 CC Roger, Jim. We're getting some numbers on the percentage of the cryos remaining at CM/CW SEP, and in the meantime, I guess we'd just sort of like to remind you of the waste water dump and to put inverter 3 on MAIN A before you all go off to sleep.

06 08 13 02 CDR Okay. And I think we'll probably put inverter 3 on MAIN A now, and we're just preparing to do the water dump.

06 08 13 07 CC Alrighty.

06 08 13 12 CDR How's everything going down there, Mr. Ward?

06 08 13 15 CC Oh, it's going very nicely, Mr. McDivitt.

06 08 13 16 CDR Very good. I want you to stay awake tonight. Keep a look out for us.

06 08 13 24 CMP Al, did you enjoy your steak tonight?

06 08 13 27 CC What steak? I had eggs for breakfast tonight.

06 08 13 31 CDR That dirty son buster down there - told us he was going to go out and get a steak for us.

06 08 13 38 CC He went out and got one for himself. He didn't take care of us.

(GOSS NET 1)

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Page 620

06 08 13 42 CDR He's a dirty guy. Hey, that's a great shift you got, isn't it?

06 08 13 48 CC Yes, it's pretty neat.

06 08 13 51 CDR Who ever gave you that bum deal?

06 08 13 55 CC Want me to name names?

06 08 13 57 CDR No.

06 08 14 00 CDR Hey, listen. I got one like that from him, too, once.

06 08 14 04 CC Okay, boss man. Here's your surplus of cryo's O_2 : you'll have 29 percent; and H_2 , you'll have 15 percent remaining CM/SM SEP.

06 08 14 17 CDR Okay. Thank you very much.

06 08 14 19 CC Yes, sir.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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REDSTONE (REV 96)

06 08 15 01 CC Apollo 9, Houston.
06 08 15 07 CDR Go ahead, sweet lips.
06 08 15 09 CC Okey-dokey. You're about to go out of sight here. I'll give you the ARIA times if you'd like them in case you need to call us.
06 08 15 14 CDR We already have 5 and 7 that Ron gave us.
06 08 15 16 CC Oh, okey-dokey.
06 08 15 17 CDR Thanks anyway.
06 08 15 19 CC Yes, sir. Just looking out for you. We're going to have LOS here pretty soon, and I guess we'll be talking to you in the morning.
06 08 15 23 CDR All right. Say hello to my lovely family for me, will you?
06 08 15 25 CC I'll do that.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 99/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 100/1
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REST PERIOD - NO COMMUNICATIONS

Apollo 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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REST PERIOD - NO COMMUNICATIONS

APOLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 102/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(COSS NET 1)

Tape 103/1
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REST PERIOD - NO COMMUNICATIONS

Apollo 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 104/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 105/1
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CARNARVON (REV 104)

- 05 20 17 40 CC Apollo 9, Houston.
- 06 20 17 44 CMP Hello. Houston, Apollo 9.
- 06 20 17 47 CC Oh, good morning. The alarm clock has just gone off.
- 06 20 17 51 CMP I can tell.
- 06 20 17 53 LMP Hello, alarm clock.
- 06 20 17 55 CC Tick-tock!
- 06 20 18 01 CDR How's everything down there in Houston today?
- 06 20 18 04 CC Oh, real fine. Good - looks like you are all sleeping pretty good.
- 06 20 18 11 CMP Yes, we sure are.
- 06 20 18 15 CC Guess I'd ought to use past tense on that now.
- 06 20 18 29 CC Okay. You're over Carnarvon - Just coming into the sunset here. Guess just a little better timing - We'd gotten you up at sunrise, but we let you sleep a little bit extra here.
- 06 20 18 42 CMP We'll take it.
- 06 20 18 43 CC Okay.
- 06 20 18 46 CDR No snap, but we don't have any complaints.
- 06 20 19 23 CMP Hey, Houston, 9.
- 06 20 19 24 CC Go ahead, 9.
- 06 20 19 27 CMP We got one little item for you. Last night we were shifting cabin fans - It was a little warm in here, and we had cabin fan 2 ON; we turned it off, turned 1 on, and it did not come on. It was hot to the touch, so we turned it off and pulled the circuit breakers.
- 06 20 19 49 CC Okay. Copy. Understand. That's cabin fan 1.
- 06 20 19 52 CMP That's affirm. And 2 is still working okay.
- 06 20 19 57 CC Okay.

(GOSS NET 1)

Tape 105/2
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06 20 20 00 CMP And we noticed the suit cabin temps were running a little higher yesterday than they had been previously, and wonder what you all thought about it on the ground.

06 20 20 12 CC Okay. Copy. Stand by.

06 20 20 31 CMP Hot mike.

06 20 23 00 CC Apollo 9, Houston. About 1 minute LOS Carnarvon. We'll have you over Honeysuckle in about a minute - minute and a half. Bring up your S-band volume. We can turn off the fan in H₂ tank 1 now and turn off inverter 3.

06 20 23 18 CMP Okay. H₂ tank 1 fan coming off now, and inverter 3 coming off.

06 20 23 23 CC Okay.

HONEYSUCKLE (REV 104)

06 20 25 49 CC And, Apollo 9, Houston. We've got you through Honeysuckle now for about another 6 minutes.

06 20 25 58 CMP Roger, Houston. You're very, very weak.

06 20 26 01 CC Roger. I think it was just the start of the lockup; how now, Dave?

06 20 26 05 CMP That's very nice.

06 20 26 08 CC Okay.

06 20 30 56 CC And, Apollo 9, Houston. About 1 minute LOS Honeysuckle. We'll see you at Mercury in about 5 minutes.

06 20 31 03 CMP Okay. Mercury in 5.

06 20 31 07 CMP Roger. Mercury in 5.

06 20 31 10 CC Roger. Copy.

MERCURY (REV 104)

06 20 36 59 CC And, Apollo 9, Houston. We have you through Mercury, about 7 minutes.

(GOSS NET 1)

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- 06 20 37 08 CMP You want to get the block data and stuff done?
- 06 20 37 11 CC Roger. I'm standing by. I have block data, I have consumables, and I have flight plan update. Just let me know when you're ready.
- 06 20 37 22 CMP Okay. I got the consumables here; why don't we hit that one first?
- 06 20 37 30 CC Okay. The hour on this one is 162. Starting: 43 12 47 15 48 16 47 16 327 24 36 29 39. End of update.
- 06 20 38 14 CMP Roger. 162 43 12 47 15 48 16 47 16 327 24 36 29 39. And I wonder if we could have SM RCS DAP redline, too, please?
- 06 20 38 35 CC Roger. Reading: quad A, 28 36 38 38.
- 06 20 38 49 CMP Okay. 28 36 38 38.
- 06 20 38 53 CC That is affirmative.
- 06 20 39 05 CMP Okay. Go ahead with the block data.
- 06 20 39 10 CC Okay. Reading block data number 17: 105 2 Bravo, plus 332, minus 0290 164 54 02 2844; 106 2 Alfa, plus 288, minus 0300 166 27 38 2844; 107 Alfa Charlie, plus 211, minus 0340 168 01 03 2844; 108 1 Alfa, plus 263, minus 0680 169 26 08 2844; 109 4 Charlie, plus 334, minus 1590 172 18 34 3831; 110 4 Bravo, plus 328, minus 1609 173 56 15 3831. Okay. Your pitch and yaw trims for REV's 105 through 108: your pitch trim, minus 0.88; yaw, minus 1.09. For REV's 109 and 110: pitch, minus 0.88; yaw, minus 1.40. End of update.
- 06 20 43 00 CMP Roger. Coming back: 105 2 Bravo, plus 332, minus 0290 164 54 02 2844; 106 2 Alfa, plus 288, minus 0300 166 27 38 2844; 107 Alfa Charlie, plus 211, minus 0340 168 01 03 2844; 108 1 Alfa, plus 263, minus 0680 169 26 08 2844; 109 4 Charlie, plus 334, minus 1590 172 18 34 3831; 110 4 Bravo, plus 328, minus 1609 173 56 15 3831. And the pitch and yaw trim per REV's 105 through 108: pitch, minus 0.88; yaw, minus 1.09. For REV's 109 and 110: pitch, minus 0.88; yaw, minus 1.40.
- 06 20 44 18 CC Roger. Houston confirms the update. We'll see you at Texas around 53. We'd like to remind you of the O_2 purge and CO_2 filter change.

(GOSS NET 1)

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06 20 44 28 CMP Okay. O₂ purge and CO₂ filter change, and 52
for Texas.

06 20 44 33 CC That's affirm.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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TEXAS (REV 105)

- 06 20 58 27 CC Apollo 9, this is Houston. Got you through Texas now, showing you just coming up on the coast of lower Mexico. I have a flight plan update for you.
- 06 20 58 42 CMP Okay. Stand by one.
- 06 20 58 43 CC Roger.
- 06 20 59 03 CMP Okay, Houston. We're ready. Go ahead.
- 06 20 59 06 CC Okay. The first change will be at the hours 170 plus 20. We want to add a P52 alignment to NOMINAL, and your time for that NOMINAL alignment - T-align: 170 plus 48 plus 00. Your next item will be another P52, and the hour will be 171 plus 45. I'd like to add another P52 to NOMINAL. Your T-align time: 172 plus 19 plus 00. Okay. We might be rushing you on this rev, but we've got a target of opportunity we'd like to have photographed over Africa and - This is if you can get to it. The time of this is 165 plus 25 plus 33, and we'd like to have the target of the countries of Niger and Chad. And the time I gave you will be the first frame. We'd like to have 10 pictures, 6 seconds apart, shooting 30 degrees south of the nadir.
- 06 21 00 50 CC Okay. Are you with me? I've got three more items.
- 06 21 00 53 CMP Okay. We're with you. Go ahead.
- 06 21 00 54 CC Okay. At hours 172 plus 28, we're going to do some COMM checks with an ARIA. This will be both S-band and VHF. So, we'd like to have S-band volumes up, and another COMM check with the ARIA at 174 plus 06.
- 06 21 01 23 CMP Okay. We got those.
- 06 21 01 25 CC Okay. And the last one is at 174 plus 55: delete the battery B charge and add waste water dump.
- 06 21 01 45 CMP Okay. You want me to read it back now?
- 06 21 01 48 CC That's affirmative. That's the end of it.
- 06 21 01 51 CMP Okay. 170 20, a P52 to NOMINAL, T-align time, 170 48 00. 171 45, P52 to NOMINAL, 172 19 00 for T-align. 165 25 33, targets of opportunity. We

got that and I think we will be able to make that okay. Kiger and Chad, 10 frames, 6-second intervals, 30 degrees south of the nadir. And 172 28, COMM checks with ARIA - S-band and VHF, and one COMM check at 174 06.

- 06 21 02 31 CC That is affirmative, and 174 plus 55, delete the battery B charge; add waste water dump.
- 06 21 02 37 CMP Oh, yes. We got that one, too.
- 06 21 02 40 CC Okay. That's the flight plan updates as of now.
- 06 21 02 44 CMP Okay.
- 06 21 03 31 CC And, Apollo 9, Houston. I'm just standing by here with a map update. I'd like to give it to you before you have to ask for it.
- 06 21 03 37 CMP Go ahead.
- 06 21 03 39 CC Okay. REV 104, which you are on now: 164 51 05; longitude, 124.5 west. And if you want to use your star chart, right Ascension, 15 plus 45.
- 06 21 04 07 CMP Okay. REV 104: 164 51 05; longitude, 124.5 west; right Ascension, 15 plus 45.
- 06 21 04 17 CC That is affirmative.
- 06 21 04 18 CDR Thank you.
- 06 21 04 20 CC Roger.
- 06 21 04 30 CC And, Apollo 9, Houston. Any time at your convenience we'll take a crew status report.
- 06 21 04 37 CDR Okay. This is the Commander. I had about 9 hours sleep last night. I took an Actifed and a vitamin pill yesterday.
- 06 21 04 48 CMP This is the CMP. I had about 9 hours sleep last night and had a vitamin pill yesterday.
- 06 21 04 59 CDR Okay. And Rusty had one vitamin pill and 8-1/2 hours of sleep.
- 06 21 05 05 CC Okay. I copy those. Thank you.

(GOSS NET 1)

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CANARY (REV 105)

06 21 16 44 CC Apollo 9, Houston.
06 21 17 20 CC Apollo 9, Houston through Canaries.
06 21 17 23 CMP Roger. Houston, 9. You're five-by.
06 21 17 26 CC Roger. We would like to recommend the following RCS configurations for today.
06 21 17 35 CMP Houston, Apollo 9. You are five-by.
06 21 17 36 CC Roger, Apollo 9. Do you read Houston?
06 21 17 39 CC I'd like to give you the RCS configuration.
06 21 17 43 CMP Roger. Go ahead.
06 21 17 46 CC Okay. We would like - Today we would like to use quads Baker and Charlie, and use for roll Baker Delta - roll - and on SPS-7, we are recommending Baker and Delta ullage.
06 21 18 17 CMP Seven: use Baker Delta for the ullage.
06 21 18 22 CC You cut out on the first part of the readback. Use quad Baker and Charlie, BD roll, and BD ullage.
06 21 18 29 CMP Roger. Baker and Charlie, BD roll, and BD ullage.
06 21 18 35 CC Roger. Thank you, Dave.
06 21 18 37 CMP Roger.
06 21 21 37 CC Apollo 9, Houston. Thirty seconds LOS. We will see you at Carnarvon at 51.
06 21 21 44 CMP Roger. Carnarvon at 51.

CARNARVON (REV 105)

06 21 50 49 CC Apollo 9, Houston. Get you through Carnarvon. Standing by.
06 21 50 53 CMP Roger. Houston, Apollo 9.

(7000 MAY 1)

Tape 100-1
Page 635

- 06 21 51 10 CDR How's the weather in Houston today?
- 06 21 51 15 CC It's a little chilly. It's been sunny the last couple of days, but it's pretty chilly. It may start turning a little cloudy this afternoon, they're saying.
- 06 21 51 27 CDR Okay.
- 06 21 51 34 LMP Hey, Stu, this is Rusty.
- 06 21 51 36 CC Yes, go ahead, Rusty.
- 06 21 51 38 LMP How about giving the Frau a call and saying good morning to her for me?
- 06 21 51 42 CC Okay. I'll do that for all three of you.
- 06 21 51 46 LMP Mine, this is.
- 06 21 52 02 CC Say, there's some bit about this GPS burn that we'll be talking to you probably in more detail, but I'd like to start on now if you have time to listen for a couple of minutes.
- 06 21 52 15 CMP Okay. Do we have to write anything down?
- 06 21 52 18 CC No, I don't think so. Just sort of let me summarize a few things here.
- 06 21 52 23 CMP Okay. Go ahead.
- 06 21 52 25 CC Okay. On this burn we are going to try to get a better look at this - at the PUGS system. We've analyzed the data and we really - We really think we understand most of the funnies. So to get data on a burn where we are using ullage, we've increased the length of this burn. The burn time is going to be about 25 seconds, and we're going to use the PUGS on it. We're going to use it in the PRIMARY mode, and don't switch. You may get caution and warning lights after about 5 seconds when it comes on, and there's a definite procedure here we want to use for the PUGS. It's about three steps, which I would want you to write down later on, but I just wanted to pass this on to you so you can be thinking about it.
- 06 21 53 23 CDR Okay. So you're going to make the burn 25 seconds longer. Do we have that much fuel left?

(CONT. NET 1)

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- 06 21 53 29 CC Roger. That's supposed to be the plan. We can get you the specific details on it, Jim.
- 06 21 53 39 CDR Okay. Don't forget we have one more after this.
- 06 21 53 42 CC Doggone! I knew we were forgetting something.
- 06 21 53 46 CDR I figured you guys left out one step, just the RETRO burn, huh?
- 06 21 53 50 CC Yes; that's it.
- 06 21 53 53 CDR Okay. Why don't you give me a hack at how much fuel I have left?
- 06 21 53 56 CC Okay. You have 68 seconds of burn time left and we are going to take about 25 of those.
- 06 21 54 04 CDR I blocked you out; say again how many seconds left?
- 06 21 54 06 CC You have 68 seconds left and we are going to use 25 of those.
- 06 21 54 13 CDR Okay.
- 06 21 54 19 CC And your deorbit burn is shaping up to be about 12 seconds.
- 06 21 54 24 CDR Okay.
- 06 21 54 47 CC And, Apollo 9, this is Houston. Just for tank management here, we would like to turn the heater off in O₂ tank 1. Leave the heater in tank 2 in AUTO.
- 06 21 55 04 CMP Okay. The heater on O₂ tank 1 is going off at this time, and we leave the heater in O₂ tank 2 in AUTO.
- 06 21 55 13 CC Okay. Very good; thank you.
- 06 21 55 20 CDR What's our resulting orbit going to be when we finish up our 25-second burn here?
- 06 21 55 26 CC Just a second, here. I took a hard copy of this thing a minute ago, but I can't read it. Stand by one here.
- 06 21 55 34 CDR Still going to be about 200 by 95 or so.

(GOSS REF 1)

Tape 106/6
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06 21 55 38 CC Roger. It's going to be 250 by 98.
06 21 55 42 CDR Very good; 250 by 98.
06 21 56 10 CC And, Apollo 9, we'll have you at Honeysuckle in about a minute, if you will bring up your S-band volume at that time.
06 21 56 16 CDR Okay. Very good. We'll come up on S-band.
06 21 56 20 CC Okay.

HONEYSUCKLE (RFV 105)

06 21 58 41 CC And, Apollo 9, Houston. We should have you through Honeysuckle.
06 21 59 28 CC And, Apollo 9, Houston. We've got you locked up on Honeysuckle about 5-1/2 minutes.
06 21 59 34 CMP Roger.
06 21 59 39 CDR Hey, Stu, were you the fellow who told us about the big cake on the Guadalcanal?
06 21 59 44 CC Yes, I mentioned that.
06 21 59 46 CDR Well, ever since you mentioned it, Rusty and Dave haven't stopped talking about it.
06 21 59 51 CC I sure am sorry about that. Maybe we better send a TWX out there and have them make that a 700 pounder.
06 22 00 29 CDR What's the weather forecast for the recovery area at recovery time?
06 22 00 33 CC Jim, I hate to bring that up. I was going to wait until you asked. We got a look at that this morning, and - course it's a long range forecast on how fast this front moves through, but they are calling right at your prime site for fairly heavy winds - Yes, around 30 knots or so, and waves around 6 to 8 feet. Now, that's the first cut right now. We're starting to get - And we'll make sure the weather is good, though. I don't think we'll plunk you down in the middle of a front, there.
06 22 01 12 CDR Okay.

(COSS NET 1)

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- 06 22 01 15 CDR Stu, you keep putting the drama back into it.
- 06 22 01 19 CC Well, you know, you've had too easy a time here. We've got to keep jacking you up a little.
- 06 22 01 26 CDR I've noticed that.
- 06 22 01 37 CC But you know, Jim, it sure is lucky you weren't landing out in there either, yesterday. I don't know how it is this morning, but all day yesterday and last night I guess the waves of - having 10 to 12 foot swells out in that area.
- 06 22 01 52 CDR Yes. When we were flying - When we've been across the Atlantic, there, it looked like it's been pretty rough down there. You could see the white caps from up where we are.
- 06 22 02 01 CC Yes. It's really been kicking up. Somebody was telling me the winds around Bermuda this morning were running 60 knots.
- 06 22 02 10 CDR Oh, great!
- 06 22 02 13 CC Yes, in fact we're not even using Bermuda because the winds are blowing so hard it's hard to get a lock on you.
- 06 22 02 20 LMP It blows those radio waves right out of the way, huh?
- 06 22 02 24 CC Roger.
- 06 22 04 05 CC Hey, Jim, I still got you for about another minute, I think. Instead of having to depend on the forecast, you're the best weather RECON we got, we'll just let you pick out your own area.
- 06 22 04 20 CDR You still there, Stu?
- 06 22 04 21 CC Yes. I'm still here.
- 06 22 04 26 CC We'll see you over Mercury at 11.
- MERCURY (REV 105)
- 06 22 12 07 CC Apollo 9, Houston. I've got you through the Mercury now, and how much time you think you'll have on this rev for some pictures?

(GOSS NET 1)

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- 06 22 12 18 CDR Quite a bit. We're just eating; we're just finishing up eating and we'll be powering up the spacecraft here in a few minutes.
- 06 22 12 27 CC Okay.
- 06 22 12 29 CDR Give us the updates, Stu. If we get them, fine; if we don't, that's too bad.
- 06 22 12 31 CC Okay. Let's just take them in order here, then. The first one we would like you to have would be the Corpus Christi area, and I can give you a time on that. It's 33 plus 33. It's on this rev. We would like to have three shots at 6-second intervals and you should be shooting right on the nadir on this one. I think you go right over it.
- 06 22 13 05 CMP Okay.
- 06 22 13 06 CC Okay. And we would like to have you shoot Galveston, and that will be at 34 plus 05. Like to have three shots, 8-second interval, and you will be shooting 30 degrees north of the nadir.
- 06 22 13 30 CMP Stu, how far north of the nadir was that?
- 06 22 13 34 CC 30 degrees, it says.
- 06 22 13 37 CMP Okay. Thank you.
- 06 22 13 40 CC Okay. I've got a couple more. On this one, the Mississippi Delta. That will be at 35 plus 17. We would like to have three shots, 8-second interval, and you will be shooting 30 degrees south of the nadir.
- 06 22 14 07 CC And another one will be Mobile, Alabama, at 35 plus 43. Like you to take three shots, 8-second interval, shooting 20 degrees north. And the last one I have for you now will be on this rev on - coming across Africa, starting at 52 plus 00. Like to have you use the 16mm, 75mm lens, shoot it at six frames a second, using CEX 368. We would just like to have you take a strip all the way across the continent.
- 06 22 15 06 CDR Okay. We will just take a strip across the continent.
- 06 22 15 10 CC Roger. And one other thing. I would like to have some 16mm settings with the 16mm camera, 75mm lens,

(GOSS NET 1)

Tape 106/9
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same film as above - and this is just any day-light pass where you can see the sun glinting off the ocean. If you can find this, we would like to have about 5 minutes of film on that at six frames a second.

06 22 15 43 CMP Okay.
06 22 15 46 CC And that will do it for now. We are about to lose Mercury. We will see you over Redstone about 23.
06 22 15 54 CDR Okay.

REDSTONE (REV 105)

06 22 24 10 CC Apollo 9, Houston through the Redstone. We should have you for about the next 30 minutes here coming across.
06 22 24 17 CMP Okay.
06 22 29 29 CC Hey, Rusty, you busy? I got a little news.
06 22 29 30 LMP Go ahead, Stu.
06 22 29 32 CC Roger. Elin won first place in the science fair.
06 22 29 40 LMP Fantastic. That kid's going to get a big head. That's two years in a row.
06 22 29 44 CC Yes; that's what I understand.
06 22 29 48 LMP That's good. Tell her she's a good girl, for me, Stu.
06 22 29 51 CC Okay. Sure will.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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REDSTONE (REV 105)

- 06 22 31 37 CC And, Apollo 9, this is Houston. If you have got time as you come across us, you might give us the weather report - how it looks from weather RECON there.
- 06 22 31 46 CDR Okay. I'll be your friendly weather man this morning.
- 06 22 31 50 CC All right. We'd appreciate that.
- 06 22 32 10 CDR Houston, this is Apollo 9, now. We are just about to Corpus, and the weather doesn't look very good over in this area. It might be better up around Houston there.
- 06 22 32 21 CC Roger. Copy.
- 06 22 32 29 CC And, Apollo 9, this is Houston. Those pictures at Corpus and Galveston we would like regardless of the weather. They are also interested in the weather in those pictures.
- 06 22 32 40 CMP Okay. We'll hurry then.
- 06 22 33 45 CDR Okay, Houston. This is Apollo 9, now. We're coming across - We're in the vicinity of Corpus Christi now. The cloud deck is breaking up. I can look out into Texas which is north of our track here. We're right along the Gulf Coast. It's all pretty clear out there.
- 06 22 34 00 CC Okay. How does it look down to the south, Jim? Is there a storm down there moving up on us?
- 06 22 34 04 CDR No, I didn't see. It just looked like a lot of high clouds.
- 06 22 34 07 CC Okay.
- 06 22 37 25 CC Yes. You call them.
- 06 22 37 26 CDR Houston?
- 06 22 37 32 CC Go ahead. Apollo 9, Houston.
- 06 22 37 33 CDR Roger. We're running across the East Coast now; you can look down into Florida. All of Florida is almost clear except just the tip end. There's a lot of snow along the East Coast. They must have had some pretty good snow storms up there recently, and it comes way down here to the south.

(0000 NET 1)

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06 22 37 46

CC

Roger. Copy.

06 22 37 48

CDR

... now, and there's a definite break in the clouds right along the coast. Then as you get out into the Atlantic there's a lot of clouds, but they don't look to be very fierce, just a lot of low-to-middle clouds, it looks like. I don't see any big thunderstorms or anything that looks like major weather sticking out.

MILA (REV 106)

06 22 38 08

CC

Okay. Copy. You know, the weather map of yesterday shows a pretty good front laying right out in the Atlantic there, and it was really kicking it up. Also, one way up to the north - I don't know how far up you can see, but there's a disturbance way up to the north that's causing some swells coming down as far south as off Florida, there.

06 22 38 29

CDR

Okay. Well, I can see that. Way up to the north it looks like there is some pretty significant weather.

06 22 38 34

CC

Yes. That beauty is kicking off swells, and they are affecting all the way down in through - underneath your track down in there.

06 22 38 41

CDR

I'll be darned. Let's see if we can see the white caps on the water down here today.

06 22 38 47

CC

Okay.

06 22 39 12

CC

And, Jim, just to elaborate a little more on that weather briefing that we got on the recovery this morning - We are going to wait until tomorrow to see - get a better hack. You know, at this stage of the game, that was just the first prediction on that movement of the front.

06 22 39 28

CDR

Okay. And looking down here, I can see white caps on the ocean.

06 22 39 32

CC

Okay. You can? Is that affirmative?

06 22 39 32

CDR

Affirmative. Yes, I can see white caps on the ocean.

06 22 39 39

CC

Okay. And we'll give you a hack here when you're over the prime landing spot.

06 22 39 45 COR Yes. It really looks rough and windy down there, although there aren't many clouds - aren't too many clouds; it's about five- or six-tenths coverage.

06 22 39 56 CDR Stu, how about getting those things moved out, okay?

06 22 40 00 CC Okay. In work.

06 22 40 02 CDR Thank you.

06 22 40 04 CDR As a matter of fact, Houston, there's really a bow that we get out over the ocean here, you can see the water pattern more. Up to the north of us must be the center of a great big thick low, and there's probably a front hanging down out of it, swirling off to the southwest and then around to the southeast. You can see the cloud pattern follows that cyclonic pattern all the way down here to where we are; must be, oh, I guess it's a thousand miles across this thing.

06 22 40 33 CC That's really a vivid description, Jim. It just matches the weather map here perfectly.

06 22 41 08 CC And, Apollo 9, the Vanguard is having 18-foot swells. We might have a little trouble with the COMM across there. If so, we'll pick you up at Canaries; we'll have Canaries ACQ around 49.

VANGUARD (REV 106)

06 22 43 35 CC Apollo 9, Houston. Do you read?

06 22 43 38 CDR Roger. We do; go ahead.

06 22 43 39 CC Roger. You have a GO for 122 dash 1, and you'll be coming over the Vanguard here. We're talking through the Vanguard now, and they are having 18-foot swells down there.

06 22 43 53 CDR Oh, boy! You're making me seasick way up here, Stu.

06 22 43 56 CC Roger.

06 22 44 17 CC I'm sure glad we advanced to where the CAP COMM stays in Houston.

06 22 44 23 CDR Yes, I'd hate to have you getting sick on us.

06 22 44 26 CC There you go.

(GSS NET 1)

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06 22 44 32 LMP They didn't give you the period of those swells, did they, Stu?

06 22 44 36 CC No, they sure didn't, Rusty. I bet we can find out, though.

CANARY (REV 106)

06 22 45 00 CC And, Rusty, Houston here. The period on the swells is about 12 seconds.

06 22 45 08 LMP Okay. That's lovely; a lot of energy in those.

06 22 45 12 CC Roger.

06 22 50 57 CC And, Apollo 9, Houston. I've got about six steps on this PUGS operation for this burn; and any time that you've got something to write on and want me to cover them, I'll be glad to.

06 22 51 13 CMP Stand by just a second, Stu.

06 22 51 15 CC Roger. No sweat; we've got all kinds of time.

06 22 54 40 CC Apollo 9, Houston. Thirty seconds LOS Canaries; see you at Tananarive 03.

06 22 54 46 CDR Okay, Stu. And the weather is real nice across Africa. We're getting a 16mm strip.

06 22 54 51 CC Real fine, Jim. Thank you.

TANANARIVE (REV 106)

06 23 08 15 CC Apollo 9, Houston through Tananarive. Standing by.

06 23 09 19 CC Apollo 9, Houston through Tananarive. Standing by.

06 23 09 39 CT CAP COMM uplinking properly.

06 23 10 32 CMP ... Apollo 9. How do you read now?

06 23 10 35 CC Apollo 9, Houston. How do you read?

06 23 10 39 LMP We're reading you. Why don't you go ahead - ... but why don't you go ahead and try that procedure on the PUGS?

06 23 10 47 CC Okay, Rusty. I'm reading you now. Step 1: SPS gaging to AC-1. Step 2: SPS heater/gaging MAIN A, MAIN B, CLOSED. PUGS mode, PRIMARY. Now go to test 2 until oxidizer reads 10.8 percent. Record the fuel readings before ignition. Do not switch PUGS mode during the burn. We would like to emphasize that we do feel you will get at least one caution and warning - maybe more.

06 23 11 47 LMP Okay. Just before I do the test 2 - I missed that step.

06 23 11 51 CC Okay. You go test 2 until oxidizer reads 10.8 percent.

06 23 12 00 LMP I know; just before that you want me in PUGS mode PRIMARY?

06 23 12 04 CC That's affirmative. The third step is PUGS mode PRIMARY.

06 23 12 16 LMP MAIN A, MAIN B, CLOSED.

06 23 12 36 CC Okay, Apollo 9. If you read, we are not getting you. I believe you were attempting a readback. We'll be here for about 2-1/2 minutes, if you want to try again in about 30 seconds. If not, we'll see you at Carnarvon at 25 and confirm it then.

06 23 12 55 CC And just to clarify one other point: we do feel you will get this caution and warning when the PUGS comes in about 5 seconds after ignition.

06 23 14 43 CC Apollo 9, Houston. Thirty seconds LOS Tananarive; Carnarvon 25.

CARNARVON (REV 106)

06 23 24 40 CC Apollo 9, this is Houston through Carnarvon.

06 23 24 44 CMP Go. Houston, Apollo 9.

06 23 24 46 CC Okay. And situation normal; I couldn't read you very well over Tananarive. I just wanted to verify that Rusty got those steps.

06 23 24 55 LMP Okay. You ready to copy, Stu?

06 23 24 57 CC Roger. Go ahead.

- 06 23 25 00 LMP Okay. Let me read you back what I've got. That was SPS gaging to AC-1. The MAIN A and B breakers CLOSED on the gaging and heaters, and PUGS mode to PRIMARY. 100 in number - test 2 until the oxidizer reads 10.8 and record the fuel. Expect the caution and warning during the burn. And the fuel after scoring with 15.4, 1-5-4, and the oxidizer balance is FULL SCALE DECREASE.
- 06 23 25 36 CC Roger. Very good, Rusty. We copy, and would like to make two other notes. Do not switch the mode during the burn; go ahead and let it stay in PRIMARY. And we want to emphasize that we do feel that you will get caution - at least a caution and warning about 5 seconds after ignition. When this comes in - and you may get more than one.
- 06 23 26 01 LMP Roger. The way it behaved the other day, Stu, I'm not sure how clear that got across, but the oxidizer unbalanced during the burn with extremely unstable - it would jump all over and give repeated caution and warning, and unless something changed, I'd expect the same behavior.
- 06 23 26 18 CC Okay, Apollo 9. Just to make it clear again: I have seen all of that on the data, and we do feel we do know the answers to it. And we do want to do it on this test to see if what we are going to get - for two things. One on an ullage start which we have not seen on this system, and the other one is attempt to really nail down these biases that we are seeing in the oxidizer storage tanks.
- 06 23 26 49 CDR Houston, this is Apollo 9. We're all for the test. We're just commenting on it.
- 06 23 26 53 CC Okay. Real good. And, yes - those series that you got the other day - those seven - Every one has been nailed down except one on that caution and warning.
- 06 23 27 08 CDR Roger.
- 06 23 27 10 LMP What did you nail them to, Stu?
- 06 23 27 12 CC Well, four of them - One of them was an O_2 high flow that came in - I don't mean O_2 , I mean H_2 tank pressure - came in right at that time, and four of them - -

③ 06 23 27 31 CTP Houston, this is Apollo 9 here. We're flying over Australia now, I guess, and we can see a number of cities down there all lighted up. Which one are we over right now? It's a great big one with all kinds of lights.

06 23 27 36 CC Okay. That should be Perth, Apollo 9.

06 23 27 40 LMP Okay. Hello all you people down there in Perth. Apollo 9 sends you greetings.

06 23 28 26 CC And, Apollo 9, Houston.

06 23 28 29 CDR Go ahead.

06 23 28 30 CC Okay. Just got a comment. Rusty asked about that - those warnings. What it was - We had a small residual in that oxidizer storage tank, and it appeared to be wetting the capacitance probe and getting real erratic readings on it.

06 23 28 50 LMP Oh, okay.

06 23 28 51 CC That was after it was empty. That was on your SPS-3, and we think we got at least five of the caution warnings from that.

06 23 29 06 CDR Okay.

06 23 29 07 CDR And the other problem that we think we have is the capillary action of the fuel, and that it's giving an erroneous reading at the start. That's why we are interested in getting an ullage start on it, to see if that will help solve that problem.

06 23 29 25 CDR Okay.

06 23 29 54 CC And, Apollo 9, about 30 seconds LOS Carnarvon. We'll have Honeysuckle in about a minute and a half with your S-band volume up, please.

06 23 30 02 CDR Okay.

HONEYSUCKLE (REV 106)

06 23 33 14 CC Good morning, Apollo 9, through Honeysuckle.

06 23 33 19 CDR Good morning. Who is this speaking to us?

06 23 33 22 CC Ron's back on in the daytime. Would you believe it?

06 23 33 25 CDR No, I don't believe it.

06 23 33 27 CDR Hello, Ron back on in the daytime. How are you?

06 23 33 30 CC Good shape; good shape.

06 23 33 32 LMP How was your steak?

06 23 33 34 CC Really delicious.

06 23 33 37 CDR Hey, listen. I've had guys play dirty tricks on me before, but nothing like that one last night. It really got me.

06 23 33 43 CC I figured that would really get to you.

06 23 33 45 CDR It really did.

06 23 33 48 LMP Jim was so disturbed he only got 8-1/2 hours of sleep last night.

06 23 33 58 CMP Hey, Ron. We've got some gyro torqueing angles if you didn't get them there on that P52.

06 23 34 02 CC Roger. Go.

06 23 34 04 CMP Okay. GET of 167 33 30, minus 01322, plus 01073, minus 00655.

06 23 34 22 CC Roger. 9, Houston. We copy.

06 23 34 25 CMP And that was P52 to a nominal T-align of 170 - 170 48 00.

06 23 34 38 CC Roger.

06 23 34 45 CC Hey, Dave. This is Stu again.

06 23 34 49 CMP Go ahead. Say again, please.

06 23 34 51 CC Okay, Apollo 9. Just to comment on this alignment now: you will be doing a preferred burn, so we'll want that - another T-align on after the burn before the S065 pass.

06 23 35 06 CMP Roger. We'll do that. We just wanted to get the preferred - a final line-up here so we'd be in plane and all squared away.

06 23 35 14 CC Okay. I understood that. I just wanted to make that other note.

(GOSS NET 1)

Tape 107/9
Page 649

05 23 35 17 CMP That's a good note.

HUNTSVILLE (REV 106)

06 23 40 50 CC Apollo 9, Houston through Huntsville.
06 23 41 41 CC Apollo 9, Houston.
06 23 42 27 CC Apollo 9, Houston through Huntsville. We have
an HF circuit here, and we're not going to -
You are not coming back.

HAWAII (REV 106)

06 23 52 10 CC Apollo 9, Houston through Hawaii.
06 23 52 15 CMP Roger. Houston, Apollo 9. Go.
06 23 52 17 CC Roger. I have three Hasselblad targets of
opportunity this rev, if you think you can get
them while you are getting ready for the burn.
06 23 52 25 CMP Okay. Stand by.
06 23 52 45 LMP Okay. Go ahead.
06 23 52 47 CC Roger. First one: Dallas-Fort Worth; geography;
168 07 01; three frames; 6 seconds. It's south
15 degrees.
06 23 53 11 LMP Okay.
06 23 53 13 CC The Intertropical Convergence Zone; the weather,
168 25 delay that - 168 28 41; three frames;
18 seconds. It's south 40 degrees.
06 23 53 40 LMP Okay.
06 23 53 42 CC The Gulf of Guinea; oceanography, 168 30 37;
five frames; 60 seconds; and it's north 50 degrees.
Over.
06 23 54 08 LMP Roger. Understand. 168 07 01; Dallas-Fort Worth,
geography; three frames; 6-second intervals;
south 15 degrees. 168 28 41; Intertropical Zone;
weather; three frames; 18 seconds; south; and I
believe you said 40 degrees. Is that correct?

(9020 NET 1)

Tape 107/10
Page 650

- 06 23 54 28 CC Affirmative. South 40 degrees.
- 06 23 54 31 LMP Okay. Then 168 38 37, Gulf of Guinea, oceanography, five frames, and I didn't get the interval on that.
- 06 23 54 39 CC Roger. Sixty-second interval.
- 06 23 54 42 LMP Roger. Sixty seconds, and north, and I didn't get the degrees on that.
- 06 23 54 46 CC North 50 degrees.
- 06 23 54 50 LMP Okay. North 50 degrees.
- 06 23 55 53 CC We're about LOS. I'll have your maneuver PAD in about 2 minutes.
- 06 23 56 27 CC Apollo 9, Houston.
- 06 23 56 30 CDR Go ahead. Houston, Apollo 9.
- 06 23 56 32 CC Roger. We noticed a CTE RESET about 15 minutes ago, and we wondered if you noticed any other glitches or anything.
- 06 23 56 45 CDR Stand by one.
- 06 23 57 00 LMP Houston, there is nothing that we can think of that we saw abnormal.
- 06 23 57 05 CC Roger. And I have your maneuver PAD.
- 06 23 57 30 LMP Okay. I'll get the book.
- 06 23 57 33 CC Roger.
- 06 23 57 50 CDR Okay. Go ahead.
- 06 23 57 52 CC Roger. Purpose SPS-7: 169 38 59 30, plus 02270, minus 05900, plus 01650 06533 06366 0250 26772, minus 090, minus 11022 31830 28400, minus 1510, plus 14563 1137. Over.
- 06 23 59 27 CMP Roger. SPS-7: 169 38 59 30, plus 02270, minus 05900, plus 01650 06533 06366 0250 26772, minus 090, minus 11022 31830 28400, minus 1510, plus 14563 1137.
- 07 00 00 21 CC Apollo 9, Houston. You read back correct.
- 07 00 00 25 CMP Roger.

(GOSS NET 1)

Tape 107/11
Page 651

- 07 00 00 33 CC 9, Houston. While we have you, we'd like to get some more information on the cabin fan.
- 07 00 00 40 CDR Okay, Houston. We haven't run the cabin fans very much. As a matter of fact, yesterday is the only day we ran them. They seemed to make the temperature go up, so when we were shifting the fans around at the end of the day is when we discovered that cabin fan number 1 didn't run and heated up like it did.
- 07 00 00 58 CC Roger. Understand the cabin fan had been on most of the day yesterday, then heated up.
- 07 00 01 05 CDR Negative; negative. We were moving the other cabin fan, and we decided to shift fans. When we decided to shift fans, we put on fan number 1, and when we did that, we noticed that there wasn't any sound or wind coming out of the cabin fan area. So we switched back to number 2. I happened to stick my hand in that area to clean out some junk, and I felt that fan housing on fan number 1. It was very hot, so we pulled the circuit breaker on it.
- 07 00 01 39 CC Okay. Now we copy correct. Roger. Thank you.
- 07 00 01 43 CDR Roger.
- 07 00 01 48 CC And, Apollo 9, Houston. Request POO in ACCEPT. We'll send you your state vector and target load.
- 07 00 01 53 CMP Roger. POO in ACCEPT.

END OF TAPE

APOLLO 9 AT GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 108/1
Page 652

VANGUARD (REV 106)

07 00 03 10 CC Apollo 9, Houston. I can give you some pointing data here to take a look at your prime recovery area, if you want.

07 00 03 24 CDR Okay; fine. Go ahead.

07 00 03 26 CC Okay. At 168, plus 13, plus 00, with a roll 015, pitch 235, yaw 025, range will be 224 miles, and you'll be pointing right at your prime recovery area.

07 00 03 45 CDR Alrighty. Thank you.

07 00 04 50 CC Apollo 9, Houston. You have state vectors both slots and the target load. Computer is yours.

07 00 04 56 CMP Roger. Thank you.

07 00 05 17 CC And 9, Houston. We've also checked your vector, and it's good.

07 00 05 21 CDR Very good. Thank you.

07 00 20 15 CC Apollo 9, Houston. About one minute LOS Vanguard; Tananarive at 42.

07 00 20 23 LMP Alrighty, Houston. Tananarive at 42.

TANANARIVE (REV 107)

07 00 43 59 CC Apollo 9, Houston. Standing by, Tananarive.

07 00 45 41 CC Apollo 9, Houston. Standing by, Tananarive.

07 00 45 46 CDR Roger, Houston. Apollo 9 here. Reading you loud and clear.

07 00 45 49 CC Roger. Same here.

CARNARVON (REV 107)

07 00 57 30 CC Apollo 9, Houston.

07 00 57 32 CDR Go ahead, Houston. Apollo 9.

(COSS NFT 1)

Tape 108/2
Page 653

07 00 57 34 CC Roger. In preparation for a possible fuel cell 2 H₂ purge, request H₂ purge line heater on.

07 00 57 46 CDR Roger. They're on.

07 00 57 51 CC Roger.

07 01 04 07 CC Apollo 9, Houston.

07 01 04 11 CMP Go ahead, Houston.

07 01 04 12 CC Roger. Request an H₂ purge on fuel cell 2 for 5 minutes, at 169 plus 17, and this is to bring the exhaust temperature down.

07 01 04 31 CMP Roger. Fuel cell purge for 5 minutes at 169 17.

07 01 04 36 CC Affirmative, and this is so we won't get a MASTER ALARM due to the high exhaust during the burn.

HAWAII (REV 107)

07 01 22 22 CC Apollo 9, Houston through Hawaii. I can give you a time hack at 16 minutes.

07 01 22 28 CMP Roger, Houston. Apollo 9, standing by.

07 01 22 59 CC 4, 3, 2, 1.

07 01 23 00 CC MARK.

07 01 23 03 CC Sixteen minutes.

07 01 23 06 CDR Okay. We're right with you.

07 01 30 55 CC Apollo 9, Houston.

07 01 30 57 CDR Go ahead, Houston. Apollo 9.

07 01 31 00 CC Roger. You're looking great down here. You have a GO for SPS number 7.

07 01 31 05 CDR Roger. Understand. A GO for SPS number 7.

07 01 31 08 CC Affirmative.

END OF TAPE

APOLLO 9 AIR-TO-GROUND TRANSCRIPTION

(GOSS NET 1)

Tape 109/1
Page 654

MILA (REV 108)

07 01 37 23 CC Apollo 9, Houston. You're still looking good.
Standing by.

07 01 37 27 CDR Roger. Houston, Apollo 9.

07 01 39 46 CMP Houston, Apollo 9. Have you got the residuals off
the DSKY?

07 01 39 49 CC Apollo 9, Houston. I have the residuals.

07 01 39 51 CMP Roger. We're at the attitude, and the EMS DELTA-V
counter is minus 17.5.

07 01 39 57 CC Minus 17.5

07 01 40 35 CC 9, Houston. We have your orbit 253.1 by 97.9.

07 01 40 39 CMP Roger. It's pretty smooth, too.

07 01 40 42 CC Good.

07 01 40 48 CMP Like an arrow in the sky.

07 01 40 51 CC Beautiful.

07 01 40 53 LMP You know, after all these days up here in zero g
we're not accustomed to these high g's like 0.8 g's.

07 01 40 59 CC (Laughter)

07 01 41 32 CDR Houston, where are we right now?

07 01 41 42 CC Roger. You're over Mila now.

07 01 41 45 CDR Okay.

07 01 44 26 CC 9, Houston. Everything looks real good down here.
Looks like we will have you here for about 8 more
minutes.

07 01 44 29 LMP Okay. Very good.

ANTIGUA (REV 108)

07 01 48 14 CDR Houston, Apollo 9.

07 01 48 16 CC Houston. Go.

07 01 48 17 CDR Listen. I never was able to get the spacecraft over in the right attitude to look at the weather as we went by before, so I'm afraid I can't tell you what the weather is. Besides which, I didn't want to terrify myself for seeing how bad it really was.

07 01 48 30 CC Roger. That's all right. It's going to get better, anyhow.

07 01 48 36 CDR Okay.

07 01 48 40 CMP Now that we have performed our day's work, we are back eating again.

07 01 48 44 CC Okay. Good.

07 01 49 23 CC 9, Houston.

07 01 49 25 CMP Go.

07 01 49 26 CC Hey, while you are eating your lunch there, I might read to you what the astrologers say about your day. This is for both Jim and Dave. You must learn to listen well. Don't get into any disagreements today and group activity is preferable tonight.

07 01 49 48 CDR Well, we'll try - (laughter) - We'll try, Ron.

07 01 49 51 CC Okay.

07 01 49 54 CDR Hey, is three considered a group?

07 01 49 56 CC Stand by. This is Rusty's. Be selective in choosing your friends. Get any new scheme moving promptly.

07 01 50 06 IMP I got a new scheme moving promptly this morning.

07 01 50 07 CC Okay.

07 01 50 17 CDR I think he may have a little trouble choosing his friends for a couple of days.

07 01 50 20 CC That's right.

07 01 50 28 IMP Hey, did they have any more good basketball games last night?

07 01 50 34 CC Roger.

(XXX NET 1)

Tape 109/3
Page 656

1 07 01 50 54 IMP How far along are they in the playoffs for the basketball championships?

07 01 51 01 CC Roger. Copy. Just a second.

07 01 51 12 CC 9, Houston. Request a readout of the PUGS gages and the imbalance meter.

07 01 51 19 IMP Okay. Oxidizer is 9.2, and the fuel is 5.0, and the unbalance is FULL SCALE HIGH - That is FULL SCALE on the increase.

07 01 51 27 CC Roger. Was the fuel 9.0?

07 01 51 31 IMP 9. - I'm sorry. Fuel was 5.0, oxidizer 9.2.

07 01 51 38 CC Roger. Fuel 5.0.

07 01 51 39 IMP That's affirmative.

07 01 52 10 CDR Hey, Mr. Evans. I have a little bit of news for you.

07 01 52 13 CC Roger. Go.

07 01 52 15 CDR Do you realize that that was the 17th propulsive maneuver that we have performed on this flight - not counting the S-IC, the S-II, the three S-IVB's, and the APS burn to depletion.

07 01 52 30 CC That's right, by golly.

07 01 52 34 CDR See. Don't we have a lot of useless data up here?

07 01 52 35 CC (Laughter)

07 01 52 45 CC Antigua at - Ascension at 58.

07 01 52 50 CDR Okay.

ASCENSION (REV 109)

07 02 00 25 CC Apollo 9, Houston through Ascension.

07 02 00 28 IMP Roger. You're five-square, Houston.

07 02 00 30 CC Roger. Isolated and clear. That Miami and Notre Dame game was one of the playoff games. The playoffs are on now. We'll get some more scores for you when we get some.

(GOSS NET 1)

Tape 109/4
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③ 07 02 00 42 IMP Okay. Very good.
07 02 00 46 CDR The USC/UCLA game wasn't a playoff game, was it?
07 02 00 58 CC Negative. That was a conference game.
07 02 01 01 IMP Okay.
07 02 01 04 IMP Did the University of Houston get in the playoffs?
07 02 01 11 CC I'm not sure. San Jacinto State beat Tyler here in the first game of the Texas playoffs for the national championship.
07 02 01 20 IMP Oh.
07 02 02 23 CC Apollo 9, Houston. We'd like to verify the H₂ purge-line heater is off.
07 02 02 29 IMP That's verified, Houston.
07 02 02 31 CC Roger. Thank you.
07 02 03 29 CMP Houston, 9.
07 02 03 31 CC Houston. Go.
07 02 03 33 CMP Roger. What's our inclination following that burn, please?
07 02 03 38 CC Roger. Stand by one.
07 02 03 49 CC 9, Houston. Your inclination is 33.54 degrees.
07 02 03 57 CMP Okay. Understand 33.54. Thank you.
07 02 07 02 CC Apollo 9, Houston. One minute LOS. Tananarive at 15.
07 02 07 08 CMP Roger. Tananarive 15.

CARNARVON (REV 109)

07 02 30 27 CC Apollo 9, Houston through Carnarvon.
07 02 30 31 IMP Roger, Houston. Read you five-square.
07 02 30 33 CC Roger. I have an S065 update.

(COSS NET 1)

Tape 109/5
Page 658

- 07 02 30 38 LMP Okay. Go ahead. We're ready to copy.
- 07 02 30 40 CC Roger. Inertial angles 180 00, 181 20 all zips. GET is 171 24 00. Your T-align was 170 48 00. It's orb rate, and the rate is 0.066 degrees per second. Your orb rate fall angles, 180 327.5 and 0. The site is the Amazon River mouth 171 29 26 20 and 03.
- 07 02 32 05 LMP Okay. Is that 21, Ron?
- 07 02 32 08 CC Roger. I have some more brief data for you. Just the one on this one here.
- 07 02 32 14 LMP Okay. Go ahead with your orb rate data.
- 07 02 32 16 CC Roger. Victor through Zulu: 00002, 14 175 00000 11 546 54 621. Over.
- 07 02 32 51 LMP Okay. Understand. 180 00, 181 20, all zips. 171 24800 170 48 00; orb rate 0.066 degrees per second. Local vertical angles 180, 327.50, Amazon River mouth 171 29 26 20 03, and Victor through Zulu: 00002 14175, all zips, 11546 and 54621.
- 07 02 33 30 CC Apollo 9, Houston. Your readback is correct, and I've got some sequence camera stuff for you.
- 07 02 33 38 LMP Okay. Stand by one.
- 07 02 33 51 CDR Go ahead.
- 07 02 33 52 CC Okay. It's a high oblique to the north sweeping across the United States.
- 07 02 34 04 CC Sequence camera, 75 mm lens, six frames per second, and you'll be using CEX 368 film. You'll start at GET 171 plus 11 plus 38 to 171 plus 19 plus 16. Over.
- 07 02 34 48 CDR Roger. High oblique to the north sweeping across the U.S., sequence camera, 75mm lens, six frames per second, CEX 368, beginning 171 11 38 to 171 19 16. We may have a little problem there because to point way out to the north there we are going to get in gimbal lock - we'll - If we point out 45 degrees or so, we'll be able to hack it for you.
- 07 02 35 17 CC Roger. That'll be mighty fine.
- 07 02 35 22 CDR All right.

GUAM (REV 109)

07 02 48 49 CC Apollo 9, Houston through Guam.

07 02 48 52 LMP Roger. Go ahead, Houston.

07 02 48 54 CC Roger. I have your libration points if you feel so inclined.

07 02 49 05 LMP Yes. The ones that I wanted - by the way, Ron - were the ones for the moon - earth/moon libration point.

07 02 49 12 CC That's affirmative. That's what we gave you.

07 02 49 16 LMP Okay. Good.

07 02 49 18 LMP Go ahead.

07 02 49 20 CC Okay. Number 1 - and this is all at 172 hours - number 1, right ascension 12 hours 46 minutes, declination minus 6 degrees 33 minutes; number 2 is at 20 hours 46 minutes, declination minus 22 degrees 15 minutes.

07 02 49 58 LMP Okay. Number 1 at 12 hours 46 minutes, minus 6 degrees and 13 minutes; number 2, 20 hours 46 minutes, declination minus 22 degrees and 15 minutes, and those are good for 172 hours.

07 02 50 13 CC Roger. And number 1 turns out to be up around by Spica; number 2 is down in the Cadillac V.

07 02 50 23 LMP Okay. Thank you.

07 02 50 47 CC 9, Houston. We will have you at Hawaii at 58.

07 02 50 53 CMP Roger.

07 02 50 54 CC And be advised that you have burned 10 515 feet per second DELTA-V in the LM and CSM.

07 02 51 06 LMP Roger.

07 02 51 08 CDR Roger.

07 02 51 10 LMP Hey, do we get a -

07 02 51 11 CC Say again.

(COSS NET 1)

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Page 660

07 02 51 16 LMP Do we get a pin for the 10 000 club?
07 02 51 18 CC Hey, that's right. How about that?

HAWAII (REV 109)

07 03 00 07 CC Apollo 9, Houston through Hawaii. And it looks like we'll have you all the way through Antigua until about 28.
07 03 00 17 CDR My goodness - what a long pass.
07 03 00 20 LMP Roger, Houston. Understand. Hey, we have got another little thing you can work on - for those libration points. I wonder if you could give us the one-half unit vectors for those, and we could use AUTO optics.
07 03 00 31 CC Roger. One-half unit vectors. We'll see if we can't work them out for you.
07 03 00 35 LMP Okay. Thank you.
07 03 04 25 CDR Houston, Apollo 9.
07 03 04 31 CC Apollo 9, Houston. Go.
07 03 04 34 CDR Roger. We need a little more detail on this string of 75-millimeter - 16-millimeter movies we are going to take here. How far out - How far below the horizon do you want the picture taken, or how far out from the track do you want it taken? We need some angle to point the camera.
07 03 04 52 CC Okay. Understand.
07 04 05 27 CC Apollo 9, Houston.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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HAWAII (REV 108)

-- -- -- -- CC Apollo 9, Houston.
 -- -- -- -- CC Apollo 9, Houston.
 07 03 07 51 CC Apollo 9, Houston.
 07 03 08 40 CMP Houston, 9.
 07 03 08 42 CC Roger. Read you loud and clear now, 9. On this pointing angle you want about 45 to 60 degrees above the nadir.
 07 03 08 55 CDR Forty-five to 60 degrees above the nadir.
 07 03 08 58 CC Affirmative.
 07 03 09 01 CDR Okay. Thank you.
 07 03 14 07 CMP Houston, this is Apollo 9.
 07 03 14 10 CC Apollo 9, Houston. Go.
 07 03 14 12 CMP Roger. We are getting an awful lot of pictures of clouds here. Do you want to use the film on clouds?
 07 03 14 20 CC Roger. We copy. I'm getting a reading from the back room there.
 07 03 14 24 CMP Okay.
 07 03 14 28 CC Keep clicking away.
 07 03 14 31 CMP Okay. Will do.

MILA (REV 109)

07 03 19 10 LMP Houston, Apollo 9.
 07 03 19 12 CC Houston. Go.
 07 03 19 13 LMP Roger. It's just about time for us to stop this thing now. We're coming across the southern tip of Florida, the Keys, and the southern tip of Cuba. I think we'll let it keep running here. And it looks like we are finally getting out of the clouds.

(COSS NET 1)

Tape 110/2
Page 662

07 03 19 27 CC Hey, mighty fine. Continue.

07 03 19 30 LMP Okay.

07 03 19 38 CC You might be advised that this is one of the rare times that the mouth of the Amazon is supposed to be without clouds down there, so that is why we are trying to get that one this time.

07 03 19 46 CDR Great. Okay. You want some Hasselblad 70-millimeter standard stuff, too?

07 03 19 53 CC Okay. You can throw some of them in there if you can get it while you are getting the S065.

07 03 19 57 LMP Oh, man, we're versatile. We can take pictures out of four or five windows at the same time.

07 03 20 01 CC Beautiful.

07 03 20 03 CMP You wouldn't believe the amount of gear we have got in here.

07 03 22 11 CC Apollo 9, Houston.

07 03 22 14 LMP Go, Houston. Apollo 9.

07 03 22 16 CC Roger. I wonder if you could tell us if the FDAO is in 1/2, and if ball 1 is in orb rate at this time.

07 03 22 27 LMP The FDAO is in 1/2 and ball 1 is not in orb rate; it's inertial. And ball 2 is in orb rate.

07 03 22 34 CC Roger. Thank you.

ANTIGUA (REV 109)

07 03 23 33 CDR Houston, 9.

07 03 23 36 CC Houston, go.

07 03 23 37 CDR Roger. We just let the 16mm run all the way down. Just by coincidence it went - it's gone right down the chain of islands and just went right through the middle of the tongue of the ocean back there aways.

07 03 23 48 CC Roger. We copy that.

(GOSS NET 1)

Tape 110/3
Page 663

07 03 24 01 CMP This is the Apollo 9 travel logue.
07 03 24 06 CC Right.
07 03 25 13 CC Apollo 9, Houston. I have those half - unit
 vectors there if you have somebody that can
 copy them.
07 03 25 20 CMP I guess we're all taking pictures. Can you
 stand by?
07 03 25 22 CC Sure. We'll catch you at Ascension.
07 03 25 27 CMP Okay.

ASCENSION (REV 10)

07 03 36 17 CC Apollo 9, Houston through Ascension.
07 03 36 22 CMP Roger, Houston. Go.
07 03 36 23 CC Roger. Do you want those unit vector things?
07 03 36 28 CMP Go ahead.
07 03 36 30 CC Roger. I_x over 2, minus 0.48708; Y minus 0.09910;
 Z minus 0.05414. That was for the number 1 point.
The number 2 point: I_x plus 0.30664; Y minus
0.34659; Z minus 0.18932. Over.
07 03 37 39 CMP Roger. Minus 0.48708, minus 0.09910, minus 0.05414,
plus 0.30664, minus 0.34659, minus 0.18932.
07 03 37 59 CC Apollo 9, Houston. Your readback correct.
07 03 38 03 CMP Houston, I'm afraid it looked like the Amazon was
cloudy again today, but we took the pictures any-
way.
07 03 38 10 CC Okay.
07 03 38 13 CMP And it also looked like we were slightly off the
coast and not directly over the Amazon - or the
mouth of the Amazon.
07 03 38 23 CC Okay. Understand. It's really where we wanted
it to be, so --
07 03 38 32 CMP Okay. Well, we got some Hasselblad of the mouth,
too.

(GOSS NET 1)

Tape 110/4
Page 654

07 03 38 35 CC Okay. Good.
07 03 42 43 CC Apollo 9, Houston. Tananarive at 51.
07 03 42 47 CMP Roger. Tananarive at 51.

TANANARIVE (REV 109)

07 03 57 21 CC Apollo 9, Houston through Tananarive. Do you read well enough for three targets of opportunity update?
07 03 57 41 LMP Houston, Apollo 9. We read you five-square. Go ahead with the updates.
07 03 57 47 CC Roger. Costa Rica, active volcano: geology, weather; 172 plus 57 plus 00, three frames, 10 seconds apart, on track. Target: west coast, Columbia, weather, 172 plus 59 plus 40, ten frames, 10 seconds apart, on track. Target: Brazil, Rio Madera, geology, weather, 173 plus 05 plus 54, six frames, 10 seconds, on track. Over.
07 03 59 22 LMP Okay. How do you read, Houston?
07 03 59 25 CC Not too well.
07 03 59 29 LMP Okay. You want a readback, or you want to save it?
07 03 59 32 CC We'll save them.
07 03 59 35 SC Okay. We'll talk to you next station.
07 03 59 39 CC Roger. It'll be at Carnarvon at 07.

CARNARVON (REV 109)

07 04 09 04 CC Apollo 9, Houston through Carnarvon.
07 04 09 08 LMP Roger. ... Go ahead.
07 04 09 14 CDR Go ahead. Houston, Apollo 9.
07 04 09 15 CC Roger. I have your S065 update, and then you can give me the targets of opportunity if you want.
07 04 09 24 CMP Roger. Ready to copy.

(GOSS MET 1)

Tape 110/5
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- 07 04 09 27 CC Okay. Inertial angles 180 00 218 30, all zips, 172 46 00 172 19 00. It will be orb rate, your orb rate ball angles are the same as before: 180, 327.5, and 0. The site: Toluca, Mexico, 172 52 08 08 04. And that's the only one.
- 07 04 10 37 LMP Okay. And are Victor through Whiskey, or Victor through Zulu the same as before?
- 07 04 10 44 CC That is affirmative. And we are double checking them and all that and will let you know if there's any difference.
- 07 04 10 50 LMP Okay, then. On the readback, 180 218 30, and all zips, 172 46 00 172 19 00, orb rate; got the local vertical ball; the target is Mexico 172 52 08 08 04.
- 07 04 11 14 CC Roger. Your readback is correct.
- 07 04 11 18 LMP Okay. And I will give you those other ones also.
- 07 04 11 22 CC Okay. Go.
- 07 04 11 28 LMP Okay. I didn't get where the first site was. The time was 172 57 00, three frames, 10 second DELTA-T, active volcano and weather. And must be somewhere in Mexico or around there.
- 07 04 11 43 CC Affirmative. It's in Costa Rica. And about 5 days ago, the lava flow was about 3 miles by a half a mile.
- 07 04 11 59 LMP Okay. See if we can't get that one. Next one was 172 59 40, target was the west coast of Columbia, ten frames at 10 second intervals; 173 03 54, Brazil, geology and weather, six frames and 10 second DELTA-T. And the last two were on track. How about the volcano?
- 07 04 12 23 CC Affirmative. Volcano is on track also.
- 07 04 12 27 LMP Okay. Thank you.
- 07 04 13 34 LMP Houston, Apollo 9.
- 07 04 13 36 CC Apollo 9, Houston. Go.
- 07 04 13 38 LMP Roger. Since that active volcano is right on track there, I wonder if the S065 guys would want a picture of an active in their little cameras?
- 07 04 13 51 LMP We're checking on it to see.

GUAM (REV 109)

07 04 20 23 CC Apollo 9, Houston through Guam.

07 04 20 27 CMP Roger, Houston.

07 04 20 31 CC Roger. Apollo 9, Houston. It's pretty well weathered-in down there, but we want to see what the IR film will do on this S065, so I have the data for that.

07 04 20 48 CC And I'm talking about the volcano.

07 04 20 58 LMP You were cut out on that last one, Sam. Go ahead now.

07 04 21 04 CC Okay. On the volcano - it looks like it's partially - a pretty well cloud cover, but we'd still like an S065 pass on it. I have that data.

07 04 21 16 CDR Okay. Stand by just one.

07 04 21 18 CC Wilco.

07 04 21 25 CDR Okay. Go ahead.

07 04 21 27 CC Roger. The sight is the volcano at E72 57 00 10 and 03. Over.

07 04 21 41 CDR Okay. Volcano 172 57 00 10 03.

07 04 21 49 CC Roger. Copy correct.

07 04 24 33 CMP Houston, 9.

07 04 24 35 CC Houston. Go.

07 04 24 37 LMP Roger. If you've got another map update, we'd appreciate that.

07 04 24 42 CC Roger.

07 04 24 49 CC Here we go - REV 109, at 172 17 35 right ascension 15 45, longitude 123.6 east. Over.

07 04 25 18 LMP Okay. REV 109, 172 17 35, 15 45 right ascension, and 123.6 east.

07 04 25 28 CC 9, Houston. That's correct. And I have some block data we can start reading it up here and continue it through ARIA.

(GOSS NET 1)

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07 04 25 37 CDR Stand by st one.
07 04 25 39 CC Will do.
07 04 25 43 CDR Okay. Ganead.
07 04 25 46 CC Okay. Now all 4 Alfa, plus 265, minus 1600 175
29 41 285 112 3 Bravo, plus 1485 176
53 09 114 113 3 Alfa, plus 1440 178
32 27 374 114 3 Charlie, plus 1410 180
04 48 285 115 Charlie Charlie minus 268, minus
1610 175 49 8196; and we're just out to have
LOS here. We've got a COCO screen through ARIA.
So I'll split.
07 04 28 04 CDR Roger.
07 04 28 35 CC ARIA 2, Houston CAP COMM. Go power VHF up.

ARIA (A 110)

07 04 28 55 CC Apollo Houston through ARIA.
07 04 29 00 SC ...
07 04 29 04 CC Apollo Houston. I don't read very well.
How me?
07 04 29 10 CMP I'm reading you ...
07 04 29 21 CC 9 - Apollo 9, Houston. I don't read at all
for this part of it. How do you read, and
then when I'm not talking, how musicise is in
the background?
07 04 29 43 IMP Okay. Houston. How do you read into 9 now?
07 04 29 47 CC Roger. I'm weak but clearer sometime.
07 04 29 52 IMP Okay. I am coming through Houston by
three, and when you do not transmit there is very
little use. It is some but not appreciable.
07 04 30 05 CC Roger. Copy that. And now, as in 9, turn your
S-band volume up. ARIA 2, remote band up.
07 04 30 29 CC Apollo Houston. How do you S-band?
07 04 30 34 IMP Five-squaw. It's beautiful.
07 04 30 37 CC Okay. It's about four by four miles. Lets
continue. By right down. Let's see more about

04 30 47

Ready to ...

04 30 49

Roger. ~~111 4 Charlie, plus 049, minus 0320 182 21 01; 117 2 Charlie, plus 222, minus 0300 185 37 38; 118 2 Alfa, plus 298, minus 0300 185 37 38; 119 2 Charlie, plus 222, minus 0300 185 37 38.~~ Your pitch trim, minus yaw, plus 0.38; plus 1.41. Over.

04 31 26

Okay. Are you ready for the readback?

04 31 28

Affirmative. Standby - about 3 minutes for readback.

04 31 32

Okay. ~~111 4 Alfa, plus 268, minus 0175 29 41 2684; 112 3 Bravo, plus 332, minus 0176 53 09 3160; 113 3 Alfa, plus 298, minus 0178 32 27 3790; 114 3 Charlie, plus 222, minus 0179 20 04 08 2634; 115 Charlie Charlie, plus 222, minus 1610 182 01 49 8196; 116 Alfa, plus 049, minus 0320 182 21 01 4982; 117 2 Charlie, plus 222, minus 0270 183 59 15 4602. 118 2 Alfa, plus 298, minus 0300 185 37 27 3234. 119 2 Charlie, plus 222, minus 0300 185 37 38; plus 0.38; yaw, minus 1.41. Over~~

04 34 19

Apollo 6, Houston beautiful job, and what kind of a noise do you hear when I'm not transmitting now?

04 34 27

None at all. Just like an air whistle.

04 34 31

Okay. ~~111 4 Charlie, plus 222, minus 0300 185 37 38; 112 3 Bravo, plus 332, minus 0176 53 09 3160; 113 3 Alfa, plus 298, minus 0178 32 27 3790; 114 3 Charlie, plus 222, minus 0179 20 04 08 2634; 115 Charlie Charlie, plus 222, minus 1610 182 01 49 8196; 116 Alfa, plus 049, minus 0320 182 21 01 4982; 117 2 Charlie, plus 222, minus 0270 183 59 15 4602. 118 2 Alfa, plus 298, minus 0300 185 37 27 3234. 119 2 Charlie, plus 222, minus 0300 185 37 38; plus 0.38; yaw, minus 1.41. Over~~

04 34 47

Roger.

END OF TAPE

APOLLO 9 AIR-TO-GROUND TRANSCRIPTION

(GOSES NET 1)

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GUAYMAS (REV 110)

07 04 53 20 LMP Hey, Houston.

07 04 53 23 CC Houston. Go.

07 04 53 24 LMP Roger. That first site over Mexico was terrific; big volcano down there, and it was the only clear area in the whole section.

07 04 53 33 CC Say. Real beautiful.

07 04 53 37 LMP We even took one extra, after the 53. In fact, two extra. You might want to log them.

07 04 53 40 CC Okay. We have that.

07 04 53 42 LMP And we got some Hasselblad film, too.

07 04 53 46 CC Roger. Real good.

07 04 54 15 CC Apollo 9, Houston. About 31 seconds. We'll pick you up at Tananarive at 23.

07 04 54 20 LMP Okay - -

07 04 54 21 LMP -- Okay.

TANANARIVE (REV 110)

07 05 128 28 CC Apollo 9, Houston through Tananarive.

07 05 130 41 CC Apollo 9, Houston through Tananarive.

07 05 130 55 ST CAP COMM, uplinking properly through Tananarive.

07 05 131 02 CC Roger. And, 9, I've got some more target updates here, but I can't hear you at all yet.

07 05 131 12 LMP We're reading you reasonably well. How are you reading us now?

07 05 131 17 CC Roger. I can't make it out. If you read me good enough to read up the updates.

07 05 131 44 LMP Go ahead, Houston, with your updates.

(GOSS REC 1)

Tape 111/2
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- 07 05 31 47 CC Okay. Apollo 9, Houston. Here we go. Bonin Islands; weather, 174 plus 01 plus 14, four frames, 10 seconds, on track. Galapagos Islands; weather, 174 plus 32 plus 38, four frames, 8 seconds, on track. Lima, Peru; weather, oceanography, 174 37 03, 18 frames, 12-second intervals, on track. The next one is in your rest period and not required unless you can get it. Japan volcanos; geology, meteorology, 175 36 07, seven frames, 30-second intervals, at north 32 degrees. Over.
- 07 05 33 58 LMP How do you read?
- 07 05 34 00 CC Roger. Got you now.
- 07 05 34 03 LMP Okay. 174 01 14, weather, four frames, 10 seconds, on track. 174 32 38, Galapagos, weather, four frames, 8 seconds, on track. 174 37 03, Lima, weather and oceanography, 18 frames, 12 seconds, on track. 175 36 07, Japan, volcanos, weather, seven frames, 30 seconds, north 32 degrees.
- 07 05 34 48 CC Apollo 9, Houston. Readback correct.
- 07 05 34 57 LMP The can was ... on the 70-millimeter Hasselblad and we've lost about 50 frames of film on a jammed track.
- 07 05 35 08 CC Roger. One pack is jammed; 50 frames are lost.

GUAM (REV 110)

- 07 05 58 08 CC Apollo 9, Houston through Guam.
- 07 05 58 11 CMP Hello, Houston. Apollo 9.
- 07 05 58 13 CC Roger. We have the state vector to shoot up to you, if you have POO in ACCEPT.
- 07 05 58 17 CMP Okay. Stand by one. Finally got the old sun filter on, and it works pretty good. I can count about 15 sun spots.
- 07 05 58 27 CC Oh, okay. We can get this state vector over Hawaii if you're using it. No problem.
- 07 05 58 34 CMP Okay. Why don't we do that?
- 07 05 58 36 CC Okay.

(GOSS SET 1)

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- 07 05 58 40 CMP I'm learning about the sun.
- 07 05 59 48 CC 9, Houston. I've got some more things I'd like to discuss with you here, though. And we're requesting both O₂ cryo heaters to AUTO; that's oxygen cryo heaters to AUTO.
- 07 05 59 06 CDR Okay. Do you want that done right now?
- 07 05 59 09 CC Sometime; yes.
- 07 05 59 10 CDR Okay. Both O₂ cryo heaters to AUTO at this time.
- 07 05 59 13 CC Roger. And cryo plan is essentially the same as the last two nights, except that we'll have H₂ tank fan on.
- 07 05 59 31 CDR Okay. You're going to let the oxygen and the hydrogen pressure dribble down to between 190 and 200, and when we go to bed, we want H₂ tank 2 fan on.
- 07 05 59 42 CC That's affirmative. And the same type of power-down: RMU STANDBY; SCS electronics power OFF; AUTO RCS OFF; ROTE control power OFF; TRANS control power OFF; everything else powered up.
- 07 05 59 59 CDR Okay. Very good. And let's see, what our heaters - You want inverter 3 on MAIN A, also?
- 07 06 00 05 CC Affirmative. Just before you go to - hit the rack.
- 07 06 00 09 CDR Okay. Fine.
- 07 06 00 11 CC And, if you have to purge fuel - purge to get the H₂ down, it may take a long time to get it down just through fuel cell 2, so you can use your discretion and purge all three if you want to.
- 07 06 00 25 CDR Okay. Thank you.
- 07 06 00 46 CC 9, Houston.
- 07 06 00 48 CDR Go ahead.
- 07 06 00 49 CC Roger. We would like a readout on your battery manifold pressure, systems test 4 ALs. And have you been venting it periodically or not?

(GOSS REV 1)

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07 06 01 03 LMP No, we haven't been venting it periodically.
07 06 01 07 CC Roger. Don't vent it; just give us a readout then.
07 06 01 15 LMP Okay. 1.2 volts.
07 06 01 17 CC Roger. Copy.
07 06 01 40 CC Apollo 9, Houston. When I called you about the FDAI SELECT and orb rate, was the attitude SEP switch in GDC or IMU?
07 06 01 58 CMP Oh, I'm not sure. We've reconfigured a few times. Right now the attitude SEP switch is in IMU.
07 06 02 07 CC Okay. Understand it's in IMU now, and it more than likely was at that time.
07 06 02 12 CMP Yes. That's probably right. Yes.
07 06 02 27 CC And, 9, Houston. We'll have another ARIA check at 06.
07 06 02 32 CMP Okay.

ARIA (REV 110)

07 06 06 26 CC ARIA 2, Houston CAP COMM. Remote VHF up.
07 06 06 46 CC Apollo 9, Houston through ARIA 2. VHF.
07 06 06 52 LMP Houston, Apollo 9. How do you read?
07 06 06 54 CC Hey, that's beautiful this time. How me?
07 06 06 59 CMP You're about the same. It sounds like a little bit of ... You're clear, though.
07 06 07 03 CC Okay. Very good. While we have you here, I have a consumables update if you'd like to copy that.
07 06 07 16 CMP Okay. Stand by one.
07 06 07 31 SC Okay. Go ahead.
07 06 07 33 CC Okay. At 173 43 10 43 12 47 13 44 13 305 22 32 28 39. And I've got some notes here for you.
07 06 08 12 CMP Okay. You're evidently cutting in and out because I ended up with one button left and no button holes.

(GOSS NET 1)

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07 06 08 18 CC Okay. We're just about ready to switch to S-band. We'll try S-band now; so S-band volume UP. S-band volume UP, and ARIA 2 remote S-band.

07 06 08 41 CC Apollo 9, Houston. How do you read S-band?

07 06 08 48 LMP You're weak on S-band. How do you read us?

07 06 08 51 CC Roger. About the same. A little weaker on S-band.

07 06 08 59 SC Okay. Try it - we just - We're back into the noise depletion.

07 06 09 08 CC Okay. Apollo 9. I think it's a function of how the stuff gets from us to you and not from ARIA to you.

07 06 09 50 CC Apollo 9, Houston. How do you read now?

07 06 09 54 CMP That's a little better, Houston.

07 06 09 56 CC Okay. That's a lot better. What didn't you get on the consumables there?

07 06 10 06 CMP You're breaking up pretty bad, Houston.

07 06 10 09 CC Okay. Understand I'm breaking up pretty bad. We'll pick you up Hawaii about 12, in 2 minutes.

07 06 10 31 LMP Houston, if you read us, you're coming through very, very garbled. We're unable to read you.

07 06 10 38 CC Apollo 9, Houston. Understand I am garbled.

END OF TAPE

APOLLO 9 AIR-TO-GROUND TRANSCRIPTION

(GOSS KMF 1)

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HAWAII (REV 110)

- 07 06 12 28 CC Apollo 9, Houston through Hawaii.
- 07 06 12 32 CDR Roger, Houston. We're reading you five-square now. That last check wasn't too good on the S-band.
- 07 06 12 39 CC Roger. We concur on that also. I was reading you most of the time, but it was way down in the mud.
- 07 06 12 47 CDR Yes. We could tell you were talking, but we were unable to read anything on the S-band that time. I think I read a couple of words one time, and it degraded again.
- 07 06 12 55 CC Okay. And request POC in ACCEPT, if you haven't done it. We don't quite have the data yet.
- 07 06 13 04 CMP Okay. We have POC in ACCEPT.
- 07 06 13 06 CC Roger.
- 07 06 13 10 LMP And I guess you read that I ran out of - Actually, I had a couple of slots left over when we finished that consumables update.
- 07 06 13 21 CC Okay. Before I start it again, as soon as we get a good data lock on here, I'd like to have you take the attitude set switch to GDC to STANDBY.
- 07 06 13 35 CDR What are you asking us to do?
- 07 06 13 37 CC STANDBY for attitude set switch to GDC.
- 07 06 13 44 CDR Okay.
- 07 06 13 48 CC Okay. We've got a keyhole there, so I'll go ahead and read up the consumables plan again. It's at 173 hours 43 10 43 12 47 13 44 13 305 22 32 28 39.
- 07 06 14 32 LMP Roger. 173, 43 10 43 12 47 13 44 13 305 22 32 28 39.
- 07 06 14 45 CC Roger. That's correct, and I've got some notes here.
- 07 06 14 50 CMP Okay. Ready.
- 07 06 14 55 CC Okay. Tomorrow we will use quad Bravo and Charlie; Alfa and Delta will be off just as today. SPS DELTA-V capability 1143 feet per second. SPS burn time 40 seconds. Service module DAP redlines 25 31 34 34.

(GOSS REV 1)

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1 07 06 16 01 CMP Okay. Tomorrow you want us to use B and C; Alfa and Delta off as today. SPS DELTA-V capability 1143 feet per second. SPS burn time capability 40 seconds. Service module DAP redlines 25 31 34 34.
07 06 16 22 CC Roger. That's correct.
07 06 16 49 CC We're about LOS here. Redstone at 17.

REDSTONE (REV 110)

07 06 20 09 CC Apollo 9, Houston through Redstone.
07 06 21 00 CC Apollo 9, Houston through Redstone.
07 06 21 04 CMP Roger, Houston. Go ahead.
07 06 21 06 CC Roger. Just clean up a few items around here. I guess you still owe us the waste water dump, and you know there's no battery charge tonight. And you still owe us the standard spacecraft readout, powerdown readout, and dosimeter reading.
07 06 21 46 CC And, Apollo 9, Houston. I guess the canister change. Just a reminder there.
07 06 22 05 CDR Houston.
07 06 22 06 CC Houston. Go.
07 06 22 08 CDR Roger. The CDR has a dosimeter reading of 3115.
07 06 22 15 CC Roger. Copy.
07 06 22 18 LMP LMP is 8016.
07 06 22 22 CC Roger. Copy 8016.
07 06 22 25 CMP And 6116.
07 06 22 37 CMP Hey, Houston. Did you get the third one: 6116?
07 06 22 43 CC 9, Houston. Say again.
07 06 22 46 CMP Roger. The CDR is 6116.
07 06 22 50 CC Roger. 6116.

(GOSS NET 1)

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- 07 06 22 58 CC Apollo 9, Houston. Request attitude set switch to GDC and give us a Mark.
- 07 06 23 06 CDR Roger. Have set switch going to GDC on my Mark. 3, 2, 1.
- 07 06 23 12 CDR MARK.
- 07 06 23 14 CC Roger. Thank you.
- 07 06 23 18 CDR What are you guys doing with that switch?
- 07 06 23 24 CC Okay. We've got our TM readout on an EMU pitch resolver that showed a little bit of change, and it's strictly a TM thing that goes into our computer here, and it's a functional whether your switches are.
- 07 06 23 37 CDR Oh, okay.
- 07 06 23 39 CC Nothing in the spacecraft at all.
- 07 06 23 43 CDR All right. Thank you.
- 07 06 23 47 CC And Clair is sitting up there in the back and she says on the basis of your rendition of "Happy Birthday," the Bay Area Chorus would like to extend an invitation to the crew to audition for a trio at a spring concert.
- 07 06 24 03 CDR Oh boy.
- 07 06 24 06 CC That's what I said too.
- 07 06 24 08 CDR Wonder what kind of food they serve.
- 07 06 24 10 CC (Laughter)
- 07 06 24 15 CMP Hey, Houston, you through with the computer?
- 07 06 24 18 CC Affirmative. Computer is yours.
- 07 06 24 21 CMP Okay.
- 07 06 24 29 CC And just to verify that you got the word. No battery charging tonight.
- 07 06 24 34 CMP Real fine. No battery charging tonight.
- 07 06 24 36 CC Roger. Thank you.
- 07 06 24 42 CC Houston. We know that you had a couple of MASTER ALARMS last night during your waste water dump, and we're trying to confirm that these were due to a high O₂ flow. Can you confirm that?

(GOSS NET 1)

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07 06 24 53 CMP Roger. That's correct.
07 06 24 55 CC Roger. Thank you.
07 06 25 00 CDR We've got so many MASTER ALARMS in here it looks like the simulator.
07 06 25 03 CC Oh great.
07 06 25 29 LMP Houston, you still with us?
07 06 25 30 CC Houston. Roger. Go.
07 06 25 31 LMP Okay. Service module A, B, C, D: 53 55 49 53; BATT C and pyro A, B: 369 371 371.
07 06 25 46 CC Roger. Copy. Thank you.
07 06 25 54 CC We're just about LOS. Have a good night.
07 06 25 58 LMP Okay. We can give you some more stuff here.
07 06 26 01 CC Go.
07 06 26 04 LMP Okay. 6 Charlie is 5.0. All the rest are FULL SCALE HIGH on the injector tests.
07 06 26 09 CC Roger. And confirm omni Bravo if possible.
07 06 26 14 LMP Omni Bravo.
07 06 26 17 CDR Okay, Houston. This is Apollo 9. We're going for awhile so if you want to give us a call.
07 06 26 21 CC Okay. Will do. Thank you very much.

TANANARIVE (REV 110)

07 07 05 17 CC Apollo 9, Houston.
07 07 06 07 CC Apollo 9, Houston.
07 07 06 34 CDR Houston, Apollo 9.
07 07 06 36 CC Hey, Apollo 9. Houston here. You rest during the night; the night watchman is on duty.
07 07 06 46 CDR Are you the night watchman on duty?
07 07 06 48 CC Roger.

07 07 06 51 CC We noticed when we went out of range that your DSE probably wasn't running, so we'd like for you to switch the uplink telemetry command switch to RESET and then back to NORMAL.

07 07 07 05 CMP Al, say that one again. You say you want the up telemetry command set to RESET and then back to NORMAL. When do you want that?

07 07 07 12 CC Roger. Apollo 9. That's affirmative, and you can do that now.

07 07 07 17 CDR Okay. Going to COMMAND RESET and back to NORMAL.

07 07 07 23 CC Roger.

07 07 07 25 CDR Hello, there, Mr. Worden.

07 07 07 28 CC Hello, Mr. McDivitt.

07 07 07 30 CDR How are you?

07 07 07 31 CC I'm fine, sir. How are you?

07 07 07 34 CDR I'm fine, too.

07 07 07 36 CC Are you ready for ...

07 07 07 40 CDR Say again.

END OF TAPE

APOLLO 9 AIR-TO-GROUND TRANSCRIPTION

(GOSS NET 1)

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REDSTONE (REV 115)

- 07 07 54 25 LMP Houston, Apollo 9.
- 07 07 54 28 CC Apollo 9, Houston. Go.
- 07 07 54 31 CDR Roger, Houston. Apollo 9 here. I just wanted to call you and tell you we had a very nice view of Hawaii as we went across it.
- 07 07 54 38 CC Very Good.
- 07 07 54 44 CC Why don't you go ahead and remind him --
- 07 07 54 46 CDR We tried to take a few pictures for the folks down on the ground.
- 07 07 56 48 CC Roger, Jim. Hey, did you guys put inverter 3 on MAIN A as part of the powerdown?
- 07 07 54 54 CDR No. We haven't done that yet.
- 07 07 55 01 CC Okay. We just wanted to remind you of it.
- 07 07 55 06 LMP Okay. We are going to do it now, Al, so we won't forget it.
- 07 07 55 08 CC Okay, Rusty.
- 07 07 55 09 LMP And we were just talking about - We have to turn the tank 2 hydrogen fan on and to turn that invertor on yet.
- 07 07 55 13 CC All right.
- 07 07 55 14 CDR -- what the hydrogen looks like.
- 07 07 55 17 CC Roger. Understand. Guess you will purge a little more, too?
- 07 07 55 21 CDR Yes.. The pressure is way up today. It still reads about 212, 222, or 224.
- 07 07 55 29 CC Understand that is because we were real good to you and let you sleep an extra 3 hours this morning.
- 07 07 55 34 LMP Hey, you guys are so good, I can't believe it.
- 07 07 55 39 CC Well, we are thinking only of you.
- 07 07 55 41 CDR I know. And we are thinking only of you.

(GOSS NET 1)

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Page 680

07 07 55 46 CC I'm going to start calling you sweet lips.

07 07 55 50 CDR No thanks.

07 07 55 52 LMP You wouldn't call him sweet lips if you could see him!

07 07 55 57 CDR Hey, Al, would you do me a favor?

07 07 55 59 CC Sure.

07 07 56 00 CDR Call my kids and tell them that I'm really growing a fancy beard for them.

07 07 56 05 CC Okay. I'll do that.

07 07 56 08 CDR Tell them I still can't bring it home for them, because I have to shave it off when we get on board the ship. But tell them I'm going to have some pictures of it for them.

07 07 56 15 CC Okay. I understand. I understand that shaving it off, too. You're a real full-blown Colonel up there.

07 07 56 23 CC Got to shave that beard off before you get on-board, huh?

07 07 56 26 CDR No; not before I get onboard, after I get onboard. I have enough beard to be proud of; I don't have to shave mine off ahead of time. But it is anything but fancy.

07 07 56 38 CC Don't want to mention any names, do you.

07 07 56 42 CDR Yes.

07 07 59 02 CC Apollo 9, Houston. Guess you are going over the hill. See you guys in the morning.

07 07 59 15 CDR Okey-dokey. Night-night.

07 07 59 19 CMP - - Night.

07 07 59 21 CC Night-night.

07 07 59 22 CMP What time is morning, Al?

07 07 59 25 CC Just a second; let me check. It's getting a little confused. It looks like it will be 154 plus 20.

07 07 59 36 CMP Okay. Thank you.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 115/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 116/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 117/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 A/P-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 118/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS MET 1)

Tape 119/1
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HONEYBUCKLE (REV 117)

- 07 17 19 49 CC Hello. Apollo 9, this is Houston. Anybody up there got their S-band up?
- 07 17 20 07 CC Apollo 9, this is Houston. How do you read?

MCPHENY (REV 117)

- 07 17 29 33 CC Good morning, Apollo 9.
- 07 17 29 40 CC Good morning! How are you this bright, sunshiny morning?
- 07 17 29 59 CC Apollo 9, Houston.
- 07 17 30 06 CMP Houston, Apollo 9.
- 07 17 30 08 CC Oh! Good morning. Even though it is dark outside, it must be time to get up.
- 07 17 30 14 CMP Oh, I guess it must be. You're calling.
- 07 17 30 17 CC Oh, yes.
- 07 17 30 18 CMP Houston, how do you read me?
- 07 17 30 19 CC I read you loud and clear.
- 07 17 30 22 CMP Okay.
- 07 17 30 25 CC Now, we let you grab 1 extra hour, but we figured if we let you sleep too long here, you would oversleep on RETRO morning.
- 07 17 30 36 CDR Oh, we'll try not to do that.
- 07 17 30 38 CC Okay. I didn't figure you would.
- 07 17 30 51 CC We've got you zipping across Mercury, here. I'll have you for about the next 7 minutes.
- 07 17 30 57 CMP Alrighty. What would you like to start on?
- 07 17 31 02 CC Well, I have block data or the consumables update. Which is the easiest?
- 07 17 31 05 CMP Well, let me find the book and find out.

(COSS Rev 1)

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- 07 17 31 42 CMP Houston, Apollo 9. Why don't we start with the consumables? Those are only two digits apiece.
- 07 17 31 49 CC Okay. You're coming through a little weak, there, Dave. How are you reading me?
- 07 17 31 56 CMP Your part's clear. How me now?
- 07 17 31 58 CC You're real good. Okay. The consumables first: 185 hours 43 10 42 12 44 13 43 13 285 20 32 27 39. And your LAP redlines, service module: 25 31 34 34. End of consumables.
- 07 17 32 52 CMP Roger. 185 43 10 42 12 44 13 43 13 285 20 32 27 39 25 31 34 34.
- 07 17 33 05 CC Roger. Houston confirms the update. And would you like to take some block data?
- 07 17 33 23 CMP Well, I reckon. Stand by one.
- 07 17 33 26 CC Okay.
- 07 17 33 45 CMP Okay, Stu. I've got the appropriate squares. Go ahead and fill them.
- 07 17 33 48 CC Okay. Reading block data number 19: 119 1 Bravo, plus 262, minus 0640 187 03 40 3515; 120 1 Bravo, plus 318, minus 0680 188 42 36 3106; 121 1 Bravo, plus 336, minus 0663 190 25 20 3005; 122 1 Alfa, plus 303, minus 0660 192 07 02 3445; 123 4 Alfa, plus 312, minus 1632 194 43 50 3198; 124 4 Bravo, plus 336, minus 1630 196 25 35 2993; 125 4 Alfa, plus 312, minus 1632 198 07 06 3221; 126 3 Bravo, plus 337, plus 1490 199 25 49 2998. Pitch and yaw trim: minus 0.64, minus 0.94. We've got about 60 seconds. Read them back as fast as you can.
- 07 17 37 24 CMP Roger. I missed the second batch. You broke up.
- 07 17 37 27 CC The second block, you say?
- 07 17 37 31 CMP That's affirm.
- 07 17 37 32 CC Okay. Reading second block: 120 1 Bravo, plus 318, minus 0680 188 42 36 3106. And we'd better take your readback over Antigua at 5%. We'd like to turn off the fan on tank 2, and turn off inverter 3.
- 07 17 38 08 CMP Okay. We'll clean up to suit you. What was the longitude in the first sweep?

(GOSS NET 1)

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07 17 38 15 CC Okay. Longitude is minus 0640.
07 17 38 23 LM Okay. See you at 57.
07 17 38 25 CC Roger.

ANTIGUA (REV 118)

07 17 57 12 CC Apollo 9, Houston. How do you read?
07 17 57 34 CC Apollo 9, Houston. How do you read?
07 17 57 57 CMP Roger. Five-Nine.
07 17 57 58 CC I'm reading you real good. Apollo 9, we'd like
to start a charge on battery Baker.
07 17 58 10 CMP Okay. Battery Baker per charge.
07 17 58 14 CC Okay. And our RCS configuration today: we're
recommending using quads Charlie and Delta, and
AC roll.
07 17 58 30 CMP Roger. Use Charlie and Delta; use AC roll.
07 17 58 34 CC That's affirmative. Apollo 9, if you wish, you
could - I'm ready for a readback from the block
data.
07 17 58 47 CMP Okay. Stand by one.
07 17 59 08 CMP Okay. Block data. Are you ready?
07 17 59 10 CC I'm ready. Let her rip.
07 17 59 12 CMP Okay. The first couple here - There were some
breakups, even though I got some extra, so you
might watch them: 119 1 Bravo, plus 262, minus
0640 187 03 46 2525; 120 1 Bravo, plus 316, minus
0680 183 47 36 3106; turn the page, 121 1 Bravo,
plus 336, minus 0663 193 25 20 3005; 122 1 Alfa,
plus 303, minus 0667 192 07 00 3445; 123 4 Alfa,
plus 312, minus 1632 194 43 50 3198; 124 4 Bravo,
plus 336, minus 1630 196 25 35 2993; 125 4 Alfa,
plus 312, minus 1632 198 07 06 3221; 126 3 Bravo,
plus 337, plus 1490 199 25 49 2998; with a pitch
trend of minus 0.64 and yaw trim of minus 0.94.
07 18 00 57 CC Okay, Dave. Two corrections. Under DELTA-V_C
in the first block, it's 3015.

(COSS NET 1)

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07 18 01 08 CP Okay. 3515 for 119 1 Bravo.
07 18 01 13 CC Okay. Under the second block, 120 1 Bravo,
time of ignition is 188 42 36.
07 18 01 24 CMP Okay. 188 42 36.
07 18 01 27 CC Roger. And that's - block data confirmed.
07 18 01 31 CMP Alrighty. Thank you. We're charging the R,
and we have inverter 3 OFF and the H₂ fan is
07 18 01 41 CC Okay. Very good. And I've got a string of
plan updates here for you, at your convenience.
07 18 01 49 CMP Okay. Stand by again.
07 18 02 10 CMP Okay. Go ahead with the flight plan updates.
07 18 02 14 CC All right. Let's start at 186 10, and delete
the H₂ purge heaters ON. To go along with that
at 186 30, delete the H₂ purge.
07 18 02 30 CMP Okay. 186 10 - and say again the other time.
07 18 02 35 CC Okay. 186 30, delete H₂ purge.
07 18 02 38 CMP Okay. 186 30.
07 18 02 41 CC Okay. Now, these are all additions. At 186
we'd like to do a P51 using the COAS option,
and then a P52 to REFSIMAT.
07 18 02 59 CMP Hey, would you believe that we were about to
do that? How about that, you were thinking to
us all the time, Stu.
07 18 03 06 CC Well, you know I'd like to take credit for this
but we've got to admit we picked up your idea
via the DSE.
07 18 03 17 CMP Oh, you fellows are clever.
07 18 03 20 CC Well, I would have liked to have just kept it
but I'm an honest guy.
07 18 03 26 CMP Oh, you're such a good guy.
07 18 03 28 CC Okay. And we'd like to have your torqueing a
on that. Okay. Now at 188 25 --

(COSS NET 1)

Tape 119/5
Page 690

- 07 18 03 39 CMP -- Okay.
- 07 18 03 40 CC We'll do a P52 to NOMINAL, and your T-align is 190 30 00.
- 07 18 03 55 CMP Okay. 188 25, P52 to NOMINAL, 190 30 00.
- 07 18 04 00 CC Okay. At 189 34, we'll have some S065 photos.
- 07 18 04 10 CMP On, very well. S065 and 189 34.
- 07 18 04 14 CC Roger. And we'll have your update and so forth later on. And then at 191 25, we want to do a P52 realign to NOMINAL and your T-align of that is 192 00 00.
- 07 18 04 37 CMP 191 25, P52, realign to NOMINAL at 192 00 00.
- 07 18 04 44 CC Okay. And now the next question is - You know, they're wanting to photograph waste water dump from the ground, and one of the windows we have is right around 192. But that's also during an S065 photography, and we'd just like to have your comment on this. If you have any doubts about it, we don't want to do the waste water dump.
- 07 18 05 24 CDR Yes. Stu, I don't think we can do that and still take pictures. It's not going to interfere; we have enough guys to do it, but ... roll of pictures.
- 07 18 05 40 CC Roger. Jim, you got ... Jim, you got a lot of static in the background. Yes, that was my opinion too. Let's just forget the waste water dump; we'll catch that some other time.
- 07 18 05 54 CDR Okay. We'll see if we can get it in some nonconflicting period.
- 07 18 05 58 CC Roger. And we've got about 3 minutes here. We're going to have pretty bad COM, let me finish these updates when we pick you up at the Canaries, about in 3 minutes ...
- CANARY (REV 118)
- 07 18 10 05 CC Okay. Apollo 9, Houston. How do you read me?
- 07 18 10 08 CMP Five-by.
- 07 18 10 09 CC Okay. We've got fairly good COM again, now. Okay. You ready to continue with some updates?

(COSS REF 1)

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- 07 18 10 18 CMP On, very well. We're ready. Go.
- 07 18 10 21 CC Okay. At 192 00, we will uplink you the desired orientation, and at 192 55 we'd like to have an alignment to that preferred option.
- 07 18 10 46 CMP Okay. Understand. At 192 00 you'll give us an uplink with the desired, and we'll align to it at 192 55.
- 07 18 10 53 CC Okay. And the reason behind all that is, at 193 we'd like to do an S-band high-gain antenna test.
- 07 18 11 06 CMP How about that. Okay. At 193 00 we'll try out that big antenna.
- 07 18 11 11 CC Okay. And at 193 35 we'll also have an S-band high-gain antenna test.
- 07 18 11 18 CMP Okay. 193 35, S-band.
- 07 18 11 21 CC Okay. 194 27, a P52, NOMINAL option 2-align, 195 plus 00 plus 00.
- 07 18 11 35 CMP Roger. 194 27, P52 NOMINAL, 195 00 00.
- 07 18 11 41 CC Okay. And at 195 plus 10, we'll have some 122 landmark tracking. And we can kick this around now or later. We're getting all the details, but basically we're going to disable the 121 alarm so you will not get it. We do have them trying to drum us up some body rates that correspond to that six-tenths IDU rate that JIM asked for the other day, which we have seemed to find yet. Also, we're having them look into what the program will do with it if we do Mark, even though you don't get the alarm. But we can messie with that later!
- 07 18 12 29 CMP Okay. Very good. Thank you. 195 10 for 122.
- 07 18 12 33 CC Roger. And at 197 00, we'll power down the space-craft.
- 07 18 12 44 CMP Okay. Power down at 197 00.
- 07 18 12 46 CC Okay. At 197 10, we'd like to get a radiation survey through your pass across the Atlantic at that time. And I've got a couple of procedures on that zebra that get stuck down on the six signal conditioning panel somewhere. I guess - is that the same one you all took into the IM that we saw on TV?

(GOSS NET 1)

Tape 119/7
Page 692

- 07 18 13 10 CDR Roger. It is.
- 07 18 13 12 CC Okay. What we'd like to have at this time would be to place the range switch to 0 to 0.1 REV's per hour, and place the snub switch to OFF and obtain the peak dose rate and time of occurrence between GET of 197 plus 23 and 197 plus 33 from one of the couch positions.
- 07 18 13 48 CMP Okay. Understand. Set the range to 0 to 0.1, the snub OFF, obtain peak dose and time during the period 197 23 to 197 33.
- 07 18 14 01 CC That's affirmative. That's all our updates at this time. We would like to get a report from you on your 300₃ frames remaining, the 70mm and 16mm films remaining, and anything about the targets of opportunity you photographed yesterday that you feel you haven't told us.
- 07 18 14 23 CMP Okay. Stand by.
- 07 18 14 32 CC And I'd like to have your S-band volume up at this time. We'll be going over to Madrid in about a minute.
- 07 18 14 36 LMP Okay.
- 07 18 14 40 LMP We'll give you the photo stuff in a little bit. We're coming over the top of apogee here, and we wanted to see if we could get some pictures.
- 07 18 14 47 CC Real good. And I show you just about making land fall. I'll stop talking to you. About the only thing else we'd like to get from you would be a crew status report at your convenience; we can do it as you come back around.
- 07 18 15 00 LMP Okay. Very well.

MADRID (REV 118)

- 07 18 18 41 CC And, Point 9, Houston. Thirty seconds LOS Madrid, Carnarvon at 45.
- 07 18 18 46 CMP Roger. Carnarvon at 45.

(GOSS NET 1)

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Page 693

CARNARVON (REV 118)

- 07 18 46 23 CMP Apollo 9, Houston through Carnarvon. Standing by.
- 07 18 46 27 LMP Roger. You're five-square. Good morning.
- 07 18 46 39 CC Good morning, Rusty.
- 07 18 46 36 LMP It's a beautiful day over Africa. How is it in Houston?
- 07 18 46 40 CC Well, I don't know. It's still dark out, at least it was when I came in. It's a little chilly. We've been having some cold weather.
- 07 18 46 50 LMP Boy, I'm glad we chose this time of year to take our vacation!
- 07 18 46 54 CC Yes, you're missing - you're missing all the cold weather here. It'll be nice and balmy when you get back. This should end - The leaves are budding out, you know; of course, it's springtime, but it's cold.
- 07 18 47 15 CC We can take a crew status report any time you'd like to give it to us.
- 07 18 47 33 CDR Houston, this is the CDR, here. I only got 7 hours sleep last night; I took one Actifed.
- 07 18 47 45 CC Roger. I copy that.
- 07 18 47 47 LMP ... half and one Actifed.
- 07 18 47 51 CC Say your hours of sleep again, Rusty.
- 07 18 47 59 LMP Yes. That's 6-1/2.
- 07 18 47 58 CC Okay.
- 07 18 48 02 LMP By the way, just out of curiosity, can you tell any difference in the quality of the voice between Dave and I or Jim and I?
- 07 18 48 10 CC You're coming through real good. Let's have Jim say something else, here.
- 07 18 48 18 CDR Roger, Houston. 1, 2, 3, 4, 5, or something else.

1

(COSS NET 1)

Tape 119/9
Page 694

07 18 48 22

CC

Okay. That's not quite as clear as Rusty's transmission.

END OF TAPE

APOLLO 9 AIR-TO-GROUND FON TRANSCRIPTION

(GOSS NET 1)

Tape 120/1
Page 695

CARNARVON (REV 118)

- 07 18 48 32 CC I believe it sounded like Dave wanted to say something, and I couldn't hear it at all.
- 07 18 48 37 CDR Oh, okay. How about mine now?
- 07 18 48 40 CC Yours isn't quite as clear. It's a little mushy, but of the three, Rusty's is the best.
- 07 18 48 47 LMP Okay. This is Rusty. I'm wearing a bunny hat, and the other two are wearing lightweights. We were just kind of curious.
- 07 18 48 55 CC Oh, well. It looks like we got a data point. Hey, Jim, for you - For your info, the weather looks - shaping up real well for Thursday morning. Looks like it's going to be pretty good.
- 07 18 49 08 CDR Oh, that's fine and dandy! Stu, you do good work.
- 07 18 49 14 CC Well, can't say anything yet. I mean, when I say pretty good, that was compared to what I - what I gave you yesterday. Officially, we're forecasting 2000 feet, scattered, variable, broken, 10 miles vis, winds 300 degrees at 15 knots, the seas about 4 to 5 feet with a few higher swells.
- 07 18 49 39 CDR Well, keep working on it. That's not down to my specifications yet.
- 07 18 49 41 CC Yes, sir; that's in work, and could we get a CMP sleep report?
- 07 18 49 44 CMP Roger. I had about 6-1/2 hours and had no pills.
- 07 18 49 52 CC Roger. Copy.
- 07 18 49 53 CMP Oh, listen; one other thing we should throw in there: we each had a vitamin pill yesterday.
- 07 18 50 07 CC Okay. Very good. One vitamin; staying healthy.
- 07 18 50 13 CMP And, Houston, we've taken 85 frames of S065 so far.
- 07 18 50 20 CC Very good. Thank you.

(GOSS NET 1)

Tape 120/2
Page 696

- 07 18 50 32 CC And, at your convenience, we'd like to know how much 70mm and 16mm film you've got.
- 07 18 50 40 CMP Roger. On the 70 millimeter, we've got roughly 200 frames left.
- 07 18 50 45 CC Very good.
- 07 18 50 47 CC And, Dave, a question just personal - on curiosity here: I was wondering if anybody had tried the R-meter looking at the ground targets and so forth - how they showed up in that.
- 07 18 51 13 CMP No, we haven't tried it yet, but we're going to probably get around to it, here, one of these days. That's a good idea.
- 07 18 51 39 CC And, Apollo 9. Just another thing while we've got a minute to chit chat - on curiosity. I noticed the cabin temp running down 66, 69, and so forth. Do you not feel cool at that, when you're sleeping, or do you sleep pretty warm?
- 07 18 51 57 CMP Gee, as a matter of fact that's a little warm around 70. I think that's our general feeling.
- 07 18 52 04 CMP Stu, with the cabin fan not running, that's really the temperature of the cabin sensor, only. It's a little hard to tell exactly what the temperature of the cabin is, but if we turn the cabin fan on, we noticed the other day, that it jumps up a few degrees. So I guess that the cabin fan - I mean the temperature sensor is located in a spot that's a little cooler than the main cabin.
- 07 18 52 26 CC Oh, very good. Thank you.
- 07 18 52 31 CMP Guess if you wanted a fairly honest reading, we could turn the cabin fan on for a second and let it get up there and turn it back off again.
- 07 18 52 38 CC No. No, that's no problem. I was just thinking of you sleeping with that temperature. I was just curious whether you thought it was cold or not.
- 07 18 52 49 CMP It kinda depends on where the base outlets are, whether you'll be cold or warm during the night.
- 07 18 52 57 CC Roger.

(GOSS NET 1)

Tape 120/3
Page 697

07 18 53 04 CC And, if you would, bring up your S-band volume, please.

HONEYBUCKLE (REV 118)

07 18 53 16 CC Gray. Apollo 9, Houston. I've got you through Honeyuckle. Did I get your S-band volume up?

07 18 53 25 CMP Sure - da.

07 18 53 26 CC Oh, very good.

07 18 53 55 CC And, Apollo 9, Houston. We're recommending that Charlie roll to ENABLED and Delta roll DISABLED.

07 18 54 03 CMP Roger. Charlie ENABLED, and Delta DISABLED on the rolls.

07 18 54 24 CC And, Rusty, Houston. At your convenience, you might push on your EKGED sensors; we're getting a little erratic data.

07 18 54 34 LMP Any particular one?

07 18 54 38 CC Roger. Your chest - We're getting the EKG's jumping all over.

07 18 55 12 LMP How about now? Do they settle down any?

07 18 55 15 CC No, it's - It's not, it's really going wild. Must either be - If it's not moved it must be a bad sensor.

07 18 55 26 LMP Either that, or my heart.

07 18 55 28 CC Man, I hope not.

07 18 55 32 LMP No, I have an idea that the electro tape is dried out. It - The ground feels a little bit scratchy right now.

07 18 55 40 CC Okay. Copy. And ya'll impress me with your wealth of knowledge coming up with statements like that.

07 18 55 53 LMP I'm afraid Mr. Scott used all the vocabulary up.

07 18 55 58 CC I see.

(GOSS NET 1)

Tape 120/4
Page 193

- 07 18 59 35 CC And, Apollo 9, houston. Just another curious question, if you've got the time. When you dump the waste water, does it hang around the space-craft for a long time, or do you - Does it - Can you see the particles, or do they dissipate pretty easily?
- 07 18 59 51 LMP You can see them all right, especially at sunset and sunrise. They really shoot out of there with pretty high velocity, and it's kind of interesting behavior. Most of them disappear over the hill rapidly, but it looks as though it continues to sputter and spurt out of the duct there for quite a while, after you've completed the dump. I'm not sure how long it continues that way, but for quite a while. When you're watching the particles go away, strangely enough, it looks like some of them either collide or something. We haven't figured out what, yet, but occasionally one of them will come back past us for a little while.
- 07 19 00 36 CC Good grief! Have you got some pictures of those?
- 07 19 00 41 LMP Yes.
- 07 19 00 43 CC Good. We're going to have an early LOS here at Honeysuckle, and we'll see you Mercury 05.
- 07 19 00 49 LMP Roger.

MERCURY (REV 118)

- 07 19 05 59 CC And, Apollo 9, this is Houston through the Mercury. And I want to volunteer a map update here before my friendly CDP zaps me.
- 07 19 06 08 CMP Okay. Stand by. I'll get something to copy it.
- 07 19 06 11 CC Okay.
- 07 19 06 27 CMP Okay. Go ahead.
- 07 19 06 31 CC Roger. It's REV 118, which you're on now; time, 187 24 55; longitude, 108 degrees west.
- 07 19 06 52 CMP Okay. 187 24 55, 108 west.
- 07 19 06 57 CC That's affirmative.

(GOSS NET 1)

Tape 120/5
Page 699

07 19 12 57 CC And I copy your star angle difference and your torqueing angles, there, Apollo 9.
07 19 13 05 CMP Roger. And I'll run a quick sextant realignment on REFSMMAT to see what kind of accuracy we got out of this.
07 19 13 16 CC I missed that, Dave. Say again.
07 19 13 19 CMP I say I'll be down and run a sextant realignment now on REFSMMAT to see what kind of accuracy we got out of the GVAS.
07 19 13 28 CC Oh, very good. And I take it the telescope worked okay yesterday. Did it hang up at all with you?
07 19 13 35 CMP No, yesterday was a clean day. Wasn't one glitch all day.
07 19 13 39 CC Did you do anything, or did it just go away?
07 19 13 43 CMP No, apparently it just worked itself out. Perhaps there was something on the outside from the LM thrusters or something, but it seems to have worked itself out.
07 19 13 54 CC Very good.
07 19 14 40 CC Apollo 9, Houston. Forty seconds LOS Mercury; see you Texas, 30.
07 19 14 49 CMP Okay.

TEXAS (REV 119)

07 19 31 11 CC Apollo 9, Houston. Standing by.
07 19 31 14 CMP Roger. Apollo 9.
07 19 31 21 CMP Houston, Apollo 9 ...
07 19 31 32 CC Dave, the COMM here is real bad. Let's hold off for about 2 minutes. I couldn't copy.
07 19 31 38 CMP Understand that we will not torque the angles ...
07 19 31 45 CC Okay.

(GOSS NET 1)

Tape 120/6
Page 700

- 07 19 32 39 CC And, Apollo 9, Houston. We have a state vector for you, if you would give us P00 in ACCEPT, please.
- 07 19 32 46 CMP You have P00 in ACCEPT.
- 07 19 32 48 CC Understand.
- 07 19 33 18 CC Apollo 9, Houston. We'd like to turn the fan on in H₂ tank 1 at this time, please.
- 07 19 33 04 CC And, Apollo 9, Houston. How do you read now?
- 07 19 35 20 CMP You're coming in five-square, Houston.
- 07 19 35 25 CC Okay, Apollo 9. VERB 66 has been entered. The computer is yours, and I have a NAV check to go along with that vector.
- 07 19 35 35 CMP Okay. Stand by.
- 07 19 35 49 CMP Okay. Go ahead.
- 07 19 35 50 CC Roger. Reading NAV check: 188 30 00, minus 3329, plus 13537 2294.
- 07 19 36 17 CMP Okay. Understand. 188 30 00, minus 3329, plus 13537 2294.
- 07 19 36 27 CC Roger. Readback is correct, and it looks like we ought to have an answer here shortly.
- 07 19 36 32 CMP Here's your answer.
- 07 19 36 40 CMP And, Houston, 9. Let me give you some of this data from the CGAS. I think you might find it interesting.
- 07 19 36 48 CC Roger. I'm ready to copy. I can read you okay now, Dave.
- 07 19 36 52 CMP Okay. I'll just give you the IMU and the gyro torqueing angles and tell you what instrument we used. Okay?
- 07 19 37 00 CC All right.
- 07 19 37 01 CMP Okay. The first one's the CGAS, and I used the calibration that I made during the rendezvous, 5 days ago. The CGAS has been in and out about, I guess, four or five times since then.

(GOSS NET 1)

Tape 120/7
Page 701

The star angle - The GET was 187 14 30. The gyro torqueing angles were minus 00080, minus 00013, and plus 00183.

- 07 19 37 34 CC Hey, that sounds beautiful, Dave. That's real good.
- 07 19 37 37 CMP ... the star-angle difference on that was 0.03.
- 07 19 37 43 CMP And on the sextant, which was the next torqueing we did, the GET was 187 19 00, and the torqueing angles were plus 00073, plus 00060, minus 00084. The star-angle difference on that was 0.01.
- 07 19 38 17 CC Roger, Dave. I copy all those. Roy, that COAS bombed through there, didn't it?
- 07 19 38 24 CMP Yes, then I did another ... to see what the DMM's were all the way down, so I have another sextant for you: 187 21 00. The gyro torqueing angles were plus 4 balls 3, minus 3 balls 25, and plus 4 balls 2; which sort of says the sextant's pretty good, which we already know. The star-angle difference on that was 0.01.
- 07 19 39 01 CC Roger. Copy. Very interesting.
- 07 19 39 06 LMP Okay. Then not to neglect our friendly telescope, the sun was coming up but I tried to get a telescope alignment, also, but I think we sort of lost out a little bit because my second star was Menkent, and it was pretty dim. I had a tough time seeing it, so we did not torque the platform, but I'll give you the data anyway. The time was 187 31 00. Gyro torqueing angles were minus 0070, plus 00169, minus 00133. The star-angle difference was 0.05, and I think that's because I just couldn't see Menkent when we got daylight through that telescope.
- 07 19 39 55 CC Okay. Very good.
- 07 19 39 58 LMP Anyway, I think it shows there is a certain capability with that COAS.
- 07 19 40 03 CC Yes, it sure does. ... That looks pretty good.
- 07 19 40 14 CC Okay. And I have a couple of targets for you coming across Africa this time, if you're in a picture-taking mood.

(G0SS NET 1)

Tape 120/8
Page 702

- 07 19 40 22 LMP Oh, yes. Always.
- 07 19 40 24 CC All right. Are you ready to copy?
- 07 19 40 28 LMP Okay. Go ahead.
- 07 19 40 31 CC All right. The target is in Chad. It's the northeast slope of the Tibetsi Mountains. Your time for the first frame: 187 57 03. We would like to have seven pictures, at 10-second intervals, and straight down the nadir. Next target: Red Sea, 187 03 06, seven pictures, 10-second intervals, and right on the nadir again.
- 07 19 41 19 LMP Okay. Copy the first one. 187 57 03, seven frames, 10-second intervals, on the nadir; and 187 03 06, seven frames, 10-second intervals, on the nadir again.
- 07 19 41 35 CC That's affirmative, Apollo 9.
- 07 19 41 37 LMP Okay.
- 07 19 41 55 LMP Houston, we have a little discrepancy on our map there. According to the map update this REV does not take us over Chad. We cross north of it in Libya. I wonder if it's right?
- 07 19 42 19 CC Roger. I copy. Apollo 9, the map might be off just a little bit here due to orbital parameter. Let me get the details on that.
- 07 19 43 04 CC Rusty, I'm looking at the map here also, and I agree with you. I think we must have something wrong on our first update.
- 07 19 43 15 LMP Okay. It looks like we may get the Red Sea one in there, just the southern end of the Red Sea.
- 07 19 43 28 CC Roger. I see that.
- 07 19 44 55 CC Well, Rusty, we're working that out. I'll have to take a gotcha because I didn't check that against the map before I passed it to you.
- 07 19 45 06 LMP You think that first one was a gotcha?
- 07 19 45 09 CC Yes, I think it was, and I did not check it on my map before I sent it up to you, so you've got me.

(GOSS NET 1)

Tape 120/9
Page 703

07 19 45 19 IMP Didn't mean to do that, but I did want to get it straight.

CANARY (REV 119)

07 19 45 21 CC Roger.

MADRID (REV 119)

07 19 49 36 CC Apollo 9, Houston.

07 19 49 40 CDR Go ahead. Houston, Apollo 9.

07 19 49 42 CC Okay, Jim. I've run that first target out on the map here, and I would believe 30 degrees south of the nadir which is the information that we have now. I don't know the Tibetsi Mountains by first name, and they're not listed; but there is that mountain range right there where you'll be at that time. So the time and the frame stay the same. Shoot it 30 degrees south of the nadir.

07 19 50 09 CDR Okay; fine. And be advised we have about two and one-third rolls of 16mm outdoor film still left. We want to save one roll for re-entry.

07 19 50 22 CC Roger. Copy. Two and one-third rolls 16mm and saving one.

07 19 51 03 CC Jim, these targets of opportunity - I'm planning on just passing them to you at convenient times until you holler Uncle, so if we start giving you too much just say so.

07 19 51 16 CDR Okay. We're picking up the ones we can get to easiest and it's sort of a random process.

07 19 51 23 CC Roger. Understand.

07 19 51 50 CC And, Apollo 9, Houston. I was guilty of slighting someone on my flight plan update: under the comments, it was good morning from your smiling flight planners.

07 19 52 03 CDR Say that one again, Houston; we just missed it.

07 19 52 06 CC Roger. We'll see you over Carnarvon about 20. We're going to lose you here at Honeysuckle - I mean at Madrid within a minute.

(GOSS NET 1)

Tape 120/10
Page 704

07 19 52 22 CDR Okay, Houston. We want to report on another failure. Last night the exerciser failed.

07 19 52 28 CC Roger. Understand the exerciser failed. Who do we give credit for being so strong they busted it?

07 19 52 36 CDR Rusty broke it.

07 19 52 38 CC Okay.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(COSS NET 1)

Tape 121/1
Page 705

CARNARVON (REV 119)

- 07 20 23 01 CC Apollo 9, Houston through Carnarvon. Standing by.
- 07 20 23 06 LMP Hello, Houston, this is Apollo 9. We hear you loud and clear.
- 07 20 23 10 CC Roger. You're coming in real good. And the S065 or this rev over Africa has been cancelled due to weather. The one on the next revcoming up will still hold, however.
- 07 20 23 26 LMP Okay; very good. Yes, Africa has a lot of clouds over it these days ... that series of photos along the end of the Red Sea. They show up pretty.
- -- -- -- CC Roger. Copy.
- -- -- -- CDR And we did not get the ones along those mountains.
- -- -- -- CC Okay. Thank you.
- 07 20 26 29 CC Apollo 9, Houston.
- 07 20 26 33 CDR Go ahead.
- 07 20 26 34 CC Roger. We'd like to turn the fans off in K₂ tank 1. We're going to let the pressure drop down during the day. Be looking at it around 190, we hope.
- 07 20 26 45 CDR Oh. Very good. Fans are off in tank 1.
- 07 20 26 53 CC And, Rusty, when you get a chance, we'd like to have you check your RICMED leads going into your blue signal conditioner.
- 07 20 27 04 LMP Okay. I'll give that a check right now. Should you say it again? The blue what, please?
- 07 20 27 09 CC The blue signal conditi - Hey, I couldn't say it the second time, either. I give up.
- 07 20 27 15 LMP Okay. I want to ask you again.
- 07 20 27 17 CC That little blue box down there.
- 07 20 27 19 LMP Roger!

(COSS NET 1)

Tape 121/2
Page 706

07 20 27 51 LMP Houston, I think that the blue leads are all right. Did you - Were you reading me okay last night just before we all sacked out?

07 20 26 03 CC That's affirmative, Rusty.

07 20 28 07 LMP Okay. I think it's just the sensors.

07 20 28 19 CC Okay. We're getting short bursts of good data and then long periods of erratic data.

07 20 28 28 CC Hi, Apollo 9, we'd like to have your S-band volume up. We'll be going over to Honeysuckle in about 20 seconds.

07 20 26 38 CDR Okay.

HONEYSUCKLE (RFV 119)

07 20 32 08 CC Apollo 9, Houston with a couple of targets of opportunity.

07 20 32 15 LMP Stand by one.

07 20 32 16 CC Roger.

07 20 32 28 LMP Okay. Go ahead.

07 20 32 30 CC The first one is Cape Kennedy: time 189 plus 10 plus 23; shoot three frames, 12-second exposures; should be right on the nadir. Next target: Bermuda, 189 plus 14 plus 07; three frames, 12-second intervals; and that's going to be real close to the nadir. Might be about a mile off.

07 20 33 11 LMP Okay. Cape Kennedy: 189 10 23; three frames, dump T of 12 seconds. Bermuda: 189 14 07; three frames, dump T 12 seconds. Both on the nadir.

07 20 33 26 CC That's affirmative, Apollo 9.

07 20 34 47 LMP Houston?

07 20 34 48 CC Go ahead, Apollo 9. Houston here.

07 20 34 51 LMP How's the cloud cover down there today around Texas?

(GOSS NET 1)

Tape 121/3
Page 707

1
07 20 34 57 CC I haven't been out since it's been daylight,
Rusty; let me check, here. I understand there's
broken clouds in our area.
07 20 35 15 LMP Okay.
07 20 35 35 CC And we'll see you Mercury 40.
07 20 35 40 LMP Roger.

MERCURY (REV 119)

07 20 41 39 CC Apollo 9, Houston through the Mercury. Standing
by.
07 20 41 52 LMP Roger --
07 20 41 53 CMP -- Roger, Houston, this is Apollo 9. Got some
gyro torqueing angles, if you want them.
07 20 41 57 CC I am ready to copy.
07 20 42 00 CMP Okay. GLT of 188 29 00, plus 00827, plus 00098,
plus 01792.
07 20 42 18 CC Roger. Would you read me the third one again
please, Dave?
07 20 42 22 CMP Roger. Plus 01792. And that was to a nominal
alignment. We course-aligned, and that's why
you get the big number, there.
07 20 42 32 CC Okay. I just wanted to make sure I was getting
it right. Thank you.
07 20 42 37 CMP Okay.
07 20 50 11 CC Apollo 9, Houston. One minute LOS Mercury; Redstone
57.
07 20 50 19 CMP Roger.
07 20 50 22 CMP Roger, Houston.

REDSTONE (REV 120)

07 20 58 58 CC Apollo 9, Houston through Redstone. You have
a GO for 136 dash 1.

(COSS NET 1)

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Page 708

07 20 59 04 CMP Roger on the GO.
07 21 01 24 CC And, Apollo 9, Houston. Do you read?
07 21 01 30 CMP Roger. Go ahead.
07 21 01 31 CC Roger. We've got you now for a nice long pass. We'll have you until 28 or so, and I've got an S065 update at your convenience.
07 21 02 05 RC ... Copy ...
07 21 02 15 LMP Houston, ready to copy your S065.
07 21 02 18 CC Roger, Apollo 9. Stand by one.
07 21 02 32 CC Okay. Apollo 9, Houston. S065 update. Inertial angles: 1800 29610 0 190 37 44 192 30 00; ORB RATE. The first one is Austin: 190 42 44 10 03, and the weather over Austin has broken clouds, but we went the pictures taken anyway. The next area is Charleston: 190 47 10 08 03; your ORB RATE ball, 180 327.5 0, ORB RATE 0.066, and your ORB RATE data - your VVXYZ is the same as you used yesterday. I can repeat it, if you wish; or, if you have it copied, you can use that.
07 21 04 25 CC Apollo 9, Houston. Do you read?
07 21 04 27 SC ...
07 21 04 37 CC Hello, Apollo 9. How do you read Houston?
07 21 05 11 CC Apollo 9, Houston. Do I have you now?
07 21 05 42 CC Apollo 9, Houston. Do you read?

MILA (REV 120)

07 21 07 15 CC Apollo 9, Houston through Mila. How do you read?
07 21 07 20 LMP Five-square, now.
07 21 07 22 CC Roger. Evidently we didn't make it at the last site. Did you get my update?
07 21 07 27 LMP The last word that I got was Charleston.

(GOSS NET 1)

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Page 709

- 07 21 07 30 CC Okay. Charleston is your second sight: 190 47 10 08 03. Your ORB RATE angles: 180 327.5 0; ORB RATE: 0.066.
- 07 21 08 02 LMP Roger. Do we have Victor through Cairo?
- 07 21 08 06 CC Roger. I have those. They are the same as yesterday. Would you like me to read them?
- 07 21 08 12 LMP Negative. We have them.
- 07 21 08 15 CC Okay. And one other comment: as you come across on the U.S., we'd like to get some 70mm photos, northward across the U.S., out of number five window.
- 07 21 08 30 LMP Roger.
- 07 21 08 39 CDR We're coming across backwards and upside down, Houston.
- 07 21 08 44 CC Roger. This was in connection with the S065 PAD.
- 07 21 08 52 CDR Sorry!
- 07 21 08 55 CC But you know, I don't really think that's a requirement. If you just take us some good old pictures looking northward, there, that'll be all right.
- 07 21 09 06 CDR Okay. Will you take him some good old pictures looking northward?
- 07 21 09 21 CC But as you will notice on the map, this REV 121, you get up there quite a ways. That's really the pass we want them on.
- 07 21 09 29 CMP Okay. Could you tell me what time we might get over Corpus Christi? On this pass?
- 07 21 09 36 CC You should be past it. You are not too far off the west coast of Florida.
- 07 21 09 42 CMP Oh yes. I can see Cape Sandblast right now. I wanted to say hello to my friends down in Refugio, but it looks like I missed them.

(COSS Rev 1)

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CANARY (REV 120)

- 07 21 14 45 CC Apollo 9, Houston.
- 07 21 14 48 CMP Roger. Go ahead.
- 07 21 14 49 CC Roger. Why don't you all think a little bit, today, how much in the flight plan tomorrow afternoon you would like to get squared away for reentry. We will be getting you up right on time the next two days, but we thought if you wanted, tomorrow you might want a few hours.
- 07 21 15 09 CDR Yes, we have some moving around to do and we would like to be in a pretty posture for reentry when we get up on reentry morning.
- 07 21 15 18 CC Why don't you kick it around a little bit, and maybe just give us an estimate in hours that you'd like extra for tomorrow afternoon. We'll make allowance in the photo plan, and so forth.
- 07 21 15 30 CDR Alrighty.
- 07 21 15 31 LMP And, Houston, do we have enough time for the readback on the S065?
- 07 21 15 36 CC That's affirmative.
- 07 21 15 39 LMP Okay. 18000 29610 all zips 190 3744 1903000 ORB RATE 0.066; local vertical angles, 180, 327.5, and 0. Austin: 190 42 44 10 03, weather broken but take them anyway; Charleston: 190 47 10 08 03.
- 07 21 16 14 CC That is affirmative; and your data that you load, your VWXYZ, is the same as yesterday.
- 07 21 16 21 LMP Okay.
- 07 21 27 46 CC Apollo 9, Houston. One minute LOS; Tananarive at 42.
- 07 21 27 52 CDR Hello there, young man.
- 07 21 27 54 CC Good morning.
- 07 21 27 56 CDR How are you today?

(GOSS NET 1)

Tape 121/7
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07 21 27 58 CC Well, I'll tell you. It looks like I'm going to have to get a flight to get any sleep.

07 21 28 03 CDR Aw, come on now! Stop picking on us!

07 21 28 06 CC Okay. Not really. Any excuse to get a flight, though.

07 21 28 13 CDR Roger.

END OF TAPE

APOLLO 9 AIR-TO-GND TRANSCRIPTION

(GOSS NET 1)

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CARNARVON (REV 120)

- 07 21 56 53 CC Apollo 9, Houston through Carnarvon. I have one Hasselblad target of opportunity.
- 07 21 57 00 CMP Go ahead, Houston. This is Apollo 9.
- 07 21 57 05 CC Roger. Your target will be Cape Blanc: oceanography, 191 plus 00 plus 33, five frames, 25-second interval, and it's north 5 degrees. Over.
- 07 21 57 38 CMP Roger. The time is 191 00 30, Cape Blanc, oceanography, five frames, 25-second intervals, 5 degrees north.
- 07 21 57 40 CC Roger. And, Apollo 9, Houston. We've been noting that you've been averaging about 20 pounds of RCS per day, for the S065 landmark and photos what have you. You still have about 70 pounds above the SCS, RCS redline, and what we're saying is that you can just about double your average usage and still be in good shape, if you want to do some particular tracking on something.
- 07 21 58 27 CDR Okay. Very good. We've actually been throwing in a little particular tracking now and then too. I think the fuel usage that we've been having is probably all that we need. Thank you.
- 07 21 58 39 CC Oh, very well.
- 07 22 05 02 CC Apollo 9, Houston. We are coming up on Honeysuckle; S-band volume up in about 30 seconds.
- 07 22 05 11 CMP Roger. Roger.

MERCURY (REV 120)

- 07 22 24 37 CC Apollo 9, Houston. About 45 seconds LOS. Redstone at 30.
- 07 22 24 41 CMP All right.

(COSS NET 1)

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REDSTONE (REV 120)

07 22 30 56	CC	Apollo 9, Houston through Redstone. Standing by. A big long pass this time.
07 22 31 03	COP	Okay. Houston, Apollo 9.
07 22 31 05	CC	Roger.
07 22 31 08	LMP	Hey, Houston, what's the forecasted weather condition on the east coast?
07 22 31 17	CC	Roger. Let me get you a good one for today there.
07 22 31 21	LMP	Okay. And in particular, I'm interested in whether we are going to get a good shot just north of Charleston there.
07 22 31 28	CC	Roger.
07 22 31 35	CC	9, Houston. From the indications we have down here, it's looking pretty good, and it ought to be open up that way.
07 22 31 43	LMP	Real great weather.
07 22 31 46	CC	Roger.

TEXAS (REV 121)

07 22 43 14	LMP	Okay. Three pictures of clouds over Austin.
07 22 51 23	CC	Apollo 9, Houston. I have a 16mm update.
07 22 51 32	LMP	Okay. Stand by one. I'll get ready to copy.
07 22 51 37	CC	Roger. Standing by.
07 22 51 43	LMP	Okay, Houston. Go ahead and start.
07 22 51 47	CC	Roger. Target will be Africa, Gulf of Guinea to Madagascar: 16mm, 75mm lens, six frames per second, CEX 368 film, start time 191 plus 03 plus 54, shoot south 30 degrees for 14 minutes.
07 22 52 29	LMP	Okay. Gulf of Guinea to Madagascar, 16mm, 75mm lens, six frames per second, CEX 368, 191 plus 03 plus 54, 10 degrees from the equator.

(COSS SET 1)

Tape 122/3
Page 714

- 07 22 52 30 CC Roger. Next one, target will be Gulf Stream: same camera, same film, start at 192 plus 22 plus 00, shoot on track for 3 minutes.
- 07 22 53 08 LMP Okay. Gulf Stream: 192 22 00 on track 3 minutes.
- 07 22 53 13 CC Okay. On one roll of that CEX 368 we'd like some interior photos. Use a spot meter at ASA 200, shutter speed 1/60. Use entire roll and mark the magazine for correct processing.
- 07 22 53 46 LMP Houston, we don't have enough film to do that. We still have some interior film. We only have two full rolls of exterior, and we want to save one for reentry, so we only have one to play with and it looks like it will take it for the Gulf of Guinea and Africa and the Gulf Stream.
- 07 22 54 03 CC Oh, understand. I thought you had more than two.
- 07 22 54 07 LMP No. There's two.
- 07 22 54 09 CC Okay. We're with you.
- 07 22 55 10 CC And, Apollo 9, I have some numbers where you can start looking for a fuel manifold pressure decay, to push the secondaries in your RCS.
- 07 22 55 21 LMP Okay. Go ahead.
- 07 22 55 24 CC Roger. Alfa through Delta will be 48, 52, 44, and 48.
- 07 22 55 37 LMP Okay. Understand, Houston. The onboard gage readout, is that correct?
- 07 22 55 41 CC That's affirmative. They'll be onboard gage readings - We will update them as we go along here a little bit more, but that's where you can start looking for a fuel manifold pressure decay to switch.
- 07 22 55 53 LMP Okay. You want us to switch them 170?
- 07 22 56 06 CC Apollo 9, Houston. I missed your last comment; say it again.
- 07 22 56 09 LMP Roger. You want us to go ahead and bring on the secondaries in 170 psi?

(GOSS REF 1)

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- 07 22 56 17 CC That's affirmative. 170 psi.
- 07 22 56 21 LMP Okay.
- 07 22 56 37 CC 9, houston. With your earlier comment on fuel usage, we're predicting that you probably won't get to those crossover points today.
- 07 22 56 46 LMP Okay. Understand. Probably won't reach them today, but we'll keep them in mind.
- 07 23 02 47 CC Apollo 9, Houston. About 1 minute ECS. Like to verify the attitude set switches in GDC.
- 07 23 02 56 LMP Negative. The attitude set is at TMU.
- 07 23 03 03 CC Roger. Request GDC unless you have a real reason to put in IMU.
- 07 23 03 10 LMP No. That's just where it ended up the last time I did a GDC set.
- 07 23 03 15 CC Roger.
- 07 23 03 29 CC 9, Houston. In preparation to firing up the S-band, like to do the IMU checklist, page 214, the first six steps of the TELCOM system powerup.
- 07 23 03 47 LMP Okay. Understand. The first six steps on 214 LMP checklist.
- 07 23 03 52 CC Roger.
- END OF TAPE

APOLLO 9 AIR-TO-GRO VOICE TRANSCRIPTION

(GOSS NET 1)

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CARNARVON (REV 121)

- 01 23 33 10 CC Apollo 9, houston through Carnarvon. I have an S065 update.
- 01 23 33 16 CDF Okay, Houston. Stand by one.
- 01 23 33 44 CC Sir, Houston. While you are digging things out, you might dig out your procedures book, and I can update your high-gain antenna test.
- 01 23 33 54 CDR Okay. Why don't you give us the S065 first?
- 01 23 33 57 CC Roger. You ready?
- 01 23 34 00 CDR Roger. Go.
- 01 23 34 02 CC 18000 28990, yaw to all zips 192 09 30 192 00 00, ORB RATE. First sight Colorado River: 192 14 33 10 08. Second sight, Snyder, Texas: 192 18 02 08 03. Third sight, Cumberland Plateau: 192 21 11 08 and 03. Over.
- 01 23 35 31 CDR Roger. 180 00 289 90 all zips 192 02 30 192 00 00. Orbit rate, Colorado River: 192 14 33 10 08. And someplace in Texas: 192 18 02 08 03. Cumberland Plateau: 192 21 11 08 03.
- 01 23 36 16 CC Roger. Readback correct. That's Snyder, Texas. And your Victor through Zulu numbers will be the same as before.
- 01 23 36 27 CDR Okay --
- 01 23 36 29 CDF -- Okay. What do you have on the high gain S-band antenna?
- 01 23 36 35 CC Okay. Why don't we just copy these things down, if you have got a pad there to copy; and then I'll go into the procedures and change the procedure itself.
- 01 23 36 46 CVP Okay. Stand by. Let me just get a pad.
- 01 23 36 56 CC And while you are doing that, we are going to be kind of close there between the end of the S065 and the first Carnarvon pass. And, also, you have got a P52 realignment in there; so if we miss that Carnarvon pass, we'll catch it over Hawaii.

(GOSS NET 1)

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- 07 23 37 14 CDR Yes. We can get that. No problem.
- 07 23 37 16 CC Okay. Good.
- 07 23 37 19 CMP Okay. Go ahead with the PAD, Ron.
- 07 23 37 21 CC Okay. The platform is aligned out of plane to the north; voice COMM will be VHF. Okay. Change high-gain antenna test procedures as follows: --
- 07 23 37 49 CDR -- Now, will you give me the PAD first, or notes, Ron?
- 07 23 37 52 CC I'll give you notes first.
- 07 23 37 56 CMP Okay. Stand by. I got the PAD first. Hold on.
- 07 23 37 58 CC Oh, I'm sorry.
- 07 23 38 11 CMP Okay. I've got the procedures book here, now, with our procedure in it. Will your notes follow the procedures so I can mark directly on it?
- 07 23 38 21 CC Okay. Let's go into that part first, and then I'll give you some additional notes.
- 07 23 38 26 CMP Okay.
- 07 23 38 31 CC Okay. In the procedures book, you go on down to step 7, and your antenna angles are pitch, minus 45 degrees; yaw is plus 90 degrees.
- 07 23 39 02 CMP Okay. Go ahead.
- 07 23 39 03 CC Okay. Delete step 8, perform step 9 at 193 plus 06 plus 05, and add high-gain antenna track to reacquire.
- 07 23 39 36 CMP As part of step 9, Ron?
- 07 23 39 39 CC Affirmative. At the end of step 9 there.
- 07 23 39 49 CC Do step 10 at acquisition which will be at 08 plus 05. Delete step 12.
- 07 23 40 31 CMP Any more than that, Ron?
- 07 23 40 33 CC Affirmative. While I think about it, S-band volume up at 42 for Honeysuckle.
- 07 23 40 41 CC Okay. On step 13. We'll do that three times. The first one at Carnarvon LOS, that'll be at 19 plus 40; at Hawaii AOS, be 35 plus 22; and Hawaii LOS at 44 plus 09. And scratch steps 15 and

(GOSS NET 1)

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- 07 23 41 41 CMP Okay. Is that everything on the procedures then?
- 07 23 41 45 CC Okay. That's all of the procedures. I'd like to get you set up in a passive thermal control. And I can give you some numbers for that so that we can in PTC as we are going through this test.
- 07 23 42 00 CMP Okay.
- HONEYMOON (REV 121)
- 07 23 42 54 CMP Okay, Houston. We're back with you now. Go ahead with the PTC.
- 07 23 42 58 CC Okay. Establish CRB RATE by using PTC CMP checklist, is page 3 - 17. Okay. Step 2: at 193 plus 06, pitch 352.00 - rather roll is 352.0 - Pitch and yaw are all zeros.
- 07 23 43 59 CMP Okay. Do you have any more, or do you want me to read all that back to you?
- 07 23 44 02 CC Negative. I have some more. New step 6 and step 7 of that CMP checklist as follows: VEEB 10 WCON 0) ENTEP, 3125 ENTER, 4 zips 2 ENTER, 14713 ENTER. Step 7: VEEB 21 ENTER, 3176 ENTER, 23163 ENTER. An that should be it.
- 07 23 45 10 CMP Okay, Ron. I got that. For step 6 is only change is a 00002 and 14713, and the number on step 7 is 23163.
- 07 23 45 23 CC That's right.
- 07 23 45 26 CMP Okay. On that, I got - just a minute. Ron, I've got one more question. On the time you gave us there, shouldn't that time be for step 7?
- 07 23 45 42 CC That's affirmative. Should be on step 7, that time there, 193 plus 06.
- 07 23 45 47 CMP Okay. Thank you.
- 07 23 45 53 CC Glad you're checking us.
- 07 23 45 57 IMP Okay. On the procedures, on step 7 you've got the pitch of minus 45 and yaw of plus 90; delete step 8; perform step 9 at 193 00 06; and add after the existing step 9, high gain antenna track to REACQ: on step 10 that should be done at acquisition.

(COSS SET 1)

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which should be at 08 05; delete step 12; step 13 we're going to do three time; Carnarvon LOS at 119 40; Hawaii AOS at 235 22; and Hawaii LOS at 44 09. Delete everything beyond step 15 - delete step 15 and beyond. Excuse me.

- 07 23 46 45 CC Affirmative. Delete step 15 and beyond. The AOS and LOS times I gave you were 193 in minutes.
- 07 23 46 56 CMP Right. Okay. Understand the platform is going to be out-of-plane to the north, and we're going to use VHF voice for radio.
- 07 23 47 06 CC Roger. I'll give you Carnarvon LOS, time is 193 19 40. Hawaii AOS is 193 35 22, LOS is 193 44 07.
- 07 23 47 27 LMP Okay. Understand the Hawaii LOS is at 44 07 instead of 09.
- 07 23 47 35 CC Affirmative.
- 07 23 47 46 CMP Okay. We'll look these over, and if we have any questions I'll give you a buzz later.
- 07 23 47 50 CC Okay. Just also note that on step 13 there, where we take those three times, copy them down after the antenna stops slewing.
- 07 23 48 00 CMP Understand. Copy down after the antenna stops slewing.
- 07 23 48 04 CC Roger.
- HAWAII (REV 121)
- 08 00 08 00 CC Apollo 9, Houston.
- 08 00 08 03 SC Go, Houston.
- 08 00 08 08 CC Roger. If you haven't guessed it yet, I guess you can see the purpose of this S-band antenna test is - We're testing the automatic PINGQ mode of this high-gain antenna during ITC when the crew may be asleep on the way to the moon. So you can use VERB 64 to monitor, but we don't want you to do any manual slewing to help the reacquisition between Carnarvon and Hawaii.
- 08 00 08 36 CDR Okay. Understand. No manual operation. Shall we make it authentic by sleeping, too?

(GOSS NET 1)

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08 00 08 42 CC Well, no. You've got enough sleep. You can just observe.
08 00 08 46 CDR Okay.
08 00 08 52 CC Apollo 9, Houston, Go.
08 00 08 55 LMP Okay. Houston, he'll make it authentic, I guarantee you!
08 00 08 58 C Okay.
08 00 09 00 CMP Want our last gyro torqueing angles?
08 00 09 03 CC Roger. Ready to copy.
08 00 09 06 CMP 191 - Stand by. We are getting ready to start this maneuver; I'll give them to you in a minute.
08 00 09 10 CC Okay.
08 00 09 12 CDR Ron, while we are waiting here: be advised I have looked through the flight plan, and I think if we go through tomorrow just as it is scheduled in the flight plan, we will be all right.
08 00 09 22 CC Very well. Sounds good, then.
08 00 09 25 CDR If we knock off at the time that we are supposed to knock off, we will have plenty of time to stow the spacecraft.
08 00 09 31 CC Okay, understand.
08 00 09 35 CMP Okay, here are your gyro torqueing angles, if you are ready.
08 00 09 36 CC Ready to copy.
08 00 09 40 CMP 191 26 00, minus 00232, plus 00509, minus 00010.
08 00 09 57 CC Roger. We copy that.
08 00 10 02 CMP Okay.

VANGUARD (REV 122)

08 00 23 19 LMP Houston, this is Apollo 9.

08 00 23 22 CC Apollo 9, Houston. Go.

08 00 23 24 LMP Well, I think this is a fairly successful S065 pass. We had some real nice weather over the clouded areas. And Snyder, Texas, had a deck of clouds that looked like it came right up next to it, and I think that both the geologist and the weatherman will really appreciate these because it shows a solid deck of clouds and a really sharp break, and then the land sticks out from underneath it. So they ought to both get a good - A pretty good piece of it.

08 00 23 47 CC Very, very good. By golly.

08 00 23 51 CMP And, Houston, you got an uplink for us?

08 00 23 56 CC Affirmative. Request for an ACCEPT and we have the REFSMMAT standing by to send to you.

08 00 24 01 CMP Okay. You've got P00 in ACCEPT.

08 00 24 20 CC Apollo 9, Houston. We'd like you to verify your SPS heater and gaging MAIN A and MAIN B circuit breakers are open.

08 00 24 30 CDR Negative. SPS system heaters and gaging MAIN A and MAIN B circuit breakers are closed.

08 00 24 36 CC Roger. We'd like to open them. We are not going to use PUGS for the deorbit burn.

08 00 24 41 CDR Alrighty. We'll open them up for you right now.

08 00 24 44 CC Roger.

08 00 25 50 CC Apollo 9, the computer is yours.

08 00 25 53 CDR All right. Go back to the BLOCK.

08 00 25 57 CC Roger.

08 00 25 58 CDR That was pretty snappy.

I (GOSS NET 1)

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- 08 00 26 03 CC They are still smiling.
- 08 00 26 19 CDR How are all you guys down there in that MOOR holding up? We giving you fatigue yet?
- 08 00 26 21 CC Oh no. We're still in good shape.
- 08 00 26 27 CDR Good. I want those recovery guys to find a nice soft piece of water with no wind and no waves tomorrow and lots of sunshine.
- 08 00 26 37 CC We're working on it real good.
- 08 00 26 39 CDR Oh yes. I forgot one thing, a couple of helicopters, too.
- 08 00 26 43 CC Okay.
- 08 00 26 49 CDR I want you to tell those guys on the Guadalcanal we're looking forward to seeing them.
- 08 00 26 55 CC Okay. You're still thinking about the cake.
- 08 00 26 58 CDR Well, that and a few other things.
- 08 00 27 01 CMP And that, too.
- 08 00 27 03 CC Roger.
- 08 00 28 22 CC Apollo 9, Houston.
- 08 00 28 24 LMP Go ahead, Houston.
- 08 00 28 29 LMP Go ahead, Houston.
- 08 00 28 31 CC Roger. I've got some pointing data for you, if you want to take a look at Pegasus.
- 08 00 29 22 LMP Houston, 9.
- 08 00 29 25 CC Roger. You there now?
- 08 00 29 29 LMP Yes.
- 08 00 29 30 CC Okay. At 192 plus 43 plus 09 with a roll 357.8, pitch 179.9, yaw 320.4, you should see Pegasus passing through your COAS, and it'll take about 45 seconds. It'll be passing from right to left. You will be trailing it by about 940 miles, and you will be 77 miles below it.

(GOSS SET 1)

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06 00 30 22 LMP Okay. What was the roll?
08 00 30 24 CC Roll is 357.8.
08 00 30 30 LMP Okay. At 192 43 09 - was that?
08 00 30 34 CC Affirmative.
08 00 30 41 IMP Okay. The angles 357.8, 179.9, 326.4. Pegasus is passing right to left 920 trailing at 77 below.
08 00 30 48 CC Roger.
08 00 31 01 CC 9, Houston. You've got about 150 square feet of area on Pegasus, so you might be able to get a pretty good look at it.
08 00 31 14 LMP Roger. Were those inertial angles or local vertical?
08 00 31 19 CC Roger. Those are inertial angles assuming you haven't torqued the platform on around to the new REFSMMAT we gave you.
08 00 31 26 LMP That's a good assumption at this point. And be advised we have taken - We've taken 105 frames of the S065 now.
08 00 31 36 CC Roger. 105 frames.

ASCENSION (REV 122)

08 00 38 59 CC Apollo 9, Houston through Ascension. Standing by.
08 00 38 03 IMP Roger, Houston ...
08 00 38 31 CC Apollo 9, Houston. I can't read you. You're in a keyhole right now.
08 00 40 42 CC Apollo 9, Houston. We might be able to read you now.
08 00 40 48 CDR Say again. Houston, Apollo 9.
08 00 40 50 CC Roger. I missed everything you said there, Jim, we're in a keyhole on the S-band.
08 00 40 54 CDR Okay. I said we are going to try to see if we can't see Pegasus, and I was wondering how long we could expect to see it in view? How many minutes?

(GOSS NET 1)

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- 08 00 41 02 CC Would you believe 44 seconds to the - just to the COAS part of it at that attitude, so you can see it a little bit longer than that going through the window.
- 08 00 41 12 CDR Okay.
- 08 00 41 27 CC 9, Houston. We've been looking for some other things with a little more of a trailing angle. Seems like everything we've come across so far is about a 90-degree crossing.
- 08 00 41 37 CDR Oh great. We're always out of phase.
- 08 00 41 39 CC Yes.
- 08 00 44 43 CC Apollo 9, Houston. About 30 seconds LOS. Tananarive at 53.
- 08 00 44 48 LMP Roger. Houston. We saw Pegasus going by. We were admiring the diastimeters, and wishing the spacecraft were in the proper attitude. At the moment we went through ...
- 08 00 45 21 CC Roger.
- END OF TAPE

(GOSS NET 1)

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08 02 00 48 IMP Roger. We are getting movies of it right now.
08 02 00 51 CC Okay. Good deal. You're ahead of us. And the other ones are clouded in, we found out, so that's it.
08 02 00 57 IMP Okay. Fine.
08 02 02 03 CDR Hey, Ron, are we just going over the recovery sites?
08 02 02 12 CC Say again. I missed it.
08 02 02 14 CDR Did we just go over the recovery sites?
08 02 02 19 CC Stand by one; just a second.
08 02 02 22 CDR Where's the Guadalcanal? I was just looking down, and I saw a great big ship down there. I just wondered if we happened to pass it.
08 02 02 29 CC I think you are way south of it.
08 02 02 33 CDR We're way south of it?
08 02 02 35 CC Affirmative.
08 02 02 37 CDR Okay.

ARIA (REV 123)

08 02 07 15 CC ARIA 5, Houston CAP COMM. Go remote.
08 02 07 23 ARIA Going remote.
08 02 07 35 ARIA ARIA 5, remote.
08 02 07 39 CC Apollo 9, Houston through ARIA for voice checks.
08 02 07 43 CDR Just a little bit broken, but readable. How us?
08 02 07 48 CC Roger. I think you are a little less than readable.
08 02 07 53 CDR All right. Another one: 1, 2, 3, 4, 5, 6, 7, 8, 9. Apollo 9 out.
08 02 08 06 CC Roger. It was much better that time, Jim.
08 02 08 04 CDR Okay. And you are coming through pretty good now, too.

(GOSS NET 1)

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08 02 10 35 CC And, Apollo 9, Houston. Another voice check, S-band.
08 02 10 44 CDR Say again, Houston.
08 02 10 46 CC Roger. I just wanted to - ARIA is sending S-band back to us now for voice checks.
08 02 10 52 CDR Okay.
08 02 10 54 CC Loud and clear.
08 02 10 56 CDR Roger. We're reading you pretty well, too.
08 02 11 01 CC Yes. I think they are working a little better nowadays than they used to be.
08 02 11 06 CDR Hey, I think they come in very handy.
08 02 11 12 CC Concur wholeheartedly.

ASCENSION (REV 123)

08 02 15 19 CC Apollo 9, Houston. Any joy?
08 02 15 22 CDR Roger, Houston. We got it. He went through the - He went to the diastimeter about a degree and a half low --
08 02 15 31 CMP And the same on the COAS. But on the COAS, he was only about a half of a degree low.
08 02 15 38 CC Okay. Half a degree low on the COAS.
08 02 15 41 CMP Right. But now it's in the right window, and it's probably not calibrated very well.
08 02 15 48 CDR He was a degree and a half in the left window, which should be calibrated pretty good.
08 02 15 55 CC Okay. We're a little curious on the times. How did the times work out there?
08 02 16 03 CMP Looks like he was like - about 10 seconds late.
08 02 16 07 CC Okay.
08 02 16 12 CDR Boy, he's really moving.
08 02 16 19 CC Yes. That's just about a 90 degree crossing there.
08 02 16 21 CDR Yes. So you want us to repeat that?

(GOSS NET 1)

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08 02 21 00 CC Apollo 9, houston. One minute LOS. Tananarive
at 30, and Carnarvon 44.

08 02 21 08 CMP Roger.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(COSS REC 1)

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CARMARION (REV 123)

08 02 44 44 CC Apollo 9, Houston. Standing by.

08 02 44 48 LMP Roger.

08 02 44 51 CC Roger.

08 02 51 57 CC Apollo 9, Houston. We're copying a pretty good size middle gimbal, there.

08 02 52 03 CMP Roger. We're sort of noseying on over to correct attitude for landmark tracking.

08 02 52 08 CC Okay. Good.

08 02 52 10 CMP Good eye, though.

08 02 52 13 CC Roger.

08 02 52 16 CDR You keep on us, Ron.

08 02 52 20 CC We'll try that.

08 02 52 24 CMP It's going to come a day when we don't see it.

08 02 52 27 CC Okay.

08 02 54 30 CC Apollo 9, Houston. You're on your own. Guam at about 57.

08 02 54 33 CDR Roger. Guam at 57. We'll keep an eye on it.

08 02 54 40 CMP When we come up over Guam, see if we've been into it or not.

08 02 54 42 CC Okay.

GUAM (REV 123)

08 02 59 41 CC Apollo 9, Houston. We are all smiling again.

08 02 59 46 CDR We fooled you, didn't we?

08 02 59 50 CDR I want to know if there was anybody placing any bets on it.

08 02 59 54 CC (Laughter)

08 03 03 02 CC Apollo 9, Houston.

(GOSS NET 1)

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08 03 03 04 CDR Go ahead. Houston, Apollo 9.
08 03 03 06 CC Roger. Pretty smooth about walking that around there. I have one more target of opportunity.
08 03 03 14 CDR Stand by.
08 03 03 19 LMP Okay. Go ahead.
08 03 03 21 CC Okay. At time 195 43 32: it's the Amazon Delta, oceanography, five frames, 10-second intervals; it will be north 35 degrees.
08 03 03 53 LMP Okay. Understand. 195 43 32: Amazon Delta, oceanography, five frames, 10 seconds DELTA-T, north 35 degrees. And be advised, we kind of concluded after unfortunately having made the mistake that the Barbados oceanography shot on the last REV should have been 30 south rather than 30 north, at least from our map here. Unfortunately, we didn't realize that until we had already taken up north.
08 03 04 31 CC Okay. Let me see if you caught us again.
08 03 04 35 LMP Yes. I'm not sure if that's right, Ron. They may have actually wanted the pictures well north of Barbados, but the Barbados were south of us.

HAWAII (REV 123)

08 03 13 06 CC Apollo 9, Houston through Hawaii.
08 03 13 10 CMP Hello there.
08 03 13 12 CC Roger. We're both right on that Barbados thing. The Island is actually south, but we wanted some pictures to the north for oceanography-type things.
08 03 13 23 CDR Okay-dokey. That what you got. You got pictures to the north, and it's water and clouds.
08 03 13 28 CC Roger.
08 03 13 34 CC And Jim, on that second landmark tracking thing, the weather is a little bit marginal on that one.
08 03 13 43 CDR Okay. I think our intrepid tracker can probably nail it down, though.

(GOSS NET 1)

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08 03 13 48 CC Very good.
08 03 13 54 LMP The marginal we handle routinely; the impossible we attempt.
08 03 13 59 CC Okay. Got you.
08 03 16 29 CC Apollo 9, Houston.
08 03 16 33 CDR Go ahead, Houston.
08 03 16 35 CC Roger. We're thinking of putting in a backup GDC align at 196 hours there - just to let you know. I'll pass up some data on it a little bit later on.
08 03 16 44 CMP Fine. Okay.
08 03 16 51 LMP And, Houston, just north of us right now by about 70 or 80 miles, there's a very, very symmetrical cyclonic pattern of clouds out there - anticyclonic, I'm corrected.
08 03 17 07 CC Roger.

TEXAS (REV 124)

08 03 26 14 CMP Okay. Houston, Apollo 9.
08 03 26 17 CC Apollo 9, Houston. Go.
08 03 26 26 CC Apollo 9, Houston. Go ahead.
08 03 26 29 CMP Houston, Apollo 9.
08 03 26 31 CC Roger. Go ahead.
08 03 27 23 CC Apollo 9, Houston.
08 03 27 30 CDR Go ahead, Houston. Apollo 9.
08 03 27 31 CC Roger. I have you now. I read you a while ago, but you weren't reading me.
08 03 27 37 CMP Roger. Houston, Apollo 9. How do you read?
08 03 27 40 CC Loud and clear, now.
08 03 27 41 CMP Okay. Got five good Marks on Point Loma.

(COSS NET 1)

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- 08 03 27 46 CC Hey, very good.
- 08 03 27 48 CMP Gee, and the surf looks great down there.
- 08 03 27 52 CC (Laughter)
- 08 03 28 10 CC Apollo 9, Houston. I think you have to proceed on your display now for us to get the Mark data down here.
- 08 03 28 17 CMF Oh, okay. I'm going to go all the way through the program. Right now ...
- 08 03 28 20 CC Oh, okay. Good.
- 08 03 29 57 CC Apollo 9, Houston. I've got the roll, pitch, and yaw align angles for your GDC align there, if you want to copy.
- 08 03 30 15 LMP Okay. Go ahead.
- 08 03 30 17 CC Roger. Roll align, 246; pitch, 315; yaw, 051; the south set stars. We'd like to leave the CMC and IMU powered up for this alignment. Your GDC ball angles will be 180, 180, and 0.
- 08 03 31 01 LMP Okay. I understand. Roll, pitch, and yaw at 246, 315, 051, south set stars. Leave CMC, IMU powered up, and GDC ball angles: 180, 180, 0.
- 08 03 31 12 CC Roger. And once you get to your GDC align attitude, can you hit us a VERB 06, NOUN 22 to compare the IMU angles with what we think they ought to be?
- 08 03 31 25 LMP Roger.
- 08 03 31 31 CC 9, Houston. That's VERB 06, NOUN 20, instead of 22.
- 08 03 31 36 LMP Roger.
- 08 03 31 55 CC Apollo 9, Houston.
- 08 03 31 57 CMP Go ahead.
- 08 03 32 00 CC Roger. Can you record these? And just to let you know what we think they ought to be - Roll ought to be 180.4; pitch, 237.5; and yaw, 0.5.
- 08 03 32 16 CMP Okay. 180.4, 237.5, and 000.5.
- 08 03 32 20 CC Roger.

(GOSS NET 1)

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ASCENSION (REV 124)

08 03 51 24	CC	Apollo 9, Houston through Ascension.
08 03 52 43	CC	Apollo 9, Houston.
08 03 53 32	CC	Apollo 9, Houston.
08 03 53 52	CMP	Apollo 9. Low and clear.
08 03 53 38	CC	Roger. I don't know if I mentioned it on that backup GDC align, we do not - I say again, do not want you to cage the KMJ.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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GUAM (REV 124)

- 08 04 34 28 CC Apollo 9, Houston through Guam.
- 08 04 34 30 CMP Hello. Houston, Apollo 9.
- 08 04 34 31 CC Roger. We need your P22 data, there. If you just call it up again, I think we can get it.
- 08 04 34 40 LMP Okay. In work.
- 08 04 34 42 LMP Houston, we'd like to run this optics GDC align again on the next pass. We'll have to stay powered up until about 197 40 or something like that.
- 08 04 34 56 CC Roger. We concur.
- 08 04 35 02 CC And, 9, houston. I have a target of opportunity.
- 08 04 35 10 LMP Okay. Go ahead.
- 08 04 35 12 CC Roger. At time 197 13 00 it will be Ecuador, geology, ten frames, 10 seconds, on track.
- 08 04 35 37 LMP Okay. 197 13 00, Ecuador, geology ten frames, and 10 seconds on track.
- 08 04 35 46 CC Roger.
- 08 04 35 50 CMP And, Houston, 9. Those are the right numbers for the second landmark.
- 08 04 35 55 CC Roger. I guess just go ahead and call P22. That 89 just won't quite hack it.
- 08 04 36 02 CMP Oh, okay. You want me to just read you the NAV 89? You want the whole P22 again?
- 08 04 36 10 CC No. Just call up P22 so we can get the Mark data.
- 08 04 36 15 CMP Okay.
- 08 04 36 20 CMP How far would you like to go in P22?
- 08 04 36 25 CC Just call it up. That's all we need.
- 08 04 36 28 CMP Okay. Fine. And it was sort of cloudy over there, and I didn't get identification until we were just about overhead, but didn't see by part 2.

(GOSS NET 1)

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08 04 36 37 LMP Also.

08 04 36 38 CC Okay.

08 04 36 39 LMP Also, Houston, it appeared the time overhead was off by almost a minute.

08 04 36 49 CC Roger.

08 04 37 09 CC Apollo 9, Houston.

08 04 37 42 CDR Go ahead, Houston.

08 04 37 43 CC Roger. The computer is yours now, and we'll delay the R memory dump and state vector update another REV here.

08 04 37 55 CDR Okay.

08 04 37 57 CC And do you have any results at all on that GDC and align?

08 04 38 03 CDR Yes. Just a minute.

08 04 38 06 CDR I guess we went through it and learned a few things, I guess, relative to history and how the procedures have changed. We did it wrong the first time and we'll go back and do it right this time and then when we get back down we'll want to talk about it some.

08 04 38 22 CC Okay. I understand.

08 04 39 00 CDR Houston, this is Apollo 9.

08 04 39 02 CC Houston. Go.

08 04 39 04 CDR We'd like to work out a - We'd like to use the procedure that we used or worked out about 4 or 5 years ago on this thing and see how it compares. Okay?

08 04 39 17 CC Okay. I don't know if anybody has got that procedure around, but we'll see.

08 04 39 21 CDR It all ends up the same way. We'll just use the same numbers and it should work the same way.

08 04 39 27 CC Okay. Very well.

08 04 39 34 CDR We'll use the procedure and get you the right numbers. How does that sound?

(GOSS NET 1)

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08 04 39 37 CC That sounds good. And watch your gimbal lock as you are maneuvering around. That's all we have got to say.

08 04 39 46 LMP Yes. It dips right in there, doesn't it?

08 04 39 47 CC Yes. Gets pretty close, I think.

08 04 39 50 LMP You'll really have a good time watching this time.

08 04 39 54 CC Okay.

08 04 41 05 CMP Houston, Apollo 9.

08 04 41 07 CC Houston. Go.

08 04 41 10 CMP Roger. Can you get us another map update here?

08 04 41 13 CC Roger.

08 04 41 20 CC Here we go. REV 124: at 196 plus 29 plus 12; right ascension, 15 17; longitude, 112.6 east.

08 04 41 48 CMP Okay. REV 124: 196 29 12, and the longitude is 112.6 east.

08 04 41 56 CC Roger.

HAWAII (REV 124)

08 04 50 47 CC Apollo 9, Houston through Hawaii.

08 04 50 52 LMP Go Houston.

08 04 50 55 CC Roger. Our cryo plan this evening is essentially the same. However, I guess you noticed that the exhaust temperature on fuel cell 1 has stayed pretty much constant today. So what we would like to do is essentially maintain the same power load without any large changes, either up or down. So in addition to the powerdown procedure we had last night, when you power down your GPS stuff, put in burner 3 on MAIN A and put the rendezvous transponder switch to POWR.

08 04 51 39 LMP Houston, do you read Apollo 9?

08 04 51 42 CC Roger. Loud and clear. How me?

(GOSS NET 1)

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- 08 04 51 44 LMP You're a little broken. I understand that when we power down the IMU in the SPS you want us to put the rendezvous transponder switch to POWER and the burner 3 to MAIN A.
- 08 04 51 55 CC That's affirmative.
- 08 04 51 57 LMP Okay. And on the cryos you want to let the pressure drop down between 190 and 200 on the hydrogen, and then we're going to turn one of the fans on until it's time for number 1, I guess.
- 08 04 52 10 CC No. We're going to use tank 2 again tonight. Tank 2 fan ON just prior to going to sleep.
- 08 04 52 15 LMP Okay, tank 2 fan ON tonight.
- 08 04 52 20 CC Roger.
- 08 04 52 45 CC And, Apollo 9, Houston.
- 08 04 52 48 CMP Go ahead. Houston, 9.
- 08 04 52 50 CC Roger. I guess our SD65 countdown here shows about 97, and you said 105. Can you recheck that?
- 08 04 53 02 CMP Roger. We'll get it in just a second, and do you have any BIOMED data on the LMP, yet?
- 08 04 53 09 CC Roger. Stand by.
- 08 04 53 45 CC Apollo 9, Houston. Still looks the same down here on the LMP.
- 08 04 53 50 CDR Looks the same, huh? Well, he checked the electrodes and they are nice and damp and the electrode paste looks fine. Guess we'll work on it some more.
- 08 04 54 01 CC Okay.
- 08 04 54 06 LMP Say, incidentally, that last bunch of landmark tracks was with the telescope rather than the sextant ... identification ...
- 08 04 54 22 CC Apollo 9, Houston. You faded on that one. Say again.

(GOSS NET 1)

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08 04 54 27 CMP Say again, Houston.

REDSTONE (REV 124)

08 04 57 43 CC Apollo 9, Houston through Redstone.

08 04 57 48 LMP Roger, Apollo 9. Go.

08 04 57 49 CC Roger. I missed your last comment there in Hawaii.

08 04 57 52 LMP Oh yes, I - I just mentioned that the second group of Marks on the second sight - for the Marks on the second sight that were made from the telescope, not the sextant, because of the visibility problem.

08 04 58 06 CC Okay. Understand. Incidentally, it looks like on that first set of Marks the 121 alarm would not have rung anyhow, even - even if we had not disabled it.

08 04 58 18 LMP Well, that's very interesting. Very good.

08 04 58 20 CC Yes.

08 04 58 23 CMP Houston, I checked the S065 magazines and we are reading about 104 or 105.

08 04 58 29 CC Okay; understand.

TEXAS (REV 124)

08 05 00 32 CC Apollo 9, Houston.

08 05 00 34 CDR Hello there, Alie; how are you?

08 05 00 37 CC Fine, Jimmy; how are you tonight?

08 05 00 40 CDR Pretty good.

08 05 00 41 CC If you're ready to copy, I've got some block data for you.

08 05 00 45 CDR Just a minute.

08 05 00 47 CC Okay.

(GOSS NET 1)

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- 08 05 00 53 CDR Okay. Go ahead.
- 08 05 00 55 CC Alrighty. 127 3 Alfa, plus 316, plus 1485 201 07 09 3147; 128 3 Bravo, plus 259, plus 1450 202 47 15 3839; 129 Delta Charlie, minus 220, minus 1600 204 35 30 4829; 130 Alfa Charlie, minus 004, minus 0270 205 00 37 5538; 131 Alfa Charlie, plus 120, minus 0325 206 35 07 4779; 132 2 Alfa, plus 264, minus 0280 208 13 15 3769; 133 Alfa Charlie, plus 231, minus 0589 209 41 36 4044; 134 1 Alfa, plus 286, minus 0680 211 16 48 3622. The S/S trims are pitch, minus 0.64; yaw, minus 0.94; and hold your readback for a minute.
- 08 05 04 32 CDR Holding.
- 08 05 04 33 CC 9, Houston. I would like to give you some pointing data here. It's going to be coming pretty close here on this Pegasus.
- 08 05 04 40 CDR Okay. Have at it.
- 08 05 04 42 CC At 197 plus 13 plus 00, if you roll 00.89, pitch 178.4, and yaw 062.7, you will pick it up at about 1100 miles. Four minutes later, it will be into 100 miles.
- 08 05 05 15 CC And your closest point of approach will be about 67 miles below it - or behind it, I mean - 77 miles below it, and 35 miles to the right.
- 08 05 05 31 CDR Well, how about that. Let's see if I got the numbers right. 197 13 00. Is that the right time?
- 08 05 05 38 CC Affirmative. That's when it will be a thousand miles off, it really booms in.
- 08 05 05 41 CDR I believe it. And then the roll - Say again the roll; I missed that.
- 08 05 05 46 CC Roll is 8.9 degrees.
- 08 05 05 49 CDR Okay. Roll, 8.9; pitch, 178.4; and yaw, 62.7.
- 08 05 05 55 CC Yes. I don't know if you will be able to track it in or not, but it might be worth a try. Try a little Kentucky windage there.
- 08 05 06 01 CDR Okay. We've got a lot of windage up here.

(COSS NET 1)

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08 05 06 04 CC Okay.

08 05 06 30 CMP Hey, Houston, Apollo 9.

08 05 06 32 CC Houston. Go.

08 05 06 33 CMP Here we've been trying to avoid that red dot on the ball all day and look what you gave us for yaw.

08 05 06 39 CC Yes; it's pretty close there.

08 05 06 42 CMP We will watch it.

08 05 06 47 LMP What kind of odds are you giving whether we go in it or not?

08 05 06 51 CC Well, the tracking is supposed to go the other way, and the yaw gets better.

08 05 06 57 LMP Alrighty.

08 05 07 42 CC Apollo 9, Houston.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS REV 1)

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TANANARIVE (REV 125)

08 05 42 56	CC	Apollo 9, Houston through Tananarive.
08 05 43 00	CDR	Go ahead, Houston; this is Apollo 9.
08 05 43 02	CC	Roger. Apollo 9, Houston. I guess we have a few minutes here at Tananarive. We can get some of this stuff out of the way, I guess, just for planning purposes. When you get to Hawaii, we'll get the D-memory dump, the state vector update, consumables, and your PRD readings. I guess while we are here at Tananarive we can get the block data readback.
08 05 43 27	CDR	Roger. ...
08 05 43 50	CC	Apollo 9, Houston. How do you read now?
08 05 43 56	CDR	Houston, Apollo 9. You are still coming through unreadable.
08 05 46 09	CC	Apollo 9, Houston. How do you read now?
08 05 46 14	CDR	Reading a little better, Houston.
08 05 46 19	CC	Roger, Apollo 9. Understand. Reading a little better. Communications here are not too good. Did you get a chance to see Pegasus?
08 05 46 38	CMP	Houston, how do you read Apollo 9? We didn't get a chance to. We really didn't see it. We may have caught a glimpse of it, but we couldn't track it ...
08 05 46 53	CC	Roger. Apollo 9, Houston. Understand.

GUAM (REV 125)

08 06 13 34	CC	Apollo 9, Houston through Guam.
08 06 13 36	CDR	Go ahead. Houston, Apollo 9.
08 06 13 45	CDR	Go ahead. Houston, Apollo 9. How are you?
08 06 13 49	CC	Roger. Apollo 9, Houston. Reading you fairly weak. I guess we could use some of this pass to tell you what we are going to do over Hawaii.

(GOSS NET 1)

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08 06 14 00 CDR Okay. Go ahead.

08 06 14 02 CC When we get a clear signal over Hawaii, we'll do an E-memory dump, then a state vector update; and, if you've got them ready, I'll get your consumables and FWD's. I guess this is a good time to remind you of the waste water dump. We want you to dump to not more than 20 percent tonight - not more than 20 percent, and remind you of the CO₂ change in the water chlorination and termination of BATT B charge.

08 06 15 35 CDR Okay. Very good. We'll terminate BATT B charge now, and understand you want us to dump to 20 percent tonight on the waste water.

08 06 15 43 CC That's affirmative.

08 06 15 46 CDR Okay. We'll be prepared to give you an E-memory dump, and we'll be ready for state vector update. As soon as we are through with that, we'll give you the consumables ...

08 06 15 57 CC Yes. Roger, Apollo 9. We'll pick you up over Hawaii at about 25.

08 06 16 01 CDR Okay. Very good. And we'd like to tell you that our GDC alignment was successful.

08 06 16 19 CMP Houston, are you still there?

08 06 16 26 CC Apollo 9, Houston. Roger. Still here, but we're reading you very weak.

08 06 16 30 CMP Roger. We said the GDC alignment was successful ...

08 06 16 37 CC Roger. Understand the GDC align was successful.

08 06 16 47 SC ...

HAWAII (REV 125)

08 06 26 47 CC Apollo 9, Houston.

08 06 26 50 LMP Go ahead, Houston.

08 06 26 52 CM Roger. We'll have to stand by for a few minutes on memory dump 'till we get through the keyhole. In the meantime, if you're ready on the consumables, we'll take that.

(GOSS NET 1)

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- 08 06 27 03 LMP We're ready; you ready?
- 08 06 27 05 CC I'm ready.
- 08 06 27 06 LMP Okay. Service module A, B, C, D: 52, 54, 45, 51. BATT C, pyro A and B: 36.9, 37.1, 37.1. And the injector temperatures, 5 Charlie and Delta: 4.9, 4.9; 6 Alfa, Bravo, Charlie. Delta: 4.8, 4.8, 4.9, 4.8. The PRD's: Commander, 31 20; CMP, 61 22; LMP, 80 22.
- 08 06 27 46 CC Roger. CDR. Consumables: 52, 54, 45, 51; 36.9, 37.1, 37.1; 4.9, 4.9; 4.8, 4.8, 4.9, 4.8. And the PRD's: 31 20, 61 22, and 80 22.
- 08 06 28 05 LMP That's Charlie.
- 08 06 28 12 CMP Hey, you want some angles on the GDC align?
- 08 06 28 18 CC Okay. Fire.
- 08 06 28 20 CMP Okay. 180.36, 236.10, 359.78. And that was after the maneuver to 180, 180, 0, which took us like about 28 minutes.
- 08 06 28 42 CC Roger. Understand. Those angles: 180.36, 236.10, 359.78.
- 08 06 28 50 CDR That's Charlie. And you want your block data back?
- 08 06 28 56 CC Okay. We might as well go ahead and get that now.
- 08 06 28 59 LMP Hey, before you get that, the maximum radiation going through the anomaly was 0.037 RADS per hour.
- 08 06 29 09 CC Roger. Understand the radiation survey reading was 0.037 RADS per hour.
- 08 06 29 19 LMP Righto.
- 08 06 29 20 CC Okay. You can give me the block data readback if you like.
- 08 06 29 24 LMP All right. Are you ready now?
- 08 06 29 26 CC Yes.
- 08 06 29 30 LMP Okay. 127 3 Alfa, plus 316, plus 1485 201 07 093147; 128 3 Bravo, plus 2nd, plus 1450 201 47 15 3839; 129 Delta Charlie, minus 223, minus 1610 204 35 30 4829; 120 Alfa Charlie, minus 604, minus 0270 205 00 17 5538; 131 Alfa Charlie, plus 1st, minus 0325

(GOSS NET 1)

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206 35 07 4779; 132 2 Alfa, plus 264, minus 0280
208 13 15 3769; 133 Alfa Charlie, plus 321,
minus 0598 209 41 36 4044; 134 1 Alfa, plus 286,
minus 0680 211 16 48 3622. With a pitch trim
of minus 0.64 and a yaw trim of minus 0.94.

08 06 30 54 CC Roger. Apollo 9, Houston. Copy correct.
08 06 30 53 LMP Okay.
08 06 30 59 CC Okay. And we're ready for the E-memory dump
if you'll give us the VERB 74 ENTER.
08 06 31 04 CMP Okay. On my mark. 3, 2, 1.
08 06 31 09 CMP MARK.

REDSTONE (REV 125)

08 06 32 21 CC Apollo 9, Houston at Redstone.
08 06 32 29 CDR Go ahead.
08 06 32 30 CC Roger. We're not sure we got all that E-memory
dump; would you do it again for us, please?
08 06 32 35 CDR Oh, yes; we'll do it again.
08 06 32 36 CC Alrighty; that's very nice of you.
08 06 32 37 CDR Pleasure. All set?
08 06 32 40 CC All set.
08 06 32 42 CDR Roger. 3, 2, 1.
08 06 32 45 CDR MARK.
08 06 33 42 CC Apollo 9, Houston. We're ready to give you a
state vector if you'll give us ACCEPT.
08 06 33 48 CDR Roger. You have ACCEPT.
08 06 33 51 CC Roger.
08 06 34 01 CC And, Apollo 9, Houston. You might be advised
that we're reading Rusty's BIOMED now okay. Looks
like Dr. Scott's operation was a success.
08 06 34 12 CDR That's great. The operation was a success, but the
patient died.

(GOSS NET 1)

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- 08 06 34 20 CDR What we did was - We took Fusty's sensors and moved them over on Dave.
- 08 06 34 28 CDR We figured he was the only one with a heart strong enough to beat through.
- 08 06 34 32 CC No wonder the doctors are scratching their heads.
- 08 06 34 40 CDR Hey, ask the Flight Surgeon on duty there if he can unscramble all of our EEG's, and he always knows who's hooked to which COM cable.
- 08 06 34 48 CC Yes, that's right. He's been able to do that.
- 08 06 34 51 CDR Very good.
- 08 06 34 54 CC He knows you guys better than you do.
- 08 06 34 57 CDR That's what bothers me.
- 08 06 35 11 CC Apollo 9, Houston. On that waste water dump, maybe I didn't make it clear. They want you to dump so that you have no more than 20 percent in the waste water. Dump down to 15 to 20 percent so that amount of water left at reentry will be correct.
- 08 06 35 30 CDR Okay. That's what we'll do. We'll dump down to between 15 and 20 percent.
- 08 06 35 33 CC Alrighty.
- 08 06 36 16 CC Apollo 9, Houston. Your state vector is in, we've verified it for you, and you have the computer back.
- 08 06 36 22 CDR Okay. Thank you.
- 08 06 37 02 CC Apollo 9, Houston.
- 08 06 37 06 CDR Go ahead.
- 08 06 37 07 CC Roger. One last question. We'd like to know how much Hasselblad film you have left.
- 08 06 37 15 CDR I think we have about a hundred frames.
- 08 06 37 18 CC Roger. Copy one hundred frames, and we're about to lose you here at Redstone.
- 08 06 37 23 CDR Okay.

(GOSS NET 1)

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08 06 37 24 CC Okay. We're still showing you in ACCEPT, there, Jim.

08 06 37 27 CDR Okay. We'll get cut in just a minute.

08 06 37 30 CC Okay. We'll be losing you in about a minute here at Redstone. I guess it's time for you fellows to get tucked in for the night.

08 06 37 35 CDR Okay. We haven't eaten yet, so we'll be up for a while, if you can get hold of us.

08 06 37 39 CC Okey-dokey.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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HAWAII (REV 126)

- 08 08 03 06 CC Apollo 9, Houston through Hawaii.
- 08 08 03 11 CMP Roger. This is Apollo 9.
- 08 08 03 13 CC We see that you all are not asleep yet, so we thought we'd give you a call and give you the update on the block data number 90.
- 08 08 03 21 CMP Okay. Stand by one.
- 08 08 03 23 CC Alrighty.
- 08 08 03 38 CMP Okay. Go ahead, Al.
- 08 08 03 40 CC Okay. It's on REV 127, and the updates are as follows: 127 Charlie Charlie, plus 17, minus 1650 201 21 04 3082. End of update.
- 08 08 04 04 CMP Roger. 127 Charlie Charlie, plus 17, minus 1650 201 21 04 3082.
- 08 08 04 15 CC That's correct, Dave.
- 08 08 04 18 CMP Okay. How's everything going down there?
- 08 08 04 20 CC Oh, it's going very quietly down here. How is it up there?
- 08 08 04 23 CMP Oh, very quietly up here. We're just sort of regrouping and getting ready.
- 08 08 04 27 CC You're about ready to go night-night?
- 08 08 04 30 CMP Well, we'll try to sort of get organized here so tomorrow night we can put everything in its proper place with a minimum of disturbance.
- 08 08 04 43 CC Dave, we'd like to confirm that you've got the H₂ fans on in tank A, and that you did do a canister change - CO₂ canister change.
- 08 08 04 54 CMP That's affirm. We did do a CO₂ canister change on time and by plan - we haven't turned it on. We're going to turn it on just before we go to bed.
- 08 08 05 03 CC Alrighty.

(COSS VER 1)

Tape 128/2
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- 08 08 05 05 CMP Which will probably be in about 15 or 20 minutes.
- 08 08 05 08 CC Okay. We'll take a look at giving you an extra hour tomorrow.
- 08 08 05 12 CDR No. I guess we'd just as soon get up on time tomorrow, and sort of get going so we have an even day tomorrow.
- 08 08 05 19 CC Okay. We're with you.
- 08 08 05 37 CC Apollo 9, Houston. We'd like for you to go ahead and turn that fan on in tank 2 now, if you would, please.
- 08 08 05 42 CMP Very well. Fan ON now.
- 08 08 05 46 CC Roger. Thank you.
- 08 08 05 48 CMP You are welcome.
- 08 08 06 48 CMP Houston, 9.
- 08 08 06 51 CC Go ahead, 9.
- 08 08 06 53 CMP Hey, Al. We just pulled the flight plan out and took a look at it, and there's really not much to do the first couple or three hours, so why don't you give us a ring about 209 in Carnarvon?
- 08 08 07 09 CC Dave. We'll see if we can work that one out. It looks okay from down here right now.
- 08 08 07 14 CMP Okay. One thing we'd like to make sure we do tomorrow, is get all the S065's done.
- 08 08 07 19 CC Yes; you bet.
- 08 08 07 22 CMP Alrighty. And one more thing. If you can't find any targets of opportunity for the space ships, don't worry about it. We'll be able to take plenty of pictures.
- 08 08 07 38 CC Okay. Copy that.
- 08 08 07 40 CMP Lots of things to take pictures of up here.
- 08 08 07 44 CC Show Biz.
- END OF TAPE

Apollo 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS SET 1)

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REST PERIOD - NO COMMUNICATIONS

Apollo 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 130
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 ASTRONAUT-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 131
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 132
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 133
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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CANARY (REV 132)

- 06 16 49 24 CC Apollo 9, Houston.
- 08 16 49 30 CMP Hello, Houston, Apollo 9.
- 08 16 49 32 CC Boy, Dave, you sure do wake up in a hurry. I never have to call you more than once.
- 08 16 49 39 CMP Well, we're expecting you every morning.
- 08 16 49 42 CC Well, good morning and all that good jazz. We'll have to think up something jazzy to wake you up with tomorrow.
- 08 16 49 56 CC Hey, I've got a question here for you.
- 08 16 50 01 CMP Go ahead.
- 08 16 50 04 CMP Go ahead, Houston.
- 08 16 50 06 CC Okay. You're over the Canaries now. When you come across Australia, you're going to hit it with a - It's going to be almost sunset, but almost enough light for a picture. I was wondering if you could get a picture. It's generally dark down there, and we don't get many chances. This gives you about 30 minutes to get ready for it.
- 08 16 50 37 CMP Roger, Houston. We'll do that.
- 08 16 50 40 CC Okay. If you've got something to write on now, I'll give you a time.
- 08 16 50 44 CMP Okay. Go ahead.
- 08 16 50 47 CC 209 plus 27 plus 11, four frames, 10-second exposures, shooting on the nadir. You're shooting the west coast of Australia, there - Beroom, Australia - and it's for geology and oceanography.
- 08 16 51 10 CMP Okay. 209 27 11, four frames, 10-second intervals, on the nadir. We can get that one.
- 08 16 51 19 CC Okay. Real good. And like I say, it's coming up - It will be a little sun angle, but maybe we can hack it, and at your convenience, we'd like to have inverter 3 OFF, and the rendezvous radar transponder off.

(COSS REV 1)

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08 16 51 35 CMP Okay. Inverter 3 is OFF and we'll go down and get the transponder.
08 16 51 39 CC Okay. And we'd like to turn the fans off in both H₂ tanks.
08 16 51 46 CMP Okay. H₂ fans are both OFF.
08 16 51 51 CC Okay. Our good old RCS configuration for the day will be quad Baker and Charlie, and Baker Delta roll.
08 16 52 04 CMP Okay. Baker and Charlie, and Baker Delta roll.
08 16 52 08 CC Okay. And make that H₂ tank 1 fan ON, please.
08 16 52 15 CMP Okay. H₂ tank 1 fan is ON.

MADRID (REV 132)

08 16 52 23 CC Very good. And you might whip up your old S-band volume, there. We'll have Madrid here for 4 or 5 minutes.
08 16 52 31 CMP Okay. S-band is up.
08 16 52 43 CDR Houston, how do you read Apollo 9?
08 16 52 45 CC I'm reading you loud and clear, Jim.
08 16 52 49 CDR Okay. Like you say, it wasn't getting out before, I guess I just didn't have all these things plugged in quite right. One of my things keeps coming loose.
08 16 52 59 CC Maybe it's wearing out. Good morning.
08 16 53 01 CDR Hello there.
08 16 53 04 CDR Hey, I've got a little question. How come we almost never use quad A? At least it seems to be the least one that we require the least out of for service module RCS deorbit, yet we seem to have the most fuel in it.
08 16 53 23 CC Okay. Stand by one, here, and let me give you a good answer on that.

(GOSS NET 1)

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- 08 16 53 39 CC Okay, Apollo 9. The answer on that one is that you require the most out of that for an SPS deorbit and we're trying to hang on to the SPS deorbit capability.
- 08 16 53 53 CDR Okay. That's a pretty good answer.
- 08 16 54 10 CC Okay. Apollo 9, we're going to - I've only got you for about another 3 or 4 minutes here at Madrid. And so, I don't think - I could get an consumables update if you've got a handy P&P for that.
- 08 16 54 23 CDR Okay. All set. Go ahead.
- 08 16 54 25 CC All right. Hours 209 42 10 42 12 38 13 39 13 2 4 3 15 31 33 39; and your DAP redlines: 25 31 34 34. End of update.
- 08 16 55 08 CDR Roger. 209 42 10 42 12 38 13 39 13 2 4 3 15 31 33 39 25 31 34 and 34.
- 08 16 55 24 CC That is affirmative, and that's correct.
- 08 16 55 28 CDR Okay.
- 08 16 55 51 CC And, Apollo 9, Houston. We'd like to start a battery A charge at 209 plus 25.
- 08 16 56 01 CDR Roger. 209 plus 25 for battery A charge.
- 08 16 56 06 CC That's correct and I'll wait until we get over Carnarvon for the rest of the block data - I mean to get the block data and the rest of the flight plan updates - so we'll probably then lose Madrid here within a minute. It will be Carnarvon at 24.
- 08 16 56 22 CMP Roger. You don't happen to have a handy map update, do you?
- 08 16 56 26 CC That is affirmative. Your map update: 208 34 44, 73 degrees west.
- 08 16 56 41 CMP Roger. That's pretty snappy. 208 34 44, 73 degrees wes'.
- 08 16 56 47 CC Roger, Doc. And I meant to get that for you. I had it all sitting out here and blew it.
- 08 16 56 52 CMP Oh, listen, that's all right. Looks like you must have a file there, and I thought I blew it.

(COSS NET 1)

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08 16 56 57 CC No, I had - I had just updated my map here to check that Australia bit. And we'll see you down there. I hope you make it before sunset.

08 16 57 07 CMP Oh, we'll make sure. We wouldn't miss Australia for anything.

08 16 57 12 CC Hey, look at this rare opportunity you have. Australia in the daylight.

08 16 57 16 CMP How about that!

CARNARVON (REV 132)

08 17 26 04 CC Apollo 9, Houston through Carnarvon. Standing by.

08 17 26 08 LMP Roger.

08 17 26 10 LMP Fine. We're all set to take pictures.

08 17 26 15 CC Very good. Looks like you're in a race with the terminator.

08 17 26 19 LMP Yes. It sure does; it's getting dark pretty quick.

08 17 26 22 CC Roger. I checked the sunset time on that. On the ground you'll be taking with about 2 minutes or a little over before sunset. We'll say a 5-degree sun angle.

08 17 29 27 CC And, Apollo 9, Houston. Bring up your S-band volume. We'll be going over Honeysuckle in about a minute.

08 17 29 35 CMP Okay.

08 17 29 39 LMP Looks like all those people down in Australia are probably still asleep.

08 17 29 53 CC Well let me see, they shouldn't have gone to bed yet, should they? It just got dark across there.

08 17 30 00 LMP Oh, that's the way the sun goes. It goes from east to west. I thought it went from west to east.

(GOSS NET 1)

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08 17 30 06 CC (Laughter) Well, I've got a gouge here. I can call up the display and I can watch the terminator move so I don't have to do any thinking.
08 17 30 13 CMP Stu, would you send that gouge up here?
08 17 30 15 CC Roger.
08 17 30 33 CC And we'll have Honeysuckle about 7 or 8 minutes. It might be a good place to get the block data at your convenience. When you get through looking across the mainland, there.

HONEYSUCKLE (REV 132)

08 17 31 35 CC And we've got you locked up on Honeysuckle now - about 6 minutes.
08 17 31 40 CMP Okay. You're loud and clear on old Honeysuckle today.
08 17 31 44 CC You're coming in five-square.
08 17 31 51 CDR Is it really only 3:30 in the morning in Houston?
08 17 31 55 CC That's affirmative.
08 17 32 01 CC I always hate to mention that - the time - because I thought it might make you (Laughter) harder to get up.
08 17 32 08 CMP If I'd just known then what I know now.
08 17 32 12 CC Come on, now.
08 17 33 17 CC Apollo 9, Houston. We'd like to know if you happened to notice any stratification when you stirred the cryos this morning.
08 17 33 30 CMP Yes; we haven't done it yet, Stu.
08 17 33 32 CC Okay; very good. We've just seen some funnies on our last data pass, there.
08 17 33 40 CMP All I've done is turn off the H_2 fan and turn on H_2 fan.
08 17 33 48 CC Okay. Understand.

(GOSS NET 1)

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08 17 33 53 CDR Of course we've turned the transponder on, too.
08 17 33 57 CC Very good.
08 17 34 02 CC How about a crew status report if you're up there; we'll make the surgeon happy. Just get that out of the way right off.
08 17 34 10 CDR Okay. The commander had about 7-1/2 hours sleep and one vitamin pill.
08 17 34 17 CMP And the CMP had about 7-1/2 hours sleep and a vitamin pill.
08 17 34 22 LMP And the LMP had about 6-1/2 hours sleep and one vitamin pill.
08 17 34 28 CC Roger. Copy all that, and good morning, Rusty.
08 17 37 27 CC And, Apollo 9, Houston. We're about 30 seconds from LOS Honeysuckle. Mercury around 42.
08 17 37 34 CDR Okay. I think we'll stop and have breakfast now.
08 17 37 38 CC All right. Sounds like a good idea.

MERCURY (REV 132)

08 17 44 48 CC Apollo 9, Houston through Mercury. Standing by.
08 17 44 53 CMP Roger.
08 17 46 21 LMP Houston, Apollo 9.
08 17 46 22 CC Go ahead, Apollo 9.
08 17 46 23 LMP Roger. Our power was down a little bit there so we just put the transponder back on to keep that same power we would on the fuel cells.
08 17 46 33 CC Roger. Copy.
08 17 51 15 CC Apollo 9, Houston. One minute LOS; we'll see you over the sunny Caribbean around 10.
08 17 51 22 CDR Okay. We'll be ready.

(GOSS NET 1)

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08 17 51 25 CC Roger.

MILA (REV 133)

08 18 11 59 CC Apollo 9, this is Houston. We've got you through Mila. Standing by.

08 18 12 05 C/P Roger, Houston.

08 18 12 14 LMP Hey, Smokey. One thing that we're a little concerned about here, this morning we're going to be dipping back into a magazine of film that was taken with a slightly faulty camera. On the EVA we took the 70mm wide angle out with magazine Echo on it and we found out subsequent to the EVA that the superwide was keeping the shutter open too long, or at least we think that it did, so we ran off an extra 10 or so frames with nothing on them. Now we're going to use the remaining 100 today, so we want to make sure that when that film pack gets back that the photo people know about it that the first part of the film, the first third, may be exposed different from the last third - for the last two-thirds, rather.

08 18 13 10 CC Okay. Understand now. To make sure that we got that, that 70mm and the magazine is Echo.

08 18 13 18 LMP That's affirmative. We're not really sure when the camera malfunctioned, so the first third may also be okay, but we don't have any way of knowing it. We know that the superwide keeps the shutter open for about three to five times as long as it should, it looks like, and so we're going to need special handling on the first third of that roll of film.

08 18 13 42 CC Okay. Suspect the superwide may have kept the shutter open two to three times normal. And on that same subject, Rusty, we were just kicking around here, a 16mm magazine is the word I have that may have been exposed at a wrong setting during EVA. Is this correct?

08 18 14 15 LMP Yes. That's affirmative, Houston. One of the 16mm magazines may have been exposed at the wrong setting.

08 18 14 26 CC Okay. At your convenience would you like to give us that magazine identification so we could make sure that word gets out.

(GOSS NET 1)

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- 08 18 14 38 IMP Okay. We'll have to find out what the number of it was.
- 08 18 14 43 CC Roger. I suspect it's probably buried down somewhere, but anyway you'd like - But we would like to know it so we could warn people.
- 08 18 14 52 IMP Okay. Well it was - We took some of the stuff apparently set at 1/60 and the rest of it at 1/250, so it's going to be a little tough to retrieve, I think. Let me get the magazine letter for you.
- 08 18 15 48 CC And, Apollo 9, Houston. There are a couple of targets we'd like photographed on this rev if you're so inclined. One is around the Red Sea area about 15 minutes from now and the other one is about 17 minutes after it.
- 08 18 16 05 IMP Houston. I believe the magazine letter was F, magazine Peter, Papa, and we took about two-thirds of it during the EVA. The first part of it was probably exposed at 1/60 of a second and the remainder at 1/250.
- 08 18 16 29 CC Roger. Copy. You exposed two-thirds of it during the EVA, and the first third at 1/60 and the rest at 250.
- 08 18 16 38 IMP Roger. And they're the same subject material for it.
- 08 18 16 45 CC Roger. Copy. Thank you very much.
- 08 18 16 48 IMP Okay.
- 08 18 16 50 CMP Okay. Go ahead with the updates. Stu, the photo update.
- 08 18 16 55 CC Okay. The first one: time, 210 plus 39 plus 34; seven frames; 16-second interval; zero degrees; and this will be the Red Sea; oceanography. The second one: time 2 plus 10 plus 52 plus 07; three frames; 20-second interval; you'll be shooting north of the nadir 30 degrees. This is weather and should be a tropical depression up there.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS REV 1)

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VANGUARD (REV 133)

-- -- -- -- CMP Okay. Let me see if I got these right: 210 39 14, seven frames, 16-second intervals, zero degrees, Red Sea, oceanography; 210 50 07, three frames, 29 seconds, north 40, weather, tropical depression.

-- -- -- -- CC Okay. The time on the Red Sea is 39 plus 34.

-- -- -- -- CMP 39 plus 34. Okay.

08 18 18 14 CC And the time on the tropical depression is 52 plus 07.

08 18 18 18 CMP 52 07. Right.

08 18 18 41 CC And, Apollo 9, I have some block data. At your convenience, I'll pass it to you.

08 18 18 53 CC You're still good for about another rev and a half, so not sweat on the time.

08 18 18 59 LMP Okay. Let's go ahead and start it now.

08 18 19 03 CC Say again, Rusty.

08 18 19 06 LMP Yes, I'm ready to copy, Stu.

08 18 19 09 CC Okay. I'll tell you what, Rusty, we're through the Vanguard now and it's a little static. Let's wait until we get handed over to Canaries. I think it would be better.

08 18 19 17 LMP Okay.

CANARY (REV 133)

08 18 24 13 CC Apollo 9, Houston. How do you read?

08 18 24 19 LMP Five-square, Houston.

08 18 24 22 CC Okay. I have block data number 21 when you're ready to copy.

08 18 24 31 LMP All set.

(GOSS NET 1)

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08 18 24 33 CC

Reading: 135 2 Bravo, plus 292, minus 0270 213
16 11 3255; 136 2 Bravo, plus 226, minus 0330
214 53 00 3332; 137 1 Alfa, plus 276, minus 0680
216 19 52 3380; 138 4 Alfa, plus 331, minus 1624
218 58 21 3232; 139 4 Alfa, plus 331, minus 1624
220 39 20 3026; 140 4 Baker, plus 286, minus 1640
222 20 10 3200. Would you bring up your S-band
volume here before I continue? We'll be handing
over into Madrid shortly. And pitch, minus 0.1;
yaw, minus 0.9. End of update.

MADRID (REV 133)

08 18 27 50 LMP

Okay, Stu. Readback: 135 2 Bravo, plus 292, minus
0270 213 16 11 3255; 136 2 Bravo, plus 226, minus
0330 214 53 00 3332; 137 1 Alfa, plus 276, minus
0680 216 19 52 3380; 138 4 Alfa, plus 331, minus
1624 218 58 21 3232; 139 4 Alfa, plus 331, minus
1624 220 39 20 3026; 140 4 Bravo, plus 286, minus
1640 222 20 10 3200. Pitch, minus 0.64; yaw, minus
0.94.

08 18 28 55 CC

Roger. That readback is correct. Thank you.

08 18 29 00 LMP

Okay.

08 18 30 44 CC

And, Apollo 9, about 1 minute LOS Madrid; and
we'll see you over Carnarvon around 58.

08 18 30 54 LMP

Roger. Carnarvon at 58.

CARNARVON (REV 133)

08 18 59 00 CC

Apollo 9, Houston through Carnarvon.

08 18 59 04 LMP

Roger, Houston.

08 18 59 10 CC

And, Apollo 9, Houston. We'd like to use Alfa
Charlie's roll today, instead of Baker Dog as we
passed up before.

08 18 59 20 LMP

Understand: Alfa Charlie roll instead of Bravo
Dog.

08 18 59 24 CC

That's affirmative, and just a little note on that.
What we'd like to do is get into that secondary
propellant tank on one of the quads and we think
that'll probably be quad C, and this will affect

(GOSS NET 1)

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- any of our deorbits. We'll still have our SCS deorbit capability.
- 08 18 59 44 LMP Okay.
- 08 18 59 46 LMP The action has been took.
- 08 18 59 51 CC Very good. Thank you.
- 08 18 59 56 LMP Say there, worker of miracles. What's the balmy picture in the surface in the recovery area?
- 08 19 00 06 CC I can find that out for you. I have neglected to mention that subject so far here. I was going to wait until you brought it up.
- 08 19 00 17 LMP I was afraid you were going to - -
- 08 19 00 44 CC And, Apollo 9, Houston. I have you about another 6-1/2 minutes to Carnarvon here, and I have five or six items on the flight plan update for today.
- 08 19 00 56 LMP Okay; stand by.
- 08 19 01 24 LMP Okay. Go ahead, Stu.
- 08 19 01 26 CC Okay. The first one is at 212 plus 38 and I'll just make this comment now which will apply later in here. As you see it in your timeline everything is shifted around 20 minutes or so due to the orbit, so if it looks like night or day or something is off, well that's the reason. But at 212 plus 38 we'd like to have a P51, P52 alignment to F92 to IONIMAL, and your T-align is 216 plus 10 plus 00.
- 08 19 02 54 CC Okay. Now, at 214 plus 30 - and want to make sure we don't get confused here - I'm deleting the second S065 pass here the one that is shown for over Africa. Now in your flight plan that's shown right around 215, but that is the pass. We're deleting that S065 pass due to weather. We still want the first S065 pass across the States, and we'll have a pass for you later on that. Okay. Now, 215 plus 38 for P52 to REFSMMAT. And at 217 plus 10, we'd like to have a Q04S calibration. Now, you gave us a real good alignment yesterday with the Q04S, and on the change of shift of the flight planning people here, I can't find any good details on why we want another one. I think there's a requirement that says you must do the

(GOSS KEP 1)

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day before reentry. But it looks like you've probably got a good one, but we'll stick that one in there - 217 plus '0. And at 217 plus '0, we'll do some 122 landmark tracking.

08 19 03 55

CC

Your powerdown will be 218 plus 35, and at 219 plus '0 we'll have a fuel cell O₂ purge. And that's the end of it.

08 19 04 19

LMP

Okay. At 218 35 P51, 52 to NOMINAL 216 10 00. At 214 30 we want to delete the second S065 pass over Africa due to weather. We still want to keep the first one across the States. 219 36 P52 to REFENMAT; 219 10 COAS calibration; 217 50, 122 landmark track; 218 35, power down; 219 00, fuel cell O₂ purge.

08 19 04 51

CC

That's affirmative, Rusty. You got them all. And I'd just like to ask a question on curiosity; I was wondering how that T and K panel worked out.

08 19 05 02

LMP

Oh, that works great, Stu. Good job on that.

08 19 05 06

CC

How about with the corona pack? Do you get - Does it fit in there all right? You know we really need a mount around that, and I was wondering about the light leak around the edge.

08 19 05 17

CMP

Well, I had trouble getting the VERB-NOUN list out. It took me about 5 days to get that out, and when I finally got that out, I haven't had a chance to put the corona pack up.

08 19 05 27

CC

You mean it was jammed in there?

08 19 05 29

CMP

Yes, it sure was.

08 19 05 32

CC

Ouch; that doesn't sound like it was so good. Sorry about that.

08 19 05 36

LMP

Oh, no sweat. I think we'll work that out when we get back.

08 19 05 40

CDR

Stu, I have a question on the S065. Looks like we have many more frames of film left on the camera there than we have allocated for pictures today. I don't think we ought to come back with any film left in those cameras.

08 19 05 54

CC

Roger. Copy, Jim.

(GOSS NET 1)

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- 08 19 05 57 CDR And I guess, what I'm saying is that soon as we get through with those S065's that are programed, I think we'll just leave it in the window and take pictures until we run out.
- 08 19 06 07 CC Yes, we're going to use it all today and it's being planned that way.
- 08 19 06 13 CD Oh, okay. fine.
- 08 19 06 22 CC And, Jim, just to clarify it, this 16mm roll taken during EVA that you exposed 2/3 of it - that is all that has been exposed on that roll, is that affirmative?
- 08 19 06 37 CDR That's affirmative. We're going to go take some sun going down into the water pictures with the rest of it.
- 08 19 06 43 CC Okay. Very good. So the rest of it will be exposed, but we're really looking at the first 2/3 of it on the EVA.
- 08 19 06 51 CDR That's affirmative.
- 08 19 06 54 CC Okay. Real good.
- 08 19 06 57 CC We've got to make sure that's developed right.
- 08 19 07 00 CDR Roger.
- 08 19 07 02 CC And let's have S-band volume up, please.
- 08 19 07 06 CDR You took part of it at 1/250. All with the same subject matter.

MERCURY (REV 133)

- 08 19 11 38 CC Apollo 9, Houston.
- 08 19 11 52 CC Apollo 9, Houston.
- 08 19 18 12 CC Apollo 9, Houston through Mercury.
- 08 19 18 17 IMP Roger, Houston. You're coming five-square.
- 08 19 18 18 CC Reading you real good, and we'd like to have the fan in H₂ tank 1 off at this time.
- 08 19 18 33 IMP Okay. H₂ tank 1 off.

(GOSS NET 1)

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Page 7/1

- 08 19 18 42 CC Roger. Thank you. And I have the temperatures in the recovery areas; water temperature is 69; the air temperature is 64. That's as of 1000 Z this morning.
- 08 19 19 01 CDR Okay. They have the forecast with them for tomorrow, Stu, as far as temperatures or anything else goes?
- 08 19 19 10 CC Well, we've got a forecast yes. I suppose you're interested in that?
- 08 19 19 21 CMP The way you worded that, you stimulated our interest.
- 08 19 19 29 CC Okay. Now I don't know what to say.
- 08 19 19 34 CC Okay. Here's the way it stacks up. I'll read it to you straight: 151 1, 2000 scattered, variable broken, high broken clouds; 10 miles visibility; wind 310 at 23 knots; waves 6 to 8 feet; swells 10 to 12 feet. How does that sound?
- 08 19 20 07 CMP Nice visibility.
- 08 19 20 11 CC Hey. That was a beautiful answer. Okay. 152 1 is 2000 scattered; 10 miles visibility; winds light and variable; waves 2 to 3 feet; and swells 6 to 7 feet.
- 08 19 20 30 CDR Hey, let's go there! Let's go there!
- 08 19 20 33 LMP Yes. Take a pick, Stu.
- 08 19 20 35 CC Roger.
- 08 19 20 40 CDR Gee, you sure made that dramatic, Stu.
- 08 19 20 47 CC The weather I read you first was the prime recovery area.
- 08 19 20 53 CDR Are they still considering it to be the prime one or are they going to shift it down one rev?
- 08 19 21 02 CC This has not been decided yet, Jim. Of course, that will come here within a few hours; but just reading the weather, I'm sure you can make that decision, also.

(GOSS NET 1)

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- 08 19 21 20 CDR Yes. What kind of backup capabilities do we have if we don't get an SPS RETRO and have to do service module RCS RETRO for the following rev? Where does that put us with respect to land? Will we still come down on the water?
- 08 19 21 38 CC Okay, Jim: That's what we're hustling so much over here right now, and what's making the RETRO all grey-headed. We don't have one on the next rev in the Atlantic, so that's what gets this hairy, is the - that we go to the backup area here, which the weather certainly dictates. Well then, that puts us into the Pacific for a backup deorbit.
- 08 19 22 15 CDR Okay. If we go into the Pacific, how does the propellant requirement change with respect to our anomaly for RETRO into the Pacific?
- 08 19 22 26 CC No real change, Jim; and I think we're looking, what? Around Hawaii - is it that - The backup landing area is in the Hawaii area.
- 08 19 22 39 CDR How's the weather there?
- 08 19 22 42 CC We're thinking - We haven't got a real good track on it yet. RETRO and RECOVERY are hustling that out right now, Jim.
- 08 19 22 51 CDR Okay. I think I know which way we all want to go. I think you probably know which way we all want to go, too.
- 08 19 22 58 CDR And, Stu, consider the fact that we do have some Pacific experience up here, in case that's needed.
- 08 19 23 04 CC Roger. Copy. (Laughter.)
- 08 19 23 08 CMP I'll tell you one thing, I don't want to get in that part of the Pacific.
- 08 19 23 14 LMP Hey, Stu, as far as the temperature is concerned, they might bring along some - On the recovery, they might bring along some fuzzy knickers. Ours are pretty thin up here.
- 08 19 23 24 CC All right. Copy that, Rusty.
- 08 19 27 21 CC Apollo 9, Houston. We've still got about 2 minutes in this nice long pass. We'll be uplinking a state vector once we get you in Texas acquisition. I've got a NAV check. You can either copy it now, or there.

(GOSS NET 1)

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08 19 27 37 CDR On, we got a piece of paper here. Stu.
08 19 27 40 CC Okay. Reading the NAV check: 212 40 00, minus 3282, plus 11997 2127.
08 19 28 05 LMP Okay. 212 40 00, minus 3282, plus 11997 2127.
08 19 28 15 CC That's affirmative.
08 19 28 35 CC And, Apollo 9, Houston.
08 19 28 38 CDR Roger. Go.
08 19 28 39 CC And, Roger. I guess just to close the loop on this discussion here, we'll have ship at 152 1, if and when you come down there, so I just thought I might toss that in in case you're wanting it.
08 19 28 53 LMP Yes, will it have the 350-pound cake on it?
08 19 28 56 CC Yes, it will have a 350-pound cake on it; at least that's the word I have.
08 19 29 01 LMP Okay. Great!
08 19 29 02 CC And we'll lose you here in about 10 seconds, and have you through Texas around 41.
08 19 29 08 CDR Roger. Did you say you've got the state vector in?
08 19 29 11 CC Oh, negative. I said we're going to uplink the state vector at Texas acquisition, and I've just given you the NAV check now.
08 19 29 20 CDR Okay. Thank you.
08 19 29 22 CC Roger.

TEXAS (REV 133)

08 19 43 08 CC Apollo 9, Houston through Texas.
08 19 43 11 LMP Roger, Houston.
08 19 43 14 CC And if you'll give us P00 in ACCEPT, we'll uplink your state vector, and I'd like to ask you a question about P22.
08 19 43 23 CDR Okay.

(GOSS NET 1)

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- 08 19 43 26 CC Okay, Dave. What we're thinking of here is on this uplink into the CSM slot and leaving the vector as is in the LM slot and then prior to P22 shoving the vector from the LM into the CSM and doing a P22 on it to see how it can bring in the state vector rather than starting the P22 with a good vector.
- 08 19 43 55 CMP Okay. I think that's probably a pretty good idea.
- 08 19 44 01 CC By Jove! I get one up, then; okay. So this vector we're uplinking now, we'll not VERB 66 it; it will be in the CSM slot.
- 08 19 44 27 CMP Are you still with us, Stu?
- 08 19 44 28 CC Roger. We got you through Texas here, now. This will be a nice long pass.
- 08 19 44 33 CMP Okay. You just faded. I guess then what we want to do just prior to P22, is do a VERB 47.
- 08 19 44 40 CC That's affirmative. VERB 47 back over into the CSM slot, and then let's see how the P22 does. Then we'll give you a good vector in both slots after the end of it.
- 08 19 44 52 CMP Sounds like a fine idea. How did those work out yesterday that I ran?
- 08 19 44 57 CC You're fading way out on me, Dave.
- 08 19 45 00 CMP I say, how did it work out yesterday?
- 08 19 45 04 LMP Okay. We're breaking up here, too.
- 08 19 45 10 CMP I say again, how did the state vector updates work out yesterday?
- 08 19 45 16 CC Okay. I don't really have that info, Dave. I wasn't here and I haven't talked to anybody that's got a good handle on how they went. I read through the transcripts and it looked like it went well. But, I can't answer your question specifically. We'll get an answer for you, though.
- 08 19 45 33 CMP Oh, don't worry about it. I was just curious. We can pick it up postflight. No sweat.

(GOSS NET 1)

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08 19 45 42 CC Okay. And, Apollo 9, we are through with the uplink, and we have not transferred it to the LM slot. The computer is yours.

08 19 45 50 CMP Roger. Thank you.

END OF TAPE

APOLLO 9 AIR-1 -GROUND TRANSCRIPTION

(GOSS NET 1)

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CANARY (REV 134)

- 08 19 55 46 CC Apollo 9, Houston.
- 08 19 55 50 CMP Go, Houston.
- 08 19 55 55 CC Okay. Just to clarify this, I will have the exact times for you later. But talking of this P22 MV update, here - We'll - When you do this VHRB 47, we'll have that over a site somewhere, so as soon as you do that we will then uplink a good vector into the LM slot. That way we won't leave you at any time without a good vector.
- 08 19 56 20 CMP You don't think we can get our vector update properly, with P22? Come on
- 08 19 56 25 CDR Listen, I'm with you, Stan. Update us a good one.
- 08 19 56 29 CC Well now, Dave, it's just your question there - Like we believe you can use that P37, but we'll still send your block data.
- 08 19 56 38 CMP Oh, I was just kidding you. I'll tell you what, we'll have a contest to see whose state vector is the best after P22. Okay?
- 08 19 56 46 CC Hey, I think that's a good idea.
- 08 19 56 51 CMP I think I know who will win.
- 08 19 57 28 CC And, Apollo 9, I have about three more targets here, we'd like photographed. One of them is coming up in about 7 or 8 minutes. If you can't make it, why no sweat.
- 08 19 57 38 CDR Go ahead.
- 08 19 57 40 CC Okay. The first one: 212 plus 04 plus 16, four frames, 1/2-second intervals, zero degrees. This is of Morocco for geology.
- 08 19 58 01 CC Did you get that, it sounded to me like I faded out.
- 08 19 58 07 CDR Say again.
- 08 19 58 10 CC Roger. Did you get the first update? It sounded to me like I faded out on you.
- 08 19 58 12 CDR No; we've got it.

1 (GOSS REV 1)

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- 08 19 58 13 CC Oh, okay. The second one is geolo - well the time, 08 19 58, four frames, 6-second exposure intervals, zero degrees. And these are the old Tibesti Mountains here in Chad, and you are going to come over them this time.
- 08 19 58 14 CDR Okay.
- 08 19 58 40 CC And our third one is 08 19 plus 16 plus 11, seven pictures, 19-second interval, zero degrees. And this is with Ethiopia, Riff Valley - study on the geology there. And the last one is 212 plus 19 plus 07, three pictures, 8-second intervals, zero degrees, and this is geology and this is of Somalia.
- 08 19 59 21 CC And that's all the updates I have now.
- 08 19 59 26 CMP Okay. Thank you.
- 08 19 59 28 CC Roger.
- 08 20 07 44 CC Apollo 9, Houston. If you read, we'll see you over Carnarvon at 34.

CARNARVON (REV 134)

- 08 20 35 55 CC Apollo 9, Houston through Carnarvon.
- 08 20 36 00 LMP Good morning ...
- 08 20 36 02 CC Roger.
- 08 20 36 06 CDR How are they making out on the recovery position decision?
- 08 20 36 12 CC Okay, they're still working on it, Jim. As far as I can tell, I don't see there's much decision to be made. Just really concentrating on the RCS backup on a couple of revs later is the big planning right now.
- 08 20 36 29 CDR Okay. Well that's kind of the way we felt too. There didn't seem to be much choice between those two sites.
- 08 20 36 36 CMP Hey, is that going to be down at 52 17

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- 08 20 36 41 CC I cut you out there. I think you're asking about the ship, and I thought that in a little bit the GO-YES, the Guadalcanal should make - 152 l is the latest word I have here.
- 08 20 36 53 CMP Okay. Very good.
- 08 20 37 11 CC On that ship, might be - That's just some hasty info, Jim. We'll have a good word for you just as soon as we can and the final decision has been made. But I guess it's touch and go and whether or not the ship actually gets there.
- 08 20 37 28 CDR Okay. If none get to us maybe we can fly to it.
- 08 20 37 32 CC Roger.
- 08 20 37 36 CMP We need that cake.
- 08 20 37 40 CC Roger on the cake.
- 08 20 37 50 CC And we're having a time down here on this P22 bit about the state vector. Had a little change of plans. Rather than do as we suggested before, I guess I didn't realize the LM vector would be quite so far out, but we're going to have you do your P22 on the vectors you're carrying now. By then it will have degraded enough the mark should take effect, and also, the first cut at it is, we're going to have to change the waiting in this. Right now I don't believe the W matrix will take the P22 update. But we'll zap - We'll give you some numbers. MIT is working this out. They're real anxious to try this, too.
- 08 20 38 41 CMP Okay. Very good. We'll go into whatever you like.
- 08 20 38 45 CC Okay.
- 08 20 39 01 CC Okay. Jim, I just got the word here. There's no doubt about the ship being at 152 l.
- 08 20 39 10 CDR Okay. Very good. Have them bring all the good weather they can with it.
- 08 20 39 15 CC All right, or leave all the bad weather where it is, I guess would be the best way.
- 08 20 39 22 CMP Yes, that's even better. Have those guys been milling around out in those big heavy seas all of this time?

(GOSS NET 1)

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- 08 20 39 27 CC Yes; they sure have. Just a second here and I'll give you some info. That temperature - air temperature and water I got from you a while ago was from the Guadalcanal and I say it's 1000 Z, and at that time the waves were 4 feet, the swells were 14 feet, and the ceiling was 2000 feet, visibility 7 miles. Wind blowing 26 knots.
- 08 20 39 55 CDR Wowee. I don't think anybody up here is good enough sailor for that.
- 08 20 40 00 CC Roger. And I believe everybody here agrees with that.
- 08 20 40 06 CDR But good.
- 08 20 42 08 CC And, Apollo 9, Houston. Would you bring up your S-band volume for Honeysuckle, please?
- 08 20 42 12 CDR Roger.

HONEYSUCKLE (REV 134)

- 08 20 43 04 CC And, Apollo 9, Houston. Anticipate a caution and warning on your H₂ pressure.
- 08 20 43 11 LMP Roger, Houston. Pressure one on the H₂.
- 08 20 49 58 CC Apollo 9, Houston. I have two more targets for you.
- 08 20 50 05 LMP Roger, Houston. Just a minute.
- 08 20 50 07 CC Roger.
- 08 20 50 16 LMP Okay. Go ahead, Stu.
- 08 20 50 18 CC Okay. Time, 213 plus 23 plus 54; three pictures; 20-second interval; shooting 45 degrees north. This is along the Georgia coast, and it's for weather. The next one is 213 plus 27 plus 33, three pictures, 20-second interval, 30 degrees south. This is of the Bermuda area, oceanography.

(GOSS NET 1)

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- 08 20 51 11 IMP Okay. We got a bunch of MASTER ALARMS here in the middle of that first one on the cryo PRESS, Stu. Would you let me give you what I got and you can fill me in on the rest. I got 213 23 54, three pictures, 20-second intervals of the Georgia coast, weather. I think you said north or south, but I'm not sure.
- 08 20 ... 13 CC Roger. It's 45 degrees north.
- 08 20 51 40 IMP Okay. 45 degrees north. And then another at 213 27 33, three pictures, 20-second intervals, 30 degrees south, Bermuda, oceanography.
- 08 20 51 50 CC That's affirmative.
- 08 20 51 57 CC I guess you had the right cut there when we were talking about the Georgia coast when you said south, I guess I should have said pardon the expression when I said 45 degrees north, there.
- 08 20 52 10 IMP Stu, right after you said you guess I had the right cut there, you cut out.
- 08 20 52 15 CC Okay. Hey, we'll see you Mercury at 47.
- 08 20 52 21 IMP Roger.

HUNTSVILLE (REV 134)

- 08 20 52 24 CC Disregard that. We'll be picking up the Mercury real soon.
- 08 20 53 05 CC And, Apollo 9, delay that fool time I gave you there, we've got you through the Huntsville now.

MERCURY (REV 134)

- 08 20 55 21 CC And, Apollo 9, this is Houston through Mercury. Standing by. Have you about 9 minutes.
- 08 20 55 27 IMP Roger, Houston.
- 08 20 59 29 CMP Hello. Houston, Apollo 9. Do you read?

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05 20 59 33 CC That's affirmative, Apollo 9. We'll have you through Mercury another 5 minutes.

08 20 59 37 CMP Okay.

08 20 59 43 CMP Just in case my kids are listening, tell them I'm growing a big beard for them.

08 20 59 CC Okay. By jewel.

08 20 59 58 CC Seems like you ought to bring that back so they could see it.

08 21 00 04 CMP Seems that way, doesn't it?

08 21 00 06 LMP If you think you hear a lot of data down there, man, you ought to be up here.

08 21 00 10 CC (Laughter)

08 21 00 24 CC And, we just got another weather forecast in here, and it's just about the same. 152 1 is looking a little better. In fact the height of the swells is going down. Winds light and variable, and scattered clouds, 10 miles VIS, 2- to 3-foot waves.

08 21 00 45 CDR That's not bad.

08 21 00 48 LMP Get the swelling down.

08 21 00 53 CC Yes. Well, on the last several hours they've gone from 6 to 6 to 6, so they're going in the right direction.

08 21 01 03 CDR That's nice.

08 21 01 09 CDR Who do we have out there measuring them?

08 21 01 15 CC Well, I don't know if we've got anybody specifically on that site yet or not, Jim.

08 21 01 23 CDR Okay. I thought maybe we had one of the destroyers down there.

08 21 01 27 CC Say again, Jim.

(GOSS NET 1)

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08 21 01 29 CDR I thought maybe we had a destroyer down there.
08 21 01 32 CC We've got a bunch of ships out in there. Let me find out if - the closest point they're getting their data from there.
08 21 01 39 CC And along with that weather forecast, the 151 looked just the same. No change in it; it's still looking pretty grim, it will pretty well determine how the decision is going.
08 21 02 02 CDR Okay.
08 21 04 15 CC And we're about LOS Mercury. We'll see you Redstone in about 4 minutes.
08 21 04 21 CDR All right Houston. We'll be here waiting for you. Waiting for those golden tones.
08 21 04 26 CC Okay, fine.
08 21 04 29 CDR Hey, speaking of golden tones, where is old golden throat these days?
08 21 04 33 CC I haven't seen old golden throat since I lost myself in this hole over here.
08 21 04 40 CDR Alrighty.
08 21 04 45 CDR See you, Houston.

REDSTONE (REV 134)

08 21 09 52 CC Apollo 9, Houston through Redstone. How do you read?
08 21 09 59 CMP Loud and clear. Go ahead.
08 21 10 01 CC Roger. I just wanted to tag up on the weather info. We don't have a specific ship at 152 1. Guadalcanal is probably heading that way shortly, but it just comes from other ships all in the area, that's radioed into Miami. I'm having a looksee how close a ship they have got to that area.

(GOSS NEW 1)

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- 08 24 10 26 CDR Okay. I just thought maybe we had one of our destroyers down there, just sitting there with baited breath waiting for us, but if not, thank you.
- 08 21 10 35 CC Roger.
- 08 21 10 36 CDR You don't have to press on any farther with it, Stu.
- 08 21 10 38 CC Okay. Just for your info, the Guadalcanal is 16 hours from 152 1. It's also 18 hours 151 1. It's been covering the 137 dash 1 recovery area, so it's 16 hours out of 152 1, plenty of time to be there.
- 08 21 10 59 CDR Okay, fine.
- 08 21 11 02 CC And Dave -
- 08 21 11 03 CDR ... running around in circles.
- 08 21 11 06 CC Roger.
- 08 21 11 08 CDR Okay.
- 08 21 11 09 CC And Dave asked a question about the tracking yesterday. The only thing that we checked in with MIT - The only thing they say is the tracking went well. They are going to take a while to analyze the data and so forth.
- 08 21 11 24 CMP Okay. No problem, I was just a little curious.
- 08 21 11 27 CC Roger. Understand. That is about all I can tell you now.
- 08 21 11 31 CMP Okay. Well, we will see if we can't do it right again today.
- 08 21 11 35 CC Today, with this procedure, you will be able to get a first hack at it - see how it goes.
- 08 21 11 41 CMP Yes. It'll be very interesting.
- 08 21 11 46 CC And I have the procedure that you will use to put in your factors in your W matrix and I could give you those any time.
- 08 21 12 00 CMP Okay. Can you stand by just one?

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- 08 21 12 03 CC Roger. Lots of time; I just thought if you wanted to take them now or anytime later.
- 08 21 13 56 CMP Houston, Apollo 9.
- 08 21 13 57 CC Go ahead, Apollo 9.
- 08 21 14 04 CMP Okay. Go ahead with your procedures for the 122, I'm ready to copy.
- 08 21 14 06 CC Okay. Before and after you do P22, do a VERB 83 so we can get comparisons before and after.
- 08 21 14 18 CMP Okay.
- 08 21 14 19 CC Roger. Now we are going to load into the W matrix, and what the optical loads will do for you is give you a 10 000 foot and 10 feet per second. And this is what we want is a VERB 24, NOUN 01 ENTER, 2004 ENTER, 137 ENTER, 762 ENTER.
- 08 21 14 58 CMP Okay. Understand set the W matrix at 10 000 and 10, with a VERB 24, NOUN 1 ENTER, 2004 ENTER, 137 ENTER, and 762 ENTER.
- 08 21 15 08 CC Roger.
- 08 21 15 13 CC And a VERB 83 before and after.
- 08 21 15 14 CMP Roger. We'll get the VERB 83 before and after.
- 08 21 15 16 CC Okay. Have fun.
- 08 21 15 18 CMP Okay. We will also reset that 121 alarm and then set it afterwards. Okay?
- 08 21 15 24 CC Yes, real good. And you still have the procedure you used yesterday, Dave?
- 08 21 15 28 CMP Yes; I've got it. Thank you.
- 08 21 15 30 CC Okay.
- 08 21 17 52 CMP Houston, Apollo 9.
- 08 21 17 54 CC Go ahead, Apollo 9.

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- 08 21 17 56 CMP Hey, on the night pass before the landmark tracking, after we get through with the COAS calibration, how about another P22 to RMPSTAMP to get the platform all tweaked up? Okay?
- 08 21 18 08 CC Roger. That sounds real good.
- 08 21 18 10 CMP Okay.
- 08 21 19 49 CC Ann, Apollo 9, Houston. You have a GO all the way to 152 dash 1.
- 08 21 19 58 CDR Roger: GO to 152 dash 1. Very good.
- 08 21 20 44 CC Apollo 9, Houston.
- 08 21 20 48 CMP Houston, 9. Go.
- 08 21 20 49 CC Okay, Dave. I just want to verify there again that we will do the P22 to the CSM vector that you have now, and that VERB 47 we will not do prior to P22.
- 08 21 21 04 CMP Roger. We understand that..
- 08 21 21 06 CC Okay.
- 08 21 21 11 CMP You want us to do mode 66 now, or you just want to leave the other one in there?
- 08 21 21 17 CC We are going to uplink you a good one before we start. I guess that's probably your choice.
- 08 21 21 25 CC Just a second; let's see what Guidance has to say about that.
- 08 21 21 54 CC Okay, Apollo 9. Guidance said the same thing I did: your choice.
- 08 21 22 01 CMP Okay.
- END OF TAPE

APOLLO 9 AIR-TO-GOSS VOICE TRANSCRIPTION

(GOSS NET 1)

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TEXAS (REV 135)

08 21 25 47 CC Apollo 9, Houston.
 08 21 25 50 CMP Houston, 9; go.
 08 21 25 52 CC Roger. We have made it official now. It will be 152 dash 1, and the time for ignition on my Mark will be 27 hours and 4 minutes.
 08 21 26 09 CC MARK.
 08 21 26 17 CMP Okay. We got that.
 08 21 26 19 CC Okay.
 08 21 26 23 CMP Looks like it's 240 30 09.
 08 21 26 34 CC Well, that's pretty close. It's really 08.
 08 21 26 40 CMP By George! I knew we'd miss something.
 08 21 26 45 CC You did good work.

CANARY (REV 135)

08 21 41 21 CC Apollo 9, Houston.
 08 21 41 25 LMP Roger, Houston. Go ahead.
 08 21 41 27 CC Roger. We're showing quad Charlie is approaching the switchover point there, and if it switches over, we would like you to go back and use BD roll and disable AC roll. Over.
 08 21 41 44 LMP Okay. We'll keep an eye on it. We will go to BD roll, and you still want us to use the BC quads, right?
 08 21 41 52 CC That is affirmative.
 08 21 41 55 LMP Okay.

CARMARVON (REV 135)

08 22 10 12 CC Apollo 9, Houston through Carmarvon. And I have an S065 PAD for you.

(COSS NET 1)

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08 22 10 19 CMP Roger. Stand by just one.
08 22 10 22 CC Roger.
08 22 10 24 CMP Houston, Apollo 9.
08 22 10 26 CC Houston. Go.
08 22 10 28 CMP Roger. We tried taking a couple of photographs through the sextant here, and we took five of them. I don't know how they are going to come out, but we just thought we'd advise you.
08 22 10 38 CC Okay. Real good.
08 22 11 04 CMP Okay, Houston. Go ahead with the S065 PAD.
08 22 11 07 CC Okay. Inertial angles, 18000 26200; yaw, all zips; 214 55 26, 216 10 00. You'll be ORB RATE and your Victor through Zulu are the same as yesterday. First sight is Wilmington at 215 00 26 20 03. Over.
08 22 12 04 CMP Roger. 18000 26200 all zips 214 55 26 216 10 00; ORB RATE. Wilmington, 215 00 26 20 03.
08 22 12 25 CC Roger. Your readback is correct.
08 22 13 23 CC And, Apollo 9, Houston. I have about seven targets of opportunity here. That'll take care of it for the day, I think.
08 22 13 31 CMP Okay. Just a minute.
08 22 14 28 CMP Okay, Houston. Go ahead and give us the time first.
08 22 14 30 CC Roger. 214 51 30, seven frames, 26 seconds, on track; it's Mexico, geology. At time 214 54 45, three frames, 24 seconds, it's north 60 degrees, Rocky Mountains, geology. At time 214 56 17, three frames, 22-second interval, south 30 degrees, College Station, Texas, weather. At time 215 01 05, four frames, 26 seconds, north 45 degrees, Gulf of Guinea, weather. At time 216 31 06, four frames, 8 seconds, on track, high plains, Lubbock, Texas, geology. At time 216 43 06, 10 frames, 20 seconds, on track, that's BOOM!, weather. At time 217 02 12, nine frames, 20 seconds, north 60 degrees, Cape Fria, southwest Africa, weather. And that ought to do it for the day.

(GOSS NET 1)

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08 22 17 22 CMP Okay. Just a minute.
08 22 17 25 CC And we'll have S-band volume up at 19.
08 22 17 30 CMP Roger. S-band up at 19.
08 22 17 33 CMP Okay. Time 214 51 30, seven frames, 26 seconds, on track, Mexico, geology. 214 54 56, three frames, 24 seconds, north 60 degrees, Rocky Mountains, geology. 214 56 17, three frames, 22 seconds, south 30 degrees, College Station, weather. 215 21 05, four frames, 20 seconds, north 45 degrees, Gulf of Guinea, weather. 216 31 06, four frames, 8 seconds, on track, Lubbock, geology. And 216 43 06, 18 frames, 20 seconds, I've got BOMEX, weather. 217 02 12, nine frames, 20 seconds, north 60 degrees, Cape somebody or the other, and weather.
08 22 18 34 CC Roger. And that BOMEX weather is on track.
08 22 18 40 CMP Okay.
08 22 18 44 CC And that's Cape Fria, F-r-i-a, in Africa.
08 22 18 49 CMP Okay. Fine.
08 22 34 45 CC Apollo 9, Houston. One minute LOS; Hawaii 39.

HAWAII (REV 135)

08 22 39 55 CC Apollo 9, Houston through Hawaii.
08 22 39 59 CDR Roger. This is Apollo 9. Go.
08 22 40 01 CC Roger. We'll have you now all the way up until about 10 minutes after the hour.
08 22 40 06 CDR Oh; very good.

END OF TAPE

APOLLO 9 ATR-TO-GROUND VOICE TRANSCRIPTION

(GOSS REV 1)

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TEXAS (REV 136)

08 23 01 47 LMP Houston, Apollo 9.

08 23 01 50 CC Apollo 9, Houston. Go.

08 23 01 53 LMP Roger. Could you brief me on what we are going to do with the SC65 on the next pass?

08 23 01 59 CC Roger. Stand by one.

08 23 03 47 CC Apollo 9, Houston.

08 23 03 49 LMP Go ahead. Houston, 9.

08 23 03 52 CC Okay. On the SC65, there will be taken some - about seven pictures over the U.S., about 40 of them over the EGMX area, and then we will pitch up and empty the cameras on the horizon. We will pass up the angles and this good deal stuff up to you.

08 23 04 03 CMP Very well.

08 23 04 10 LMP Okay. Very good. I was very afraid you might have some film left.

08 23 04 13 CC No, we are going to use it all. As a matter of fact, we will run up before we pitch up, I think, on one of the cameras, but we will just use the other cameras on the - out on the horizon.

08 23 04 21 LMP Okay. Very good.

CARNARVON (REV 136)

08 23 48 08 CC Apollo 9, Houston through Carnarvon.

08 23 48 12 CDR Go ahead. Houston, Apollo 9.

08 23 48 15 CC Roger. We'd like to get a little more information on quad Delta switchover; so if you could, use quads Charlie Delta for attitude control, right Bravo Charlie.

08 23 48 33 LMP Okay. You want us to go with Charlie Delta now?

08 23 48 35 CC Affirmative. Charlie Delta for attitude control, continue with Bravo Delta roll.

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- 08 23 48 52 LMP Okay; check. Here it is: Baker Delta for roll.
- 08 23 49 56 CC Roger. Baker Delta for roll when you switch over.
- 08 23 49 03 LMP Wait a second, now. Do you want me to stay in Bravo Charlie now or do you want me to go to Charlie Delta now?
- 08 23 49 13 CC Roger. We'd like to go to Charlie Delta now for attitude control, and then when you switch over, go to BD for roll.
- 08 23 49 24 LMP Okay.
- 08 23 51 31 CC Apollo 9, Houston. I have two S065 updates for you.
- 08 23 51 38 CMP Okay. Stand by just one.
- 08 23 51 45 CMP Okay. Go.
- 08 23 51 46 CC Roger. 180 00 274 70, all zips, 216 23 00, 216 10 00. It'll be ORB RATE. First site: southwest U.S., 216 27 15 20 15. Second site: Georgia, 216 34 40 20 07. Third site: ROMEX, 216 40 43 20 33.
- 08 23 53 12 LMP Houston, are you there?
- 08 23 53 14 CC Roger. Go.
- 08 23 53 16 LMP Okay. Ready for readback?
- 08 23 53 19 CC Affirmative.
- 08 23 53 21 LMP Okay. 180 00 274 00, all zips, 216 23 00, 216 10 00, ORB RATE; southwest U.S., 216 27 15 20 15; Georgia, 216 34 40 20 07; ROMEX, 216 40 43 20 33.
- 08 23 54 00 CC Roger, Houston. Let's verify your pitch inertial angle, 274.70.
- 08 23 54 08 CMP Roger. 274.70.
- 08 23 54 12 CC Okay. And now for this deplete in the film, there. What we want are some pictures of the horizon to see if we can get these different shades of blue that were observed in the Gemini program, and I'll give you some ORB RATE angles. I guess

(GOSS NET 1)

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as soon as you finish up the last S065, just whip around in the ORB RATE ball at these angles. I'll give you the time, then you can deplete the film as soon as you get to the attitude.

- 08 23 54 44 CDR Okay. Go.
- 08 23 54 46 CC Okay. Your ORB RATE ball angles will be 180 27 - belay that. Pitch will be 25.7; yaw, zero. Your time will be 217 03 00. And S-band volume up for Honeysuckle.
- 08 23 55 18 CDR Okay. You want me to read it back?
- 08 23 55 20 CC Your site there will just be the horizon. Deplete film and 10-second intervals.
- 08 23 55 39 CDR Okay. Ready, Houston?
- 08 23 55 40 CC Affirmative. Go.
- 08 23 55 42 CDR Okay. For the film depletion we use orbit rate angles, pitch or roll will be 180.0, pitch 025.7, and yaw 000. The time will be ... 7 03 00. We put the cameras on horizon, take pictures at 10-second intervals until the film is all gone.
- 08 23 56 04 CC Roger. And Jim, we're kind of short there. You'll probably be going into darkness right away, so as soon as you get the attitude just go ahead and start taking the pictures.
- 08 23 54 17 CDR Okay. We'll zip right up there.
- 08 23 54 20 CC And I can give you some inertial angles if you want to check your ORB RATE and things.
- 08 23 54 25 CDR Okay. Fine. Go ahead.
- 08 23 54 26 CC Roger. Inertial angles will be 180 00, 169 70, and yaw, zero.

HONEYSUCKLE (REV 136)

- 08 23 57 47 CC Apollo 9, Houston. I think we have good two-way lock, now.
- 08 23 57 51 CDR Okay, Ron. I get the 180 but I didn't get the pitch.

(GOSS NET 1)

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08 23 57 54 CC Okay. The pitch will be 169.70 and yaw, zero.
08 23 58 02 CDR Okay. The inertial angles are 180.0, 169.7,
and 00000.
08 23 58 09 CC Roger. And those inertial angles will be good
at 217.03.00.
08 23 58 14 CDR Okay.
08 23 58 49 CC Apollo 9, Houston. Approaching LOS. Possibility,
no voice Honeysuckle 01; if not, Hawaii at 13.
08 23 59 00 CDR Okay. Understand you might get us at Honeysuckle
and you may not, and Hawaii at 13.
08 23 59 05 CC Roger.
08 23 59 25 LMP Houston, Apollo 9. What's the last gyro torqueing
angle?
08 23 59 32 CC Apollo 9, Houston. Say again.

HUNTSVILLE (REV 136)

09 00 01 31 CC Apollo 9, Houston through Huntsville.
09 00 02 39 CC Apollo 9, Houston through Huntsville.
09 00 03 48 CC Apollo 9, Houston.
09 00 10 17 CT Apollo 9, this is Huntsville. Over.
09 00 10 20 CMP Hello there, Huntsville. This is Apollo 9. How
are you today?
09 00 10 24 CT Just fine, Apollo 9. Our HF link to Houston
is out at this time. Can I take any message for
them to relay until we get back in?
09 00 10 32 CMP I don't believe so. Tell them we're preparing
to do S065, and everything else is okay.
09 00 10 39 CT Roger. Huntsville.
09 00 10 46 CDR Huntsville, how are you doing down there?
09 00 10 51 CT Apollo 9, Huntsville. We're doing fine now,
other than our CGM is bad here on HF link.

(GOSS NET 1)

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09 00 10 57	CDR	We certainly appreciate all the help you guys have given us during the flight.
09 00 11 02	CT	Roger. Thank you.
09 00 11 04	CDR	Okay. Get some of that good sun for us, will you?
09 00 11 06	CT	Roger. That we have down here pretty close to the equator. It's pretty warm.
09 00 11 13	CDR	Yes, I know. I wish we had some of it up here.
09 00 11 17	CT	You should be closer to it.
09 00 11 21	CDR	I hadn't thought about it that way.

HAWAII (REV 136)

09 00 13 42	CC	Apollo 9, Houston.
09 00 13 45	CMP	Go ahead, Houston. Apollo 9.
09 00 13 46	CC	Roger. I'll take your torqueing angles now if you want to.
09 00 13 52	LMP	Roger. Stand by.
09 00 14 05	LMP	Okay. GET: 215 40 00, plus 00134, minus 00017, minus 00105.
09 00 14 23	CC	Apollo 9, Houston. Roger. We copy.
09 00 14 26	LMP	Okay.
09 00 14 27	CC	And I think I left you with the idea that the depletion on that S065 was pointed right at the horizon. Actually, the camera should be pointed 15 degrees below the horizon.
09 00 14 42	LMP	Okay.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(COSS NET 1)

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HAWAII (REV 136)

09 00 30 41 CC Apollo 9, Houston.

09 00 30 44 CMP Roger. Go.

09 00 30 45 CC Roger. We had a little problem there in semantics with the scientists. Your ORB RATE pitch angle for the depletion thing is really 040.7. The cameras are pointing at the horizon, and your inertial pitch angle will be 184.7.

09 00 31 19 CMP Roger. ORB RATE, 040.7; inertial, 184.7.

09 00 31 24 CC Roger.

09 00 31 27 CMP Okay.

TFAAS (REV 137)

09 00 43 20 CC Apollo 9, Houston. One minute LOS; Ascension at 51.

09 00 43 25 LMP Roger. Okay, Houston. We are busily snapping pictures for you.

09 00 43 29 CC Real good.

09 00 43 31 LMP The States were really clear that time; we ought to really have some nice ones.

09 00 43 35 CC Hey, that's what we like to hear.

09 00 43 42 LMP Trouble is we're supposed to be taking pictures of the weather out here and the ocean is clear as a bell.

09 00 43 45 CC Well, oceanographers will be happy, then.

09 00 43 49 LMP Yes, just as long as we have the cameras pointing down, we're pleasing somebody.

09 00 43 55 CC Okay.

(COSS NET 1)

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ASCENSION (REV 137)

- 09 00 52 14 CC Apollo 9, Houston through Ascension. Standing by.
- 09 00 52 19 CDR Roger.
- 09 00 52 22 CC Roger. Loud and clear. --
- 09 00 52 25 CDR Excuse me, Ron. I cut you out. Say again.
- 09 00 52 28 CC That's all right. You're pitching up but we got it.
- 09 00 52 31 CDR Okay.
- 09 00 54 30 CC Apollo 9, Houston.
- 09 00 54 34 CMP Go ahead.
- 09 00 54 35 CC Roger. It looks like we are going to get a pretty good tracking target on the ascent stage this evening. It's - The closest point of approach will be 222 hours and about 41 minutes. It's about an hour into your rest period there, but we plan to let you sleep an hour in the morning and kind of wonder what you thought about this.
- 09 00 54 59 CDR Sure. We'd like to track it.
- 09 00 55 01 CC Okay. Real good. It looks like we'll go ahead and work it into the flight plan there and update you a couple of state vectors - both the CSM and the LM. Range will be out about 690 miles, and we'll give you some gimbal angles to point the optics out of. We'll take a few Marks, and then we'll make a vector compare on it.
- 09 00 55 23 CDR Great.
- 09 00 55 25 CMP Very good.
- 09 00 55 32 CC And we are tracking the ascent stage by a C-band radar and skin track, so that's where we are getting our vector.
- 09 00 55 41 CDR Okay. How did that ascent stage hold up after we got out of it?
- 09 00 55 46 CC Beautiful. The Commander's bus went down in about 7 hours, I think.

(GOSS NET 1)

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- 09 00 56 12 CC Oh, by the way, the lighting looks like it's going to be about perfect for this tracking thing, too.
- 09 00 56 18 CDR Okay.
- 09 00 56 00 CC Apollo 9, Houston.
- 09 00 56 04 CDR Go ahead.
- 09 00 56 08 CC Roger. It looks like - When you finish your landmark tracking there, what we plan to do is set you up in a PTC mode, and we'll update the stuff for you here later on. But just keep it in the PTC mode, then you can go ahead and get kind of squared away in there. We'll stay in PTC until we start on the tracking of the LM.
- 09 00 58 27 CDR Okay. We can also set ourselves up in 30- to 40-degree deadband hold to keep it out of gimbal lock, and that's what you want.
- 09 00 58 35 CC No. We really want the data on the PTC with the DAP driving it so we can get an idea on the fuel and pressure operations, and what have you.
- 09 00 58 46 CDR Okay. What kind of pitch and yaw deadband are you looking for?
- 09 00 58 51 CC Roger. It'll be 20 degrees.
- 09 00 59 06 CC I think so, but we will get you over Tananarive; if not there, Carnarvon.
- 09 00 59 14 CDR Okay. How about checking into that, will you, please?
- 09 00 59 16 CC Okay.

CARNARVON (KSCV 137)

- 09 01 22 09 CC Apollo 9, Houston through Carnarvon. I have a landmark tracking update.
- 09 01 22 16 CDF Okay, Houston. We'll be ready for the landmark tracking in a minute. But before you send us that data, he advised that we went into the darkness taking a picture of the dark horizon rather than the sunlit horizon; our plan is to continue around and finish up the 360 degree sweep we did.

(GOSS NET 1)

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- sunrise, if that's okay with you. Now, go ahead with your update.
- 09 01 22 42 CC Okay. That's fine with us.
- 09 01 23 00 CMP And we're ready to copy the update.
- 09 01 23 04 CC Okay; update follows. Landmark ID: 005 217 59 15 00; on down to TCA time, 218 03 13 00; north 10 miles. Next one: ID, 065 218 10 38 00; TCA time, 218 14 05 00; and it's north 30 miles. Over.
- 09 01 24 09 CP Okay. 005 217 59 15 00, 218 03 13 00, 10 miles north; 065 218 10 38 00, 218 14 05 00, north 30 miles.
- 09 01 24 33 CC Apollo 9, Houston. Your readback correct.
- 09 01 24 42 CC Apollo 9, Houston. Can you give us POO in ACCEPT there shortly for a state vector uplink?
- 09 01 24 52 LMP Roger. As soon as we torque these angles - You can probably copy them down now.
- 09 01 24 59 CC Roger. We have them.
- 09 01 25 08 LMP Okay. We'll be torqueing at 217 25 30.
- 09 01 25 14 CC Roger.
- 09 01 26 07 CMP Houston, 9.
- 09 01 26 09 CC Apollo 9, Houston. Go.
- 09 01 26 11 CMP Did you want the numbers from the COAS calibration now, or do you just want them recorded for later?
- 09 01 26 18 CC If you have them, then go ahead and get them.
- 09 01 26 22 CMP Okay. I can give you - You've got POO in ACCEPT now, by the way.
- 09 01 26 28 CC Roger.
- 09 01 26 30 CMP I can give you the ones I did on the rendezvous day, and then I did two today for repeatability, if you want to copy them down.
- 09 01 26 37 CC Roger. Go.

(GOSS NET 1)

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09 01 26 39 CMP Okay. The first one was on day 5: 35974 57167.
09 01 26 50 CC Roger. Copy.
09 01 26 52 CMP Okay. And here are the two for today: 35981
57239, 35977 57296.
09 01 27 06 CC Roger. We copy.
09 01 27 09 CMP Okay.
09 01 28 11 CC Apollo 9, Houston.
09 01 28 15 CDR Go ahead, Houston.
09 01 28 17 CC Roger. If you can get it in there prior to
P22, we'd like you to do a VERB 83 and copy
down R, R dot, and Theta; and then also hit
a VERB 83 after you've completed P22.
09 01 28 35 CDR Okay.
09 01 29 22 CMP Houston, Apollo 9.
09 01 29 25 CC Go.
09 01 29 27 CMP One other question: when you get around to having
us track the ascent stage, are you going to do
anything on the dummy matrix?
09 01 29 39 CC Roger. Stand by.
09 01 30 08 CC Apollo 9, Houston.
09 01 30 11 CMP Houston, 9. Go.
09 01 30 12 CC Roger. The computer is yours. You have a good
state vector in the LM slot and a deteriorated
one in the CSM slot.
09 01 30 23 CMP Okay. We'll plan to use the CSM slot for the
updating on landmark tracking, and then we'll
take a look after that.
09 01 30 30 CC Roger. And we're still ginning up the procedure
there on that tracking thing. We'll let you know
on the W-matrix.
09 01 30 39 CDR Okay; very well.
09 01 32 24 CC Apollo 9, Houston. We'll see you at Guam at 36.
09 01 32 39 CDR Roger. Okay.

(GOSS NET 1)

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HAWAII (REV 138)

- 09 01 49 34 CC Apollo 9, Houston. Standing by through Hawaii.
- 09 01 49 38 CDR Roger. Houston, Apollo 9. We are coming around to tracking attitude. And we advised we took some pictures of the sunrise. We only had two cameras running when we started and one ran out after about three or four frames, so we finished up with the other camera.
- 09 01 49 52 CC Roger.
- 09 01 53 52 CC Apollo 9, Houston. Check your gimbal there.
- 09 01 53 56 CDR Roger. Houston, Apollo 9. Thank you.
- 09 01 55 14 CC Apollo 9, Houston. Just a little reminder on that W-matrix update.
- 09 01 55 21 CDR Go ahead with your reminder.
- 09 01 55 24 CC Okay. To update the W-matrix, change it to 10 000 feet and 10 feet per second; that we talked over this morning.
- 09 01 55 35 CDR Roger. That's in work.
- 09 01 55 37 CC Okay. Good.
- FND OF TAPE

APOLLO 9 AIR-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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MIA (REV 138)

09 02 05 36 CMP Houston, Apollo 9.
 09 02 05 39 CC Apollo 9, Houston. Go.
 09 02 05 41 CMP Roger. There's a little low deck of clouds over the first landmark, so we will have to try another one.
 09 02 05 48 CC Okay. Can't get them all, I guess.
 09 02 05 52 CMP Everything else looks pretty good inland, but there's a little low deck of stratus out there.
 09 02 05 57 CC Roger. Understand.

ANTIGUA (REV 138)

09 02 17 42 CC Apollo 9, Houston. About 2 minutes LOS, and I have your PTC procedures, and I will give them as flight plan updates.
 09 02 18 15 IMP Okay. Ready to copy your PTC updates.
 09 02 18 19 CC Roger. Perform CMP, page 3 dash 17, 4 plus 0.1 degrees per second. Your initial attitude: roll, zero; pitch, 231.7; yaw, zero.
 09 02 18 52 IMP Okay. Is that it, Ron?
 09 02 18 53 CC Negative. Do step seven at 218 plus 35 plus 00; at 218 plus 40 plus 00, change DAP deadband to plus or minus 10 degrees. I think you have that procedure on page about 327, your CMP checklist.
 09 02 19 31 CMP Right.
 09 02 19 39 CMP Anything else?
 09 02 19 41 CC Roger. Just about every REV thereafter we are going to want to try a different deadband. We will try to get 20 degrees, and then 25 degrees. We will give you a call on those.
 09 02 19 48 CMP Okay. Understand to perform - The procedure then is to perform the CMP 317 for plus 0.1 degrees per second, initial attitude, R. 231.7, P. 00

(GOSS SET 1)

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09 02 26 10

CC

step 7 at 218 35 00; and 218 40 00, change the DAP deadband to plus or minus 10 degrees.

09 02 26 30

CDR

Affirmative. And you will be kind of on your own. Now you can do any housekeeping things you want to do and we will update you for the tracking procedure here a little later on.

Roger. Stand by for some ... where we're going to put all this stuff.

ASCENSION (REV 138)

09 02 28 52

CC

Apollo 9, Houston, Ascension. Standing by.

09 02 28 57

CMP

Roger.

09 02 28 59

CC

Roger. Loud and clear.

09 02 29 01

CMP

Hey, Houston, 9.

09 02 29 05

CC

Apollo 9. Go.

09 02 29 08

CMP

Hey, I guess that data isn't going to be much good to you on landmark tracking; there were clouds down there and I marked at a wrong target.

09 02 29 17

CC

That ought to give us a pretty good error, anyhow.

09 02 29 20

CMP

Yes, it ought to really give you a good error.

09 02 29 22

CC

Okay.

09 02 29 23

CMP

Took a stratus back there - and the prime one - There was one that looked like the prime one, and just missed it.

09 02 29 31

CC

You may have to break the spacelight, I guess.

09 02 29 33

CMP

Yes, I can give you latitude and longitude of a good one.

09 02 29 37

CC

Okay. Let's use that one.

09 02 29 41

CMP

Okay. Stand by.

09 02 29 42

CC

Is this the one you tracked?

(GOSS NET 1)

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Page 802

09 02 29 56 CMP Roger. Stand by and I'll give you latitude and longitude; maybe you can put it together.
09 02 29 59 CC Okay. That'll help us.
09 02 34 10 CC Apollo 9, Houston. Thirty seconds LOS; Tananarive 44; if not there, Carnarvon 59.
09 02 34 19 CMP Roger. Tananarive 44, Carnarvon 59.

CARNARVON (REV 138)

09 02 59 07 CC Apollo 9, Houston. Carnarvon standing by.
09 02 59 12 CDR Roger. Houston, Apollo 9.
09 02 59 14 CC Roger. Loud and clear, Jim.
09 02 59 30 CMP Houston, 9.
09 02 59 33 CC Apollo 9, Houston. Go.
09 02 59 35 CMP Okay. Let me give you the latitude and longitude of the point that we Marked on our last pass and maybe you can make some good out of the data you got. Okay?
09 02 59 44 CC Hey, very fine; we can use it.
09 02 59 47 CMP Okay. I'm sure you can figure out what the point is when I give you the numbers. Its latitude is 19.815, longitude is 73.416.
09 03 00 03 CC Roger. 19.815 and .416.
09 03 00 08 CMP Roger. And it's on the western tip of Haiti, there.
09 03 00 13 CC Roger.
09 03 00 15 CMP And, surprisingly enough, the 0689 numbers that came up out of the computer were pretty close.
09 03 00 24 CC Well - amazing! Real good. Thank you.
09 03 00 27 CMP Yes, sort of like it identified an unknown landmark and then made it known, and figured out where it was; it did a pretty good job.

(GOSE MET 1)

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GUAM (REV 138)

- 09 03 13 38 CC Apollo 9, Houston through Guam.
- 09 03 13 41 CMP Roger, Houston.
- 09 03 13 44 CC Roger, Dave. Your best admirer and two little ones are watching you whip across the world here, now.
- 09 03 13 50 CMP Say again.
- 09 03 13 52 CC I say your best admirer and two little ones are watching you whip across the world.
- 09 03 13 56 CMP Oh, very good. Say hello to them for me.
- 09 03 14 00 CC You're saying it.
- 09 03 14 14 CMP As a matter of fact, tell them I'll be there for chow in a couple of days.
- 09 03 14 19 CC She's nodding.
- 09 03 15 27 CMP Houston, Apollo 9.
- 09 03 15 30 CC Apollo 9, Houston. Go.
- 09 03 15 32 CMP For your information, right now we are demonstratin how to take out and remove the center couch at zero g in order to fill, I guess, one of the last DTG's.
- 09 03 15 41 CC Real fine. Any problems at all with it?
- 09 03 15 44 CMP Oh, no; it's real easy. As a matter of fact, it's easier than it is down there.
- 09 03 15 49 CC That's what we were hoping.
- 09 03 15 51 CMP We'll have some movies if Cecil B. McDivitt and this other fellow here can come out with the right production scenes.
- 09 03 16 01 CC Mighty fine.
- 09 03 16 03 CMP What we really need are a couple of good editors.
- 09 03 16 06 CC That's for sure, probably.
- 09 03 16 39 CC 9, Houston. MCC is looking real good so far. We'll see what happens when you come up perigee here.

(COSS RET 1)

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Page 804

09 03 16 46 CMP Okay. Let us know when you want us to change headbands.
09 03 16 49 CC Will do.
09 03 20 00 CC Apollo 9, Houston. Hawaii at 27.
09 03 20 05 CME Roger. Hawaii at 27.

END OF TRANSCRIPT

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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REDSTONE (REV 138)

09 03 36 05 CC Apollo 9, Houston. I can give you the times to change DAP deadbands now.

09 03 36 16 CDR Say again.

09 03 36 17 CC Roger. I can give you the times to change your DAP deadbands.

09 03 36 22 CDR Okay. You're coming through clear, now. Go ahead.

09 03 36 26 CC Roger. At 220 plus 10 plus 00, change DAP deadband to 20 degrees.

09 03 36 42 CDR Roger. Understand. 220 10 00, DAP deadband to 20 degrees.

09 03 36 49 CC Roger. And at 221 plus 45 plus 00, change deadband to 25 degrees.

09 03 37 03 CDR Roger. 221 45 00, deadband to 25 degrees.

09 03 37 08 CC Roger.

TEXAS (REV 139)

09 03 40 22 CC Apollo 9, Houston. I'd like to talk a bit about your cryo plan for tonight.

09 03 40 30 CMP Okay. Go ahead.

09 03 40 32 CC Roger. It's the same as last night except your H₂ tank pressure can go down to 180 to 200, and then we'll stir tank 1 fans tonight.

09 03 40 53 CMP Okay. H₂ tank pressure down to 160 or 200, and we'll turn on tank 1 fan tonight.

09 03 40 59 CC Roger. Otherwise, it's the same as last night.

09 03 41 03 CDR Okay. And we'll give a report when we get everything done.

09 03 41 06 CC Okay.

09 03 46 10 CC Apollo 9, Houston. Temperature at 21.

(GOSS NET 1)

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Page 806

09 03 46 41 CDR Roger. TAN at 21.

TANANARIVE (REV 139)

- 09 04 21 23 CC Apollo 9, Houston through Tananarive.
- 09 04 21 50 CC Apollo 9, Houston through Tananarive.
- 09 04 22 02 CDR Go ahead. Houston, Apollo 9.
- 09 04 22 04 CC Roger. Do you read well enough for a flight plan update?
- 09 04 22 12 CDR Roger. I believe so.
- 09 04 22 16 CC Roger. When you are ready.
- 09 04 22 29 CDR Go ahead, Houston.
- 09 04 22 32 CC Apollo 9, Houston. When you are ready, I will go with flight plan update.
- 09 04 22 39 CDR Roger, Houston. Go ahead with the flight plan update.
- 09 04 22 43 CC Roger. 220 plus 48, block data; 221 plus 05, update state vectors; 222 plus 25, maneuver to ascent stage track attitude; 222 plus 50, power down IMU and SCS, terminate BATT A charge, waste water dump to 35 percent. I say again, 35 percent. Begin rest period. Over.
- 09 04 24 23 LMP Okay. How do you read Apollo 9, Houston?
- 09 04 24 26 CC Roger. Pretty good now.
- 09 04 24 29 LMP We missed where you said 220 48. Would you say that one again, please?
- 09 04 24 36 CC I'll send you block data.
- 09 04 24 44 LMP Okay. 220 48, block data; 221 05, update state vectors; 222 25, maneuver to ascent stage track attitude; 222 50, power down IMU and SCS, terminate BATT A charge, waste water dump to 35 percent. Begin rest period. Over.
- 09 04 25 07 CC Roger. Your readback correct.
- 09 04 25 13 CDR Houston, Apollo 9. What's the get-up time in the

(GOSS NET 1)

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Page 807

09 04 25 17 CC Roger. Your normal time on the flight plan was 232 plus 20, and we are thinking of making it 233 plus 35 or 233 plus 50. That's about 7-1/2 hours prior to RETRO.
09 04 25 43 LMP Roger. Understand it will be 233 35.
09 04 25 49 CC Affirmative.

GUAM (REV 139)

09 04 49 41 CC Apollo 9, Houston through Guam.
09 04 49 47 CMP Houston, Apollo 9. Go.
09 04 49 49 CC Roger. I'll take your block date over Hawaii, here. I'd like to talk over the P20 procedures now if you want to copy.
09 04 49 58 CMP Roger. Let me get a pencil.
09 04 50 11 CMP Okay. Go ahead, Ron.
09 04 50 13 CC Okay. I'll give you the procedures - about six steps - and then I'll give you the dope on the ascent stage relative motion.
09 04 50 21 CMP Roger. Ready to copy.
09 04 50 29 CC Okay. The first step is roll spacecraft to blank angle; I'll get that to you in a minute. Second one: select normal P20 procedures with AUTO maneuvers starting CMP page 4 dash 1. Mark as long as desired at 1-minute intervals, and update IM state vector. Time of closest approach, 222 plus 1 - hold that - I'll start again: 222 plus 11 plus 46. You can call P20 anytime prior to closest approach, but be careful of middle gimbal angle on VERB 50 NGUN 16. If you call it too early, that middle gimbal angle may be greater than 90 degrees.
09 04 51 47 CMP Roger.
09 04 51 48 CC And your current W-matrix initialization is okay. And, actually, you can call P20 at 12 plus 35 plus 30. Your range is about 1000 miles at that time.
09 04 52 15 CMP Okay.

(GOSS NET 1)

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- 09 04 52 17 CC Okay. Your initial roll angle will be 345.6.
- 09 04 52 27 CMP Okay. You ready for readback?
- 09 04 52 29 CC Okay; go.
- 09 04 52 32 CMP Okay. The roll angle for initial acquisition, 345.6, with an AUTO maneuver in P20 - normal P20. Mark at 1-minute intervals; time of closest approach, 222 13 46; and P28 time prior to closest approach. We'll keep an eye on the middle gimbal angle. W-matrix is okay, and the range is 1000 miles at 222 ...
- 09 04 53 05 CC Apollo 9, Houston. Roger. Your readback is correct.
- 09 04 53 10 CDR Okay. We'll give it a whirl.
- 09 04 53 12 CC Okay. I've got some more info here at your point of closest approach, on it.
- 09 04 53 17 CMP Yes, I was just going to ask you how close and that sort of thing.
- 09 04 53 24 CC Okay. Do you read me now - still?
- 09 04 53 27 CMP Roger. Go.
- 09 04 53 29 CC Okay. The range will be 652 nautical miles, R dot 32; CSM will be trailing 603 miles. You'll be below 272 miles, and you'll be 117 miles to the right.
- 09 04 54 02 CMP Okay. Understand. Closest approach 652 miles, R dot equals 32 is what I heard; CSM trailing 603 miles, below 272, to the right 117.
- 09 04 54 14 CC Roger. Your LM RA is 3741.7 by 127.8.
- 09 04 54 26 CMP Roger. 3741.7 by 127.8.
- 09 04 54 36 CMP Hey, Ron, say again the R dot at closest approach.
- 09 04 54 39 CC Roger. R dot is 32 feet per second.
- 09 04 54 42 CMP Okay. 32 feet per second.
- 09 04 54 46 CC It's a pretty slow pass through there, also. Looks like you'll have about 10 to 15 minutes of tracking there.

(GOSS NET 1)

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09 04 54 52 CMP Okay. Say again what you said just before the 10 to 15 minutes of tracking.
09 04 54 57 CC It goes pretty slow across the field of view.
09 04 55 01 CMP Okay. Does it go right to left or left to right or what?
09 04 55 07 CC It will be going left to right.
09 04 55 07 CMP Okay. Thank you.

HAWAII (REV 139)

09 05 03 48 CC Apollo 9, Houston.
09 05 03 54 LMP Roger, Houston. Stand by one.
09 05 03 58 LMP Okay. We are ready to copy the block data.
09 05 04 01 CC I was afraid of that. I don't quite have it yet. Request POO in ACCEPT.
09 05 04 07 CDR POO in ACCEPT we got.
09 05 04 10 CC Very well, and you won't quite have a Pegasus up there today. It's going to look like about a fourth magnitude star, we think, and my interpretation of the relative motion plot was wrong. The LM is going to be moving from your right to left, so the CSM will be yawing to the left.
09 05 04 39 CMP Okay. Roger. Understand. Right to left and we'll be yawing to the left.
09 05 04 45 CC Affirmative.
09 05 04 49 LMP Hey, when we get back we'll have to talk about the PTC and where we stopped it. We stopped it a couple of times now, and we'll get with you and get that all squared away. We have got the times.
09 05 05 00 CC Okay. Very fine. No problem.
09 05 05 10 CC 9, Houston. I have a NAV check I can feed up to you. This is an LM NAV check.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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HAWAII (REV 139)

09 05 05 26 CMP Okay. Go ahead.

09 05 05 28 CC Roger. Time: 222 00 00 00, plus 0252, plus 11936 0228. Over.

09 05 05 56 CMP We understand. 222 00 00 00, plus 0252, plus 11936 and 0228.

09 05 06 10 CC Roger. That n is really at 3 000, 22.8, but the LSKY doesn't have room for it - or the pad doesn't.

09 05 06 21 CMP Okay.

09 05 07 23 CMP Houston, Apollo 9.

09 05 07 24 CC Apollo 9, Houston. Go.

09 05 07 26 CMP Okay. There goes your uplink again. Your uplink was hung up there for a minute.

09 05 07 52 CC Apollo 9, Houston. We've got a bit of in and out of keyhole there in Hawaii. If we don't quite get it, we'll finish it at Redstone. Redstone AOS is at 09.

REDSTONE (REV 139)

09 05 10 34 CC Apollo 9, Houston.

09 05 10 37 LMP Roger, Houston. Go ahead.

09 05 10 39 CC Roger. We had a couple of lines wrong there due to keyhole, so we'll line-by-line the CSM, then go straight up with the LM state vector.

09 05 10 48 LMP Okay.

COLDSTONE (REV 140)

09 05 12 37 CC Apollo 9, Houston. The computer is yours.

09 05 12 41 CDR Okay. Thank you.

(GOSS NET 1)

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09 05 12 44	CC	Roger.
09 05 12 50	CC	9, Houston. How's your eyeball today?
09 05 12 55	CMP	Oh, it's pretty good.
09 05 12 57	CC	Okay. Real well.
09 05 13 00	CMP	We'll find that out about - -
09 05 13 03	CC	We're counting on you.
09 05 13 07	CMP	I hope.
09 05 13 09	CDR	Dave is telling me that maybe the tracking light is back on.
09 05 13 15	CC	Yes; Roger.

GUAYMAS (REV 140)

09 05 13 23	CC	9, Houston. Super RETRO has checked and checked and we are ready for block 22.
09 05 13 34	CDR	Okay. Tell super RETRO to shoot.
09 05 13 37	CC	Roger. 141 Charlie Charlie, plus 17 ¹ / ₂ , minus 1620 223 57 43 2834; 142 Charlie Charlie, plus 078, minus 1690 225 32 55 2832; 143 Charlie Charlie, plus 209, plus 1450 227 01 06 3913; 144 Charlie Charlie, minus 258, minus 1620 228 51 03 5825; 145 Alfa Charlie, plus 038, minus 0320 229 13 07 5534; 146 Alfa Charlie, plus 198, minus 0301 230 49 07 4539; 147 2 Alfa, plus 293, minus 0300 232 26 14 3813. Your pitch trim, minus 0.64; yaw, minus 0.94.
09 05 16 36	LMP	Okay, Ron. What did we start with? 141 Charlie Charlie?
09 05 16 40	CC	Affirmative.
09 05 16 42	LMP	Okay. Plus 17 ¹ / ₂ , minus 1620 223 57 43 2834; 142 Charlie Charlie, plus 078, minus 1690 225 32 55 2832; 143 Charlie Charlie, plus 209, plus 1450 227 01 06 3913 - -
09 05 17 12	CC	Faster.

(GOSS NET 1)

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09 05 17 16 SC Are you still with us, Houston?
09 05 17 17 CC Affirmative. Faster.
09 05 17 19 SC Okay. 144 Charlie Charlie, minus 258, minus 1620 228 51 08 5825; 145 Alfa Charlie, plus 038, minus 0320 229 13 07 5534; 146 Alfa Charlie, plus 198, minus 0301 230 49 07 4539; 147 2 Alfa, plus 293, minus 0300 232 26 14 3813. Pitch trim, minus 0.64; yaw, minus 0.94.
09 05 18 00 CC Roger. Your readback is correct.
09 05 18 05 CC 9, Houston.

TANANARIVE (REV 140)

09 05 58 57 CC Apollo 9. Houston through Tananarive.
09 05 59 04 CDR Hello there, Houston; how are you?
09 05 59 06 CC Oh, Roger. Mighty fine. The White Team bids you Sayonara, and they will see you back at the ranch.
09 05 59 24 CDR Very good.
09 05 59 34 CDR Houston, do you read Apollo 9?
09 05 59 37 CC Apollo 9, Houston. Loud and clear. How __?
09 05 59 42 CDR We're reading you. I'd like to thank - We'd all like to thank the White Team for all their efforts.
09 05 59 48 CC Roger. We appreciate it.
09 05 59 53 CDR Tell that Flight Director that we still have that debriefing we've got to get with.
09 05 59 59 CC Okay. He copied.
09 06 00 12 CDR Hey, is the big white Director there?
09 06 00 16 CC Say again.
09 06 00 20 CDR Is that big white Flight Director there?
09 06 00 23 CC Affirmative. He's on the loop.

(GOSS NET 1)

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09 06 00 26 CDR Okay. Tell him we better have that debriefing.
09 06 00 33 CC We concur and we will schedule it accordingly.
09 06 00 39 CDR Tally Ho!
09 06 00 41 CC Roger.

END OF TAPE.

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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HAWAII (REV 140)

- 09 06 40 11 CC Apollo 9, Houston.
- 09 06 40 15 CDR Go ahead, Houston. This is Apollo 9.
- 09 06 40 18 CC Roger. Just checking here with you. We'll be doing - asking you for your E-memory dump here at about 51.
- 09 06 40 27 CDR Okay. Well we're tracking the LM right now and - -
- 09 06 40 36 CC Okay. Understand. How's it going?
- 09 06 40 39 LMP Okay. We've got it.
- 09 06 40 41 CC Very good.
- 09 06 40 45 CC Lot of smiles around here.
- 09 06 40 49 CMP It's 40 46.
- 09 06 41 16 CC Apollo 9, Houston.
- 09 06 41 19 CDR Go ahead, Houston.
- 09 06 41 20 CC Roger. We can let the E-memory dump go if you get in a time bind, tracking the ascent stage, there. We would like you to turn BATT A charge off now, though.
- 09 06 42 05 CDR Houston, Apollo 9. Say again; I missed that.
- 09 06 42 09 CC Okay, Jim. We can let the E-memory dump go if you get involved tracking the ascent stage but we would like you to turn BATT A charge off now.
- 09 06 42 20 CDR Okay. Battery A charge is OFF now.
- 09 06 42 22 CC Alrighty.
- 09 06 44 57 CC 9, Houston. We're watching the Marks and they're looking good.
- 09 06 45 01 SC Say again, please.
- 09 06 45 03 CC Roger. We're checking the Marks as they come in, and they're looking good.
- 09 06 45 07 CDR Okay.

(GOSS NET 1)

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REDSTONE (REV 140)

09 06 48 40 CC Apollo 9, Houston.
09 06 48 42 CDR Go ahead, Houston.
09 06 48 43 CC Roger. When you lose the LM, we'd like you to do a VERB 83 and tell us what range you are at.
09 06 48 51 CDR Okay. Right now, he's against the earth background, and Dave can't see him. We've been Marking, but we just can't see him right now. AUTO OPTICS has been following him, but no more Marks for the last four minutes or so.
09 06 49 05 CC Okay. Understand.
09 06 49 08 CMP I can pick him up every once in a while, but not long enough to get out of AUTO OPTICS and take a Mark. We'll have to process the last one before we call a VERB 83 up, anyway.
09 06 49 18 CMP Okay, Dave.
09 06 49 27 CC Okay. You've got about 2 minutes to LOS, if you can do it before then.
09 06 49 31 CMP Okay. I'm picking him up every once in a while. Maybe he'll get to a dark background in a little while where I can hold onto him.
09 06 49 37 CC Okay. If we lose you here, we'll pick you up in Tananarive.
09 06 49 42 CMP Yes. We'll pick up a VERB 83 as soon as we get through the last Mark.
09 06 49 45 CC Okay, Dave.

TANANARIVE (REV 141)

09 07 37 38 CC Apollo 9, Houston through Tananarive.
09 07 37 46 CMP Roger, Houston. How do you read?
09 07 37 48 CC I read you loud and clear and just want you to know we are standing by at Tananarive, and we expect to talk to you in Hawaii at 224 14.

(GOSS NET 1)

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- 09 07 38 04 LMP Roger. 224 14. And if we're on there long enough we'll give you our powerdown schedule.
- 09 07 38 17 CC Okay. Apollo 9, Houston here. We are reading you a little better. We can go ahead and take some of your powerdown stuff now, if you have it.
- 09 07 38 30 LMP Okay. Ready to copy, Al?
- 09 07 38 30 CC Yes. Al set, Rusty.
- 09 07 38 32 LMP Okay. Service Module A, B, C, D: 51 54 40 48. BATT C power, A, B: 369 370 370. Injectors: 5.0, 5.0, OFF SCALE HIGH, 5.0, 5.0, 4.9. Two ID's, 3125 6127 8027. Over.
- 09 07 39 04 CC Roger, Rusty. Copy. 51 54 40 48, 369 370 370, 50 50 OFF SCALE HIGH 50 49, 3125 6127 8027.
- 09 07 39 32 LMP Roger. You missed one - 5.0 in the injector. 4.9 was 6 Delta.
- 09 07 39 40 CC Roger. We copied that.
- 09 07 39 42 LMP Okay.
- 09 07 39 49 CC And while we have you on the line, did you get a range for LOS on the LM?
- 09 07 40 00 CMP Roger. I got the figures for you - times. I didn't get you a good range because we can't run VFBB 83 along with P20, but those are the times for the first sightings to the last sightings and the beginning and the end of the Marks. Okay?
- 09 07 40 17 CC Okay. We're running out of coverage at Tananarive. I guess we'd better save it for Hawaii. See you there at 14.
- 09 07 40 25 CMP Oh, very well.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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HAWAII (REV 141)

- 09 08 16 16 CDR Houston, Apollo 9.
- 09 08 16 18 CC Apollo 9, Houston here.
- 09 08 16 20 CDR Roger. Hello there.
- 09 08 16 25 CDR Houston, how do you read Apollo 9?
- 09 08 16 27 CC Apollo 9, Houston reads you loud and clear. How are you doing?
- 09 08 16 32 CDR Pretty good. I've got a couple of questions for you.
- 09 08 16 34 CC Okay.
- 09 08 16 36 CDR Did you want us to leave inverter 3 on MAIN A and ... transformer on tonight like last night?
- 09 08 16 42 CC That is affirmative, Apollo 9.
- 09 08 16 44 CDR Okay, we configured that right.
- 09 08 16 46 CC Okay. We've got a question for you: have you switched tanks on quad Charlie yet?
- 09 08 16 53 CDR Negative.
- 09 08 16 54 CC Okay. We're reading a little low quantity; we just wondered.
- 09 08 16 58 CDR No. Unless they've been inadvertently opened sometime during the flight, they should still be closed, and we have not switched them.
- 09 08 17 06 CC Roger, Apollo 9. Houston copies, and you want to give me that LM LOS stuff now?
- 09 08 17 18 CMP Okay. Let me give it to you real quick here. The first sighting we had was at 222 25 55. It wasn't good enough to Mark on, but we did pick him up occasionally. The first Mark was at 222 39 40. The last Mark was at 222 45 40. Then we saw him every once in a while until 222 51 43, and that was the last time we had any sightings at all.

(GOSS NET 1)

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- 09 08 17 57 CC Roger, Apollo 9. Understand you got your first sighting at 222 25 55. You didn't take a Mark. You got your first Mark at 222 39 40 and your last one at 222 45 40, and you had him in sight until 222 51 43.
- 09 08 17 57 CMP Roger. The times we were not Marking we would only get a visual on him - maybe 2 seconds out of every 30 or 40, so you couldn't really get aim lined up to take a Mark. But with the stat vectors you have and with the machinery up there it really looked pretty good.
- 09 08 18 33 CC Roger, Dave. Understand. Would you give us a VERB 66 and shift that state vector over now?
- 09 08 18 43 CMP Okay. Give you a VERB 66 now.
- 09 08 18 47 CDR And, Houston, Apollo 9. We have some information for reentry stowage.
- 09 08 18 52 CC Roger. Understand reentry stowage. Go ahead.
- 09 08 18 55 CDR Okay. We have the -- one of the large suits and center-seat suit folded, and the L-shaped AGS underneath the center couch. We have a large pressure suit and all three helmets tied down on the floor between the L-shaped AGS and the lithium hydroxide canisters on the front part of the LEB floor. We're going to have two large bags of trash that'll probably be tied down in lower equipment bay, and we'll give you more on that tomorrow. The rest of the spacecraft will be stowed essentially the same, the one exception being the food. B1 - Locker B1, Bravo 1, that in lower equipment bay has just trash in it right now, and it will weigh somewhat less than it did at launch. Lockers L3 will be full of food. They'll have somewhat less than the food that was in them at launch, but we'll stuff some trash in there and try to at least fill them up. As I mentioned earlier, all the LM data is over in A1.
- 09 08 20 15 CC Roger. Apollo 9, Houston. Copy. Would you give us a VERB 74 right now, Jim?
- 09 08 20 21 CDR Roger. VERB 74.
- 09 08 20 23 CMP Three, 2, 1.
- 09 08 20 26 CMP MARK.

(GOSS NET 1)

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09 08 20 36 CDR And Houston, that's about all the data I have for R&TRO. Essentially, the spacecraft is stowed pretty much the same way it was at launch, except for the LM data in A1. The two pressure system or L-shaped bags - both of them on the floor, and other pressure suit lying crossways in the LEB, just forward of the lithium hydroxide canisters.

09 08 20 41 CC Roger. Apollo 9, Houston. Copy all that, and the Gold Team would like to say so long to you; it's been fun working.

09 08 21 06 LMP Say, Gold Team, we've enjoyed every moment with you, and we'd sure like to thank you for all your help. We'll see you at the big debriefing that Mr. Kranz is going to arrange.

09 08 21 16 CC Roger. I think everybody's agreeable to that.

09 08 21 19 LMP Okay. You've got a fine bunch of guys, let me tell you.

ASCENSION (REV 142)

09 08 58 14 CC Apollo 9, Houston through Ascension.

09 08 58 45 CC Apollo 9, Houston.

09 08 59 08 CC Apollo 9, Houston through Ascension.

09 08 59 34 CC Apollo 9, Houston.

09 09 00 07 CC Apollo 9, Houston through Ascension.

09 09 00 35 CC Apollo 9, Houston.

09 09 01 03 CC Apollo 9, Houston.

09 09 01 27 CC Apollo 9, Houston through Ascension.

09 09 01 48 CC Apollo 9, Houston.

09 09 02 13 CC Apollo 9, Houston.

END OF TAPE

APOLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 145/1
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REST PERIOD - NO COMMUNICATIONS

Apollo 8 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS REST 1)

Tape 146/1
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REST PERIOD - NO COMMUNICATIONS

Apollo 9 AIR-TO-GROUND VOICE TRANSCRIPTION
(COSS NET 1)

Tape 147/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION
(GOSS NET 1)

Tape 148/1
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REST PERIOD - NO COMMUNICATIONS

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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CARNARVON (REV 147)

- 09 17 36 26 CC (Alarm clock ringing) The alarm clock just went off, gentlemen.
- 09 17 36 30 CDR Roger. I thought I heard a little ding-a-ling there, Mr. Alarm Clock.
- 09 17 36 37 CC All right. Out of the sack, troops; let's get to work. Today you come home.
- 09 17 36 41 CDR Hot diggity dog! I think we're all ready.
- 09 17 36 46 CMP Okay. What would you like to do?
- 09 17 36 48 CC Okay. What do you have in front of you?
- 09 17 36 52 CMP ... switch, I think.
- 09 17 36 55 CC Okay. Do you want to start with the consumables?
- 09 17 37 00 CMP Okay. Stand by.
- 09 17 37 16 CMP Alrighty. Go with the consumables.
- 09 17 37 18 CC Okay. 234 hours: 42 10 42 12 33 13 38 13 195 11 40 31 39. Okay. And your DAP redline: 25 31 34 34.
- 09 17 38 01 CMP Roger. 234 42 10 42 12 33 13 38 13 195 11 40 31 39 25 31 34 and 34.

END OF TAPE

APOLLO 8 AIR-TO-GROUND VOICE TRANSCRIPTION

(COSS NET 1)

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CARNARVON (REV 147)

- 09 17 38 19 CC Roger. And you've probably noticed, there, quad C is a little low. However, we still have both DAP and SCS capability using four jet/two jet.
- 09 17 38 27 CMP Okay. Understand.
- 09 17 38 37 CC All right. And one other comment before we get too far: I'd like to just mention that the DAP is still cycling, so when you get squared away on that - I just want to let you know that the DAP is still powered up.
- 09 17 38 53 CMP Oh, is it really? That's very interesting.
- 09 17 38 56 CC Okay. And, let me see. Oh, one thing else, I guess. I - Just for your info, on the batteries, we're computing that you've got 71 hours on the water, if that question ever comes up.
- 09 17 39 13 CMP Okay. Take a look at our VERB 46 right now.
- 09 17 39 19 CC Okay. The story I have here, Dave, is that you need a VERB 46 ENTER to really kill the DAP.
- 09 17 39 28 CDR I put that in last night, too, Stu.
- 09 17 39 30 CC Say again, please?
- 09 17 39 32 CDR I put that in last night, too.
- 09 17 39 34 CC Oh. Okay. We'll have them take another look then. Okay. I have some block data for you.
- 09 17 40 01 CMP Okay. Stand by.
- 09 17 40 11 CMP Okay. Go with the block data.
- 09 17 40 13 CC Okay. And make sure your S-band volume is up. We might pass over Honeysuckle before I finish up.
- 09 17 40 21 CMP All right.
- 09 17 40 22 CC Okay. Reading: 148 1 Bravo, plus 246, minus 0640 233 53 37 4148; 149 1 Charlie, plus 314, minus 0680 235 30 22 3 49; 150 1 Bravo, plus 271, minus 0310 237 27 07 2159; 151 1 Charlie, plus 30, minus 0670 235 31 21 1338; 152 1 Alfa, plus 233, minus 0810 230 57 21 0314.

(GOSS NET 1)

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plus 336, minus 1610 243 11 54 3268; 154 4 Bravo, plus 310, minus 1600 244 52 53 3038; 155 - Okay. I think I'm back with you again. I blotted out on that 155 didn't I?

HONEYSUCKLE (REV 147)

- 09 17 41 01 CDR I lost you on the longitude at 154 4 Bravo.
- 09 17 41 09 CC Okay. Longitude: minus 1600 244 52 53 3038; 155 4 Bravo, plus 239, minus 1594 246 35 09 3337; 156 Charlie Charlie, plus 122, minus 1640, 243 11 25 3083. Your pitch and yaw trim: minus 0.64, yaw minus 0.94. End of update.
- 09 17 45 39 CMP Okay. See, I didn't know we were going to go that far, but here you go: 148 1 Bravo, plus 296, minus 0640 233 51 37 3148; 149 1 Charlie, plus 314, minus 0680 235 50 22 3033; 150 2 Bravo, plus 270, minus 0310 237 27 07 3159; 151 1 Charlie, plus 309, minus 0670 238 51 19 3033; 152 2 Alfa, plus 233, minus 0680 240 32 58 3402; 153 4 Bravo, plus 336, minus 1610 243 11 54 3268; 154 4 Bravo, plus 310, minus 1600 244 52 53 3038; 155 4 Bravo, plus 239, minus 1594 246 35 09 3337; 156 Charlie Charlie, plus 122, minus 1640 248 11 25 3083; with a pitch trim of minus 0.64, and a yaw trim of minus 0.94.
- 09 17 47 22 CC Roger. That's correct. Stand by one.
- 09 17 47 27 CMP Okay.
- 09 17 47 33 CC And, readback is correct, Dave.
- 09 17 47 38 CMP Alrighty.
- 09 17 47 43 CC And, since I was mean enough to wake you up with an alarm clock, I can give you some good news. The on-the-hour report from the Guadalcanal says there are calm seas, winds are 5 knots, visibility 10 miles, 2000 scattered. And there are some 5-foot swells with about a 10-second period and the ship is about 35 miles from the target point now.
- 09 17 48 13 CDR Hey, that's a pretty good description of the kind of weather we like.
- 09 17 48 17 CC Well, you put in an order; we strive to please.

(GOSS Rev 1)

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- 09 17 48 21 CDR You guys are absolutely outstanding.
- 09 17 48 29 CC And, let me see. We've still got you here for about another 2 minutes. The daylight darkness as shown in your flight plan is off. It's slipped some. I might update you on that, if you think that will help you any on your planning. I'll just call out the stations.
- 09 17 48 47 CMP Okay. Let me get the flight plans. Just a minute.
- 09 17 49 03 CMP Okay. Go ahead.
- 09 17 49 10 CC Okay. Well, we've got you now in the nighttime coming across here, but you'll come out of this darkness here just over Texas at about 23 - something like that. These times are just rough; I don't think you'll need them. And then you'll go back in Carnarvon darkness again right at 18, and that's at 235 plus 16, and come out over Guaymas around 19. Okay. And then you'll hit back in again at 236 plus 48 over Carnarvon; come back into daylight about 237 plus 25, and then darkness again at 238 plus 20, and daylight at 238 plus 55. You probably should be realigned by then, but I'll give you the last one here. At 239 52 you'll go into darkness again, and come out just before the burn at 240 about 25.
- 09 17 50 39 CC And we're going to have LOS here momentarily. We'll pick you up over the Mercury - Stand by, I'll try to settle down, here - oh, in about 4 minutes.
- 09 17 50 51 CMP Okay. Fine.

MERCURY (REV 147)

- 09 17 56 37 CC Apollo 6, Houston through Mercury.
- 09 17 56 41 CMP Roger, Houston. We have you. Go.
- 09 17 56 44 CC Okay. We'd like to have inverter 3 OFF.
- 09 17 56 49 CMP Roger. Inverter 3 OFF, now.
- 09 17 56 52 CC And also, just to get you all away here in plenty of time, we'd like to ask you the question about two-jet versus four-jet on the burn. The two-jet would save around 1 to 2 pounds per quad, or about 7 pounds total. Just to make sure we don't foul things up, we'd like you to bring in the two-jet.

(GOSS NET 1)

Tape 150/4
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- 09 17 57 21 CDR How much fuel do we have? We have quite a bit of fuel extra, don't we?
- 09 17 57 27 CC You're right on the redlines now, Jim. It's - It's right there. This is quad Charlie. Quad Charlie is right on the redlines, as you can see. We passed 33, and 34 is the DAP redline. But you know, this is within the gaging uncertainty, and so forth and so on. And that's --
- 09 17 58 05 CDR Okay. B and D are well up, aren't they?
- 09 17 58 03 CDR We'll do a two-jet, then, Stu.
- 09 17 58 06 CC Okay. You'd like to do a two-jet, then?
- 09 17 58 10 CDR Yes. We'll do a 18-second two-jet on - what? B and D, I guess.
- 09 17 58 15 CC Roger, Jim. We concur with that.
- 09 17 58 18 CDR Okay. Thank you.
- 09 17 58 20 CC Thank you.
- 09 17 58 28 CDR Hey, Stu, why didn't we get a drop in pressure, and all that stuff? Is there any - Do the guys on the ground think that maybe we have the secondary propellant fuel pressures OPEN on quad C?
- 09 17 58 44 CC That appears to be a good possibility; as we told you, it should have opened up. There's a plus or minus 6 percent on that doggone estimate. So you - But still yet we should be down below that. And so, the feeling here is, it's quite possible that that secondary valve is OPEN.
- 09 17 59 13 CDR Okay.
- 09 17 59 18 CC We did a lot of talking about that here this morning, and you know we had those funnies on that - on that separation. And we're - We're just not real sure.
- 09 17 59 31 CDR Yes. That's sort of what I was thinking of, too. Hey, have you done anything - any new information on our DAP here?
- 09 17 59 45 CC No, we sure hasn't. You know to get us squared away down here, to make sure we're reading right, could you give us a VERB 46 ENTER?

(GOSS NET 1)

Tape 150/5
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- 09 17 59 56 CDR Okay. I'll proceed out of the VERB 48; then we'll give you VERR 46. Okay. Here comes the VERB 46 now.
- 09 18 00 12 CC Okay.
- 09 18 00 24 CC Okay. That got us squared away, Jim, and we show the DAP in good shape.
- 09 18 00 51 CDR You mean the DAP really was running, then?
- 09 18 00 33 CC All our data showed it was; yes.
- 09 18 00 39 CDR I'll be darned. We got three-way verification on that one last night, but maybe it didn't get in.
- 09 18 00 48 CC Roger. Copy.
- 09 18 01 32 CMP Hey, Stu.
- 09 18 01 34 CC Go ahead, Dave.
- 09 18 01 36 CMP Yes, we just decided to have a six-I verification on the DAP. You want to add two?
- 09 18 01 42 CC Okay.
- 09 18 03 26 CC Okay. Apollo 9, Houston. I have you for another couple of minutes. Before I lose you here at Mercury, I guess I can cover a couple of changes that we'd like in the flight plan.
- 09 18 03 37 CMP Okay. Stand by. ...
- 09 18 03 43 CMP And by the way, you want to come off the H₂ fan 2?
- 09 18 03 50 CC Stand by.
- 09 18 03 58 CC That's negative. We do not want it OFF, we'll leave it just like it is.
- 09 18 04 03 CMP Okay. Go with your changes and I've got a question for you after you get through.
- 09 18 04 07 CC Okay. Why don't you go ahead and ask it, Dave? We're going to lose you probably, in about a minute and a half, and I'd cover these changes when we see you over Texas at 60.
- 09 18 04 16 CMP Okay. Do you want to switch to the primary boiler? And, if so, do you want to unservice first? And, we've talked it over and we think it's a good idea to unservice before we turn down the

(COSS NET 1)

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09 18 04 30 CC Roger. Copy two questions. One is whether you want to reservice the primary boiler before you activate it, and you have decided you'd like to cold-soak. We'll try to give you a recommendation on that.

09 18 04 42 CMP Okay. Fine.

09 18 05 05 CC And, we're approaching LOS here, troops. We'll see you about 20.

09 18 05 21 CMP Roger. 20.

TEXAS (REV 148)

09 18 20 27 CC Apollo 9, Houston. We have you in good lock.

09 18 20 32 CMP Roger. Houston, Apollo 9. We're still here.

09 18 20 36 CC Very good. And on your questions, we concur with the cold-soak. On the water boiler, we say do not reservice it prior to bringing it up. The reason for this is, we are not sure how much water is in there, and we would like to go ahead and bring it up and see whether it will dry out. It should dry out in the first day/night passes, and we'll be looking at it.

09 18 21 06 CMP Okay. So you want us to bring it up right now?

09 18 21 09 CC That's affirmative. Let's bring - Go ahead and bring it on the line.

09 18 21 11 CMP Alrighty. Here we go.

09 18 22 00 CMP Hey, Houston, 9. Do you have one of those handy-dandy map updates around?

09 18 22 07 CC Roger. Stand by one, here. While I'm trying to locate that ditty, I'd like to pass up a couple of changes to you.

09 18 22 16 CMP Okay. Stand by a second.

09 18 23 01 LMP Okay. Go with your changes, Stu.

09 18 23 04 CC Okay. On your CO₂ filter change at 236, or at - the second line, should read 8 to B, reuse 20 to E6.

09 18 23 27 LMP Roger. Understand. 8 to B and reuse 20 to E6.

(GOSS NET 1)

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- 09 18 23 33 CC Okay. Now with the addition of the other rev, there is a lot of changes, such as the time you do the star check and all that, which I really don't think you need. But I've got them all written out here, and the times, if you'd like to take that.
- 09 18 23 50 LMP No. I think what we're going to do is get the IMU up, and on the next rev do a P51 and get it all squared away. And then, the nightside pass before the deorbit burn, we're going to get to the burn altitude early and make sure we get a good solid star check, because the horizon probably won't be too good just prior to the RETRO.
- 09 18 24 08 CC Okay. Real good. As to most of the flight plan changes I have here, they are just reflecting change in daylight and dark and the addition of the rev; so, that's really, I believe, all you need to change on your flight plan this time. And we do have a couple of, would you believe, changes to the entry checklist I'd like to talk to you about.
- 09 18 24 31 LMP Well, I believe that. You've had about 10 days, and I'd be surprised if you didn't have any changes.
- 09 18 24 37 CC Okay. And I found my map update sheet here, if you want to take that too.
- 09 18 24 45 LMP Okay. Go with the map update, and we'll dig out the entry checklist in the meantime.
- 09 18 24 50 CC Okay. REV 147, which is completing, 234 15 36; longitude, 107 west.
- 09 18 25 07 LMP Roger. Rev 15 36: 107 west. Right?
- 09 18 26 42 LMP Okay. Go ahead with the entry checklist, Stu.
- 09 18 26 52 CC Okay. Let's start here on page E1 dash 1.
- 09 18 27 02 LMP All right.
- 09 18 27 04 CC Okay. The first one - these are out now, but I'll just toss in the reminder - the very first line on panel 3, your heater gaging circuit breakers main A and main B, we want these CPM.
- 09 18 27 23 LMP Okay. Got that.
- 09 18 27 25 CC Okay. Still under the 147, the next one is last line on panel 3, the 2nd CPM.

(GOSS NET 1)

Tape 150/8
Page 832

- showing 16 MAIN B. We'd recommend the command module 1 MAIN A, command module 2 MAIN B, and AC roll MAIN B.
- 09 18 28 05 LMP Okay. I guess that's a nox nix. We'll do that.
- 09 18 28 10 CC All right. And now, on page E1 dash 6, right at the top right under C, you can just delete the stir the tanks.
- 09 18 28 29 LMP Okay. Just delete step C, is that right?
- 09 18 28 32 CC That's affirmative. Delete step Charlie.
- 09 18 28 36 LMP Okay. Go ahead.
- 09 18 28 39 CC All right. On page E1 dash 13/14.
- 09 18 28 47 LMP Go.
- 09 18 28 49 CC Okay. Here, the third line down, the SCS LOGIC 2 on UP: we'd like to have that moved just above the MSFI confirmed GO for PYNO ARM. And essentially, what we're trying to do here, is make sure that you have your EIS to AUTO, ELS LOGIC ON. Then, when you throw the SCS LOGIC, we know we're all squared away to give you a GO.
- 09 18 29 18 LMP Okay, Houston. Understand. It'll read 35 sequential arm 2 CLOSE, ELS auto and EIS logic ON, and then, sequential logic 2 on UP.
- 09 18 29 28 CC That's affirmative. Jolly good on that one. Now, on page E2 dash 1.
- 09 18 29 39 LMP Okay. Go.
- 09 18 29 41 CC And this I know you're well aware of. I'm just tossing it in with our decision to G+ on the two-jet village: that register 1 under the 10102.
- 09 18 29 54 LMP Okay. 10102. Go ahead.
- 09 18 29 57 CC Okay. On page E2 dash 3.
- 09 18 30 01 LMP Go.
- 09 18 30 02 CC All right. Down here at minimum 1 second, we'd like to - the first two lines there, we'd like to reverse the order of them. We'd like to

(GOSS NET 1)

Tape 150/9
Page 833

have the tape recorder record high-bit rate FORWARD, to be first, followed by average g on up-telemetry command RESET and then NORMAL.

- 09 16 30 29 LMP Okay. So it will read this way: tape recorder record high-bit rate FORWARD, and then average g on up-telemetry command RESET, and then NORMAL.
- 09 16 30 38 CC That's affirmative. And, just for your info, that's just to keep us from having to reacquire the data link. Okay. And now over on page E2 dash 6.
- 09 18 30 54 LMP Go ahead.
- 09 18 30 55 CC Okay. We're showing AUTO RCS select command module 1 MAIN P. Change that to read MAIN A and this will agree with the configuration that we recommended over on the first page.
- 09 18 31 13 LMP Okay. So it will read AUTO RCS select CM 1 MAIN A.
- 09 18 31 19 CC That is affirmative.
- 09 18 31 24 LMP Go ahead.
- 09 18 31 25 CC Okay. That's all I have.
- 09 18 31 29 LMP Gee. That's not bad at all.
- 09 18 31 31 CC Very good.
- 09 18 31 34 LMP Okay. Well, I guess everything else is squared away on that. We went through it last night and we don't have any questions on it. So if you see anything else, you can give a whistle.
- 09 18 31 43 CC Okay. We sure will.

VANGUARD (REV 148)

- 09 18 38 24 CC And, Apollo 9, Houston. I was a little surprised asking for that map update. Are you all going to be taking any pictures this morning?
- 09 18 38 31 CDR Say, listen. We're the world's greatest spectators.
- 09 18 38 35 CC Okay. Are you going to have your cameras out at all this morning, Jim?

(GOSS NET 1)

Tape 150/10
Page 834

- 09 18 38 40 CDR No, we really don't have much in the way of film left, Stu. We've got about 15 frames on the Hasselblad left and we've got about - oh, I think we have three film packs for the 16mm, and have about a quarter of a roll left on them. We do plan on taking pictures of the reentry. We have one full roll of 16mm reserved for that.
- 09 18 39 00 CC Okay. The reason why I asked you, we've got a TVX in here from Australia, requesting some specific pictures, and I wasn't even going to mention it to you. I thought on reentry, say you wouldn't be interested. But if you've got a camera out coming across Australia, why, there's some people down there want some pictures.
- 09 18 39 21 CDR That's okay. We've been trying to get a picture of Australia, too. When are we going to go across?
- 09 18 39 27 CC Well, let me check my terminator here. I think you're going to be in darkness but, Perth - in regards to your comment the other night - Perth wanted some pictures of their lights.
- 09 18 39 41 CDR Okay. We'll see what we can do here. Give us the time.
- 09 18 39 45 CC Roger. Will do.
- 09 18 40 51 CC Okay, Jim. For the picture of Perth - You might bring up your S-band volume, here, too. We'll be going over to Madrid.

MADRID (REV 148)

- 09 18 41 06 CMP Go ahead with the times, Stu --
- 09 18 41 07 CDR -- Ahead, Stu. We're here.
- 09 18 41 08 CC Okay. We don't have your time, now. To get Perth, it's going to be two revs from now, and the best time it's putting you is up at about 23⁴⁵ plus 12, which looks like it's getting up toward the busy section.
- 09 18 41 24 CDR Okay. We'll write it down on the flight, Jim. If we can get it, we'll try to set it.
- 09 18 41 29 CC Okay. Let me give you the exact time, here, for Perth. It'll be 23⁴⁵ plus 20; plus 10. That's your closest approach.

(COSS MET 1)

Tape 150/11
Page 835

- 09 18 41 44 CMP Okay. Will they be north or south of track?
- 09 18 41 48 CC You'll be just about over them. You'll have about an 82-degree angle on them, so you'll be coming right over in about 226 miles.
- 09 18 41 58 CMP Okay.
- 09 18 41 58 CC Okay. Apollo 9. We've got about a minute here, I believe, off of Madrid. Can you give us a crew status report? If not, we'll catch you at Carnarvon at all.
- 09 18 43 22 CDR This is the commander. I had about 6 hours of good sleep, about 1 hour of poor sleep, and I took one Actifed.
- 09 18 43 29 CMP I had some - CMP - and I had about 7-1/2 hours of good sleep and - No; I had a vitamin pill yesterday.
- 09 18 43 37 CDR And I had a vitamin pill, too.
- 09 18 43 42 CC Roger. I copy both.
- 09 18 43 47 LMP Rusty had 8 hours of good sleep, one Seconal, one Actifed, and one vitamin pill.
- 09 18 43 54 CC Roger. Understand. Thank you very much.

END OF TAPE

AOLM - AIR-TO-GROUND TRANSCRIPTION

(GOSS NET 1)

Tape 151/1
Page 837

CARNDARVEN (REV 148)

09 19 11 26 CC Apollo 9, Houston through Carnarven. Standing by.

09 19 11 35 SC Roger. Houston, Apollo 9.

09 19 11 38 CC Read you loud and clear.

09 19 12 15 CDR Houston, Apollo 9.

09 19 12 16 CC Go ahead, Apollo 9.

09 19 12 19 CDR What quads do you want to use for the early part of today? A and B or --

09 19 12 26 SC Roger. Copy. Stand by.

09 19 12 50 CC Okay. Apollo 9, Houston. We're recommending that you just go ahead and use all of them for this since we won't really be using that much, and we'd like to have all four ON bringing up the platform.

09 19 13 04 CDR Okay. You'd like to have all four of the quads ON when we bring up the platform?

09 19 13 08 CC That is affirmative. And you can just go ahead and leave all four ON with the exception of the two-jet ullage that we've already discussed.

09 19 13 18 CDR Okay.

09 19 17 14 CC Would you bring up your S-band? We'll be going over to Honeysuckle in a couple of minutes.

09 19 17 20 CDR Okay.

HONEYSUCKLE (REV 148)

09 19 23 02 CC Apollo 9, Houston.

09 19 23 05 CDR Go ahead. Houston, Apollo 9.

09 19 23 47 CC Roger. Guadalcanal is on station and is waiting.

09 19 23 51 CDR Very good. Thank you.

(COSS NET 1)

Tape 151/2
Page 838

- 09 19 23 53 CC Roger.
- 09 19 23 59 CDR Houston, what are you talking to us through?
- 09 19 24 02 CC Stand by one, and I'll see what I'm uplinking. Wait. We're through Honeysuckle; it's got to be S-band.
- 09 19 24 03 CDR Okay.
- 09 19 24 20 CC And, Spell - , Houston. Jim, since you were so agreeable about that picture of, particularly of Perth - there, that was - The data I gave you was for REV 100. You'll come within about 80 miles of it on the next REV around, if you'd like to take that time, if you think it's going to be feasible.
- 09 19 24 42 CDR Okay.
- 09 19 24 45 CC Are you ready to copy?
- 09 19 25 40 CDR We sure can see a lot of lights down on the city - down on the ground right now, Stu.
- 09 19 25 45 CC Roger. There's two cities - Well, there's actually three. Sidney will be about 228 miles off your track the next time around, but Perth and Brisbane both are - Perth will be 80 and Brisbane 110. And sure like to get some pictures of those, if you can work it in.
- 09 19 26 03 CDR Okay. Just a second.
- 09 19 26 05 CC Roger. No sweat. It will be on the next REV.
- 09 19 26 09 SC Okay. Why don't you go ahead and give us the data here; I'll write it down now.
- 09 19 26 14 CC Okay. For Perth your time of closest approach: 236 plus 41 plus 36. And Perth will be 82 miles north of track.
- 09 19 26 29 CDR Okay. And what's the other one?
- 09 19 26 32 CC Okay. The other one will be Brisbane: 204 237 00 plus 41. And it will be 110 miles north of the track.
- 09 19 26 53 CDR Okay. Very good. We'll try to get them.

(GOSS NET 1)

Tape 151/3
Page 839

09 19 26 55 CC Okay. And I don't whether you can reach out 220 miles or not, but if you've got your camera out, I might as well give you one for Sidney, and that will wipe us out.

09 19 27 05 CDR Okay. Go ahead.

09 19 27 04 CC All right. Sidney: PCA 236 plus 59 plus 37. And Sidney will be 228 miles south of track.

09 19 27 16 CDR Okay. We'll have two north and one south. Is that correct?

09 19 27 20 CC That is affirmative. And you'll hit Perth first, of course. By the time - We're going to leave here at Honeysuckle; see you over the Mercury around 31.

09 19 27 30 CDR Okay.

09 19 28 03 CDR Houston, Apollo 9.

09 19 28 10 CC Apollo 9, Houston. Ga.

09 19 28 19 CC You're over the hill, I believe.

MERCURY (REV 148)

09 19 30 54 LMP Houston, Apollo 9.

09 19 31 01 CC Apollo 9, Houston. Go.

09 19 31 04 LMP Roger. Would you tell the good people of Sidney that we saw their lights about 5 minutes ago. It was a very beautiful sight.

09 19 31 11 CC Good. Mighty fine. Thank you.

09 19 31 17 CDR Good morning, Ron. How are you?

09 19 31 19 CC Hey, fine shape, and all set to go.

09 19 31 22 CDR Very good.

09 19 31 26 CDR Where you going, Ron?

09 19 31 30 CC Hey, that's a good question, come to think of it.

09 19 40 51 CC Apollo 9, Houston. About LOS; will pick you up at Redstone [unclear]

(GOSS NET 1)

Tape 151/4
Page 840

09 19 40 57 CDR Roger.
09 19 41 35 CMP Houston, you got enough to get the gyro torqueing angles, or did you copy them?
09 19 41 41 CC No. We missed them.
09 19 41 43 CDR Do you want to read them?
09 19 41 45 CC Affirmative. Go.
09 19 41 48 CDR Okay. GSI was 239 3° 00, minus 00128, minus 00761, plus -

REDSTONE (REV 148)

09 19 49 44 CC Apollo 9, Houston.
09 19 49 48 CMP Houston, Apollo 9. Go.
09 19 49 50 CC Roger. We copied your torqueing angles, and we'll have you all the way through Canaries. LOS will be 19.
09 19 49 59 CMP Okay. Did you copy what type alignment it was?
09 19 50 03 CC Negative.
09 19 50 05 CMP Okay. We did a nominal to time 240 30 08 in order to get the platform up into place.
09 19 50 16 CC Roger. Copy.
09 19 57 26 CMP Houston, Apollo 9.
09 19 57 29 CC Apollo 9, Houston. Go.
09 19 57 30 CMP Roger. Our original flight plan schedule was for a H₂ purge this morning, and did you want us to do that?
09 19 57 44 CC Stand by one, there.

GUAYMAS (REV 149)

09 19 58 00 CC Apollo 9, Houston. The fuel cells are looking good here. Disregard H₂ purge.

(COSS FET 1)

Tape 151/5
Page 841

09 19 58 06 LMP Okay.
09 19 58 07 CC Request :00 in ACCEPT; then we'll have a state vector and target load and the REFSMMAT for you.
09 19 58 14 CMP You've got it.
09 19 58 17 CC Roger. Coming up.

MOM (NA 149)

09 20 01 00 CC Apollo 9, Houston. I have your maneuver PAD.
09 20 01 06 CMP Okay. Stand by.
09 20 01 30 CDR Okay. Ready to copy, Ron.
09 20 01 34 CC Okay. Proposed: 152 dash 1 Alfa, 240 31 1378, minus 01969, plus all zips, plus 02585 03250 03081 0116 24888, minus 064, minus 094 15 02610 32900, minus 2990, plus 10536 2329. Over.
09 20 03 13 CMP Okay. 152 dash 1 Alfa, 240 31 1378, minus 01969, all zips, plus 02585 03250 03081 0116 24888, minus 064, minus 094 15 02610 32900, minus 2990, plus 10536 2329. Over.
09 20 03 54 CC Roger. That is correct.
09 20 04 10 CC Apollo 9, Houston. The computer is yours. You have a state vector, target load, REFSMMAT, and we've VREFB 66'ed it.
09 20 04 19 CDR Oh, very well. That sounds like a full day's work. Thank you.
09 20 04 24 CC Roger. If you're in a copying mood, I have your entry PAD.
09 20 04 31 CDR Okay. Stand by one.
09 20 05 09 CDR Okay. Go ahead.
09 20 05 13 CC Roger. Area: 152 dash 1 Alfa, 046, plus 2325, minus 0600 12015 25996 15 27 16 03, minus 03177. The roll right: 00 60 19 01 15 56 19 29 23 46 24 33, plus .0, plus 075. Over.
09 20 06 35 CDR Okay. I've got 152 dash 1 Alfa, 046, plus 2325, minus 0600 12015 25996 15 27 16 03, minus 03177. Right: 00 60 19 01 15 56 19 29 23 46 24 33, plus .0, plus 075.

(COSS NET 1)

Tape 151/6
Page 842

09 20 07 12 CC Apollo 9, Houston. Your readback is correct.

09 20 07 18 CMP Houston, 9, again. Let me recheck the CO₂ filter, would you? Which one was 20 supposed to replace? Number 8 or number 9?

09 20 07 25 CC Stand by one, there.

09 20 07 37 CMP Okay. Thank you.

09 20 08 19 CDR Houston, Apollo 9.

09 20 08 22 CC Apollo 9, Houston. Go.

09 20 08 24 CMP I think I have it sorted out now. You want to put 8 and 9 in; you want to take 20 out and put in B6; and take 1 out and put it in A3. Is that right?

09 20 08 41 CC 9, Houston. I think that's - 9, Houston. I think that's correct, there, but let me double check it with WAO.

09 20 08 49 CMP Okay. Thank you.

09 20 11 09 CDR Apollo 9, Houston.

09 20 11 12 CMP Go ahead, Houston.

09 20 11 14 CC Okay. Here's the way the canister - the way I take it. You put 8 and 9 in - 8 in the B slot, 9 in the A slot, and close the door; and you take 20 and stow it in B6; and you take number 1 canister and stow it in Alfa 3.

09 20 11 32 CDR Okay. That's what I thought. We just wanted to make sure that we got the right ones going in the right place because, surprisingly enough, the CO₂ canisters were not marked for the flight.

09 20 11 43 CC Roger. Copy.

09 20 11 55 CC Apollo 9, Houston. I have a comment for your entry update.

09 20 12 44 CMP Houston, Apollo 9.

CABARY (REV 149)

09 20 12 49 CC Apollo 9, Houston through Cabarie.

(COSS REF 1)

Tape 151/7
Page 843

- 09 20 12 53 CDR Roger. How do you read now?
- 09 20 12 54 CC Roger. Loud and clear. Your comment for your entry update there is: you put the 31.4-degree window mark on the horizon at 0.05g.
- 09 20 13 20 CDR Okay. Understand the 31.4-degree line on the window on the horizon at 0.05g.
- 09 20 13 24 CC Roger. And you will lose your sextant star at 240 plus 10 plus 53.
- 09 20 13 29 CDR Understand. We lose the sextant star at 240 16 53.
- 09 20 13 45 CC Affirmative.
- END OF TAPE

APOLLO 9 AIR-TO-GROUND TRANSCRIPTION
(GOSS NET 1)

Tape 152/1
Page 844

CARNARVON (REV 149)

09 20 49 12 CC Apollo 9, Houston through Carnarvon.
09 20 49 16 CMP Roger, Houston. Go.
09 20 49 18 CC Roger, Dave. We're not getting any EKG on you. If it's something real simple, fine; otherwise, we'll just put by with your respiration.
09 20 49 30 CMP Okay. I'll give it a quick check.
09 20 52 18 CC Apollo 9, Houston. Looks like you fixed the EKG, there.
09 20 53 06 CMP Say again.
09 20 53 08 CC Roger. It looks like your EKG is good, now.
09 20 53 12 CMP Oh, okay. It was a loose connector.
09 20 53 17 CC Roger.

HONEYSUCKLE (REV 149)

09 20 55 03 CC Apollo 9, Houston. S-band volume up for Honeysuckle.
09 20 55 08 SC Roger. S-band up for Honeysuckle.
09 21 06 47 CMP Houston, Apollo 9.
09 21 06 49 CC Apollo 9, Houston. Go.
09 21 06 56 CC Apollo 9, Houston. Go. We read you.
09 21 07 09 CMP Houston, Apollo 9.
09 21 07 12 CC Apollo 9, Houston. Go.
09 21 07 15 CMP Roger. Did you get the gyro torqueing angles?
09 21 07 18 CC Negative. You went over the hill just before we got them.
09 21 07 22 CMP Okay. GET of 237 05 30, minus 00395, minus 00223, plus 00534. And that's to the desired REFSIMAT that you sent up.
09 21 07 25 CC Roger. In copy.

(COSS MET 1)

Tape 152/2
Page 845

MERCURY (REV 149)

09 21 09 14 CDR Houston, Apollo 9.
09 21 09 16 CC Apollo 9, Houston. Roger.
09 21 09 17 CDR Did you want an E memory dump today?
09 21 09 23 CC That's affirmative. Stand by, and I'll give you a time on it.
09 21 09 27 CDR Okay.
09 21 10 30 CC Apollo 9, Houston.
09 21 10 32 CDR Go ahead, Houston. Apollo 9.
09 21 10 34 CC Roger. The computer was powered up all night, so I guess we don't need E mem - E mod dump.
09 21 10 40 CDR Okay. Very good.
09 21 12 01 CDR Houston, Apollo 9.
09 21 12 03 CC Apollo 9, Houston. Go.
09 21 12 10 CDR Houston, we were doing a DSKY lamp test there, and I hit a RESET at the end of the thing; got a 212 ALARM, which in our book says PIPA failed or PIPA not being used. Says do a PIPA bias check. What do you think about that?
09 21 12 35 CC Apollo 9, Houston. I think that's the same thing we saw the other night when you did that, and we think it's normal, but stand by one.
09 21 12 45 CDR Okay.
09 21 12 50 CC And, 9, Houston. We're getting bias checks down here anyhow, so PIPA bias check not necessary.
09 21 12 59 CDR Okay. I think - but you understand the question? We got a 212 ALARM, and I guess you can see it on the DSKY as well as we can, so okay.
09 21 13 08 CC Affirmative. We understand.
09 21 13 11 CDR Alrighty.
09 21 14 09 CC Apollo 9, Houston.

(GOSS NET 1)

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Page 846

09 21 14 19 CC Roger. We're sure that's a normal thing. It's the power supply that gets interrupted when you do that DSKY check, and all you have to do now is hit ERROR RESET.

09 21 14 26 CDR Good. We're very good at that ERROR RESET.

09 21 14 26 CC Okay.

09 21 15 36 CC Apollo 9, Houston. We'll pick you up at Redstone at 20.

09 21 15 42 CDR Roger. Redstone at 20.

REDSTONE (REV 149)

09 21 23 37 CC Apollo 9, Houston.

09 21 23 40 CDR Go ahead, Houston.

09 21 23 41 CC Roger. We still have the secondary loop coming on the line, and we'll have you until about 54.

09 21 23 47 CDR Okay. Very good.

GUAYMAS (REV 150)

09 21 37 42 CDR Houston, Apollo 9. Do you read?

09 21 37 44 CC Apollo 9, Houston. Affirmative. Go.

09 21 37 46 CDR Okay. We are going to open our secondary propellant fuel pressure valves in the service module RCS, now.

09 21 37 52 CC Roger. Go ahead.

09 21 38 32 CDR Houston, Apollo 9. We've opened all. Did you see any change of state in anything on the ground?

09 21 38 39 CC Negative. No change down here; which is good.

09 21 38 43 CDR Yes.

09 21 53 00 CC Apollo 9, Houston. This is minute 168; Transbarive at 17. Target will be at 20.

09 21 53 06 CDR Thank you.

APOLLO 9 - EARTH-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

Tape 153/1
Page 847

TANANARIVE (REV 150)

- -- -- -- CC Apollo 9, Houston through Tananarive.
- -- -- -- CDR Hello, Houston. This is Apollo 9.
- -- -- -- CC Roger. If you turn H₂ tank 2 fan on, that may pump the pressure up in the H₂ tanks, there.
- -- -- -- CDR Okay. You want the fan ON in H₂ tank 1?
- -- -- -- CC Tank 1 and tank 2.
- -- -- -- CDR Okay. Tanks 1 and 2 ...
- -- -- -- CC Roger.
- -- -- -- CDR Houston. You want the heaters ON, also - to get the pressure up?
- -- -- -- CC Apollo 9, Houston. Say again.
- -- -- -- CDR Roger. Do you want the heaters ON, also - to get the pressure up?
- -- -- -- CC Apollo 9, Houston. Negative.

CARNARVON (REV 150)

- 09 22 23 51 CC Apollo 9, Houston through Carnarvon.
- 09 22 23 56 CDR Hello, Houston. Apollo 9, here. We're just doing our star attitude check at this time, and we're going to follow that up with the last F52 to RRFSSMAT. We're standing by at the 1-hour point on our checklist.
- 09 22 24 11 CC Roger. We copy. Tell Dave to watch out for a flare from Perth at 26, and don't mistake it for his sextant star, there.
- 09 22 24 22 CDR Okay.
- 09 22 24 51 CDR Houston, which direction is Perth from our track? North or south?
- 09 22 24 59 CC Roger. It should be 28 miles north.
- 09 22 25 01 CDR Roger.

(GOSS NET 1)

Tape 153/2
Page 848

09 22 27 01 CMP Houston, Apollo 9.
09 22 27 03 CC Apollo 9, Houston. Go.
09 22 27 06 CMP Okay. Three 9's on the DESKY.
09 22 27 10 CC Roger. We copy.
09 22 27 13 CMP And we're just a tad off on attitude.
09 22 27 16 CC Roger.
09 22 27 22 CC I've got an oddball COAS star there, if Jim wants to look at it.
09 22 27 29 CMP Okay. What is it?
09 22 27 34 CC Roger. It's - I can't even pronounce it - Y-X-I-D-I-S. But it's a fourth magnitude star closest to Regor, on a line between Regor and Alphard.
09 22 27 52 CC And it should --
09 22 27 53 CMP Hey, you --
09 22 27 55 CC Say again.
09 22 27 59 CMP You really found --
09 22 28 05 CC We really found a good one. It should be about a half of a degree up and 1.7 degrees to the left.

HONEYSUCKLE (REV 150)

09 22 30 17 CC Apollo 9, Houston. S-band volume up for Honeysuckle.
09 22 30 25 CDR Roger. Honeysuckle, and S-band up. David came through on the last one. Look at that! Ali balls!
09 22 30 38 CC Hey, beautiful. You guys are getting pretty good up there.
09 22 30 43 CDR Well, we want to go out with a flash, here.
09 22 30 44 CMP I'm going to hang it up right now.
09 22 30 47 CC Okay.

(GOSS REV 1)

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Page 849

09 22 32 08 CDR Houston, Apollo 9.
09 22 32 10 CC Apollo 9, Houston. Go.
09 22 32 12 CDR How long before retrofire do we come out into daylight? Will I have a daylight horizon - horizon - or not?
09 22 32 21 CDR Roger. You have sunrise at 25. Burn time is at 31.
09 22 32 32 CDR Okay.
09 22 32 35 CC And, 9, Houston. We moved over there a bit in our orbit; we'll use antenna Bravo for the deorbit burn.
09 22 32 44 CDR Okay. Antenna Bravo for deorbit burn.
09 22 32 48 CC And we'll still stay on Charlie for entry.
09 22 32 53 CDR Okay.

REDSTONE (REV 150)

09 22 56 47 CC Apollo 9, Houston.
09 22 56 49 CDR Roger. Houston, Apollo 9.
09 22 56 51 CC Roger. We've been integrating your state vector, and we'd like to update you another one. We'll do it in about 2 minutes at Redstone.
09 22 57 01 CDR Okay.
09 22 57 05 CDR Okay. You've got POC in ACCEPT.
09 22 57 06 CC Roger. We'll do it probably at 58.
09 22 57 12 CDR Okay.

GOLDSTONE (REV 150)

09 22 59 48 CC Apollo 9, Houston.
09 22 59 50 CMP Go ahead. Houston, Apollo 9.
09 22 59 59 CC Roger. We had real weak signal strength there at Redstone. We'll catch it up at Goldstone.

(GOSS MET 1)

Tape 153/4
Page 850

- 09 23 00 01 CMP Okay. Very good. Get it at Goldstone.
- 09 23 00 22 CC 9, Houston. Request ACCEPT.
- 09 23 00 26 CMP Roger. You've got it.
- 09 23 01 14 CC Apollo 9, Houston.
- 09 23 01 16 CMP Go ahead. Houston, Apollo 9.
- 09 23 01 17 CC Roger. We'd like for you to whip through P30 and P40 again and reload those two programs.
After you -
- 09 23 01 26 CMP We've got a 2101 on the DSKY now flashing. Can you get in, or are you through, or what?
- 09 23 01 31 CC Negative. We are not through yet. Soon as the computer is yours, you can go into that. And I have a NAV check here if you want it.
- 09 23 01 40 CMP All right. Stand by.
- 09 23 01 51 CMP Okay. Go ahead with the NAV check.
- 09 23 01 53 CC Roger. 240 00 0000, minus 3112, plus 10039 2298. Over.
- 09 23 02 18 CMP Roger. 240 00 0000, minus 3112, plus 10039 2298, and just what exactly are you uplinking on this mode?
- 09 23 02 31 CC We are just uplinking a state vector.
- 09 23 02 34 CMP Okay. State vector uplink. I understand.
- 09 23 02 37 CMP Okay. That means we are going to have to re-load P30.
- 09 23 02 40 CC Affirmative.
- 09 23 03 33 CC Apollo 9, Houston. The computer is yours.
- 09 23 03 38 CDR Thank you.
- 09 23 03 39 CMP Okay. We have got it, and we will go through P30 now for you.
- 09 23 03 42 CC Roger. And we just wanted to give you a little better hit record than you had in playing baseball a while back.

(GOSS NET 1)

Tape 153/5
Page 851

09 23 03 50 CDR Oh, hey. We were real sorry in that ballgame.
We should really be great today.

09 23 03 55 CC That's right.

09 23 04 54 CMP Houston, Apollo 9.

09 23 05 00 CC Apollo 9, Houston. Go.

09 23 05 00 CMP Okay. That gives us a tenth of a foot per second difference ΔV_R , but I guess we can take that, huh?

09 23 05 07 CC 9, Houston. Say again. I missed it.

09 23 05 10 CMP I say that gives us about a tenth of a foot per second difference in ΔV_R , but I guess we can take that.

09 23 05 15 CC Roger.

VANGUARD (REV 151)

09 23 21 26 CC Apollo 9, Houston. One minute LOS. Ascension 30.

09 23 21 34 CDR Roger, Houston.

ASCENSION (REV 151)

09 23 30 13 CC Apollo 9, Houston through Ascension.

09 23 30 17 CDR Go. Houston, Apollo 9.

09 23 30 22 CC Roger, Jim. Your altimeter ΔH is minus 100 feet, and your sea-water temperature is 75 degrees. The air temperature is about 75 degrees. Mighty fine.

09 23 30 38 CDR Great. We put on two sets of long underwear too, just expecting it would be cold.

09 23 30 48 CC I missed it there.

09 23 30 52 CDR I said we even put two sets of long underwear on just so we'd be warm in the water.

09 23 31 03 CC Roger. I don't think it'll be necessary.

(GOSS NET 1)

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09 23 32 36 CDR Hello, Houston. Apollo 9.
09 23 32 38 CC Apollo 9, Houston. Go.
09 23 32 41 CDR Roger. We are ready to add up our logic here. Are you willing to support?
09 23 32 48 CC Roger. Stand by.
09 23 32 56 CC Roger. You can go ahead and turn your logic switches ON. We've got about 2 minutes.
09 23 33 02 CDR Okay. ELS logic going AUTO coming ON; ELS to AUTO - SEQ ECS logic coming ON.
09 23 33 28 CC Apollo 9, Houston. You are GO for PYRO ARM.
09 23 33 32 CDR Roger. GO for PYRO ARM.
09 23 33 46 CC One minute to LOS. Tananarive at 43, and if not there, Carnarvon at 58.
09 23 33 53 CDR Roger.
09 23 34 09 CDR Houston, if we fire the RCS - command RCS pressurization ON, can you still support?
09 23 34 17 CC Apollo 9. Negative. We'll catch you at Carnarvon.
09 23 34 22 CMP Okay.

END OF TAPE

APOLLO 9 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

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CARVARVON (REV 151)

- 09 23 58 24 CC Apollo 9, Houston through Carnarvon.
- 09 23 58 27 CDR Roger, Houston. Apollo 9 here. Are you ready to support the arming and firing of the command module RCS pressurization?
- 09 23 58 35 CC Roger. We have a good lock on now. You can go ahead.
- 09 23 58 47 CDR Roger. ELS is coming to AUTO now. ELS logic ON now. SEQ ECS logic to ON now. Do we have a GO for arming the pyros now, Houston?
- 09 23 59 09 CC Affirmative. GO for arming the pyros.
- 09 23 59 40 CDR Houston, CM RCS PRESS Mark.
- 09 23 59 48 CDR Looks like we got both of them, Houston.
- 09 23 59 53 CC Roger. They're looking good here.
- 10 00 00 08 CDR Pyros coming OFF, Houston.
- 10 00 00 10 CC Roger.
- 10 00 01 54 CDR Houston, Apollo 9.
- 10 00 01 56 CC Apollo 9, Houston. GO.
- 10 00 01 59 CDR Are we going to retrofire over Hawaii?
- 10 00 02 02 CC Affirmative.
- 10 00 02 07 CDR Okay; so we can expect a voice countdown?
- 10 00 02 09 CC Affirmative.
- ~~10 00 02 10~~ CDR Very good.
- 10 00 02 13 CDR I have 29 minutes on my Mark.
- 10 00 02 15 CDR MARK.
- 10 00 02 16 CC We're right with you.
- 10 00 02 19 CDR Okay. Next time it's your turn.
- 10 00 02 21 CC Roger.

(GOSS NET 1)

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10 00 03 33 CC Apollo 9, Houston. We've dumped the tape recorder, rewound it, and it's yours now.

10 00 03 40 CDR Roger.

10 00 04 03 CC And, 9, Houston. We'll have you through the Huntsville until 23. Pick you up at Hawaii at 25.

10 00 04 11 CDR Very good.

10 00 04 18 CDR Right now we're just sort of holding, getting ready to enter P40. We'll enter there about T minus 12 or so.

10 00 04 25 CC Roger.

10 00 06 27 CC Apollo 9, Houston. You are looking good down here. You are GO for deorbit.

10 00 06 34 CDR Roger. Houston, Apollo 9. We look pretty good from up here, too. And we're ready.

10 00 08 21 CC Apollo 9, Houston. About 1 minute LOS; the Huntsville at 14.

10 00 08 27 CMP Roger. We'll see you at the Huntsville.

10 00 08 29 CC Roger.

HUNTSVILLE (REV 151)

10 00 15 42 CC Apollo 9, Houston.

10 00 15 46 CDR Go ahead, Houston. Apollo 9.

10 00 15 47 CC Roger. Loud and clear, Jim. The helos are just now lifting off the flight deck of the carrier.

10 00 15 58 CDR Houston, Apollo 9 here. I can't read you.

10 00 16 03 CC Roger. Nothing important. How now?

10 00 16 10 CDR You are very weak, Houston.

HAWAII (REV 151)

10 00 25 07 CC Apollo 9, Houston through Hawaii. Standing by.

10 00 25 08 CDR Roger, Houston. Apollo 9 here. We'll stand up

(GOSS NET 1)

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10 00 25 14 CC Roger.

10 00 25 15 CC MARK.

10 00 25 17 CC Six minutes.

10 00 25 15 CC MARK.

10 00 29 17 CC Two minutes. You are looking good.

10 00 29 18 CDR Roger.

10 00 30 15 F Sixty seconds.

10 00 30 45 F MARK.

10 00 31 15 F Thirty seconds.

10 00 31 16 F MARK.

10 00 31 17 F Fifteen seconds.

10 00 32 05 CC 10, 9, 8, 7, 6, 5, 4, 3, 2, 1.

10 00 32 15 CC RETROFIRE.

10 00 32 48 CMP Houston, Apollo 9. Burn looks good up here. We're nulling residuals. The EMS DELTA-V was minus 18.2.

10 00 32 56 CC Roger. Minus 18.2, and we have the residuals.

10 00 32 59 CMP Okay.

10 00 32 14 CMP Residuals are zero.

10 00 32 16 CC Roger.

10 00 32 27 CC 9, Houston. High-speed tracking shows it's a good burn. Mighty fine.

10 00 32 32 CMP Roger. It felt good.

10 00 34 08 CC 9, Houston. I'll give you a time hack at 3 minutes.

10 00 34 12 CMP Standing by.

10 00 34 15 CC MARK.

10 00 34 16 CC Three minutes.

10 00 34 18 CMP Thank you.

(GOSS NET 1)

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10 00 37 46 CC Apollo 9, Houston. You're looking good down here.

10 00 37 49 CDR Roger, Houston. We're separated now, and we're moving our reflector up at this time.

10 00 37 54 CC Roger.

10 00 43 29 CC Apollo 9, Houston. I have a postburn update.

10 00 43 33 CMP Roger. Go ahead.

10 00 43 37 CC Plus 12091 25996 1525 1601, minus 03256, roll right 50 60 19 00; and I'll get the rest a little later.

10 00 44 03 CMP Roger.

10 00 45 03 CC Apollo 9, Houston. I have time to begin blackout.

10 00 45 07 LMP Go ahead.

10 00 45 08 CC 1553 1928 2346 2433.

10 00 45 21 LMP Okay. I'll read the whole thing back. 12091 25996 1525 1601, minus 03256, right 50/60 1900 1553 1928 2346 2433.

10 00 45 41 CC 9, Houston. Your readback correct.

TEXAS (REV 151)

10 00 50 46 CC Apollo 9, Houston.

10 00 51 16 CC Apollo 9, Houston.

10 00 51 44 CC Apollo 9, Houston.

10 00 52 01 CC ARIA, Houston CAP COMM. Go REMOTE.

10 00 52 14 CC Apollo 9, Houston through ARIA.

10 00 52 17 CDR Roger. Apollo 9 here.

10 00 52 21 CC Roger, Apollo 9. We can just barely read you.

10 00 52 26 SC ...

10 00 54 28 CC Apollo 9, Houston through ARIA.

10 00 54 37 CDR Apollo 9, ready to read.

(GOSS NET 1)

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- 10 00 54 39 CC Roger. Apollo 9, Houston. Go.
- 01 00 54 43 CDR Okay. PUGS, 123.26, minus 68.01; and it looks like we're about a mile off.
- 10 00 54 50 CC Roger. Real good. You ought to have chutes in about 10 seconds.
- 10 00 54 54 CDR Okay.
- 10 00 59 01 CDR Roger. Verified how do you read Apollo 9?
- 10 00 59 04 AB2 Read you loud and clear.
- 10 00 59 06 CDR Roger. Doing pretty good. Have three chutes, and I'm already down to three here. Got that cake ready?
- 10 00 59 12 AB This is AIR BOSS. I have three main chutes. They are drift free, approximately 2 miles from the command module, and its altitude is 2500 feet, approximately, at this time.
- 10 00 59 34 AB3 Apollo 9, Apollo 9, AIR BOSS. Over.
- 10 00 59 39 CDR This is Apollo 9. If you read me, we won't need a second AIR BOSS. We're presently coming down through 2000.
- 10 00 59 43 AB2 AIR BOSS to 3.
- 10 00 59 45 AB3 Go ahead.
- 10 00 59 47 AB2 Roger. I am circling Apollo 9, and he is at 15.
- 10 00 59 55 AB3 Roger. I have you in sight, and we have had no contact with the command module.
- 10 01 00 01 CDR Hello, AIR BOSS. This is Apollo 9, do you read me?
- 10 01 00 05 AB3 Apollo 9, this is AIR BOSS. Reception a little bit broken.
- 10 01 00 09 AB2 Apollo 9, AIR BOSS. We're getting you a little broken. Recovery 3 is circling you at this time. You're looking real good. Give me your status, please.
- 10 01 00 17 CDR We're all fine. We're okay.
- 10 01 00 24 AB3 Roger. Understand. The crew is in good shape. Is that correct?

(GOSS NET 1)

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10 01 00 42 AB1 Apollo 9, this is AIR BOSS. We're not reading you.
Check your propellant dump. Stand by.

10 01 00 56 AB3 SPLASHDOWN. This time! Jettison your mains.

10 01 01 09 AB Control, AIR BOSS. Parachute has been jettisoned.
Capsule is reading stable I at this time. It looks good.

END OF TAPE