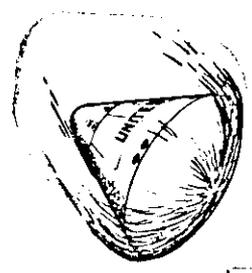


Classification changed to Secret by authority of USC Sec 1.552-9-78 Date 2-5-73 Sally Yes

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION



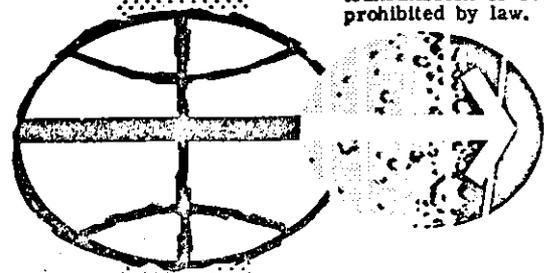
# APOLLO 7 ONBOARD VOICE TRANSCRIPTION

## AS RECORDED ON THE SPACECRAFT ONBOARD RECORDER (DATA STORAGE EQUIPMENT)

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

CLASSIFIED DOCUMENT - TITLE UNCLASSIFIED

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MANNED SPACECRAFT CENT  
HOUSTON, TEXAS

December 1968

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SECURITY INFO  
DATE

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## Introduction

This is the transcription of the Apollo 7 flight crew communications as recorded on board the spacecraft data storage equipment (DSE), and subsequently transmitted (dumped) to Manned Space Flight Network stations and ships. Magnetic tapes containing dumped voice and onboard recorded ground elapsed time (GET) were forwarded to the NASA Manned Spacecraft Center, Houston, Texas. Transcription of these tapes was managed by the Apollo Spacecraft Program Office with the assistance of personnel from the office of the Director of Flight Crew Operations.

The Apollo 7 mission was flown October 11 to 21, 1968.

Communicators in the text are identified as follows:

### Command module:

CDR	Commander	Walter M. Schirra, Jr.
CMP	Command module pilot	Donn F. Eisele
LMP	Lunar module pilot	R. Walter Cunningham
SC	Unidentifiable crewmember	

### Mission Control Center:

CC	Capsule communicator (CAP COMM)
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### Remote sites:

CT	Communications technician (COMM TECH)
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In the text, a series of three dots (...) is used to designate those portions of the communications which 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 abruptly terminated.

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DAY 1

00 00 03 37 LMP Okay, Donn?

00 00 03 38 CMP Yes.

00 00 03 40 LMP They just broke off.

00 00 03 42 CMP They gave up.

00 00 03 45 LMP Okay, we can continue with this now. It's ... but while you're there, let's get the pyro breakers off.

00 00 24 23 CDR Guys, we had a good second stage a few seconds after count and reached 2g before SECO.

00 00 24 29 CDR If we got information, by the way, on mode 4, I didn't hear it. Did anybody else copy it?

00 00 24 34 LMP I didn't hear it either, and in spite of the g-load, though, I had no trouble reaching all the switches and operating the time-code meter throughout.

00 00 24 45 CDR Just at the last part, after 2 minutes, it started to read about 4g.

00 00 24 49 CMP Okay, let's continue with the ECS postinsertion configuration here.

00 00 24 55 CMP You want to try that little peep on our suits if I hold it?

00 00 25 00 CMP What we need to get here, Wally, is that reservoir. Can you get at it?

00 00 25 06 LMP I'd like to loosen up on my shoulder harness here, and I can get at a couple of circuit breakers, too.

00 00 25 17 CDR Okay, let's go ahead.

00 00 25 19 CMP Okay, the next one's the hard one. We've got to get the glycol reservoir bypass valve OPEN, with the inlet and outlet valves CLOSED.

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Day 1

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00 00 25 28      CMP      Not the radiator but the glycol ... It's awfully hard to reach, Walt.

00 00 25 32      LMP      Yes, I am going to loosen up my shoulder harness if you think it is okay, so far. Okay, not unplug it, just loosen it, huh? What do you think, Wally?

00 00 25 42      CDR      I don't think - Oh hell, we can't get shot down. Are there any systems that you are worried about?

00 00 25 47      LMP      Not a thing.

00 00 25 51      CDR      Donn, why don't you let me - oh, are you already going? Go ahead.

00 00 25 56      CDR      Did you unstrap awhile ago?

00 00 25 57      CMP      Oh, I just want to get my shoulder harness unhooked.

00 00 26 03      LMP      One big question mark: we still have to work on the system to see if the radiator is flowing right.

00 00 26 08      CMP      Yes, I'm just loosening my belt a little - the strap's a little long.

00 00 26 25      LMP      That was a lot easier than any simulation we've had though, wasn't it?

00 00 26 30      CMP      Yes, we didn't have ... trying to get in our knickers.

00 00 26 38      CDR      Yes, I want to go to - let's go to hot mikes and see how it is.

00 00 26 43      LMP      I can't stand my seat belts ...

00 00 26 46      CMP      Boy, I've got a couple of problem circuit breakers over here myself, Walt.

00 00 27 01      CDR      I'll guard the hand controls while you guys wrestle with your belts. I can't make it up. ... Okay, ... lock it out here.

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Day 1

3

00 00 27 19 CDR Never did get that swizzle stick, did we?

00 00 27 22 LMP No.

00 00 27 24 CDR Okay, give me those DO's again.

00 00 27 27 LMP Okay, let's see. Bypass to OPEN, first - the bypass valve OPEN first, and then the reservoir outlet valve CLOSED, and last, the inlet valve CLOSED.

00 00 27 43 CDR Okay, that's done.

00 00 27 45 CDR How about that, have you ever been ... over here.

00 00 27 52 LMP Well, let's see, we are about 27 minutes into the flight. We might try to flow our radiators. Let's go ECS radiator flow control to POWER, Donn.

00 00 28 03 CMP POWER.

00 00 28 04 LMP Okay, glycol to radiator primary valves, push, Wally.

00 00 28 09 LMP Look at him go. (Laughter)

00 00 28 14 LMP This is our first ... (Laughter)

00 00 28 19 LMP Oh well. (Laughter) ...

00 00 28 23 CDR What's going on. I can't see what you're doing.

00 00 28 26 CDR I can't understand moving around and can't get back. (Laughter) I grabbed the valve and start doing "boom" - -

00 00 28 34 CDR First time had so much room up here. It's a real ball. ... easy back there.

00 00 28 44 CDR This is going to be a real expedition to get back in these beauties. (Laughter)

00 00 28 53 CDR I still have - I've still got two circuit breakers I haven't gotten.

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Day 1

4

00 00 28 57 LMP Okay, I'm going to ... - I'm going to put STEAM/URINE DUMP HEATERS in, switch should be ON. Verify that switch is ON down there if you can see it, Donn.

00 00 29 04 CMP Yes. It's ON, Walt.

00 00 29 05 CDR Do you want to move the couch back up yet, or do you need to?

00 00 29 08 LMP Really, I don't think I need to; I'm up here.

00 00 29 10 CMP I think we - yes, I think we ought to leave it where it is. I've got a - when we - -

00 00 29 16 CDR Yes.

00 00 29 17 CMP - - unstow down there, I have to have it in this position to start with.

00 00 29 21 CMP Hey, I found a good place for the pens, gang.

00 00 29 24 LMP For the what?

00 00 29 25 CMP Pen, like this, see?

00 00 29 27 CMP Oh, that's cute. That ought to take care of our pencil jazz.

00 00 29 31 CDR Okay, let's see if we've got any other good things to do here.

00 00 29 34 CMP Did you get completely unpacked, Wally?

00 00 29 36 CDR I had to. Whenever ... I pulled that handle I just started doing a 180. I had to get another hand out.

00 00 29 43 LMP Okay, we want to check - we want to monitor pretty close for the outlet temperature, Donn, to be less than the inlet. It looks like it is already doing that.

00 00 29 53 CMP It's coming down. It's down to ... so far.

00 00 29 56 LMP Yes.

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Day 1

5

00 00 30 00 CDR You notice all the stars you see out there on the right? (Laughter)

00 00 30 06 LMP Yes, 8 billion stars out there.

00 00 30 08 CDR There's sure a lot of dirt on those side windows; look how dusty they are.

00 00 30 13 LMP Yes.

00 00 30 14 CMP You know, I haven't even hardly looked out yet. That's only the second time I've looked out.

00 00 30 18 CDR Okay, why don't you take a minute and look out. It's much fun.

00 00 30 21 LMP Okay, ECS radiator talk-back is gray. Looks like the radiators - watch that pretty close -

00 00 30 27 CMP Yes, I'll keep an eye on them for you, Walt, 'cause we - -

00 00 30 29 LMP - - 'cause we've got to go back and bypass them again if it's not - -

00 00 30 33 CDR Yes, we're out of communication. We'll pick up Tananarive at 36 minutes. Are you done with it?

00 00 30 40 LMP Okay, I can finish by then. Yes.

00 00 30 41 CMP I think it's coming down, Walt. This scale is drifting, it's a little hard to tell.

00 00 30 45 LMP Okay, ECS radiator heater to PRIMARY 1.

00 00 30 49 CMP Roger, heater to PRIM 1.

00 00 30 50 LMP The talk-back should be gray on those radiators.

00 00 30 53 CMP Right, it's gray.

00 00 30 54 LMP Okay, GLYCOL EVAP TEMP primary inlet to AUTO, Donn.

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Day 1

6

00 00 30 58 CMP GLYCOL EVAP, right there to AUTO.

00 00 31 02 LMP Roger, AUTO. The STEAM/URINE DUCT HEATERS circuit breakers are both closed.

00 00 31 09 CMP Okay. Primary and secondary quantities.

00 00 31 12 CDR Okay, the LH<sub>2</sub> vents should close at 31 minutes. Let's listen and see if we hear anything. I'm not sure what's going to happen. (Laughter)

00 00 31 22 CDR Hey, don't we have to keep - I'm a little warm, how about you?

00 00 31 30 LMP I'm a little warm too, and the suit - but the suit inlet TEMP is still holding about the same, 47 degrees, but I am coming up in temperature. I don't know whether it's the work, or what.

00 00 31 40 CMP Well, we've got a much lower flow I expect than when we ... to the gas.

00 00 31 43 CDR Yes.

00 00 31 44 CMP I'm at that same temperature. It's colder than hell.

00 00 31 48 LMP ... wait, Donn. I figured you wouldn't mind.

00 00 31 51 CMP What?

00 00 31 52 LMP I figured you wouldn't mind waiting - -

00 00 31 53 CMP What's that?

00 00 31 54 LMP - - getting warm. It happens that way.

00 00 31 57 CMP Oh yes, I figured - if it's a good chill-down for you.

00 00 32 01 LMP Okay, Wally?

00 00 32 02 CDR Yes?

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Day 1

7

00 00 32 03 LMP Looks like the radiators are flowing okay. I'd like to leave them there, and we've got - as far as we can go 'til Donn gets out of the couch.

00 00 32 11 CDR Okay, how about that casual burn?

00 00 32 13 CMP It looks like we have got 73 degrees going in and about 60 degrees coming out of the radiator turn.

00 00 32 18 LMP Yes, they are all beginning to work.

00 00 32 20 CDR I want you guys to make note of the approaching night now, which is going to occur at about 36 minutes. Look for things like the terminator, cloud layers - I hope you have no doubt in your mind what yaw is, do you?

00 00 32 34 LMP No, but I am not sure just how accurately I could pin it down, either, without trying a couple of times.

00 00 32 39 CDR You need a couple of lines. Donn has the good lines, I've got - I think I'll put the COAS up there.

00 00 32 46 CDR This one is almost perfect for your yaw and roll. It's the pitch that's not too good.

00 00 32 52 LMP By the horizon, we could get some roll.

00 00 32 55 CDR Okay.

00 00 33 01 CDR Boy, it gets easy to work in here with that zero-g stuff, huh?

00 00 33 06 LMP Yes, it sure is, isn't it? All the difference in the world.

00 00 33 09 CDR Kind of handy.

00 00 33 12 CDR ... bump my butt ... like that - - (Laughter)

00 00 33 18 CDR Okay, let's see if that beauty works now.

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Day 1

8

00 00 33 20 LMP Okay, Donn, - I was trying to tell you on the pad there, we haven't had that stupid thing working in the simulator, the propellant tank temperature.

00 00 33 31 CMP The light bulb works ..., gang.

00 00 33 33 LMP It does. It's an open-loop manual control, 55 to 75. I thought the first time we got down I'd see if heater A hacks it - if not we'll try it with both heaters. It is a 24-hour job on about a 7-hour cycle, I think.

00 00 33 49 CMP Okay, Walt, you just told me - that is something to keep an eye on now and then.

00 00 33 58 CDR Oh man, is this COAS beautiful for yaw. God damn. See, it rotated. See what I'm doing? Let me scoot over here, the flag is down. See, I rotate it in pitch - I rotate the thing in roll axis with the pitch pulses.

00 00 34 16 CMP Just put it where I want it, and man, I've got a point to pick right down it. Look at that night coming up on us.

00 00 34 23 CDR Everybody's talking about SEF. As you go into ... you see the fuzzy - there is no horizon any more. You can't define it. Look at it, Walt.

00 00 34 31 LMP Yes.

00 00 34 32 CDR There is no way to tell where the hell the horizon is.

00 00 34 34 CMP Oh man, that is terrible, just a big blur.

00 00 34 38 LMP Yes, yes, there's no way to tell.

00 00 34 39 CDR Well, I can see it on your side better, though.

00 00 34 41 LMP Let me read - -

00 00 34 42 CDR Yes, as you go off the edges, you can.

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Day 1

9

00 00 34 43 LMP - - Let me read CRYO tanks onto the tape here, and we will be pretty much caught up. Okay?

00 00 34 48 LMP Okay, we have hydrogen pressure is sitting about - it looks like 230 on tank 1 and about 245 on tank 2.

00 00 34 58 LMP O<sub>2</sub> tank 1 pressure is 870, tank 2 is about 860 - make that tank 1 about 880, and the third tank 870, and tank 2, 860; and the cycle on the oxygen tank, on our gage at least, seems to be between about 850 to 900 instead of the greenline areas. The hydrogen quantity - we lifted off with about 95 on the left and 93 on the right. Oxygen quantity is 100 percent.

00 00 35 31 CDR Very good. Ho hum.

00 00 35 39 CMP I'd like to point out that hydrogen pressure number 1 was out of the green. Before lift-off, it was about 220.

00 00 35 46 CDR It was low?

00 00 35 47 LMP Yes, I think you called my attention to it just before it started cycling. That gage is not too good.

00 00 35 51 CMP That reminds me, I was watching that DELTA-V counter that first set. We had 90 000 on there, and I reset it. (Laughter)

00 00 36 00 CMP It looks good now.

00 00 36 02 CMP How about turning that DELTA-V OFF when you come back up here. I need a ... Okay, I'll go OFF and go to network.

00 00 36 11 CDR Okay. OFF and AUTO.

00 00 36 15 CMP Okay now, we need to bring some lights up here to see, even. Do you want to try an integral lightup a little bit here to see if it works - the integral?

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Day 1

10

00 00 36 22 CDR I'm taking the floods down, just out of curiosity.

00 00 36 27 CDR It's still not night yet.

00 00 36 29 CDR See if we can find any stars out there. This is our first go-around.

00 00 36 37 LMP This Velcro is not too good, you know it?

00 00 36 39 CMP No, even in ...

00 00 36 40 CDR What I'm doing with this thing, Walt, I'm clipping the thing, see? I've used the - took the ring apart and put it around the wicket.

00 00 36 47 LMP Okay, very good.

00 00 36 52 CMP I hope this stuff dumps. We'll have a lot of good data. (Laughter)

00 00 36 55 LMP Yes, I hope so too.

00 00 36 57 CDR If it doesn't, it's all off.

00 00 36 59 CDR You don't need this part anymore, Donn, you can save that for posterior - -

00 00 37 02 CMP Yes, I am putting all this stuff - -

00 00 37 04 CDR - - and that for posterior, and all this is posterior. This is still good.

00 00 37 10 LMP Oh, you can tear all that off if you want.

00 00 37 11 CDR Yes, that's okay with me.

00 00 37 13 CMP Okay.

00 00 37 14 CDR Well, we'll leave it up there for now, just so we can get this other garbage.

00 00 37 17 LMP When we finally put this stuff away, I am going to put all - -

00 00 37 19 CMP Hey, I got a star in sight.

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Day 1

11

00 00 37 21 LMP I'm going to put all my cards away, Donn.

00 00 37 22 CMP God damn, he's moving fast. How can we do that?

00 00 37 26 LMP We're moving.

00 00 37 28 CMP No, no, no, no, no ... They don't move.

00 00 37 31 LMP Do you ever get the -

00 00 37 33 CMP Oh, wait, we're in ORB RATE, I guess.

00 00 37 35 LMP Yes, but do you ever get the impression that we're deorbiting?

00 00 37 37 CDR Oh, man, wait 'til you see us pointing straight down sometime. You feel you're doing a split S. You know, I did that one time and I wanted to pull out. (Laughter)

00 00 37 48 CDR You can back your lights down a little - -

00 00 37 50 CMP Okay.

00 00 37 51 CDR - - and take a look and see what the world's doing.

00 00 37 52 CMP I'm taking six ...

00 00 37 53 CDR You know, I'm getting a little venting here. Look at this, Donn. I put up the DELTA-V AUTO - -

00 00 37 58 CMP Posigrade, huh?

00 00 37 59 CDR - - which shows you're not getting it in ... maybe.

00 00 38 07 CMP Sunlight.

00 00 38 13 CMP There she goes. Be sure we - well, they're going to give us a call from the ground. I want to get P47 on there when they do the big dump over the next pass.

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Day 1

12

00 00 38 26 CDR Well, when we get our next vent, we want to get a new state vector, don't we? Or, are we going to just update it?

00 00 38 34 LMP Yes, but I say when the booster vents, the big LOX dump - -

00 00 38 38 CDR We want to get that in.

00 00 38 39 CMP Be sure that's in P47, so it gets in. Course, they'll give us a state vector anyway, but - -

00 00 38 46 CMP God damn, isn't that delightful?

00 00 38 50 CDR That's really great for the old S-IVB for the rendezvous.

00 00 38 53 LMP Oh, gosh darn it! I just released my shoulder harness, it might - really, you all, it's going to be a bear getting back into this thing.

00 00 38 58 CMP Yes. (Coughing)

00 00 39 03 CDR How about that for S-IVB attitude? Man, that is a doozy.

00 00 39 09 LMP I'm afraid once you get back in there - (Laughter)

00 00 39 11 CDR It feels like you can't get into there because the suit is still inflated, Walt.

00 00 39 14 LMP Yes.

00 00 39 16 CDR You're in sort of a bubble.

00 00 39 19 CDR Yes, that is something else, Donn, I meant to note, and I didn't see it until - See that strap by your right foot? I was going to worry about it not being clipped, but it isn't.

00 00 39 29 CMP Okay.

00 00 39 30 CDR Details!

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Day 1

13

00 00 39 31 LMP Hey, I think I am going to take and kind of wrap this shoulder harness around the - -

00 00 39 36 CMP Hey, I see fires.

00 00 39 37 LMP Oh, that is beautiful.

00 00 39 38 CDR Yes, you can.

00 00 39 39 LMP Do you see some on the ground?

00 00 39 41 CMP Yes - See something that's orange down there - orange spots.

00 00 39 44 LMP That's pretty.

00 00 39 45 CMP There's something else weird. I looked out here, and I see what looks like stars if I were looking at a simulator star ball - -

00 00 39 52 CDR That's lightning.

00 00 39 53 CMP Except I can't see stars because I'm looking at the ground, and they're not moving which they should be, because we're in ORB RATE. I don't know what it is. It must be some little - -

00 00 40 00 CDR Here's your - here's your attitude.

00 00 40 01 CMP - - ... or something out there.

00 00 40 02 LMP Look how much light is coming in from my side over here. It's hitting the edge of the window. I thought maybe that's what it is.

00 00 40 09 CMP Yes.

00 00 40 10 LMP Maybe little spots - little sunspots on the window.

00 00 40 11 CMP Hey, how about - -

00 00 40 12 LMP Yes, they are getting darker.

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Day 1

14

00 00 40 13      CMP      What about going to - well, if we went to boost, we got our heads jammed up there, don't we? I mean - -

00 00 40 18      LMP      Yes.

00 00 40 19      CMP      I think we're better off here until we need to go to boost.

00 00 40 20      LMP      Okay.

00 00 40 21      CDR      You mean dock?

00 00 40 22      CDR      Dock, yes.

00 00 40 24      LMP      I'm going to bring some light up here.

00 00 40 25      CMP      Were we supposed to pick somebody up at 36? It's 40 now.

00 00 40 27      CDR      Yes, we're at 40.

00 00 40 29      CDR      Houston CAP COMM, Apollo 7. We're S-band over Tananarive.

00 00 40 37      CDR      You got to lock up one.

00 00 40 39      LMP      I don't think we've got S-band. We have no lockup on the right antenna.

00 00 40 42      CDR      Houston CAP COMM, Apollo 7 over Tananarive. Do you read?

00 00 40 46      CMP      Say something else, ...

00 00 40 49      LMP      Something else. We never did get this in because of the status of that simulator. Is the VHF antenna - we've always been able to ignore it.

00 00 40 56      LMP      Yes.

00 00 40 57      CDR      I tell you what you want to do, anytime we can. Now, I've got my COAS up. We'll try to stay ahead of this beauty all the time.

00 00 41 03      LMP      Yes.

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Day 1

15

00 00 41 04 CDR It's a real nice feeling that - -

00 00 41 06 LMP You are going to have to kind of feed it to us.

00 00 41 08 CDR That's why I got it out.

00 00 41 09 CMP Well, all we have to do now is just coast at nighttime, look for stars. Well, the COAS, that's the first event.

00 00 41 17 LMP How about Donn maybe starting to - the next thing he has to do is get out and start unstowing, isn't it? Is there any reason why we - yes, I guess we have to wait for a GO, don't we?

00 00 41 23 CDR We get a GO/NO-GO, yes, I'd rather not - -

00 00 41 26 LMP Yes.

00 00 41 27 CDR - - get too far off. I'm sure we're GO, but - let's play honest.

00 00 41 32 LMP Look at this, Donn.

00 00 41 33 CDR We've got 53 minutes 'til we pick up Carnarvon.

00 00 41 36 CMP (Laughter) Look at this damn strap.

00 00 41 41 CDR I'm telling you something guys - (laughter) let's enjoy these few minutes. We've got 10 minutes to go before we pick up Carnarvon.

00 00 41 45 CMP Hey, Wally, look at this damn strap flying around.

00 00 41 47 CDR Yes, isn't that wild?

00 00 41 49 CMP (Laughter)

00 00 41 58 CMP If that's that little peep, I spent about 2 minutes trying to get ahold of that thing. Beating it over there. Beating it back and forth.

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Day 1

16

00 00 42 05 CDR I wondered what you were playing with.

00 00 42 07 CMP Yes. I got it trapped and then I lost it.

00 00 42 10 CDR There's a little nut that you want to look for, a hex nut, about the diameter of my finger.

00 00 42 15 LMP Oh, yes?

00 00 42 16 CDR It came off the PYRO BATTERY terminal. Of course, they lost it, they put another one on. It's a silvery gold color.

00 00 42 32 CDR It's tracking in here nice.

00 00 42 36 CDR Let's take a look for the stars. They've all blacked out.

00 00 42 38 LMP Ooooooooooh! I'll tell you. It's a good thing the boost was exciting or I would have been damn disappointed. It's been such a quiet day. (Laughter)

00 00 42 47 CMP I'll tell you, man, ... There is no doubt about it.

00 00 42 52 LMP Look at the stars out there, Wally, on your left.

00 00 42 55 CDR Oh, beautiful!

00 00 42 56 CMP ...

00 00 42 57 CMP Hey, I only see a couple of stars.

00 00 43 00 CDR It's pretty clear, but - -

00 00 43 04 LMP Oh, beautiful sky over here, yes.

00 00 43 07 CMP I just got a - I don't know what it was, lost the COAS.

00 00 43 13 LMP You know it's hard as hell to imagine that this could be Navi over here. My whole frame of reference is rotated up - I don't know

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Day 1

17

how it's rotated. (Laughter) Now I can see the horizon at night.

00 00 43 29      CMP      Yes, you should be looking at Navi on that side, Walt.

00 00 43 31      LMP      Is that right? Well, I - -

00 00 43 33      CMP      Now you can see the horizon, look at the air-glow. See it, Walt?

00 00 43 39      LMP      Yes, beautiful - -

00 00 43 40      CMP      - - horizon there, Walt?

00 00 43 42      LMP      Oh yes, beautiful.

00 00 43 43      CMP      See out here?

00 00 43 45      CMP      Let's see. I thought that - -

00 00 43 46      LMP      I can't see it from here.

00 00 43 47      LMP      What's the flashes that I see.

00 00 43 51      CMP      Did you see some flashes? I did too, Walt.

00 00 43 53      LMP      I did ...

00 00 43 54      CMP      ..., huh?

00 00 43 55      CDR      I wonder if that's that hydrogen venting? It's not thrusters, I hope.

00 00 43 59      CMP      I hope not there.

00 00 44 00      LMP      Well, you know it could be. That's probably the S-IVB attitude - -

00 00 44 01      CDR      Probably the attitude thrusters - -

00 00 44 04      CMP      It's the attitude thrusters.

00 00 44 05      CDR      I'll bet that's the S-IVB - I saw one too. That's why I wondered.

00 00 44 08      CMP      Yes.

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Day 1

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00 00 44 09 CDR I bet that's it. Okay, we've got that one logged, I assume.

00 00 44 12 LMP Yes, the tape's running. Look at - - Incidentally, the thing we're going to have to watch on that tape is, when we get over a station now, they're going to dump it, and for that period of time we've lost it.

00 00 44 22 CMP Oh, that's weird. I see two points of light on the ground. Looks like the stars are going through the earth again.

00 00 44 29 CDR Yes, I see it. (Laughter)

00 00 44 30 LMP Yes, I see it too.

00 00 44 31 CDR It's a trick of that simulator.

00 00 44 39 LMP (Laughter) Oh, it's a piece of cake up here, isn't it?

00 00 44 41 CMP Oh, it's a good feeling.

00 00 44 46 LMP You know, I have the feeling that I'm upside-down.

00 00 44 48 CDR That's good, 'cause you are. (Laughter)

00 00 44 50 CDR You'll notice the curvature of the earth is a little bit flatter than what we saw in the simulator.

00 00 44 53 LMP Yes.

00 00 44 55 CMP Just a little.

00 00 44 56 CDR Did you see that flash then down there?

00 00 44 57 CMP I sure did.

00 00 44 58 LMP Hey, I'll tell you something. The stars are clearer here, Donn, than I've seen them on the ground. I can point out Pleiades very nicely.

00 00 45 04 CDR Have you got the Pleiades?

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Day 1

19

00 00 45 05 LMP Yes.

00 00 45 06 CMP Man, I hope they stay that way.

00 00 45 07 LMP 1, 2, 3. I can see six of them. There's supposed to be seven. I could see seven, I'll bet, but we've got that dread LEB light wiping me out.

00 00 45 15 CMP Yes.

00 00 45 20 CDR That's a good testimonial for the windows.

00 00 45 23 LMP Yes, but of course, it could possibly get worse, you know, as the flight goes on, though. That's kind of -

00 00 45 27 CMP Well, what I'm thrilled about is the fact that they're not occluded by that damn tower.

00 00 45 32 CMP Yes.

00 00 45 33 LMP Hey, that's spastic! Did you put anything on tape on that? That thing takes off like a scalded eagle!

00 00 45 37 CDR Yes sir! No, that goes off like the - that's the jettison motor, isn't it?

00 00 45 41 LMP Yes. That's just a jettison motor, yes.

00 00 45 44 CMP Yes.

00 00 45 45 CMP I didn't see much out there out through the center window. I saw a little orange flame and some little pieces go by.

00 00 45 49 CDR Well, that's something else I want to get on the tape during boost. Just before 2 minutes, I saw a wisp of smoke between the boost protective cover and my number 2 rendezvous window here.

00 00 46 01 LMP Huh!

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Day 1

20

00 00 46 02 CDR Like something was cooking. It really drew my attention. I'm just naturally conscious of something like that.

00 00 46 07 LMP I'll be darned!

00 00 46 08 CDR It was outside of the spacecraft, but between the spacecraft and the boost protective cover. Well, Walt - -

00 00 46 14 LMP Yes?

00 00 46 15 CDR You know how the airglow is. You can see stars at 12 o'clock, below us.

00 00 46 20 LMP 12 o'clock, you said?

00 00 46 21 CDR See that big white star?

00 00 46 23 LMP Yes. Oh, yes.

00 00 46 24 CDR Well, that airglow is way up there. It's a good 2 or 3 degrees.

00 00 46 27 LMP But what bothers me - is that a star?

00 00 46 29 CDR That's a star you see there - watch it come up through. See that bright star right there?

00 00 46 33 LMP It's very bright.

00 00 46 37 CDR ... It's coming up through the airglow, and now it's right on the edge of it.

00 00 46 41 CMP You know what that might be? It might be down around where Sirius could be.

00 00 46 42 CDR Yes, and I think it is.

00 00 46 44 CMP Yes.

00 00 46 45 CDR See, now it's out of the airglow.

00 00 46 47 LMP I see a couple of meteorites. That's what those lights are moving.

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Day 1

21

00 00 46 49      CMP      Very likely.

00 00 46 50      LMP      Yes, I saw some meteorites burning themselves in.

00 00 46 54      CMP      That's fun to see, Walt.

00 00 46 58      CDR      At last Walt has a window to play with.

00 00 46 59      LMP      Yes. (Laughter)

00 00 47 01      LMP      That's why I noticed the tower going somewhere. It was the first time I could see out.

00 00 47 04      CDR      Yes.

00 00 47 06      LMP      But look, I've got - that is Sirius coming up very nicely. You can see it through the airglow for a long way.

00 00 47 11      CMP      Yes, I saw it about 2 or 3 degrees below the airglow.

00 00 47 14      LMP      All I can say is the target'll be easier to find here, Donn.

00 00 47 17      CMP      Yes, I hope they work through the optics, too. (Laughter)

00 00 47 20      CDR      ... (Laughter)

00 00 47 23      CDR      Okay, we have about 6 minutes to go to Carnarvon. Let's - What do we need over Carnarvon?

00 00 47 29      CMP      Turn your - turn the flood out a second, Wally.

00 00 47 31      CDR      Do what?

00 00 47 32      CMP      Is that the Southern Cross you got out there?

00 00 47 34      CMP      We're due over Carnarvon at 53:40.

00 00 47 37      LMP      Yes, what are we supposed to have done by then?

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Day 1

22

00 00 47 40 CDR Yes, that's what that is, isn't it?

00 00 47 42 LMP Oh, that's pretty.

00 00 47 46 CDR That's right, you haven't seen that before, have you?

00 00 47 49 LMP No, I didn't think it would look that big.

00 00 47 50 CDR Yes.

00 00 47 53 LMP I'll tell you one thing, I'm going to have - no, maybe it won't make it up. I should have Orion over here. Yes, I'll bet Orion is over here in this blind spot, Wally.

00 00 48 05 CDR Oh.

00 00 48 06 LMP Isn't that nice?

00 00 48 09 CDR We're pretty far south, you know.

00 00 48 11 LMP Yes, but I've got Taurus out here and what is it - Aldebaran?

00 00 48 17 CDR Yes, you know what you're looking at, Walt, that bright star was Betelgeuse.

00 00 48 21 LMP Over here?

00 00 48 22 CDR No, Orion's belt has come up through the airglow --

00 00 48 23 LMP Yes, I know.

00 00 48 25 CDR That was Bellatrix there. Wait a minute.

00 00 48 28 LMP That's Sirius.

00 00 48 29 CDR No, no, no, no, it isn't; no, no, that bright star at 12 o'clock - -

00 00 48 32 LMP Oh, Rigel you're talking about.

00 00 48 34 CDR Rigel. You can see the - -

00 00 48 36 LMP Wally, you're right.

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Day 1

23

00 00 48 37 CDR There's the belt - -

00 00 48 40 LMP Yes, you're right. That's Rigel. Yes, I was looking at part of - -

00 00 48 43 LMP We ought to see another - hard star to find down underneath.

00 00 48 46 CDR Sirius isn't coming up yet. We could use Sirius as a mark.

00 00 48 49 LMP Well, Sirius is coming up now. I think you can see it dead ahead of you.

00 00 48 53 CDR It should be just in there, right between - -

00 00 48 55 LMP It's just at the top of the airglow now. See it, just breaking out.

00 00 49 03 CDR I don't think so. That's not bright enough.

00 00 49 05 LMP No, it might not be. It might be the bottom of the belt - -

00 00 49 08 CDR No, it'd be down in the belt a little more, coming up.

00 00 49 12 LMP We're going to have Orion nicely, though.

00 00 49 14 CDR Yes.

00 00 49 16 LMP We may be able to hack it. (Laughter)

00 00 49 23 LMP And what is that other star that we got down there, Donn, that's just below Orion, the hard one to find?

00 00 49 33 CMP Gavavalon? No, that would be in the wrong place.

00 00 49 34 CDR No ...

00 00 49 35 LMP No ... around Sirius.

00 00 49 36 CDR Do you see Sirius now?

00 00 49 38 CMP Yes.

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Day 1

24

00 00 49 40 CDR It's bright and it - -

00 00 49 41 CDR That's what amazes me. Now that's 2 degrees by the COAS and 2.2 degrees right, below the airglow.

00 00 49 47 CMP Okay.

00 00 49 48 CDR Okay, let's get an elapsed time of 49:47.

00 00 49 53 LMP How do you - where do you draw your line at that airglow in row? Up top of center?

00 00 49 57 CMP I'm using the COAS. When I saw Sirius, I measured the angle which should act within the COAS.

00 00 50 03 CDR Okay, now that sun looks like it's - -

00 00 50 06 LMP I - -

00 00 50 07 CMP - - I'll give you a mark when I've got Sirius on the surface.

00 00 50 09 LMP Okay.

00 00 50 12 CMP 10, 9, ...

00 00 50 14 LMP Yes.

00 00 50 16 CMP MARK.

00 00 50 17 LMP Yes.

00 00 50 18 CMP 50:14, 50:15.

00 00 50 19 LMP Yes.

00 00 50 20 CMP That's quite a spread in time.

00 00 50 22 LMP Yes, it is.

00 00 50 24 CMP And there's two definite layers. I see a layer right next to earth. I see a star. There's one coming up - -

00 00 50 28 CDR That is beautiful.

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Day 1

25

00 00 50 30 CMP There it is. There it is now about halfway between the two layers.

00 00 50 33 LMP Right.

00 00 50 34 CDR There's a low, low, low layer. See?

00 00 50 35 LMP Yes.

00 00 50 37 CMP You know that's a ... If we only had a tool to do it ... Wow! That's almost - It thins out at 4.

00 00 50 43 LMP You know, if you'll look out the side, Wally, it seems to be more evident.

00 00 50 47 CDR Well, dead ahead at 12 o'clock, it's 3 degrees on my COAS.

00 00 50 52 CMP Look at this little window-shade tab going around.

00 00 50 57 CDR Oh, really?

00 00 50 59 SC Yes, ... (laughter).

00 00 51 00 LMP Why don't we take a peek at that flight plan, and see what we've got to come up with at Carnarvon. Anything?

00 00 51 05 CDR Just my COAS.

00 00 51 06 CMP Quite a few - -

00 00 51 07 LMP - - It looks like it's trying to lock on, gang.

00 00 51 10 CMP At Carnarvon?

00 00 51 11 CDR Over some place. I don't know what else it could be.

00 00 51 16 CMP Okay, at Carnarvon. Install COAS, lithium hydroxide, I mean hydrogen, vent OPEN. We have a report from MCC, GO/NO-GO, S-IVB passivation, - -

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Day 1

26

00 00 51 26 LMP You ready to get out when you get a GO/NO-GO, Donn?

00 00 51 28 CMP - - Yeah, boy. CMP to LEB, finish insertion checklist. Stow LMP, CMP, and CDR gloves and lifevests - -

00 00 51 35 LMP First thing we can pick up is complete ECS insertion checklist, huh?

00 00 51 42 LMP We can forget about that one for a while.

00 00 51 56 CDR We'll be at Carnarvon in about another minute.

00 00 52 01 CMP It's too bad that everybody can't see this.

00 00 52 06 LMP Yes, it's a shame.

00 00 52 09 CDR Few nice guys like me want to hang around and go again. (Laughter)

00 00 52 14 LMP You got that now, huh? (Laughter)

00 00 52 19 CDR It's kind of hard to get rid of it.

00 00 52 20 LMP I noticed you weren't terribly excited about that RED down there, but I -

00 00 52 25 CDR No, I told you I get GO fever. (Laughter)

00 00 52 30 LMP I can't think anything more natural.

00 00 52 31 CDR Yes.

00 00 52 36 CMP COAS off. Hey look, I've got a lockup, gang.

00 00 52 41 LMP Okay, let's see what they have to say. Let's try - If you want, I can turn S-band up. Let me have the chart.

00 00 52 47 CDR Houston CAP COMM, Apollo 7 over Carnarvon.

00 00 52 51 CC Roger, Apollo 7, this is Houston. Reading you loud and clear.

00 00 52 54 LMP Roger, read you same. We're having a ball.

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00 00 52 58 CC Roger.

00 00 53 06 SC ... record launch vehicle ... S-IVB passivation. I guess I could get that now.

00 00 53 21 SC Yes, I don't know if it means immediately before or not. Hey, the tape is running again, so can't we ...

00 00 54 08 SC You know what I hear? I bet it is ... heard it from.

00 00 \_\_\_ SC Yes.

00 00 \_\_\_ SC Okay, recording the - the launch vehicle - -

00 00 \_\_\_ SC ... oxidizer A is 22.0 and B is 22.0.

00 00 \_\_\_ SC Walt, do you want me to get some of those pyro breakers on ...

00 00 \_\_\_ SC Okay, Donn.

00 00 \_\_\_ CMP Yes.

00 00 \_\_\_ SC ...

00 00 \_\_\_ CMP Okay, we can continue with this now. It's - we've got the drinking water supply valve to come - well, while you're there, let's get the pyro breakers.

00 01 06 36 CDR Okay, I'll get them, that's what I was asking about. They're coming OFF now.

00 01 06 40 LMP No, we want to leave them ON until after S-IVB. That's right.

00 01 06 42 CMP Okay, they're in, then.

00 01 06 43 LMP Okay.

00 01 06 44 CDR That's what I was asking. Did you want them in?

00 01 06 45 LMP Yes.

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Day 1

28

00 01 06 46 CMP Fine and dandy. Verify they're in.

00 01 06 50 LMP Okay, we want to go ahead and - DRINKING WATER SUPPLY valve, ON.

00 01 06 54 CDR Okay.

00 01 06 56 CMP What is CNB? We're over that.

00 01 07 00 LMP What?

00 01 07 01 CMP That's Huntsville, isn't it?

00 01 07 03 LMP CNB?

00 01 07 04 CDR Now I wonder what that could mean.

00 01 07 05 CMP Carnarv-, Carnarv-, -

00 01 07 06 CDR Carnarv-, Canberra!

00 01 07 08 LMP Canberra, yes. That's Honeysuckle, I guess they call it.

00 01 07 16 LMP That noise is the tape recorder kind of going kk, kk, kk, kk.

00 01 07 18 CDR It's terrible.

00 01 07 19 LMP Yes, I think that drinking water's ON. My checklist says it's a valve.

00 01 07 21 CDR Okay.

00 01 07 22 CMP If that's the case, we're hearing it through here, by the way.

00 01 07 25 CMP It sounds like it's on its last leg (laughter). It's loud as hell down there (laughter).

00 01 07 28 LMP Okay, Donn - -

00 01 07 31 CMP Yes?

00 01 07 32 LMP Do you want to check the SYSTEMS TEST meter 4A to see what the battery manifold pressure is?

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Day 1

29

00 01 07 36      CMP      Okay, 4 it is.

00 01 07 42      LMP      What are you reading?

00 01 07 43      CMP      I'm reading 3.7 volts.

00 01 07 46      LMP      Roger. We are reading 3.7 volts. We're going to go ahead and now vent the battery manifold. We want to verify the WASTE STORAGE VENT valve is CLOSED. You can pull my footpads - footpads - down out of the way if you want to. It will give you a little more room there.

00 01 08 03      CMP      Footpads, okay, that's a good idea. Footpads down. Now, say again there - -

00 01 08 08      LMP      WASTE STORAGE VENT valves. You've got to verify that one is CLOSED.

00 01 08 12      CMP      WASTE STORAGE VENT valve is CLOSED - -

00 01 08 15      LMP      - - and the WASTE MANAGEMENT OVERBOARD DRAIN valve, CLOSED.

00 01 08 19      CMP      Okay, the OVERBOARD DRAIN is going to OFF. Okay, now - -

00 01 08 22      LMP      Now, vent the battery for 5 seconds.

00 01 08 29      CMP      Alright, going to VENT for 5 seconds.

00 01 08 31      LMP      And I'll watch the meter go right on down there - - 1, 2. You can let it go a little longer. I can see the meter is still moving.

00 01 08 37      CMP      Okay.

00 01 08 39      LMP      Okay, that looks like it has stopped, Donn.

00 01 08 41      CMP      Want me to close it?

00 01 08 42      LMP      Yes.

00 01 08 43      CMP      Alright, CLOSED.

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Day 1

30

00 01 08 44 LMP Now we want to put the WASTE MANAGEMENT OVERBOARD DRAIN valve back to DUMP.

00 01 08 49 CMP Okay, back to DUMP.

00 01 08 52 LMP And we can read onto the tape what the battery manifold pressure reads - -

00 01 08 57 CMP - - What do you want with this WASTE STORAGE VENT? Do you want that in OFF or VENT?

00 01 09 00 LMP The WASTE MANAGEMENT OVERBOARD DRAIN valve - -

00 01 09 02 CMP Yes, that one's in DUMP - -

00 01 09 07 LMP - - To DUMP.

00 01 09 08 CMP The WASTE STORAGE VENT, isn't that OPEN?

00 01 09 11 LMP No, we would leave that one CLOSED, but -

00 01 09 13 CMP We do, huh? Okay, how about the - -

00 01 09 18 LMP We have to have one of those - -

00 01 09 20 CMP Something's got to be open.

00 01 09 22 LMP That's right, and - would you believe I've got the same valve called out twice in the checklist three lines apart?

00 01 09 29 CMP Oh, is that what it is?

00 01 09 30 LMP Yes, it's got - -

00 01 09 31 CMP - - That WASTE STORAGE VENT is supposed to be OPEN, isn't it?

00 01 09 35 LMP The WASTE STORAGE VENT - no, you want to leave that one closed. You only open that one when you are putting something in it.

00 01 09 39 CMP Okay.

00 01 09 40 LMP But the OVERBOARD DRAIN line has to be open in order for - -

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Day 1

31

00 01 09 43      CMP      - - Okay, it's on DUMP. I'm squared away.

00 01 09 46      LMP      Okay, and the WASTE STORAGE is closed?

00 01 09 48      CMP      Right.

00 01 09 49      LMP      Okay, I'm going to write it here, should be  
the WASTE STORAGE VENT valve.

00 01 09 51      CMP      Oh! That mother can leak.

00 01 09 53      LMP      What's that?

00 01 09 54      CMP      Oh, this felt ... mapping. There it is.

00 01 09 57      LMP      There it is. Okay.

00 01 10 02      CDR      Are we recording now, Walt?

00 01 10 04      LMP      Yes, Wally.

00 01 10 14      CMP      Okay, I'm ready for whatever else - -

00 01 10 17      LMP      Retro P00 is OFF. We've got the - mount the  
ORDEAL BOX and then you can look at your  
optics.

00 01 10 24      LMP      Well, Wally - have you got the flight plan?

00 01 10 28      CMP      Yes, that's the - -

00 01 10 29      CDR      Well, this involves taking you guys' helmets  
off, and then - -

00 01 10 31      CMP      Yes, that's what we really ought to hear.

00 01 10 33      LMP      Let's get that stuff done. I'll give my  
gloves to you, Donn. You want to turn my  
... off?

00 01 10 37      CMP      Okay, what about your R-12, too? I've got to  
do something - yes, give me your glove ...

00 01 10 45      LMP      Let's just go by the list that Wally's got  
there, Donn.

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Day 1

32

00 01 10 48      CMP      Okay - ... then we can swing into night side. I think that was a good move.

00 01 11 00      LMP      Boy, it will be nice when we get those suits off, won't it?

00 01 11 04      CMP      Kind of nice just getting the helmets and gloves off.

00 01 11 05      LMP      Yes.

00 01 11 06      CDR      It is, isn't it?

00 01 11 07      CMP      I've got some odor. Did somebody goof up the system?

00 01 11 08      CDR      You'll get over that in a while.

00 01 11 11      CMP      I have yet to take a leak and I'm about ready to do it.

00 01 11 16      CMP      I almost got around to it just about lift-off, but I decided I didn't want to get caught in the middle.

00 01 11 20      CDR      Look at the sunrise, gang. There you go. That's the thrill of this business. See it, Walt?

00 01 11 28      LMP      Yes.

00 01 11 29      CMP      Well, I've got some action (laughter). Will that suit be crowded. ... The new generation is upon us.

00 01 11 41      CDR      Hey, look at the clouds, Walt.

00 01 11 42      LMP      Look at those thunderheads!

00 01 11 43      CDR      Yes. Aren't they great?

00 01 11 44      LMP      Lord - Those are some big ones, aren't they?

00 01 11 51      CMP      I stretched the bag, this is unreal (laughter).

00 01 11 54      CDR      There is going to be a few, I tell you (laughter).

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Day 1

33

00 01 11 58      CMP      Hey, listen, this is too much trouble to get up and down all that - -

00 01 12 00      CDR      Hey, I tell you - I think you - that Gunnar Went.

00 01 12 03      LMP      Hey, why are you laughing - didn't it have to happen before?

00 01 12 07      CMP      I have never heard it - I just about busted a gut (laughter).

00 01 12 11      CMP      It's such an obvious pun - I guess the planning is the thing - -

00 01 12 14      CMP      Well - He said, "It looks like Gunnar's going," and you said, "Yes, I think Gunnar Went."

00 01 12 20      CDR      Listen, you're breaking my heart.

00 01 12 21      LMP      Hey, look at that, that's beautiful.

00 01 12 23      CDR      Yes.

00 01 12 24      LMP      The sunrise is on your side.

00 01 12 26      CDR      Yes. You know it?

00 01 12 28      CMP      You mean we're coming up from the south, we're going north now.

00 01 12 31      LMP      I tell you I've got to get a reference system going here.

00 01 12 34      CDR      Once we roll over, you're like the world.

00 01 12 35      CMP      Yes, but let's see. We're coming in like -

00 01 12 36      LMP      You'll have to put that in that bag for him.

00 01 12 38      CMP      Yes, I'll get -

00 01 12 45      CDR      Yes, you just put the bag around and I'll hold it.

06 01 12 46      LMP      Okay.

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Day 1

34

00 01 12 49 LMP Lift up. ROLL B. Okay, I'm on the north side.

00 01 12 54 LMP I guess if I keep remembering that I might make - I might make out (laughter).

00 01 13 06 CMP You know, actually - -

00 01 13 08 CDR - - Go ahead, Donn - -

00 01 13 09 CMP - - We went through that loud phase of boost, you know, MAX Q, so fast, I'm not sure if - well, if I had it, but - -

00 01 13 15 CDR - - Wait a second - -

00 01 13 16 CMP - - could be much noise, you know.

00 01 13 17 LMP Could you get it on the ... for me, Wally?

00 01 13 19 CDR Yes, Walt.

00 01 13 22 LMP You know, Wally, I don't remember that noise at MAX Q being really any worse than at Houston.

00 01 13 28 CDR No, it wasn't bad.

00 01 13 29 LMP It wasn't all that bad. How much did the a meter get to? I wasn't watching.

00 01 13 33 CMP I don't really know.

00 01 13 35 LMP Well, if you would quit showing off by floating around down there - - (laughter).

00 01 13 38 CDR There you go, Donn. It's going in now (laughter). Alright, ugh!

00 01 13 44 LMP What the hell is making all the racket up here?

00 01 13 48 LMP Wait a minute. Something went - -

00 01 13 53 CDR Into the fan?

00 01 13 54 CDR What was that?

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00 01 13 56 LMP Huh? Was I getting across the fan?

00 01 13 57 CDR Something blew.

00 01 13 59 LMP Is the fan stalled out?

00 01 14 00 CMP No, it looks like one of those cords - it looks like one of those things floated into the back of the fan - -

00 01 14 04 LMP It did.

00 01 14 05 CMP - - and then came back out (laughter). I got it.

00 01 14 07 CDR Hey, what is that noise?

00 01 14 09 CMP Maybe if I turn the fan OFF - -

00 01 14 11 CMP Ready.

00 01 14 12 CDR Stand by.

00 01 14 17 LMP What's that?

00 01 14 18 CMP That's the fan.

00 01 14 19 LMP Turn the other one OFF, too.

00 01 14 22 CDR What a nice roar.

00 01 14 23 LMP Holy mackerel! If we ever get on the air, I'm going to turn those mothers OFF.

00 01 14 28 CMP You want them back on?

00 01 14 29 CDR No, no.

00 01 14 30 LMP Well, - -

00 01 14 34 CDR Those fans are so horrible (laughter).

00 01 14 38 CDR Okay, let's get ready. We have got some stuff to do here.

00 01 14 41 LMP Okay, read it.

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00 01 14 43      CMP      We're going to need another bag.

00 01 14 45      CMP      Okay, can you put this on, Walt, by yourself?

00 01 14 48      LMP      Yes, yes, just give me a bag there.

00 01 14 49      CMP      I've got to fix the strap on this other one that came loose. Otherwise, I ...

00 01 14 53      LMP      Okay.

00 01 14 58      CDR      Okay, ... we ought not to horse around too long - -

00 01 15 02      LMP      No, we've got to get hot on this stuff.

00 01 15 04      CDR      - - with the cabin fan on there, because we do need to circulate the air.

00 01 15 06      LMP      No, we're circulating it just by moving.

00 01 15 08      CMP      Okay, now, let's open the suit return air valves up, Wally. That will do it.

00 01 15 15      CDR      Let me get this rolling ...

00 01 15 18      CMP      What's that do?

00 01 15 21      CDR      Well, that cuts both you guys out of your suits, and we're still in the suit mode.

00 01 15 31      LMP      Let's get out of them.

00 01 15 33      CMP      Okay.

00 01 15 35      LMP      Suit return air valve.

00 01 15 40      CMP      Okay, I've got to - a helmet stowage bag to go under the right seat, and when I go under there, I'm going to hand you the ORDEAL, Wally.

00 01 15 48      CDR      Are you? Hand me those whatchamahickey bags.

00 01 15 51      CMP      The bags - Now, the one thing I haven't done yet is get the data file out for Walt.

00 01 15 57 CDR Do you want to do that now or do you want to hang on to your helmet?

00 01 15 59 CDR You forgot my headrest.

00 01 16 00 LMP If you get that now, then I can be stowing it over here while you are doing the other.

00 01 16 05 CMP Okay.

00 01 16 06 LMP Donn?

00 01 16 07 CMP Yes?

00 01 16 08 CDR As long as you're taking that down - -

00 01 16 09 CMP What do you want, Walt ...

00 01 16 11 CDR ... we've got to do it some other way.

00 01 16 14 CDR Man, I'm going to be ready for sunglasses pretty soon.

00 01 16 21 LMP Yes, that is beautiful, isn't it?

00 01 16 23 CDR Isn't this unreal though? (Laughter)

00 01 16 27 CDR Wait until about the eighth day.

00 01 16 30 CMP I picked this box up, and I'd swear there is nothing in it, because it doesn't weigh anything.

00 01 16 37 CDR That's funny! (Much laughter)

00 01 16 38 LMP You're really sharp there! My God, ... Did you open it and look in it?

00 01 16 44 CMP Yes, I did (laughter) as a matter of fact!

00 01 16 48 CDR That's funny! Unreal!

00 01 16 52 CMP I had one nightmare down there, you know, - you know - you have that COMM slide rule in your checklist?

00 01 16 55 LMP Yes.

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00 01 16 57      CMP      Oh, good, because I couldn't find. Apparently it slipped down the crack, and I could never run our systems data.

00 01 17 02      CDR      I better record what I've got on here. 01 plus 14 plus 50, oxidizer was 22.0 on A and B; fuel was 10.0, ranged from 8.0 to 10.0. That's S-IVB readouts.

00 01 17 22      LMP      Can you hang on to this with one hand for a second?

00 01 17 23      CDR      Yes.

00 01 17 25      CMP      Man, that sun is brighter than hell.

00 01 17 27      CDR      Yes, that's why you need sunglasses - ...

00 01 17 29      CMP      I just caught a corner of it in the eyeball.

00 01 17 31      CDR      Yes. It'll hurt, too - -

00 01 17 34      CDR      You can get my headrest down and out of your way if you want.

00 01 17 37      CMP      Well, let me do this first because it's in my way when it's - well, I'll be damned. Here's another one of these straps off. What did it go to?

00 01 17 42      LMP      Oh, I see why, Donn. No friction (laughter).

00 01 17 45      LMP      They just float out (laughter). Here is another one coming out!

00 01 17 50      CDR      I guess there's just no reason for them to stay there. All the filters go through the rings.

00 01 17 53      LMP      Yes.

00 01 17 54      CMP      Wonder if somebody put them in wrong? ... You can't fix them. Great. ...

00 01 18 01      LMP      This one's coming out too over here.

00 01 18 03      CMP      ... again. Oh, boy.

[REDACTED]

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Day 1

39

00 01 18 05      CMP      Well, once they are snapped to the wall, they're okay, but up to that point they are not too swift. That's interesting. We've got a stray strap around there some place.

00 01 18 16      CDR      It'll come by in a minute (laughter).

00 01 18 19      LMP      Get it the next time around, will you?

00 01 18 23      CMP      I guess I'll never live that down.

00 01 18 25      LMP      You know this is - not bad, really, you know. In Gemini you didn't get this marvelous opportunity to float around, did you?

00 01 18 34      CDR      Oh, this is wild, IVA, gang.

00 01 18 35      CMP      Hey, Wally, here is your box.

00 01 18 38      LMP      Just what he always wanted.

00 01 18 40      CDR      I have one, too, huh?

00 01 18 41      CMP      Yes (laughter).

00 01 18 43      CMP      Anyone I know? (Laughter)

00 01 18 44      CMP      Will you take this hat?

00 01 18 46      LMP      Huh - take your hat? Helmet.

00 01 18 49      CMP      Yes, it's my hat. ...

00 01 18 50      CMP      Just a second until I get over there ...

00 01 18 56      CMP      I'm going to close this box first. Walt, give me your ...

00 01 19 05      LMP      You won't need the sleep station out yet. You want your headrest down?

00 01 19 09      CDR      Yes, that's what's the matter.

00 01 19 10      LMP      If you'll pull out those temporary stowage bags and hand them to me, I will hold onto them.

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Day 1

40

00 01 19 14      CMP      I think you are going to want the headrest  
up when you're sleeping down there - -

00 01 19 16      CDR      Yes.

00 01 19 17      CMP      Do you want to leave it where it is? Or fold  
it?

00 01 19 19      LMP      I think it makes more room to pull them down  
and get a traffic - I can come by under there  
when it is down, I think.

00 01 19 29      CMP      Come by where?

00 01 19 32      LMP      If you are down underneath, you can come up  
better with that thing down, I think.

00 01 19 36      CMP      Here is Walter Cunningham's checklist float-  
ing by Wally's knee (laughter).

00 01 19 40      LMP      What?

00 01 19 42      CDR      By my knee.

00 01 19 46      LMP      I don't know how it got over there, but there  
it is (laughter).

00 01 19 50      CDR      Okay, I am going to go ahead and get ORDEAL  
out of the way.

00 01 19 53      CMP      Here's another one.

00 01 19 55      LMP      Okay, now - -

00 01 20 00      LMP      Yes.

00 01 20 01      CMP      Walt?

00 01 20 02      LMP      Yes?

00 01 20 03      CMP      Do we need anything out of here, like a hydrom-  
eter or anything like that?

00 01 20 06      LMP      Now, we've got to start right down that list  
which does include the cameras. Well, Wally's  
...

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Day 1

41

00 01 20 12        CMP        I know where the cameras are. I don't think any of them are under here.

00 01 20 15        CDR        No, but you got the - we want to get our Mae Wests off.

00 01 20 19        CMP        Did we get a GO/NO-GO report, Wally, REV by REV, huh?

00 01 20 23        CDR        Now, we're GO until we get a ...

00 01 20 36        CMP        I don't seem to have enough room to get under.

00 01 20 41        CMP        Hey, Walt, are my hoses caught on anything under here?

00 01 20 45        LMP        Let's see. No.

00 01 20 50        CMP        No? How come I can't get under this thing?

00 01 20 53        LMP        Well, are they the right length hoses?

00 01 20 55        CMP        Well, I hope so. They were the right length before. Well, I'm a son of a bitch, I can't get under here.

00 01 21 01        CMP        Look at that. I can't get to it!

00 01 21 03        CDR        (Laughter) We got a s.o.b. down there.

00 01 21 04        CMP        Okay, look, I'm going to undo the hoses, Wally, and I can put them right back on - -

00 01 21 08        CDR        Okay.

00 01 21 09        CMP        - - Because otherwise, I can't reach the wall back here. I can with - I think the COMM cable will go back alright. I have enough of the COMM cable, but I don't have enough hose.

00 01 21 23        LMP        Those people are going to go out of their gourd ...

00 01 21 25        CMP        Aren't they, though?

00 01 21 27        LMP        ... (Laughter)

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Day 1

42

00 01 21 32 LMP Need any help?

00 01 21 33 CMP I don't think so; it's just been - getting a little warm. On the whole, it's a piece of cake. I am warm in my suit.

00 01 21 47 CDR You guys still have suit flows on, haven't you?

00 01 21 55 CMP Okay, Walt, there is your helmet on the wall.

00 01 21 57 LMP Okay, I've got a Mae West off, - put it down here.

00 01 22 07 CMP It's easier in zero g, isn't it?

00 01 22 09 LMP Yes, it is. 100 percent easier than it was. Get rid of that Mae West, you can move around a little.

00 01 22 18 LMP Boy, that thing is already starting to shred.

00 01 22 20 CMP In fact - -

00 01 22 21 LMP Look at that. Look at how that Mae West is shredding - -

00 01 22 26 LMP Here is that strap we were looking for (laughter).

00 01 22 32 CDR Beautiful, beautiful.

00 01 22 36 LMP You got it off that fast, Donn?

00 01 22 40 LMP Aren't you glad we allowed double time for ...

00 01 22 45 LMP Let's get all that garbage out of the way.

00 01 22 52 CMP You see how bright it is in here - you'd never sleep.

00 01 22 53 LMP Yes ... window shades.

00 01 22 56 CMP Let's see. Walt, you want to hand me your lifevest. I think I can put it in from right here.

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[REDACTED]

Day 1

43

00 01 23 01 LMP Okay.

00 01 23 05 CDR You really don't need these headrests any-  
more ... Kind of nice to have ...

00 01 23 11 CMP Okay, Wally, you want to hand me your life-  
vest?

00 01 23 13 CDR There you go.

00 01 23 15 LMP ... until 8 o'clock, it's unreal. Have you  
noticed it?

00 01 23 19 CMP Yes, I haven't even gotten mad yet.

00 01 23 21 LMP You said one "s.o.b."

00 01 23 24 CMP Well, that was just in - that was not said  
in anger - -

00 01 23 27 LMP That was just to warm up? (Laughter)

00 01 23 40 CMP We don't need the hydrometer right now - is  
that correct?

00 01 23 44 LMP No, we don't.

00 01 23 46 CMP No point in getting it out.

00 01 23 47 CDR ... just go by the ...

00 01 23 48 LMP Are you in any position to use the strap  
down there, Donn, for the helmet bag?

00 01 23 52 CMP Well, I am on the wrong side. That missing  
strap goes on yours. I can put it on if you  
want.

00 01 23 57 LMP That's okay ...

00 01 24 01 CMP Snap it to the wall, we can pull it down  
later. It'd be better. Can you reach the  
snap there, Wally?

00 01 24 06 CDR Yes, I can reach it.

00 01 24 07 LMP ...

[REDACTED]

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Day 1

44

00 01 24 10 CDR Okay, let's check on the time. We're at 01:24. We should be over Huntsville. That's program 47. That's at 01:43, of course. We got 10 minutes for that.

00 01 24 23 CMP We are still doing - reading the unstowage list, Wally, and get the details later.

00 01 24 27 CDR Okay, we've got - -

00 01 24 29 CC Apollo 7, Houston.

00 01 24 32 CDR - - lifevest and a helmet.

00 01 24 33 LMP Lockup at Huntsville.

00 01 24 34 CDR Houston, Apollo 7. Go ahead.

00 01 24 41 CC This is Houston through the Huntsville. How do you read?

00 01 24 43 CDR Houston, Apollo 7. Loud and clear. How me?

00 01 24 49 CDR Maybe they don't.

00 01 24 53 CMP Want the cameras now, you guys?

00 01 24 54 CDR Okay, here's what you come up with - -

00 01 24 55 LMP Might try S-band, but I - that's not locked up, huh?

00 01 25 01 CDR Yes. Okay, go ahead.

00 01 25 02 CDR Is it locked up now?

00 01 25 04 LMP No.

00 01 25 05 CDR Here is what you want, Donn. Camera bracket on the left-hand side.

00 01 25 08 CC Apollo 7, Houston. How do you read?

00 01 25 11 CDR Houston, Apollo 7. Loud and clear. How me?

00 01 25 19 CMP Oh, we just lost the lock.

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Day 1

45

00 01 25 21 CC Apollo 7, Houston. How do you read?

00 01 25 23 CMP ...

00 01 25 24 LMP Houston, Apollo 7. Read you loud and clear.

00 01 25 32 LMP ... the camera bag?

00 01 25 33 CMP Yes.

00 01 25 34 CDR Okay, Walt, why don't I give you this - oh, I need it. No, I don't need this - -

00 01 25 39 CDR You got the helmet - camera bracket, you getting that?

00 01 25 44 CMP Yes.

00 01 25 55 LMP You got that ... through?

00 01 25 57 CMP Yes. I'm trying to figure out in this silly position where it goes.

00 01 26 05 CDR The ORDEAL - you should see my ORDEAL - I got - that's not it - here ... the ORDEAL all over the place (laughter).

00 01 26 16 CDR What else are you getting, Donn?

00 01 26 17 CMP I've got a Hasselblad coming.

00 01 26 21 CDR Alright. It's already got the film on it and - -

00 01 26 25 CMP ... the movies ...

00 01 26 29 CC Apollo 7, Houston.

00 01 26 30 CDR Doesn't really matter who has it. Just get it out of the way.

00 01 26 32 CDR There is nothing to take pictures of, frankly.

00 01 26 34 CC Apollo 7, Houston.

00 01 26 36 CDR Okay, hold up a minute.

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00 01 26 37 CDR Houston, Apollo 7. How do you read?

00 01 26 40 CT ... Houston, coming ...

00 01 26 45 CDR Houston, Apollo 7. I read you loud and clear.

00 01 26 52 CT ... copied you loud - - 7 copied you loud and clear. Go ahead. We'll relay.

00 01 26 58 CDR Lockup S-band.

00 01 27 00 CC Roger, Apollo 7. This is Houston CAP COMM. Understand you are reading ... through Huntsville, the S-IVB tank pressures.

00 01 27 11 CDR Wilco, Huntsville, Apollo 7. Tank pressures, I'll give you present readings: 24 on A, 24 on B for oxidizers; fuel is 13 on A, and 13 on B. Over.

00 01 27 46 LMP Can't keep them in lock.

00 01 27 48 CMP Yes, it keeps braking.

00 01 27 50 LMP ...

00 01 27 52 CT We can only copy if - when we are in S-band lock. Still having trouble ...

00 01 27 59 CDR You locked up?

00 01 28 00 LMP Yes, I'll tell you what I will do.

00 01 28 01 CDR Huntsville, do you read Apollo 7 ...?

00 01 28 02 LMP - - I'll switch VHF - -

00 01 28 04 LMP I just switched the VHF antennas.

00 01 28 05 CDR Huntsville, do you read Apollo 7 now?

00 01 28 20 LMP Houston, Apollo 7. Do you read?

00 01 28 22 CC Roger, Apollo 7. Read you loud and clear. How us?

00 01 28 24 CDR Okay, the readings are - 24, 24, 13, 13.

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Day 1

47

00 01 28 30 CC Roger, 24 and 13.

00 01 28 32 CDR That's affirm on both A and B, and I have it logged.

00 01 28 37 CDR You're breaking up ...

00 01 28 41 CC Roger, did you get the propellant readings while you were at Huntsville, Wally?

00 01 28 45 CDR I am afraid so. What is that ...?

00 01 28 48 CC Did you read the tank pressures and the propellant program 47 prior to lockup?

00 01 28 54 CDR Roger, we have that data. I have tank pressures logged for 01 plus 06 plus 15, 01 plus 14 plus 50, if you're ready to copy.  
(Laughter)

00 01 29 06 CC Roger.

00 01 29 07 CDR Okay, that's 23, 23, 8, and 8; that's 01 plus 06. 01 plus 14 plus 50 is 23, 23, 10, 10.

00 01 29 31 LMP We've got a lock here.

00 01 29 33 CT Apollo 7, Houston. You faded out completely. We'll contact you over California in a couple of seconds.

00 01 29 39 CDR Roger, data is logged.

00 01 29 40 CDR Okay, let me set up this program - program 47 now ...

00 01 29 45 LMP Is it too early?

00 01 29 58 CDR ... I'd wait until about 2 minutes ...

00 01 53 34 CDR ... each other out, Walt, you might see a dump somewhere. I don't know why the hell it would go that way. It should go out that way.

00 01 53 39 CDR ...

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Day 1

48

00 01 53 57 CDR Jack, for the record our DELTA-V counter is at 33 feet per second.

00 01 54 01 CC Okay, we got it all in the - that was the DELTA-V counter?

00 01 54 08 LMP Okay, you going to write that down?

00 01 54 15 CDR Okay, I will, Walt. I'm going to do it at 01:56.

00 01 54 19 CMP I've got the optic feature installed ...

00 01 54 29 CMP The optic operation is no sweat at all - -

00 01 54 31 CDR Is that right?

00 01 54 33 CMP - - the part that is a little disconcerting is that this Velcro isn't holding down to the floor very well.

00 01 54 40 CDR I wondered about that.

00 01 54 41 CMP I think it's because there's enough stiffness in these hoses - you see, I sort of want to float to the top of the spacecraft.

00 01 54 52 CC Apollo 7, Houston, ... MILA reports your DSE voice quality on the dump was very good.

00 01 54 58 CMP That's good -

00 01 54 59 CMP Outstanding.

00 01 55 00 CDR That really helps.

00 01 55 15 CDR Yes, let's see, we should be on our way to the Canaries by now. Yes.

00 01 55 21 CDR That's the Canaries. We're coming up on Africa, yes.

00 01 55 25 CDR What's the ..., Walt?

00 01 55 28 CDR Let me get some light out there for you.

00 01 55 31 CMP Okay ... is correct ... B. Optic code has -

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Day 1

49

00 01 55 40      CMP      See that white cloud on ...?

00 01 55 43      CDR      It got up to 18. Out over the water, it went  
down to 14. Did you ever do that, Walt?  
250, f:11 is the - -

00 01 55 51      CMP      Okay, Walt, you ready?

00 01 55 55      LMP      Well, okay, let it fly -

00 01 55 58      CDR      Okay, I want to give you a reading. Okay,  
2 - 125, f:11.

00 01 56 06      CDR      What have you got now? 100? That's good.  
Go.

00 01 56 13      CMP      Okay, here we come, I hope. We're turning.  
Boy, was that ever pretty! I never saw any-  
thing like it. If this thing pops off and  
the minute it got out to sunlight ... there's  
a whole bunch of little pieces and there's  
two little, two larger pieces or - well, guess  
that would be the two covers, sitting out  
there twirling around, still reflecting sun-  
light.

00 01 56 46      CDR      You see both of them?

00 01 56 47      CMP      Yes, I still see them -

00 01 56 49      CDR      Beautiful.

00 01 56 51      CMP      There must be something else that went by  
... There's some light straying into the  
sextant.

00 01 57 05      CC      Apollo 7, Houston. You are 1 minute LOS  
Canary and we've computed a cabin leak rate.  
We find it to be one-half of set value.

00 01 57 15      CDR      Very good.

00 01 57 20      CMP      Man.

00 01 57 23      CDR      The optic covers are jettisoned, and now we're  
tracking them.

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Day 1

50

00 01 57 27 LMP It's crazy, I think - -

00 01 57 28 CC Roger, real good.

00 01 57 30 CMP - - I'm coming in a little bit with the star sight, but they're so damn bright that they tend to obliterate the stars. Well, that's funny.

00 01 57 35 CDR Well, the sun shouldn't be there (laughter).

00 01 57 40 CMP That's true, but I think I can see some stars out there.

00 01 57 45 CDR Now?

00 01 57 47 CMP Yes, I wouldn't be - I wouldn't want to guarantee what they are, but I can see something - -

00 01 57 48 CDR That's good with the - -

00 01 57 50 CMP Well, I'm not sure really whether they're stars or just little light specks in the glass. It could be little -

00 01 58 00 CDR I'm sure it was not unusual. Night is about 02:07. We're only 8 minutes away, Walt.

00 01 58 10 LMP Hey, Jack, the SPS propellant tank temperature has held pretty much right around 70, ever since lift-off. I never did get a feedback on what kind of a duty cycle they expect on those heaters - I haven't turned them ON, but for the last couple of hours they are getting by with no heat at all.

00 01 58 25 CMP Wally, I just threw - went to ZERO OPTICS, and the thing is cranked up - I had to go almost 180 degrees.

00 01 58 32 CC Okay, Apollo. I couldn't copy there. Walt, you're down very low.

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Day 1

51

00 01 58 38 LMP SPS propellant tank temperature is running 70, and it's been that way ever since lift-off. I have not turned the SPS line heaters ON and ...

00 02 11 22 CDR ... study the stars to see if I might find some I know so I can set it in the record. ... I was trying to punch in the numbers just to see how it looks.

00 02 12 04 CMP ... There it is. Would you believe there's a star right in the middle of my sextant?

00 02 12 08 CDR Is that right? How does it look?

00 02 12 12 CC Apollo 7, this is Houston through Tananarive. How do you read?

00 02 12 17 CDR Okay, Jack.

00 02 12 19 CC Roger, we're getting a lot of background noise on the HF coming in ... here, but you're coming in loud and clear.

00 02 12 26 CDR Roger, you're putting through a lot of echo, and you are just readable. We just ran through the Orion constellation, and it was very pretty.

00 02 12 36 CC Roger, how do the stars look through both the telescope and sextant compared to the simulator?

00 02 12 43 CDR A little bit better. The Orion constellation was not ...

00 02 12 55 CC Real good. Okay, we're going to give you a time hack at 40 minutes to go until separation in about 2 minutes.

00 02 13 04 CDR Roger, I'll reset my dial.

00 02 13 07 CC ... record ...

00 02 13 14 CDR Roger, Tom, ready to copy. Go ahead.

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Day 1

52

00 02 13 25 CC Okay, GET of pitchdown is 02 plus 42 plus 55;  
GET of inertial attitude, 02 plus 51 plus 10.

00 02 13 40 CDR Roger, pitchdown at 02 plus 42 plus 55, and  
inertial at 02 plus 51 plus 10 ...

00 02 13 53 CC We are going to give a 40-minute hack count-  
ing down, so you can set your watch.

00 02 13 59 CDR Okay, I'm all set here, Tom.

00 02 14 00 CC Alright.

00 02 14 01 LMP I've got my GET set up.

00 02 14 12 CMP Say, Wally ...

00 02 14 21 LMP ... 12 000, 22 000, and ...

00 02 14 30 CC 30 seconds to go.

00 02 14 33 CDR Roger ...

00 02 14 55 CC 5, 4, 3, 2, 1 -

00 02 15 00 CC MARK.

00 02 15 01 CC 40 minutes, counting down for SEP.

00 02 15 06 CDR We'd better proceed, Wally, ...

00 02 15 09 LMP We have our gyro-torquing angles if you'd  
like to copy.

00 02 15 14 CC Go ahead.

00 02 15 15 LMP Can you read the DSKY?

00 02 15 21 CDR Roger, DSKY readout follows: this is VERB 06,  
NOUN 93, minus 00012, plus 00023, plus 00186.  
Star difference angle was 00002.

00 02 15 42 CC Roger.

00 02 15 47 CDR ... In fact, I'm going to get ...

00 02 16 06 CDR ... Okay, that's one more time hack.

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Day 1

53

00 02 16 09 CC Apollo 7, Houston. What was your star angle difference? That's the only one we were questioning.

00 02 16 13 CDR 00002.

00 02 16 16 CC Not bad.

00 02 16 17 CDR We're going to ...

00 02 16 22 CC Roger.

00 02 16 28 LMP Hey, we've got a real nice, clean cabin here, very few little particles floating around.

00 02 16 32 CDR You joking?

00 02 16 34 CC Sounds good.

00 02 16 35 LMP A few particles, one looks like ...

00 02 16 47 CC Okay.

00 02 16 51 LMP If we find one more, we'll give it a cup of coffee.

00 02 16 53 CC (Laughter)

00 02 17 54 CMP There's your star angle distance, babe. I'm sitting here sweating, I want to yell out 00000.

00 02 17 58 CDR I don't get it, I hope there is a little bit of bias.

00 02 18 03 CMP It doesn't pull them right in the middle. You have to - but really it's very much like a simulator, it's about a tenth of a degree off, just at the outer end of that reticle pattern.

00 02 18 20 LMP I'm just storing it to get it out of your way, Wally. You going to log those early optic lens shots of Orion?

00 02 18 33 CDR If we got time, it's very difficult to come back and get that, so there's 1 minute - -

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Day 1

54

00 02 18 44 CC Apollo 7, Houston. You're 1 minute to LOS Tananarive. We'll pick you up at Carnarvon in about 8 minutes.

00 02 18 50 CDR Roger, Bill, navigating at 00001, on the second test.

00 02 18 55 CC Okay.

00 02 18 59 LMP Gyro-torque angles are plus 00023, plus 00006, plus 00001. This is the second go-around on the fine align.

00 02 19 07 CDR Okay, magazine M - -

00 02 19 08 CC Roger. Sounds good.

00 02 19 10 CDR Magazine M, Walt, do you want to log that or don't you?

00 02 19 14 LMP We'll put it on the tape now. Are we recording now? Magazine M, frames 1 through 4, or 0 through 4, of the urine dump at sunset. Schirra dumping! (Laughter)

00 02 19 33 CDR Look at it go. That's pretty good zero g.

00 02 19 38 CMP I'm going to do a urine. You guys mind if I dump mine now?

00 02 19 40 CDR No.

00 02 19 41 CMP Walt?

00 02 19 47 LMP Do what?

00 02 19 48 CDR We dumped; that's stunning, yes.

00 02 19 49 CMP Walt, you ready for this camera?

00 02 19 53 LMP (Laughter) Wow! That was unreal. That was just too smooth. Hey, we ought to take a movie of that, you know it?

00 02 19 55 CMP Yes, I know it but - what a ball!

00 02 19 57 CDR Yes.

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Day 1

55

00 02 20 20 CDR Okay, let's see. At 02:28 we come over Carnarvon. We got the gyro-torque angles already. That's - -

00 02 20 27 LMP Yes, I got that all done.

00 02 20 29 CDR So we're ahead of them, again. This is beautiful, guys. I'm really pleased. We're way ahead. Okay, we got the S-IVB takeover, gang. That comes up at 02:30, and, Walt, I think the way we play that, you call if for us.

00 02 20 48 LMP Jesus, my - my peter hurts so bad I can hardly stand it; I don't know what the hell it is, whether it's the vacuum or the damn roll on or what it is.

00 02 20 52 CMP I don't want to say the third part.

00 02 20 53 LMP Huh?

00 02 20 54 CMP I don't want to say the third possibility.

00 02 20 57 LMP No, it's not - -

00 02 20 58 CMP (Laughter)

00 02 20 59 LMP Boy, does that ever smart! Terrific!

00 02 21 08 CDR Takeover is at 02 plus 30.

00 02 21 26 CDR We do window photography at 45.

00 02 21 28 CDR Have you watched your spotmeter, yet?

00 02 21 31 LMP I can do that whenever you say, or Donn, either one.

00 02 21 40 LMP I'd like to get into dock position now, gang.

00 02 21 44 CDR Okay. Donn, you want to - you're busy.

00 02 21 46 CMP Am I ever! I don't know what in the hell I'm going to do, but - wait a minute. I know what happened. Goddamn ... twisted on me.

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Day 1

56

00 02 21 54 CDR Walt, what are you doing?

00 02 21 56 LMP Hey, this thing doesn't seem to be dumping too much - how do you get this thing to dump?

00 02 22 04 CMP Really?

00 02 22 06 CDR I did, but I had a hard time.

00 02 22 08 LMP It's made up. It's just not doing anything.

00 02 22 10 CDR You feel this little gurgle. You feel it in your belly gurgling.

00 02 22 16 CMP I haven't felt a thing, really.

00 02 22 20 CDR I don't think you need it. I'm just going to throw it back.

00 02 22 25 CMP You got it. ...

00 02 22 33 CDR Now I'll do it in slow motion. Let's see ... How about that! Oh, sexy! Wild, baby!

00 02 22 58 CMP This thing's not dumping.

00 02 23 07 CMP It reads 1.6 volts. What does that mean?

00 02 23 15 CDR I smell urine somewhere. Did you open your suit up, Donn?

00 02 23 19 CMP I just unzipped a little bit at the bottom. I'm dry, I'm not a wetback. It's just that when I peed, it filled the bag and shifted way over to one side and twisted my penis in the front there. Boy, it really hurt!

00 02 23 37 CDR Well, oddly enough, I smell urine. Do you? Do you, Walt?

00 02 23 40 CMP Just how did that happen?

00 02 23 45 LMP I don't know.

00 02 23 57 CMP Well, I'm going to knock off. ... Okay. Maybe we can dump this thing later ...

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Day 1

57

00 02 24 04 CDR Well, hell! I've got to get it dumped some way ...

00 02 24 10 CDR How in the hell are you going to dump that thing?

00 02 24 54 CDR ... that valve ... GO/NO-GO for S-IVB. ... S-IVB, ... Really? Where? Well, let me see.

00 02 25 23 CDR Is this Orion again? ... all the stars can come around the same place.

00 02 25 44 CDR Where do we stow those covers for the altimeter and accelerometer?

00 02 25 55 CDR How about the covers to your deal?

00 02 26 01 LMP Hey, I see Orion.

00 02 26 04 CDR I wonder how Walt's going to do.

00 02 26 09 LMP It's coming down here now. Did it go out the bottom?

00 02 26 17 CMP That's what I mean. Yes, if it's coming in the top it might ...

00 02 26 18 CDR I see.

00 02 26 23 CMP ... God damn it!

00 02 26 29 CMP You know the constellations in here are kind of hard to recognize, I think, because you do see an awful lot of stars.

00 02 26 38 CDR You see more?

00 02 26 39 CMP Yes, I think you do.

00 02 26 59 CMP Yes.

00 02 27 06 CMP You want to hand me a Kleenex?

00 02 27 16 CC Apollo 7, Houston.

00 02 27 18 CDR Go ahead.

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Day 1

58

00 02 27 19 CC Roger, for - you won't need a state vector update. I guess Donn did so good there.

00 02 27 28 CMP (Laughter) Looks like I got - -

00 00 27 30 CC You are GO for your S-IVB takeover.

00 02 27 35 CDR Roger.

00 02 27 37 CC And, Wally, after you get through with the S-IVB control test there, let me know when you arm your LOGIC and we'll then take a look at it and give you a GO for PYRO ARM.

00 02 27 51 CDR Thank you. Stand by.

00 02 35 54 LMP ECS power, ON.

→ 00 02 35 57 CDR ECS power, ON, and light, ON.

00 02 36 01 LMP Okay, DELTA-V count is zero.

00 02 36 10 CC ARIA 2, go REMOTE.

00 02 36 15 LMP We called for GET to be reset here.

00 02 36 20 CDR Hey, that's right. Let's do a count.

00 02 36 21 LMP Okay, counting up. You time it. You see plus time afterwards. You want me to get you a rehack?

00 02 36 30 CDR I see what you mean. Let me go with it for - How far are we from there?

00 02 36 36 CMP I don't know. ... That moon is pretty!

00 02 36 43 CC Apollo 7 through ARIA. How do you read?

00 02 36 46 CDR Roger. Read you loud and clear, Jack. How me?

00 02 36 48 CC 5 by.

00 02 36 49 CMP Very good.

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Day 1

59

00 02 36 53      CC      Okay, Wally. ARIA 2 has us for about 10 minutes here, and then we'll pick up ARIA 3 for about another 10 minutes.

00 02 37 02      CDR      That's a very nice light opera.

00 02 37 04      CMP      If you guys want to see something spectacular when you get a chance, take a look at the moon in the sextant.

00 02 37 09      CDR      Is it really magnified?

00 02 37 10      CMP      God! It's just great. Well, it's a 28-power scope.

00 02 37 17      LMP      Okay, Jack, can you verify the tape recorder is in RECORD FORWARD, and we'll go to HIGH BIT RATE for the S-IVB maneuver?

00 02 37 27      CC      Okay. Stand by.

00 02 37 29      LMP      If we're running through AIRA, you're going to want me to go to HIGH BIT RATE?

00 02 37 50      CC      Understand you will control the tape recorder for ACCEPT.

00 02 37 54      CDR      Who said that? ...

00 02 38 01      CMP      I didn't hear ...

00 02 38 18      CDR      You've got the plan. Okay.

00 02 38 23      CDR      Let me take the computer, Donn.

00 02 38 24      CMP      Okay, go ahead.

00 02 38 30      CDR      Wow! Really good.

00 02 38 44      CMP      How's that for 00000?

00 02 38 49      CMP      Okay. Swell. Yes. You need the spotmeter?

00 02 39 13      CDR      That you have to do yourself.

00 02 39 20      CDR      We're headed back up towards it. Take your movie camera out, too.

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Day 1

60

00 02 39 46 LMP Command module RCS LOGIC, ON.

00 02 39 48 CDR Okay.

00 02 39 50 LMP ATTITUDE DEADBAND, MIN; RATE, LOW.

00 02 39 52 CDR MIN and LOW.

00 02 39 54 LMP And we're standing by now to pick up the last 10 seconds.

00 02 40 01 CDR The last 10 seconds? How about DELTA-V AUTO? Was that called out? DELTA-V AUTO? That late, huh? There's a nice place for it.

00 02 40 30 CDR Set the whole rig down?

00 02 40 35 CT This is ARIA 3 ...

00 02 40 40 CDR ARIA 3, Apollo 7 reads you.

00 02 40 44 CC Apollo 7, this is Houston through ARIA 3. How do you read me?

00 02 40 47 CDR Roger, read you loud and clear, Tom.

00 02 40 56 CC Apollo 7, this is Houston through ARIA 3. Over.

00 02 41 00 CDR Roger, Houston. We read you loud and clear. How me?

00 02 41 06 CC Roger. We can read you about 1 by, Wally.

00 02 41 12 CDR Roger. You're about 4/4.

00 02 41 43 CDR Yes.

00 02 41 55 CDR 02:41.

00 02 41 56 CDR Get that light. Maybe - I don't know. Do - do you want it?

00 02 42 07 CDR Well, by the time we get down, we'll be so used to that (laughter).

00 02 42 16 CDR Great!

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Day 1

61

00 02 42 17      CMP      Did you see that? It's unreal. (Laughter)

00 02 42 20      CC      Apollo 7, Houston through ARIA 3. How do  
you read now?

00 02 42 24      CMP      Roger. Read you loud and clear. How me?

00 02 42 27      CC      Roger. You're now coming in about 3 by 3.

00 02 42 31      CDR      Roger. Okay. We're facing sunrise now,  
Walt.

00 02 42 35      CMP      What is that that keeps dinging all the time?  
Is it something on me or - -

00 02 42 39      CDR      Yes, what is that? I hear it - -

00 02 42 41      CMP      I don't know.

00 02 42 42      CDR      It sounds like it's you. It's down there  
where you are. I think you - -

00 02 42 45      CMP      Yes.

00 02 42 47      CDR      Have you got a strap loose? ...

00 02 42 49      CMP      I don't - I'm looking. I can't see any.

00 02 42 55      CDR      Let me give you a check in a minute. I think  
we are over Carnarvon.

00 02 43 01      CDR      Oh ... 02:42.

00 02 43 06      LMP      We're coming up toward Hawaii. Have we got  
all the PREP checklists done?

00 02 43 31      CDR      What is that, Donn?

00 02 43 33      CMP      I don't know. It sounds like chow call.

00 02 43 47      CMP      A flight plan?

00 02 43 49      CDR      Yes, we should start window photography when  
we get more light here for it.

00 02 43 54      CMP      Well, that's a ...

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Day 1

62

00 02 43 58 CDR Yes.

00 02 43 59 CMP Yes.

00 02 44 00 CDR I tell you, that's a mistake. Let's not do that. Let's plot one on.

00 02 44 03 CC ARIA 3 ... ARIA contact. REMOTE S-band only. REMOTE - REMOTE S-band only if it is better.

00 02 44 17 LMP Alright, what the hell is it?

00 02 44 21 CDR ... cute.

00 02 44 24 LMP Check your straps. Are they all secured?

00 02 44 27 CDR Yes. Here comes the morning! Down go the floodlights!

00 02 44 40 CDR ... like you've seen it.

00 02 44 41 CMP Yes.

00 02 44 51 CDR No, you've got - it'll be - right over Houston.

00 02 45 02 CMP What was that?

00 02 45 04 CDR Whatever it was, it went into the fan. Don't put your hand in there, Donn.

00 02 45 10 CMP No, I'm not. I'm feeling.

00 02 45 14 CDR Yes.

00 02 45 16 CDR You can turn the fan off, turn it back on and see what - -

00 02 45 20 CC Apollo 7, Houston. How do you read now?

00 02 45 25 CDR Read you loud and clear. Well, slightly garbled. How me?

00 02 45 31 CMP I don't know what it was that - -

00 02 45 35 CDR Let's take a little - -

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Day 1

63

00 02 45 36 CC Apollo 7, Houston through ARIA 3. How do you read?

00 02 45 43 CDR I think it'll wait awhile.

00 02 45 50 CDR You guys - -

00 02 45 51 LMP Houston, Apollo 7. Do you read?

00 02 45 57 CC Apollo 7.

00 02 46 01 CMP Shoot, I should have got that map out of there.

00 02 46 17 CMP What are you taking a picture of, Walt?

00 02 46 19 LMP Not much.

00 02 46 21 LMP Yes.

00 02 46 26 CDR ... I don't know what to do.

00 02 46 30 CT ARIA 3, ARIA 3, ARIA contact REMOTE ... REMOTE VH - - Over.

00 02 46 52 LMP Well.

00 02 46 56 CMP 10 seconds?

00 02 46 57 CDR 10 minutes. No, no. Don't worry, Donn. Don't worry. We know where to look ... The count was bad.

00 02 47 08 CMP Okay.

00 02 47 09 CDR Okay.

00 02 47 22 CC Apollo 7, do you read through ARIA 3?

00 02 47 26 CMP Apollo 7, loud and clear. How me?

00 02 47 32 CC ...

00 02 47 37 CC ... through Hawaii whenever you're ready for it. We're not in any hurry, but whenever you're ready for it.

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Day 1

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00 02 47 43      CMP      What does he want?

00 02 47 45      CDR      Say again.

00 02 48 18      CDR      Yes. Remind me to ask what he's taking pictures of ... motion pictures of.

00 02 48 25      CDR      Look at that ... That's a good picture to take. Let's do that instead. Shoot right across my belly, Walt. That's what we really want. Right here? You're right with that ...

00 02 49 18      CDR      30 and what?

00 02 49 22      CMP      ...

00 02 49 24      CDR      I've got 32 A.

00 02 49 29      CMP      ... Am I bump - bumping you?

00 02 49 31      CDR      I guess I'm drifting ...

00 02 49 36      CDR      5 minutes - 02:49, Walt.

00 02 49 40      LMP      Okay, that's it. Okay. Let's take one more.

00 02 49 46      CDR      ... still take ...

00 02 49 51      LMP      Okay, I'm trying to - -

00 02 49 53      CDR      ...

00 02 49 54      LMP      - - get this fastened down so I won't be in your way. That - that optics is going to be a real problem to see anything in the daytime because there's a lot of light leak around it somewhere, and we will - -

00 02 50 12      CDR      We'll leave the slider out here, put it down behind Donn. The slider's up here ... Donn. It's not wound. Right?

00 02 50 24      LMP      What did you say, Wally? Do not wind it after each picture?

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Day 1

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00 02 50 27 CDR That way when you catch around the ... you would know where ...

00 02 50 29 LMP Yes, I see what you mean. Alright, then, from now on we will not do that.

00 02 50 35 CDR Now what? I don't know what made me think - 02:50 - We're pitching, Walt. You want to give us S-band antenna A?

00 02 50 49 LMP It's alright now.

00 02 50 50 CDR It is?

00 02 50 52 LMP Yes.

00 02 50 53 CDR Okay.

00 02 50 58 CDR We should be able to see the Hawaiian Islands pretty soon. Donn could take one, I bet. How does that look ... straight down in there?

00 02 51 08 CMP Yes.

00 02 51 09 CDR Yes, that's alright. There's ...

00 02 51 11 CMP I just see a blur, a mild blur if anything.

00 02 51 12 SC Got damn!

00 02 51 20 CDR Do you have the spotmeter, Walt?

00 02 51 24 LMP Yes, let me get the trash put away first.

00 02 51 25 CDR Okay, I ...

00 02 51 28 LMP Whoa! You see that? The controllers would let us die for something like this! One-finger push! Here you go. That's it.

00 02 51 42 CDR If you throw, you get a trajectory (laughter). What did you get for your spotmeter reading, Donn?

00 02 51 49 CMP There it is.

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Day 1

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00 02 51 54 CDR It probably is. That puts you back on infinity and goofs you up. I've done that a lot.

00 02 52 10 CMP Hey, we're 2 minutes out, Walt.

00 02 52 16 LMP Well, I got 13-1/2, 13-3/4.

00 02 52 22 CDR ... 125, f:11 ...

00 02 52 24 LMP That's the general overall basis - if you put it on a cloud, it went all the way up to 17.

00 02 52 29 CDR What you ought to do is average it.

00 02 52 34 LMP Okay. I would say it averaged out about a 14 or 15.

00 02 52 37 CDR We'll set about 125th at 11.

00 02 52 39 LMP Yes.

00 02 52 40 CDR Just a minute. Let me see if I am right. Look at your ...

00 02 52 46 CDR You can do 02:58.

00 02 52 50 LMP 125th at 11.

00 02 52 52 CDR Yes, there you go.

00 00 52 55 CMP It's getting brighter now. Wait a minute now. We'll have to do it again. Jesus!

00 02 53 01 CDR Okay, if it is getting brighter - -

00 02 53 02 LMP No, it isn't. No, it's still the same.

00 02 53 03 CMP It shouldn't vary very much - -

00 02 53 05 CDR It looks different when you take the spotmeter away from your eyeball.

00 02 53 07 CMP I'll take the spotmeter, Walt, and you get the camera, Wally.

00 02 53 09 CDR Okay.

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Day 1

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00 02 53 10      CMP      - - the ... and that jazz.

00 02 53 11      CMP      You want me to - -

00 02 53 12      CDR      I think you'd do well with that camera; Walt  
can run the movies.

00 02 53 14      CMP      Okay. You want me to take one of the ground  
here? There's nothing down there but clouds  
right now.

00 02 53 23      CMP      Well, if you're talking about - well, when  
we first started out, we could see it good.

00 02 53 29      CDR      Right.

00 02 53 30      CDR      Okay, we're 1 minute out, Walt.

00 02 53 33      LMP      I'll give you a mark in 1 minute and I'll  
reset my clock.

00 02 53 36      CMP      This lap belt works great, here - -

00 02 54 36      CDR      Yes.

00 02 54 38      CMP      - - it needs to be - -

00 03 22 40      LMP      If you are ready on the ground, we are going  
to start checking our main REG.

00 03 22 48      CC      Okay, Apollo 7, Houston. We're ready to copy.

00 03 22 54      CMP      You want me to go do that now?

00 03 22 56      CMP      Alright, what do you want me to do?

00 03 22 58      LMP      Main REG B valve closed.

00 03 23 02      CMP      Closed - going closed - now.

00 03 23 05      LMP      Emergency cabin pressure valve to 1.

00 03 23 07      CMP      Wait a minute, let me get some light down in  
here.

00 03 23 12      CMP      Emergency cabin pressure valve to 1.

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Day 1

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00 03 23 16 LMP Emergency cabin PUSH-TO-TEST pushbutton.

00 03 23 18 CMP PUSH.

00 03 23 20 CMP That brilliant ... and we picked up about a foot and a half per second in register 2. I guess you picked that up on your downlink. You might have somebody tell me whether they want to redo the state vector, or not.

00 03 23 35 CC Okay, good. Look, we're going to have you at Ascension in just a couple of minutes, and we'd like to get a PPO<sub>2</sub> reading.

00 03 23 43 CMP Okay, Walt.

00 03 23 44 LMP Okay.

00 03 23 45 CMP Stand by.

00 03 23 47 CMP No, no ...

00 03 23 48 CC Also, what was your closest point of approach, Wally, to the IVB?

00 03 23 53 CDR I'd say about 4 or 5 feet, Tom.

00 03 23 55 CC 4 or 5 feet.

00 03 23 58 CDR It's a pretty big one.

00 03 24 01 CDR We're a little worried to get in - about getting in there with that cocked panel. It's probably a good decision to drop those things off.

00 03 24 09 CC Roger.

00 03 24 10 CMP Yes, if you didn't have those fans - -

00 03 24 15 CMP Okay.

00 03 24 20 CDR No, just means the wire's hooked up (laughter).

00 03 24 28 CMP Okay, gang, I'm going to stow this first film down here in B-3, which is where the camera came from - -

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Day 1

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00 03 24 34 CDR We're done with that camera, aren't we? Why don't you put this slider in it?

00 03 24 39 CMP Are we done with the sequence camera?

00 03 24 41 CDR For now.

00 03 24 43 CDR It's targets of opportunity for now.

00 03 24 46 CDR We don't have any attitudes to worry about for quite awhile, do we?

00 03 24 49 CMP Well, I don't know - look on your flight plan. I don't think there's anything in particular we have to do for a while.

00 03 25 02 CDR Yes.

00 03 25 06 CDR Okay, flight plan, let's see - -

00 03 25 22 LMP Houston, Apollo 7.

00 03 25 29 CDR What's the slosh-damping test? (Laughter)

00 03 25 38 CDR I'm afraid that's one of them we aren't going to get much information.

00 03 25 41 LMP There wasn't enough slosh in any of them (laughter).

00 03 25 43 CMP I couldn't tell any.

00 03 25 44 CDR No.

00 03 25 45 CDR We'll give them a subjective report that we could detect no sloshing from the RCS burn.

00 03 25 50 CDR There wasn't any.

00 03 25 52 CDR Flight plan? You guys going to get to that big brute soon?

00 03 26 00 CMP Again? I stuck it to the wall - Oh, it's behind your head (laughter).

00 03 26 08 CMP You want to keep looking for that guy or not?

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Day 1

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00 03 26 10 LMP Who? That S-IVB?

00 03 26 12 CMP I don't know.

00 03 26 13 CMP Okay, I'll pulse over.

00 03 26 21 CMP I wonder how much fuel we used. How's the quantity look there, Walt?

00 03 26 27 LMP "It's 90, 80 - 90. Yes, it's around 95 or 96 - what we're supposed to have.

00 03 26 38 CMP I don't know what - well, it's kind of hard to tell. That meter doesn't mean much.

00 03 26 42 LMP No.

00 03 26 43 CMP Let's see - 3 or 4 percent. Yes. That's about right.

00 03 26 48 CMP 50, 60 pounds.

00 03 26 54 CMP Let's select HBR. You're LOW BIT now, aren't you, Walt?

00 03 27 05 CMP Okay.

00 03 27 11 CMP Yes, yes, I already called it out to you.

00 03 27 18 CMP Are we recording?

00 03 27 21 LMP Roger, we are now going to complete our post-SEP checklist ... it's most imperative that, in spite of the timeline we had, we are now going to finish it.

00 03 27 32 CMP Tape recorder. I verify that it is running, that we're in LOW BIT RATE, apparently.

00 03 27 39 LMP EDS power, OFF, verified.

00 03 27 40 CDR Verified.

00 03 27 41 LMP TVC SERVO POWER 1, OFF.

00 03 27 42 CDR That's verified.

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Day 1

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00 03 27 44 LMP Circuit breakers SECS ARM, both OPEN. SECS LOGIC, both OPEN.

00 03 27 48 CDR LOGIC and ARM, OPEN.

00 03 27 50 LMP Circuit breaker RCS LOGIC, both - okay - EDS, three, OPEN.

00 03 27 55 CDR What about that RCS 1 you were talking about?

00 03 27 57 LMP Okay, RCS LOGIC, both OPEN.

00 03 27 59 CDR RCS LOGIC, both OPEN.

00 03 28 01 CDR EDS, also?

00 03 28 03 LMP All three of them, OPEN.

00 03 28 04 CDR Okay.

00 03 28 05 LMP Command module RCS LOGIC, OFF.

00 03 28 08 CDR OFF.

00 03 28 09 LMP Now, Donn. We're going to open those two circuit breakers.

00 03 28 11 CMP Okay.

00 03 28 13 CMP What's it say for the pyros - -

00 03 28 14 LMP PYRO A, SEQUENCE A, first.

00 03 28 17 CMP Right. PYRO A, SEQUENCE A, first, coming OFF now.

00 03 28 21 LMP Verify PYRO B, SEQUENCE B, OFF.

00 03 28 23 CMP B, OFF now.

00 03 28 25 LMP Verified.

00 03 28 26 CMP Okay. Pyros are fully disarmed.

00 04 59 30 SC Yes, yes, I get it ...

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00 04 59 37 CDR Well, we'll have to go up to 270. Is that going to pulse you too much?

00 04 59 47 CMP Will you pull the handle again? Oh, you're working right there.

00 04 59 57 CMP Glycol radiator secondary - -

00 05 00 00 LMP To NORMAL.

00 05 00 02 CMP - - to NORMAL.

00 05 00 04 CMP Okay, it's NORMAL, Walt. Anything else down under here? No, I guess not. Okay. Huh?

00 05 00 20 CMP We can put it back to BYPASS? Oh, I see. Okay, well, okay, it passes the test. See what it does, Walt? Watch. If I put it in AUTO - but if I do it this way, then in AUTO, it's alright. See the deal? You move the switch around STANDBY.

00 05 01 15 CMP Look at that. Boy!

00 05 01 50 CMP Where is it? Oh, right here.

00 05 02 01 CMP Very good.

00 05 02 05 CDR I have an idea that those damn things are winding us up in yaw. You know it?

00 05 02 15 CMP What's that, Wally?

00 05 02 16 CDR The evaporators. They completely move in yaw.

00 05 02 24 CMP Well, they probably are a little bit then.

00 05 02 31 CMP Yes. I picked it out once.

00 05 02 50 CMP Boy, this window is getting smudgy. Look at this one.

00 05 02 56 CDR Yes, look at the moisture on it.

00 05 02 58 CMP And it was so good, too. That's gone to pot fast.

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00 05 03 04      CMP      Now's the time to take a picture of something like that. That's what we're looking for.

00 05 03 11      CDR      Yes, want to give me the - oh - -

00 05 03 20      CDR      Yes.

00 05 03 37      CDR      You what?

00 05 04 08      CMP      Something's gone wrong here.

00 05 04 09      CDR      Yes.

00 05 04 14      CMP      No.

00 05 04 28      CDR      See those lines on it? Can you see it? Way down on the bottom, it's almost terrible. It's bubbly.

00 05 04 40      CDR      Moisture - -

00 05 04 50      CDR      We have the - you're recording that? Okay, that's frame 52 and 53 of the centerline window - of the hatch window, that is - at 5 hours 5 minutes on magazine M as in Mike. The center window is picking up quite a bit of visible moisture, and it looks like on the outer pane - the inner surface of the outer pane.

00 05 05 42      LMP      Okay, we've closed the secondary glycol loop, now ... it's flowing the radiator. Secondary radiator inlet temperature is reading about 72. Secondary radiator outlet temperature is reading 60. I verify that the heaters did come on when I turned the secondary heaters on, and I'm judging now with the high radiator outlet temperature, I turned the - cycled the secondary heaters ON and OFF and had no change of current, so apparently it came ON and was immediately shut OFF by the LOGIC in the secondary radiator loop. When I turned the secondary coolant loop pump to AC 1, in the EVAP mode, the glycol evaporator outlet temperature came down, overshoot the control range, went down to about 35, the steam

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pressure went down to less than 0.1 and came back up in about 50 seconds and stabilized out. The glycol evaporator outlet temperature is about 40 and about 0.12 on the steam pressure.

00 05 07 11 CDR How long do you have to watch that beauty, Donn?

00 05 07 16 CMP I'm done for now. Do you want it back?

00 05 07 21 CDR No, no! Just curious.

00 05 07 27 CMP Can't understand that.

00 05 07 29 CDR Yes.

00 05 07 41 CMP You know that temperature really goes up.

00 05 07 46 LMP We'll have to do a tenth of a degree per second from zero.

00 05 07 50 CDR Is that right?

00 05 07 51 CMP Yes.

00 05 07 52 CC Apollo 7, Houston through Ascension. Standing by.

00 05 07 57 CDR Roger. We're noticing a little bit of fogging on the hatch window.

00 05 08 06 CC Roger. Copied.

00 05 08 07 CDR And we've taken a couple of pictures of it.

00 05 08 12 CMP What about the other windows?

00 05 08 13 CDR The other windows are apparently alright.

00 05 08 15 CMP The hatch is the only one that's - -

00 05 08 17 CDR Yes, they said they - -

00 05 08 19 CC ...

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Day 1

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00 05 08 22 LMP We've closed the secondary radiators, and the temperature came down right smartly. We've turned on the secondary coolant loop pump and EVAP, and the glycol EVAP outlet temperature came right on down, overshot to about 35, and seems to be controlling around 40, and the steam pressure is 0.12.

00 05 08 44 CC That sounds real good, Walt.

00 05 08 50 CDR The fogging on the center hatch window is on the inner surface of the outer pane. It looks like a condensation.

00 05 09 12 CMP Yes. Yes.

00 05 09 22 LMP Hey, Jack, I have one anomalous thing here. When we flowed the secondary loop, the primary RAD OUT temperature is sitting about, well, call it 55, make it 65, and the glycol EVAP outlet temperature climbed right on up to about 58 - something like that. Makes you wonder about the mixing valve working.

00 05 09 49 CC Roger.

00 05 09 52 CDR We're coming up on a night pass, Donn - That's a P52 IMU realign.

00 05 09 59 CMP Okay. Walt, I don't know which one it is off-hand. Is it on the coolant panel? Is that the one you're talking about?

00 05 10 06 CMP Well, I don't - there isn't any labeled mixing valve. Which - what would it be?

00 05 10 11 LMP ...

00 05 10 12 CMP Gly - primary glycol EVAP TEMP IN?

00 05 10 14 LMP ...

00 05 10 19 CMP Well, there isn't anything, it just says - -

00 05 13 08 CC Apollo 7, Houston. About 40 seconds LOS Ascension; we'll pick you up in about 18 minutes over Carnarvon.

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Day 1

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00 05 13 20 CDR Roger.

00 05 13 25 CMP Well, there come some stars.

00 05 13 27 CDR Well, will you do the stars ...

00 05 13 30 CMP Hey!

00 05 13 32 CDR Come on, come - are you moving?

00 05 13 33 LMP A little bit.

00 05 13 35 CMP I'm going to have to get dark adapted here.

00 05 13 42 LMP What about the ...?

00 05 13 43 CDR I did that.

00 05 13 45 LMP You did?

00 05 13 47 CMP Man, I sure - I've been looking at a bright light too long. I'm having a hell of a time adjusting - -

00 05 13 50 LMP Better watch it, better watch it!

00 05 13 59 CMP Wally, I'm going to do something which will torque your ball around. We're going to do a coarse align this time. Okay?

00 05 14 03 CDR You are?

00 05 14 04 CMP Yes, sir, that's - -

00 05 14 05 LMP You have the ORDEAL there.

00 05 14 06 CMP Yes.

00 05 14 07 CDR Yes.

00 05 14 08 LMP Go ahead.

00 05 14 09 CMP Okay. Now, that's what you're going to read when we do it. It should be in plane, but it's going to be a different pitch angle. Are you ready?

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00 05 14 16 CDR Yes, I had no idea we were - -

00 05 14 23 CMP ... GDC is still good where it was.

00 05 14 26 LMP Yes.

00 05 14 27 CDR ...

00 05 14 28 CMP Keep that little devil going.

00 05 14 29 CDR Okay.

00 05 14 33 CMP It's going right toward the belly now. It's still 90 degrees.

00 05 14 47 CMP You bastard, you would! Look at it.

00 05 14 53 CDR Okay, let's see.

00 05 14 54 CMP Well, I'm going to have to go hunt.

00 05 14 56 CDR Are we recording, Walt?

00 05 15 00 CDR Okay, Schirra had 20 clicks of water, 20 clicks of water from the water gun at 5 hours and 10 minutes.

00 05 15 13 CMP You didn't!

00 05 15 17 LMP Oh, crap! Now we can spend the next 263 hours cleaning all that stuff up.

00 05 15 48 CMP And we didn't even come close.

00 05 15 53 CDR What do you mean? Was it faking or what?

00 05 16 08 CMP Yes. It's getting worse.

00 05 16 23 CMP ... Boy, we are really moving around, aren't we?

00 05 16 27 CDR Yes. 10 degrees a second in pitch.

00 05 16 30 CMP Is that all? Boy!

00 05 16 36 LMP ... far behind ... take that in a basket. We'll pick it up, drop it ...

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Day 1

78

00 05 16 53 LMP Okay, Alpheratz. What the hell is the other one? Mirfak over there, there you are.

00 05 17 09 CMP Whoops, can't make that one.

00 05 17 11 CDR ... stop your rate.

00 05 17 13 CMP Never mind, I see what happened. Okay.

00 05 17 18 CMP I better ...

00 05 17 49 CDR Let's take a night and let's not freak around with this off-nominal.

00 05 18 01 CDR The nominal is doing fine.

00 05 18 11 CMP A quarter of that?

00 05 18 26 CDR If you want to record those, go ahead.

00 05 18 30 CMP Ha! We missed that. That ain't bad considering how screwed up I was to start with. That thing wasn't anywhere near the right - well, of course, we did get a coarse align, that's why. That's why it wasn't in the sextant. Okay, here are your angles. Jesus! Look at that! Oh, that's right! That was the coarse align. Okay, are you ready?

00 05 18 54 CDR Yes.

00 05 18 55 CMP Well, good. We're going to torque about 2-1/2 degrees in yaw now. You always get a big one the first time through on account of the thing, of the coarse align type thing. Okay, I'm going to do it again, alright?

00 05 19 14 CDR You going to do the whole thing again?

00 05 19 16 CMP Well, just the fine align part. It will only take a second - It will only take a second, Walt.

00 05 19 21 LMP Just don't get enamored with each roll we're doing. We're behind, right?

00 05 19 25 CMP Wait a minute.

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Day 1

79

00 05 19 33 CDR We haven't done our P30 DELTA-V yet.

00 05 19 39 CMP Huh?

00 05 19 40 CMP Yes, we're not really ahead. We are ...

00 05 20 12 CMP We do?

00 05 20 15 CDR Use a ... It made my whole day. Seriously, we should get - -

00 05 20 26 CMP How about these heaters? They're getting up there.

00 05 20 32 CDR That's alright.

00 05 20 59 CMP (Laughter)

00 05 21 03 LMP Be quiet, 00000.

00 05 21 10 CDR Look at those numbers. Record those.

00 05 21 13 CMP Okay. Alright, the first batch was probably more significant, but I think they are on there long enough to get on them. But they were only the coarse align numbers, so it doesn't matter. These are 00000, 00012, 00001, coming up. And getting back ...

00 05 21 34 CDR Okay, should I GDC align with it?

00 05 21 40 CMP Yes, Wally, you can align with that, that's a good alignment now. ... settled. That's your 6-4 deorbit REFSMMAT 180, 180 zero roll, minus ... if we have to.

00 05 21 55 CMP Okay, Walt, what have you got next on your list there?

00 05 21 59 LMP Glycol to RADIATOR, secondary to BYPASS.

00 05 22 03 CMP Okay, glycol secondary - glycol to RADIATOR, secondary to BYPASS, right?

00 05 22 26 LMP Roger.

00 05 22 27 CMP You are now bypassed on that little item.

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Day 1

80

00 05 22 29 LMP Good, may not have to move it again.

00 05 22 32 CMP Okay, back to your mixing valve problem. I was wondering about that. This thing seems to be - The primary GLYCOL EVAP INLET TEMP valve is sitting on MIN. It hasn't moved off of there and I don't know - -

00 05 22 48 LMP I think that's called MIN heat. That's okay. That is where it belongs.

00 05 22 52 CMP That means MIN heat?

00 05 22 54 LMP Yes.

00 05 22 55 CMP What's that mean?

00 05 22 56 LMP It means it is mixing MIN, which is where you want it.

00 05 22 59 CMP Okay, that is where it is.

00 05 23 04 CMP Okeedokee. ... secondary glycol. You know, we are going to use up a bunch of RCS fuel if we have to keep taking out these damn rates all the time.

00 05 23 19 LMP I know.

00 05 23 20 CMP We're not going to have as much as we thought, maybe, for certain items. It hasn't really changed, however.

00 05 23 31 CMP Walt, did you say you had sticky fingers? Oh, you did get one? I was going to say you could get a Kleenex and I'll wet it for you. You can do that. I did that.

00 05 23 47 CMP Oh, sob, where did the tape go?

00 05 23 54 CMP Huh? We're going to need it? Okay, we'd better start looking for it. Had it taped to the wall, and it is not there anymore. It'll show up somewhere. The way everything goes up, I expect to find it on the ceiling somewhere. I don't see it up there.

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Day 1

81

00 05 25 04      CMP      Evaporator.

00 05 25 07      CMP      You want to turn that to OFF? Okay?

00 05 25 43      CC      Houston through Tananarive.

00 05 25 46      CDR      Loud and clear.

00 05 25 48      CDR      The CMS DELTA-V test is GO. We have prepared  
the P52 IMU realignment.

00 05 26 01      LMP      Houston, Apollo 7.

00 05 26 22      LMP      Did we do P30 yet, external DELTA-V?

00 05 26 31      CMP      I'm still maneuvering around here. Here I am.  
Okay. I'll get my belt down here. That  
ought to hold it. Okay. 59 and 43, very  
good. Minus 3924, 00000, 3953. Pretty good  
size burn.

00 05 27 29      CMP      497 is your counter.

00 05 27 31      CDR      497 is ...

00 05 27 46      CDR      Yes. When did that occur? Okay.

00 05 27 59      CDR      490 what? ...

00 05 28 01      CMP      497.

00 05 28 16      CDR      Okay, got 497.

00 05 28 19      CMP      Why is this thing taking so long to compute  
for us?

00 05 28 29      CMP      There she goes. 15, 153, and 33.1. That's  
pretty close.

00 05 28 41      CDR      With all the number exercise, right?

00 05 28 44      CMP      Huh?

00 05 28 45      CDR      With all the number exercise?

00 05 28 48      CMP      Number exercise, what do you mean? ...

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Day 1

82

00 05 28 50      CMP      Yes, this is what you targeted for if you did the burn.

00 05 29 00      CMP      Yes. ... did it again. That is just about an hour and a half from now, I guess.

00 05 29 25      CMP      How soon are we supposed to do the retro check?

00 05 29 37      CMP      Okay. It's the latest ...

00 05 29 49      CDR      Yes, you want to cycle through for GO/NO-GO.

00 05 30 01      CMP      Theoretically, we are ready for a ... look at those angles come up there.

00 05 30 11      CDR      I see.

00 05 30 16      CMP      3-1/2 hours from now. We can go up through the ... region.

00 05 30 28      CMP      Yes, that's all I'm going to do. No, oh, no.

00 05 30 43      CMP      Listen, how far do you want to go with P40? To the gimbal checks?

00 05 30 51      CMP      The gimbal checks? Don't we turn it OFF then?

00 05 30 58      CDR      Yes.

00 05 30 59      CMP      Okay, that verifies that P40 is GO for the burn. That's the way we will have to do it.

00 05 31 08      LMP      Now, ... if we really do have to do this, we've got to remember to reload the right numbers in P30 because they got those data out again.

00 05 31 16      CMP      Okay, check the DAP ...

00 05 31 23      LMP      Guess they did.

00 05 31 24      CMP      Yes.

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Day 1

83

00 05 31 33      CMP      3246. That's very good. I got - what'd I get here - I got 86 and 30, I got 81 and 33 ... up, right after lift-off.

00 05 31 57      CMP      I know, I just wondered what these numbers are. I obviously didn't know what they mean.

00 05 32 04      CMP      Well, why would they change after lift-off? We haven't burned that much fuel.

00 05 32 08      CMP      Well, I'll go ahead and load them in, anyway. ... 2, 4 ... yes ... 00024.

00 05 32 31      CMP      That realignment worked out very nicely. I got, I got the damn stupid alarm just like you always do on this freaking pick-a-pair. I went ahead and looked in there and just happened to look out, and the first thing I saw was the square of Pegasus, so I grabbed Alpheratz right off the bat and got that one, and then I tried to get Mirfak but he was out of the field of view, so on the way after Mirfak, I found Navi, so I used it instead.

x

00 05 32 58      SC      (Laughter).

00 05 33 02      CMP      And it worked out. And the first time I went through, we got about a half a degree on the first two registers, and 2-1/2 on the third one.

00 05 33 13      CDR      On the ...

00 05 33 15      CMP      On the gyro torquing, but that was because we were just on a coarse align. We expected to be a couple of degrees off. But I was a bit surprised at 2-1/2. I thought that was kind of big. So, but the second line came up and it nearly was zero. One of them was 12 000 something ... I could verify it, and we got a 180, 180 zero on the DEKY for the preferred attitude for the burn in P40. Yes, P40. So I would say that we're in very good shape. I reloaded the DAP for G&C control and four-jet ullage, and MIN DEADBAND half degree rate if you need it.

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Day 1

84

00 05 34 20 SC Only way to be, isn't it?

00 05 34 22 CMP I was sweating that alignment a little bit. I looked out there and I didn't see a God-damned thing for about 30 seconds. You have to get dark adapted or you don't see any stars, and they finally came in. And then after, you know, a couple of minutes, they were loud and clear.

00 05 34 37 LMP Yes, how about that?

00 05 34 38 CMP It almost lost my attitude, I might as well stay there.

00 05 34 43 CMP Are we recording?

00 05 34 46 CMP I hope. Since I've been saying all this, I hope it gets on the tape (laughter).

00 05 34 54 CMP The PIPA BIAS is all within limits, too. I wrote it down in the two log books. I don't remember exactly what they were.

00 05 35 02 LMP Did you log it?

00 05 35 03 CMP I wrote it, I didn't say it. ...

00 05 35 12 CMP Huh?

00 05 35 13 CDR I'm almost in attitude, I'm going to go for it.

00 05 35 19 CDR ... yaw particularly, lots of yaw.

00 05 35 29 CDR Hey, we're not using any fuel. We got more now than we had awhile ago (laughter). We are slightly ... (laughter).

00 05 35 41 CDR God bless, is that a sight there?

00 05 35 45 LMP Okay, I'll go look for it.

00 05 35 49 CDR Okay, you haven't been down there yet, anyway. Have a ball.

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Day 1

85

00 05 35 55      CMP      I think the only thing that is loose down there is the crazy urine hose. I didn't get a chance to - -

00 05 36 00      CDR      Did you flush that hose?

00 05 36 01      CMP      Huh?

00 05 36 03      CDR      Did you flush it?

00 05 36 04      CMP      Flush it?

00 05 36 05      CDR      With air.

00 05 36 06      CMP      No, I didn't. I never could get anything to go in it that I know of.

00 05 36 14      CMP      Okay. Well, hold it.

00 05 36 20      CMP      Are we purging through the urine hose? ... that elbow ... Well, what's on there? Something is on anyway. No? Okay, the dump is on and the - -

00 05 36 30      SC      ...

00 05 36 40      CMP      Oh, wait. Yes, okay, I get you. That's one. Well, here, let me give you the dingdang to that. Use the elbow and everything will be alright. Hell, I put it back in there for - ... There you go ... How do you purge this little - put it - oh, put the elbow on the end of it. Yes. Why don't you go ahead and do that? I have 1.7 volts which is what it was awhile ago, a good long while ago. Yes.

00 05 38 01      CMP      Okay. Have at it.

00 05 38 04      CMP      Okay, she is going down. Down to 0.6. Still going. It stopped at 0.6.

00 05 38 47      CC      Apollo 7, Houston through Carnarvon.

00 05 38 51      CDR      Roger, loud and clear.

00 05 38 53      CC      Roger, loud and clear. 7, when you went over the hill we found your secondary coolant loop

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Day 1

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was working satisfactory and everything looked good on the primary loop also.

00 05 39 09 CDR Roger, we concur.

00 05 39 10 CC Okay.

00 05 39 12 LMP Roger, we've isolated our secondary radiator again. We should not have to flow it again for the rest of the flight. The ECS redundant component test was completed satisfactorily. I still feel like there's some slightly anomalous behavior there on the mixing valve, possibly on the primary loop. The GLYCOL EVAP OUTLET temperature was running at 58 degrees when I turned off the evaporator.

00 05 39 41 CC Roger. Copy, Walt. John Aron is shaking his head.

00 05 39 50 LMP We did check the GLYCOL EVAP TEMP IN valve on the cooling control panel, and it was at MIN heat, so not much more could be done there.

00 05 40 20 SC Okay.

00 05 40 23 LMP What's that?

00 05 40 27 CMP Oh, did it? How did you dump it before?

00 05 40 35 CMP Oh, I see. You got a partial hookup.

00 05 40 39 CMP I never got even a decent partial, I don't think. I might have got a little out of it. I don't know.

00 05 40 43 CMP Huh? Is it really pulling it out? You can feel it gurgle.

00 05 40 58 CC Apollo 7, Houston.

00 05 40 59 CDR Go ahead.

00 05 41 01 CC Walt, we just want to talk over on that primary loop. Was the primary loop running

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Day 1

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when you read the 58 degrees? Was it in operation when you read an EVAP OUT of 58 degrees?

00 05 41 14 LMP When I first read it, it was not pumping, but then there was a 58, so I turned the evaporator on. There wasn't a great deal of time there between when I turned the pumps back on, on the primary loop, and went to EVAP, so maybe it didn't get a chance to settle down.

00 05 41 34 CC That might be. Okay.

00 05 41 36 CMP My turn to watch sunrise. Rah!

00 05 41 39 CC Your primary loop is working okay now, Walt?

00 05 41 40 CDR Right.

00 05 57 00 LMP Put this update list here somewhere, would you? I don't have a place for it right now.

00 05 57 06 CMP Yes.

00 05 57 17 CDR Use bottom line of window, what's he talking about?

00 05 57 26 CMP Well, the line is a certain thickness and somebody said just to - -

00 05 57 30 CDR Oh, I see.

00 05 57 34 CMP - - just one side or the other, it doesn't - use the bottom side - it doesn't make any difference.

00 05 57 36 LMP Where's the tape?

00 05 57 37 CMP I don't know, Walt, I was looking for it a while ago ... plenty of floods on that one.

00 05 58 14 CMP Yes. I'll have to get some in a minute.

00 05 58 16 CMP Where's your garbage?

00 05 58 27 CDR What are you doing?

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Day 1

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00 05 58 30      CMP      Who, me?

00 05 58 31      CDR      Yes.

00 05 58 32      CMP      Looking for the tape. You knocked me off my  
seat before.

00 05 58 38      LMP      I did what?

00 05 58 40      CMP      Knocked me off my seat.

00 05 58 42      LMP      How did I do that?

00 05 58 44      CMP      You pushed my leg down, backed me up to the  
wall.

00 05 58 46      LMP      Oh, I did? Your feet react nicely, it's just  
... floating there.

00 05 58 56      CMP      Wally? What? ...

00 05 59 42      CDR      You guys are going to have to, about the  
next 10 minutes, settle down so I can get  
this ATTITUDE. It's a precise test, we're  
carying down to a degree.

00 05 59 57      LMP      Okay, you want to get my feet ready? No.

00 06 00 07      LMP      Did you ever find the tape?

00 06 00 10      LMP      Well, it's a mystery to me. I don't know.  
The last I saw of it, it was stuck to the  
front wall here. The next time I looked for  
it, it was gone.

00 06 00 19      LMP      What's this LOW/HIGH? What's that for?

00 06 00 22      CMP      I haven't any idea what this is for. Are  
we - well, let's see, we're venting, but  
that shouldn't ... accumulator ...?

00 06 01 36      CDR      Walt, you going underneath there again? I'm  
dead serious, I've got to pass here! I don't  
know what you are up to, but I've got a pass  
here, a control pass.

00 06 01 45      LMP      Wally, I can't help it. I'm just -

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Day 1

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00 06 01 49 CDR Well, I said it and I meant it.

00 06 01 51 LMP Jesus!

00 06 01 54 CDR I ask you to -

00 06 01 55 LMP Would you lock your seat down? That's what is doing it. Can I lock your feet down in the - -

00 06 01 58 CDR Yes, I've got about 5 minutes to get into a fixed attitude, and you're freaking around down there like you - -

00 06 02 04 LMP I'm not freaking around down here! I just drifted into it. I couldn't help it. That's why I asked you - -

00 06 02 07 CDR Now I lost the damn attitude. Aggravating! And shit! It's your trouble I can't get anything done right.

00 06 02 17 LMP I appreciate that. I'm - -

00 06 02 18 CDR Okay - knock it!

00 06 02 28 CDR ... kicking you when you're doing your IMU.

00 06 02 56 LMP What did you say? You've still got a light?

00 06 03 52 CC Apollo 7, Houston through Hawaii.

00 06 03 55 CDR Roger.

00 06 03 57 CC Wally, we'd like to have you do a PO - PPO<sub>2</sub> check whenever you get a chance, the reason for this being that the second one was a little shaky.

00 06 04 11 CDR Do a what?

00 06 24 34 CMP Ooo, wow, wow, wow, look at that one line. Look at that DELTA there.

00 06 24 44 LMP 6 hours and 24 minutes into the flight; I took frames 55 and 56 on magazine M looking at several islands in the ocean.

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Day 1

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00 06 24 58 CC Roger, copy.

00 06 25 06 LMP Yes, okay. Will you give me a NAV program, Donn? It's in the checklist log. We got a lot of shit spread out here.

00 06 25 54 CMP Yes.

00 06 26 03 CC Apollo 7, Houston.

00 06 26 05 LMP Go ahead.

00 06 26 06 CC Roger. On the O<sub>2</sub> flow problem, we've looked it over pretty well. We can't see anything that would cause high O<sub>2</sub> flow: surge tanks holding well, cabin is not increasing. So we kind of have a feeling it's probably a detector failure.

00 06 26 22 CDR Roger.

00 06 26 23 CC And we have some corrections on that manual retro attitude, the one you are going to do at 06 plus 50.

00 06 26 31 CDR Alright, go ahead.

00 06 26 33 CC Okay. It's the pitch attitude. The pitch attitude should be 339. Yaw attitude should be 000.5.

00 06 26 50 CDR You are pretty sure of roll by now, huh?

00 06 27 00 CDR What do you calculate for that first one?

00 06 27 18 LMP Donn, what are you up to?

00 06 27 19 CMP Me?

00 06 27 20 CDR Yes.

00 06 27 21 CMP Oh, I'm down here in the corner. Why? What you need?

00 06 27 23 LMP You want to put this up?

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Day 1

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00 06 27 26      CMP      Yes. Where are the helmets? Where are the helmets? Oh, I see. You just put it in a temporary bag.

00 06 28 03      CMP      Hey, Walt, here is ... attitude ... if you want to leave it.

00 06 28 12      LMP      Yes, I do.

00 06 28 13      CMP      Huh?

00 06 28 14      CMP      No, I had it on the wall, I just thought I'd give it to you in case you wanted it. So what - you want to keep it down here? Yes, you'll need that.

00 06 28 23      CC      Houston, Apollo 7. We want to go ahead and purge, right now.

00 06 28 30      CMP      I'm still trying to locate that stupid tape.

00 06 28 34      LMP      Really?

00 06 28 35      CMP      I don't know where in the hell that got to.

00 06 28 40      CDR      ... I guess it - -

00 06 28 45      CMP      Well, I had it on the wall, Wally, and it just got - -

00 06 28 48      CDR      - - Got knocked off?

00 06 28 49      CMP      Well, I don't know. Apparently sticking things to the wall isn't all it's cracked up to be, because as soon as you bump - No, I thought that tape, you know, and as sticky as it was, and I had a pretty good chunk of it pasted on there. It got loose somehow and -

00 06 29 06      CDR      Oh, oh, oh, oh (moan).

00 06 29 54      CMP      Are you flying?

00 06 29 57      CDR      Yes. I got a piece of shit ... right in it.

00 06 30 05      CMP      Where are you going now? Do you need ...

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Day 1

92

00 06 30 11 SC ...

00 06 30 18 CMP Not yet, Walt, I'm looking for tape yet.

00 06 30 22 CMP Oh, I am going to be grabbing hold of a couch now.

00 06 30 24 CDR Let's put the couch down.

00 06 30 28 LMP Well, I was thinking, when we get close to your attitude - you kind of snuck it in - why, I'll have to be quiet. Or if you want, I'll be quiet right now, but - -

00 06 30 43 CDR No, I'm opening -

00 06 30 50 LMP What I was doing before, apparently, was bumping into your seat pan - -

00 06 30 53 CDR Yes.

00 06 30 54 LMP - - which in turn was bending your legs around ... then move up. It's screwing you up. It's locked on there, it shouldn't be doing that.

00 06 31 05 CMP Walt, I'll see if I can get - get at it ... photography ...

00 06 31 46 CMP Okay, let's see if I can get you a 121 magazine here.

00 06 32 11 CMP Here is a 121.

00 06 32 24 CMP There's the tape. All the time ... and there it's hanging underneath your helmet - -

00 06 32 30 CDR Walt, I put it - -

00 06 32 33 CMP - - just sitting there, staring at me (laughter).

00 06 32 39 LMP Can you reach it, or do you want me to go get it? I'll have to put the seat down if I go.

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Day 1

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00 06 32 46      CMP      I think if you just roll over to your right side. Can you see it?

00 06 32 50      LMP      Uh-huh.

00 06 33 07      CDR      Hey, did you get that tape, Walt? You got it now?

00 06 33 14      LMP      Yes. No, it's on this side. You'd better grab it.

00 06 33 20      CMP      I'd like to. Where is it?

00 06 35 40      CDR      No, it isn't. Just goes on a complete tour of the spacecraft. Oh, you are going to use it.

00 06 36 10      ?      (Sneeze).

00 06 36 28      CMP      Okay. (Laughter) Stay away from Wally's couch. Man, if I let go of anything, I'll just float right over there into it. I don't know what the hell it is.

00 06 36 48      CDR      Maybe you're just too lazy ...

00 06 37 19      CMP      Say, Walt, what are you doing, just floating around?

00 06 37 51      CMP      Yes. Last night. Yes ...

00 06 38 10      CDR      You can really hear those thrusters, can't you?

00 06 39 11      CMP      What's that? Oh, he asked you if you got your preselected food. Makes pretty good ... soup. ...

00 06 42 58      CMP      Yes, I've got it, Walt.

00 06 42 59      CDR      You do?

00 06 43 07      CMP      Yes, I'll watch it like a hawk from now on.

00 06 43 10      CDR      Okay. ... I do too. ... I got here 23 - 33.58 ...

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Day 1

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00 06 43 38 CMP You need the DSKY on that now, Wally?

00 06 43 45 CDR Yes, I guess so. The number won't be much longer.

00 06 43 47 CMP Okay.

00 06 43 49 CDR How soon do you need it?

00 06 43 51 CDR I don't particularly - I just haven't checked a computer problem which we're using in a few more seconds.

00 06 43 59 CMP Yes, alright.

00 06 44 02 CMP Move over that way a little.

00 06 44 20 CC Apollo 7, Houston through Ascension.

00 06 44 34 CC Apollo 7, Houston.

00 06 44 37 CDR Go ahead, Houston.

00 06 44 39 CC Roger. Wally, we're still showing a good cabin and everything seems to be holding fine in the ECS there.

00 06 44 46 CDR We concur.

00 06 44 51 CC About 1 minute LOS Ascension; we'll pick you up at Tananarive.

00 06 44 56 CDR Roger.

00 06 45 07 CDR ...

00 06 45 08 CMP Yes.

00 06 45 24 CDR ... 9, 9, 9, ...

00 06 45 41 LMP What?

00 06 45 44 CMP ...

00 06 45 45 LMP Why, what are you getting?

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00 06 50 39 LMP Yes, I think the computer is a little bit off. Somehow it had the wrong attitude in there.

00 06 51 55 LMP Houston, Apollo 7.

00 06 52 06 LMP You want the ... report, Walt?

00 06 52 20 CDR Okay, on the manual retro attitude check for night. Roll, 186329; yaw, 0; pitch out at 504 ...

00 08 02 33 CMP ... I wish to hell I could ... the next SM RCS.

00 08 02 35 CMP Hey, listen, I want to tell you ... 076 ... you know ... Wally ...

00 08 02 43 CDR About all there is to do is power up ...

00 08 04 33 CMP This may go away ...

00 08 05 42 LMP Hey, it might not be that lock on ...

00 08 09 09 CDR Well, I'll tell you what I ended up doing is laying the neck ring ... folded, then purge, and then just holding the right wing ... after purge in about 6 or 8 seconds.

00 08 09 54 CDR - - How's the cabin pressure?

00 08 10 02 CDR ... 25 squirts of water at 8 hours, 10 minutes ...

00 08 12 42 CDR ... 12 minutes, 46 seconds - 8 hours ... we got about six or eight things ... minutes until ...

00 08 14 40 CMP Wally.

00 08 14 53 CMP (Laughter)

00 08 21 42 LMP Hey, Wally ... the simulator must be in roll.

00 08 26 12 CDR Walt, when you put the flight plan over there ...

00 08 29 47 LMP Yes, Wally.

00 08 29 57 CDR What did you say, Walt? ... Okay, that was really what I was worried about. I was getting a flashlight out of there.

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00 08 30 18      CMP      Doo Doo Doo Dee, Doo Dee Dee.

00 08 30 34      CDR      Is that you talking, Walt?

00 08 31 53      LMP      Wally.

00 08 32 03      CDR      Yes, I think I will too. I could use it.

00 08 32 28      CMP      (Laughter)

00 08 32 45      CMP      Hey, Wally, I think I see the piece of tape  
you attached to the wall up there.

00 08 33 22      CC      Apollo 7, Houston through Tananarive.

00 08 33 28      LMP      Roger, Houston. Go ahead.

00 08 33 30      CC      Roger, we are just standing by here. One item  
of interest, the hydrogen and oxygen purity is  
lots higher than predicted. It looks like the  
next purge that will be required will be some-  
time after 40 hours.

00 08 33 43      CMP      Boy!

00 08 33 44      LMP      Roger, we'll stand by for your update, and since  
confession is good for the soul, one of those  
hydrogen purges ran a little better than  
3 minutes last time.

00 08 33 54      CC      No problem.

00 08 34 24      LMP      I'll just put it right here for the time being  
and ...

00 08 34 46      LMP      ... Okay.

00 08 35 13      LMP      This is the LMP. I want to log 20 squirts on  
the water gun at 8 minutes - 8 hours and  
35 minutes into the flight.

00 08 35 31      CC      Apollo 7, Houston. Roger, we copy.

00 08 35 36      CMP      ... (laughter)

00 08 35 38      LMP      We are using you for real-time logging.

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Remember we have the DSE out of commission temporarily.

00 08 35 43 CDR - - This is really pretty nifty when you get out of these crazy suits.

00 08 35 46 CC Okay.

00 08 36 49 CMP No, I didn't, because at the time you weren't hooked up.

00 08 36 53 CDR ... yes ...

00 08 37 08 CDR Did you do it?

00 08 37 13 LMP I'll tell you what, I'm just trying to hold you a place to the wall ...

00 08 37 57 CDR ... you got velocity?

00 08 37 58 LMP Yes.

00 08 38 00 CDR Okay, let's get those ...

00 08 38 36 LMP Yes, I guess so.

00 08 38 49 LMP Houston, this is Apollo 7. Do you have the good team on yet?

00 08 38 55 CC Apollo 7, Houston. Say again.

00 08 38 58 LMP Sounds like you've got the good team working there.

00 08 39 00 CMP ...

00 08 39 02 CC Yes, that's affirmed.

00 08 39 03 CMP What?

00 08 39 08 LMP I hope you had a nice trip back to Houston.

00 08 39 13 CC We had a beautiful trip. I tried to contact you, but no go.

00 08 39 21 LMP Understand.

00 08 39 40 CDR (Laughter)

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00 08 39 45 CC Apollo 7, Houston. We have 1 minute LOS Tananarive.

00 08 39 53 LMP Roger.

00 08 39 54 CMP Roger.

00 08 40 04 CMP Put this in your pocket if you want it. You don't want it? Okay.

00 08 40 33 LMP Yes, Wally.

00 08 40 34 CMP Hey, Walt.

00 08 40 40 LMP What's that?

00 08 40 48 CDR ... over there.

00 08 40 53 CMP I'll get those things out, Wally.

00 08 40 57 CMP Huh?

00 08 41 02 CMP Yes, I will.

00 08 41 25 CMP Really?

00 08 41 28 CMP It isn't here. That's odd.

00 08 41 35 CMP What did you do with that, Wally?

00 08 42 10 CDR I've got the other two on, Walt, so they're -

00 08 42 49 LMP You're what?

00 08 43 04 CMP Are you sure you didn't bring somebody along?

00 08 43 06 CDR What?

00 08 43 10 CMP Are you sure you didn't bring somebody along?  
(Laughter)

00 08 43 20 CDR (Laughter) It must be still in there.

00 08 43 46 CMP Huh?

00 08 44 00 CMP ... I'm beginning to like that. I've put it on about four times (laughter).

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[REDACTED]

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00 08 44 16      CMP      Well, hell. We've got most of it in anyway.

00 08 44 53      CDR      Boy ... better get the top of it ...

00 08 45 10      LMP      Do you want to?

00 08 45 14      CDR      ... you're welcome to it.

00 08 45 39      LMP      ... (laughter).

00 08 45 40      CMP      You have already got the other side.

00 08 45 45      CMP      No, I don't think you can put any in it.

00 08 45 51      CDR      No.

00 08 46 00      CMP      I just put mine around back ...

00 08 46 24      CDR      Hey, it's got little daisies on it. Isn't that cute?

00 08 46 32      CMP      No trouble ... you made it this way.

00 08 46 33      CMP      You may need your imagination a little bit.

00 08 47 02      CMP      Say, I wonder how this stuff is going to feel ... That's what I was wondering, whether I ought to get the Beta ... without putting on this a ... jacket off that Teflon ...

00 08 48 32      CMP      Alright?

00 10 13 01      CC      We request the partial pressure O<sub>2</sub> reading.

00 10 13 15      CDR      - - 19 - -

00 10 14 09      CDR      Houston, Apollo 7. We took the - we changed the canister out of the A side. On the ground, they inadvertently taken canister 2 in there. I put canister 2 down to side B, which removed canister 1, and canister 2 is now where it belonged in the first place.

00 10 14 53      CC      Apollo, Houston. That's roger.

00 10 15 03      CDR      Houston, the cabin reads 190.

[REDACTED]

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00 10 15 48 CDR Houston, do you read Apollo 7?

00 10 31 41 CC Apollo 7, Houston.

00 10 31 44 CDR Go ahead.

00 10 31 46 CC Roger, we need your partial pressure O<sub>2</sub> reading, Wally, and also your status on the waste management OVERBOARD DRAIN VALVE.

00 10 31 55 CDR Roger, you got the reading on the partial which reads 190, and the ...

00 10 32 05 CC Say again the reading, I missed it.

00 10 32 08 CDR 190.

00 10 32 16 CC Roger, cleared to go ahead and close your waste management OVERBOARD DRAIN VALVE. ... the one you - -

00 10 32 18 CDR Do what to it?

00 10 32 19 CC Close it.

00 10 32 23 CDR Thank you.

00 10 32 26 CC The one you already closed at 10:15.

00 10 32 41 CC Apollo 7, Houston. I've got some block data to give you.

00 10 33 06 CDR Go ahead, I'm listening.

00 10 33 09 CC Roger, block data number 2: 009-3B, plus 254, plus 1367, 013 plus 29 plus 36, 5150; 010-AC, minus 054, minus 0162, 014 plus 19 plus 12, 4314; 011-AC, plus 060, minus 0220, 015 plus 54 plus 48, 4131; 012-AC, plus 134, minus 0330, 017 plus 28 plus 48, 4098; 013-2A, plus 262, minus 0282, 019 plus 08 plus 06, 4258; 014-1B, plus 220, minus 0620, 020 plus 34 plus 03, 4163. Houston, over.

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00 10 36 32 CDR Roger, readback: 009-3B, plus 254, plus 1367, 013 plus 29 plus 36, 5150; 010-AC, minus 054, minus 0162, 014 plus 19 plus 12, 4314; 011-AC, plus 060, minus 0220, 015 54 48, 4131; 012-AC, plus 134, minus 0330, 017 28 48, 4098; 013-2A, plus 262, minus 0282, 019 08 06, 4258; 014-1B, plus 220, minus 0620, 020 plus 34 plus 03, 4163. Over.

00 10 37 47 CC Roger, Wally. Readback is correct. I think when we get over Hawaii we're going to want to make a E memory dump via VERB 74. Essentially, we'll be starting out with few feet of VERB 74, ENTER, and then wait 1 minute.

00 10 38 05 CDR Houston, Apollo 7. I would like to log at 10 plus 35 I had 11 squirts on this water pistol, and I'd like to add that the beef stew bites tend to be very crumbly. And a lot of crumbs when you open the package even.

00 10 38 20 CMP Pretty crummy food!

00 10 38 27 CC Copy the crumbly food.

00 10 38 49 CDR Houston, as long as we're logging water in squirts, 17 squirts for CDR at 10 hours - -

00 10 39 05 CDR Houston, Apollo 7. Do you copy?

00 11 09 32 LMP Houston, Apollo 7, go. And are you monitoring our jet problem? We've been waiting for about 20 minutes now for steam pressure to increase, about ready to reservice water boilers.

00 11 10 01 LMP Houston, Apollo 7. Do you read?

00 11 10 04 CC Apollo 7, Houston. Affirmative. Read you.

00 11 10 10 LMP Roger, I'm reading you very weak and it seems we've been running into a lot of static here, but in the meantime we're left without our tape recorder running. We don't quite know the status of it, but we are left that way. We'd like to be using it to record some of these problems. We - I should be observing the

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anomaly we got in our steam pressure now, and I'm going to reservice the water boiler.

00 11 10 34 CC Roger, I understand, you're servicing the water boiler.

00 11 10 39 CDR Houston, Apollo 7. Let's get those guys in the backroom to keep track of the tape recorder for us, please.

00 11 12 28 CDR Okay, at 11 - at 11 hours and 10 minutes into the flight, CDR logged 25 clicks on the water gun.

00 11 24 53 LMP At about 11:15, LMP took ... clicks on the water gun.

00 11 30 10 LMP And we've chlorinated the potable water at 11 hours 30 minutes into the flight. The potable water quantity is reading about 87 percent.

00 11 59 38 LMP ... 11 hours and 58 minutes into the flight, and frame 4 ...

00 12 06 14 CC Apollo 7, Houston. AOS via Mercury.

00 12 06 18 CDR Roger.

00 12 06 27 LMP Houston, Apollo 7. We temporarily had our primary loop back working on the line. It is beginning to look like the primary water flow valve. For a while, we thought it was stuck shut. However, I was able to, by playing with it, eventually get it to come back up with steam pressure reading normal for awhile. It's holding around a temperature of about 43. Right now, it's pegged low again. It looks like it's possibly the water control section of the 240 controller.

00 12 07 05 CC Walt, say again there the last sentence there. It looks like what?

00 12 07 09 LMP I believe it's probably getting down to the water control section of the 240 controller.

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Also, we had a DTO to accomplish here, the CRYO stratification for hydrogen. It's - both tanks are over 90, plus or minus 5, percent on the hydrogen, and the procedure calls to let the pressure rise to about 260 to 265, and I believe that's the spec number, and I'd like EECOM to tell me how high these pressures have been rising before they - the heaters shut off so I'll know where to start doing the DTO. Over.

00 12 07 46      CC      Roger. Stand by, we'll get it for you.

00 12 07 48      LMP      More specifically, Ron, I need the DEADBAND that the hydrogen pressure tank 1 and tank 2 have been running back and forth between.

00 12 08 02      CC      Roger.

00 12 11 51      CC      Wait 1 - I think - P52. Don't we just pick a pair out of the CMC?

00 12 12 01      CDR      Roger, we'll go ahead like that.

00 12 12 03      CC      Roger.

00 12 12 07      LMP      Did anybody come up with any suggestions on our ECS problem?

00 12 12 09      LMP      The malfunctions procedures call for activating the secondary loop. Whenever the primary radiator out - radiator outlet temperature gets above 48. I think - now, we've just been doing that and kind of going by the glycol EVAP TEMP. I'm now reading almost 60 on the radiator outlets system, now that my glycol EVAP outlet check has gone to about 52. I would like to hold to not activating the secondary loop until the primary glycol evaporator outlet TEMP hits 50.

00 12 12 43      CC      Apollo 7, Houston. We concur on that. We kind of believe that we're really - not really hot enough, and then we're starting to cool down when it starts evaporating, maybe overshooting, going too cold on the thing. We're working on that right now.

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00 12 13 04 LMP Okay. During the night pass, the glycol evaporator outlet temperature got down as low as about 45, something like that, before we got the evaporator working again.

00 12 13 16 CC Roger.

00 12 13 23 LMP Do you have anybody sending us extreme data on what the hydrogen pressure should cycle between?

00 12 13 59 LMP The potable water was chlorinated around 11:30 with a chlorine ampule and a buffer ampule.

00 12 18 33 LMP It's about 12:18:30. It's 12:18:30 into the flight and ...

00 12 26 33 CC Apollo 7, Houston. I have your DEADBANDS for H<sub>2</sub> 1 and H<sub>2</sub> 2 tanks.

00 12 26 40 LMP Roger. Go.

00 12 26 41 CC Roger. Tank 1 - H<sub>2</sub> tank 1, 228 to 246; H<sub>2</sub> tank 2, 237 and 255.

00 12 27 01 LMP Roger. 228 to 246, 237 to 255, and it turns out that the pressures are cycling back and forth in the neighborhood of these readings?

00 12 27 10 CC That's affirmative in the R/O AUTO heaters, and you can tell Wally that it looks like stars 11 and 12 would probably be pretty good stars to try for.

00 12 27 22 LMP Roger, 11 and 12. Thank you.

00 12 27 34 LMP And we'll accomplish the zero-g test after the alignment. We're still checking on ...

00 12 46 11 CC Apollo 7, Houston. 30 seconds to LOS.

00 12 46 16 CDR Roger, Houston. We see you later.

00 12 46 17 CC Roger, thank you.

00 12 46 18 LMP Houston, Apollo 7. I got 00001 on the star data check and used number 1, Alpheratz, star

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number 7, Menkar. And we're going to go ahead and take the gyro-torquing angles. Is that acceptable?

00 12 46 53 CC Apollo 7, Houston. We'll take those angles.

00 13 11 48 LMP Hey, Ron, it's not a good situation, but I don't consider we've got anything of real problems with that primary coolant loop right now.

00 13 12 12 CC ... 7, we concur with that.

00 13 12 20 CC 7, Houston. We are just now taking a look at the dumped data that we've picked up at Redstone.

00 13 12 27 CDR Roger.

00 13 24 20 LMP At 13 hours 24 minutes and 30 seconds into this flight, we took on magazine Peter, frame - frames 7 and 8, what we believe to be the Red Sea.

00 13 27 26 CDR At 13:27:32, magazine P for Peter, frame 14 or 15: the Gulf of Oman.

00 13 31 38 LMP At 13 hours and 32 minutes, I'm finishing up the first step of P5.8 CRYO zero-g test for hydrogen. Pressurizing the - the pressure seemed to be stabilized some 2 minutes after the time of ... fuel cells ...

00 13 32 12 LMP My data shows that there's possibly a slight drop in pressure when I switch the fans ON. However, after looking at the needle, I can't really be sure. The range of pressures covered is very narrow, and we plan to operate by a set of ground figures. The pressure band will be my own estimation ... there is no ...

00 13 35 37 LMP This is the ...

00 13 37 21 LMP At 13:37 into the flight, frame 58 on magazine M was taken of the sidehatch window, documenting the continuing degradation of the outer frame of that window.

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00 13 41 01 CC Apollo 7, Houston through Mercury.

00 13 41 04 CDR Roger, loud and clear.

00 13 41 09 CC Roger, we'd like to get VERB 06, NOUN 21; read out the PIPA count. We would like to get your onboard readout. Our Y PIPA count down here - it has been zero for a long time.

00 13 41 34 CDR Roger, we can't very well fix that ... about 2 minutes.

00 13 41 43 LMP Hey, Ron, I completed P5.8 for the hydrogen tank pressure at 90 percent level. It didn't look to me like we have any stratification. Pressures that I noted down did drop a little bit, but I'm not sure what distance the NSR reading is.

00 13 42 11 CC Walt, you're coming through HF this time across there - and I can't - I can't read you very well. Can you talk a little slower?

00 13 42 18 LMP Roger, understand. I did complete the hydrogen tanks at 90 percent portions of the CRYO stratification test, and I logged the data, but it is my own estimation that we didn't really have any stratification.

00 13 45 07 CDR Islands off China in the Sea of Japan ... magazine P for Peter, frame 18, time 13:45.

00 13 47 54 CDR Frame number 19, time 13:47:56; small island.

00 13 52 42 CC - - this upcoming maneuver. We will yield about nominal displacement a NC - NCC 1. The S-IVB orbit on third day, however, yields a displacement between 63 and 87 miles, if we go ahead and make the burn. And this is all based on beacon tracking, so it's pretty good.

00 13 53 27 CDR They think there's two guys in the LM; let's get to it.

00 13 53 31 CC Roger. We're working on the update and we'll talk to you again over Redstone.

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00 13 53 38 CC It looks like the GETI is about 15 plus 52.

00 13 55 11 LMP Houston, Apollo 7. Are you still monitoring the DSKY?

00 13 55 28 LMP To save fuel ...

00 13 58 43 CDR The islands ... were the Marshall Islands.

00 14 06 30 LMP Let's see. At 14 hours and 6 minutes into the flight, which is possibly 2-1/2 hours after chlorination of the water, the water in the drinking guns does not taste very good after two squirts. In fact, tastes very bad.

00 14 13 04 CC Apollo 7, Houston. I have a maneuver pad to give you.

00 14 13 09 CDR Go ahead.

00 14 13 19 CDR Go ahead.

00 14 13 22 LMP They copying?

00 14 13 30 CDR Houston, Apollo 7. Do you read?

00 14 13 38 CC Apollo 7, Houston.

00 14 13 40 CDR We read you. Go ahead.

00 14 13 51 LMP Houston, Apollo 7. Ready to copy. Go.

00 14 14 35 CC Apollo 7, Houston. Opposite OMNI.

00 14 14 45 CDR We read you, Houston. Loud and clear.

00 14 15 28 CC Apollo 7, Houston.

00 14 15 30 CDR Roger. We read you. Go ahead.

00 14 15 47 LMP Houston, Apollo 7. We are reading you 5 by 5. Go ahead.

00 14 47 51 SC What he said is incomplete.

00 14 55 27 LMP Magazine M, frame 22 taken at 14 hours and 55 minutes into flight.

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00 14 59 22 LMP At 14 hours 59 minutes into the flight, the magazine P, as in Peter, frame 22 was taken of the Sinai Peninsula on the Gulf of Aqaba, and frame 24 was taken in the same general area.

00 15 02 07 LMP At 15:02:07, I photographed off the mainland of coastal India ... I think, an island of some great length; frame 27, magazine P as in Peter. The last one was - may be an island off the coast of - Gulf of Oman.

00 15 05 59 LMP The island with the smoke coming off of it was in the Persian Gulf.

00 15 29 18 CC Walt, I think we can give you a proper and an actual number a little later on in the mission here, when we figure out how much the fuel cells are dumping the water in and all these good-deal things.

00 15 29 29 CMP Okay.

00 15 32 33 CMP Now, that's a good sign. How are they doing? Booger's right up there.

00 15 32 48 CMP Yes, that's a good idea.

00 15 32 58 CMP (Sneeze) Huh?

00 15 34 30 CMP What's that?

00 15 35 45 CMP ... not properly seated.

00 15 36 08 CMP What's that?

00 15 36 21 CDR Right there.

00 15 36 24 CMP It's in the bag? Okay.

00 15 36 57 CMP Yes.

00 15 37 28 CMP Did you find out anything? Did it stratify?

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00 15 37 59      CMP      Yes, okay. What did the -

00 15 38 31      CMP      260 ... 19. Uh huh. Okay.

00 15 38 41      CMP      Yes. Okay.

00 15 38 55      CMP      Well, that one meter reads a little low too,  
as I remember. Doesn't it?

00 15 39 11      CMP      Alright. You're not going to monkey with  
the water boiler, I gather, just let things go  
as they are?

00 15 39 47      CMP      What did you say? What's going on? The glycol  
EVAP broke?

00 15 40 09      CMP      Okay.

00 15 40 19      CMP      Yes. Okay. Wait a minute.

00 15 41 22      CMP      When do we do that burn?

00 15 41 40      CMP      Okay, let's see what we're getting ...

00 15 41 57      CMP      Okay ...

00 15 42 06      CMP      Yes.

00 15 42 37      CMP      Huh? As I understand it, we're pitching back.

00 16 21 49      CC      Apollo 7, Houston.

00 16 21 56      LMP      Houston, Apollo 7. Go.

00 16 21 59      CC      Roger. I have two items. We'd like a check  
on the CMP BIOMED harness, when it's convenient.  
We're not getting anything, and we'd like to  
check the pin connectors, the signal conditioner  
connectors, and, at last resort, press down on  
the sensors. Second item, information: it will  
probably take about 28 minutes to drain the H<sub>2</sub>O.

00 16 22 33      LMP      Roger, I've been fighting this harness. It  
doesn't make up properly. I don't know how  
we're going to get it. Say again regarding  
water.

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00 16 22 47 CC I am sorry, Apollo. I cut you out. Say again, please.

00 16 22 50 LMP I say, my BIOMED harness is not making up properly. I don't know whether it is going to work.

00 16 22 58 CC Roger.

00 16 33 58 CMP Frame 26 of magazine Papa at 16:34.

00 16 47 53 CMP Humidity survey check, in the right window area: and ambient temperature is 78 degrees ... point ... Lift-off temperature is 56 degrees.

00 16 49 04 CMP Cabin fan, outlet, 76 degrees. Left ... 56 degrees.

00 16 50 43 CMP Lower equipment bay, on the left side, 45 degrees and 56 degrees.

00 16 51 44 CC Apollo 7, Houston.

00 16 51 47 CMP Houston, Apollo 7. Go.

00 16 52 17 CMP Houston, Apollo 7. Go.

00 16 52 20 CC Roger. I have a couple of items here that we would like verification, if you have it. That the water chlorination was performed at 11 hours and 20 minutes - -

00 16 52 31 CMP Roger, that was done.

00 16 52 34 CC - - I mentioned this before, but I couldn't understand the answer. We want to advise that it will take 28 minutes to drain the water.

00 16 52 50 CMP Roger. I understand, 28 minutes to drain the water. You're referring to the waste tank dump?

00 16 52 58 CC I am sorry, waste tank dump. Affirmative.

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00 16 53 02      CMP      Roger. We're only up to 40 percent on waste water, so we've got a ways to go.

00 16 53 09      CC      Thank you.

00 16 53 13      CC      Apollo 7, Houston. Did you read me on the water chlorination?

00 16 53 18      CMP      Roger. We did the chlorination at 11 hours.. Wally did it.

00 16 53 23      CC      Thank you.

00 16 53 38      CMP      Houston, Apollo 7. The command module pilot got about 6 hours of sack time, of which 4 hours was in a pretty deep sleep. I would have slept a little better except I'm not used to going to bed at what's 6 o'clock local time for me. I think in a day or two I'll get used to the cycle.

00 16 53 59      CC      Apollo 7, Houston. Roger.

00 16 54 02      CMP      Roger..

00 18 23 03      CMP      Frame 27, magazine Papa; 18 hours 23 minutes.

00 18 38 14      CMP      Six clicks of water for Eisele at 18:30.

00 19 43 13      CMP      Frames 29 through 36 were taken approximately 19 hours and 43 minutes; Nile Delta over to the Red Sea.

00 19 48 51      CMP      At about 19:45, we had a MASTER ALARM, a SUIT COMPRESSOR light, and an AC BUS 1. We reset AC BUS 1 after checking the voltages, and the suit compressor came back on, the bus came on right. Everything is back to normal.

00 20 38 28      CC      Stand by.

00 20 38 48      CC      Apollo 7, Houston ... AOS Bahamas at 20 plus 49.

00 20 39 00      CMP      Understand.

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00 20 50 53 CC Apollo 7, Houston.

00 20 50 56 CMP Houston, Apollo 7. Go.

00 20 51 00 CC Donn, I'd like to - -

00 20 52 03 CC And Apollo 7, Houston. This will be a sort of a small burn, plus Y and then minus Y, total DELTA-V about 5 feet per second.

00 20 52 14 CMP Bill, I missed practically your whole transmission there. All I heard was that you had something for me, and then you said something about a small burn. Would you run it by again, please?

00 20 52 26 CC Roger, Apollo 7, Houston. How do you read now?

00 20 52 29 CMP Roger. That's loud and clear.

00 20 57 59 CC Roger ... 0:42, 4275; 016-1B, plus 312, minus 0630, 023:46:41, 4539; 017-1A, plus 298, minus - -

00 21 02 54 CC Apollo 7, Houston.

00 21 02 57 CMP Roger. Go ahead, Houston. You dropped out there for 3 or 4 minutes.

00 21 03 02 CC Roger, Meyer here. How far did we get through on that?

00 21 09 47 CMP Here goes ... plus 314, minus 1624, 029:43:42, 4363; 020-4A, plus 310, minus 1623, 031:18:29, 4679; 021-4A, plus 261, minus 1633, 032:53:56, 4944.

00 21 53 00 CMP Roger, GET plus 19.

00 21 54 03 CMP ... Apollo 7. Over.

00 21 54 10 CMP Houston, Apollo 7. Over.

00 21 57 34 LMP This is LMP. At 21 hours 40 minutes ... defecation. I'm going to make a few subjective comments about it and, I trust ...

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00 21 58 02 LMP I did attach the urine collection device and voided myself at the same time. I noticed my general language on the ...

00 21 58 15 LMP At any rate, on that - there are several problems have come up that we hadn't particularly expected. One is the constant wear garment. In addition to that, there's nothing really large enough to accommodate the bag. It makes it quite messy when it springs back after completion of a defecation. The other alternative is to take the - the constant wear garment off the shoulders and put it down around your knees. Now, in order to do that, you have to disconnect the BIOMED sensors, which are not color coded incidentally, and the - very difficult for them to hook them all back up to the right place ...

00 21 59 12 LMP Other than that, the problems are really surprisingly few. I voided myself simultaneously, dumped the urine collection. Cleaning myself up, I had relatively little mess. I utilized two of the tissues, each of which were used, folded, used again, and then used a third tissue which had earlier been soaked with water from the water gun, cleaning up rather well, and then went ahead and used the wet-wipe that is provided. It's worth noting that those wet-wipes that come in the fecal bag do not have any Velcro on them for attaching to the wall, and that's a definite handicap.

00 22 19 52 CC Apollo 7, Houston.

00 22 19 57 CMP Roger, Houston. Go.

00 22 19 59 CC Roger, AOS Texas. I'll give you a time hack here. 22 hours 20 minutes - 9, 10, 11 -

00 22 20 11 CC 12.

00 22 20 15 CMP Roger. We're right on it.

00 22 20 17 CC And counting down to burn. 2 minutes and - -

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Day 1

115

00 23 37 18 LMP At 22 hours 37 minutes into the flight, the  
O<sub>2</sub> partial pressure is 200 mm of mercury.

00 23 50 20 CC Apollo 7, Houston.

00 23 50 24 LMP Go ahead, Houston.

00 23 50 32 CDR Houston, Apollo 7. Go ahead.

00 23 50 36 LMP Houston, Apollo 7. Go ahead.

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DAY 2

01 01 04 11      CMP      Can you read my intercom, okay?

01 01 09 30      CDR      Fan 1 was turned OFF at 25 hours and 9 minutes.  
Correction, fan 2 turned OFF at 25 hours and  
9 minutes.

01 01 15 40      CMP      While performing P5.8, the cryogenic zero-g  
test, the oxygen tank went to the 90 percent  
level, with the heaters OFF, the fans OFF ...  
The pressure dropped very sharply, in a matter  
of several seconds, all the way down to 860  
for oxygen tank 1 and 850 for oxygen tank 2  
...

01 01 16 30      CC      Apollo 7, Houston.

01 01 16 33      CDR      Go ahead, Houston.

01 01 16 37      CC      Apollo 7, we're going to pass - the present  
plans now are to pass the three NAV loads up  
to you - send three NAV loads up to you over  
Texas. Can you tell me how your last P52  
came out?

01 01 48 58      CC      Apollo 7, Houston through Canary. Standing  
by.

01 01 49 02      CDR      Roger. We're coming into attitude.

01 01 49 05      CC      Roger. Could we get you to switch the BIOMED  
switch to the LMP?

01 01 49 13      CDR      Are you saying I'm kind of dull today?

01 01 49 17      CDR      You've got it.

01 01 49 18      CC      Roger. Thank you.

01 01 49 20      CDR      You are stealing 8 hours of my prime time.

01 01 50 22      CC      7, you are 1 minute LOS. We pick you up at  
Ascension in about 3 minutes.

01 01 50 26      CDR      Roger, see you there.

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Day 2

117

01 01 51 50 CDR Houston, Apollo 7.

01 01 51 57 CDR Houston, Apollo 7. Over.

01 01 52 20 CDR At 25 hours 52 minutes, we'd like to log two suggestions for housekeeping. One is using the channel grip fitting on the water gun to pick up goblets of water, or droplets of water. The other is to clean the inlet screens that go in the red tip of the two hoses, knock it off on one screen, and then take the dust and debris off with tape.

01 01 53 52 CC Apollo 7, Houston through Ascension. Standing by.

01 01 53 56 CDR Roger.

01 01 55 57 CC Apollo 7, Houston. 1 minute LOS; we'll pick you up at Tananarive in 10 minutes.

01 01 56 01 CDR Roger.

01 02 06 23 CC Houston through Tananarive.

01 02 06 28 CDR Roger.

01 02 06 43 CC Apollo 7, Houston through Tananarive.

01 02 06 46 CDR Roger, Houston. How do you read?

01 02 06 48 CC You're 5 by. We're standing by.

01 02 06 51 CDR Roger, checking our sextant stars.

01 02 07 46 CDR This is a ... a good 5 degrees - less than one-half.

01 02 10 25 CMP Roger, and SPS ... everything looks fine.

01 02 10 29 CMP ... magazine 1 ...

01 02 13 01 CMP ... CMC ATTITUDE, IMU.

01 02 13 08 CMP 0.05g switch, OFF.

01 02 13 16 CMP 0.05g switch OFF?

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Day 2

118

01 02 13 22 CDR 0.05g, OFF.

01 02 13 23 LMP SCS LOGIC, BUS 3.

01 02 13 25 CDR SCS LOGIC, BUS 3.

01 02 13 27 LMP Donn, check the caution-warning.

01 02 13 30 LMP Wally, the DELTA-V counter set?

01 02 13 32 CDR 196.0.

01 02 13 36 LMP Block test complete. It looks GO.

01 02 13 41 CMP We've done P40 IMU attitude - -

01 02 13 43 CC Apollo 7, Houston. You're 1 minute LOS Tananarive. We'll pick up ARIA 2 at about 2 minutes and have continuous coverage through Carnarvon.

01 02 13 51 CDR Roger, we're just doing our checklist for IMU alignment.

01 02 14 01 CC Roger, I didn't copy that, Wally.

01 02 14 03 CDR Roger, we're going to CMC AUTO MODE.

01 02 14 08 LMP We will be coming down live to you.

01 02 14 11 CC Okay.

01 02 14 12 CDR CMC, AUTO.

01 02 14 13 CMP Go.

01 02 17 05 CC Apollo 7, Houston through ARIA 2. Standing by.

01 02 17 09 CDR Roger.

01 02 17 12 CDR We are waiting for our 25 plus 30 update.

01 02 17 16 CC Roger. Copy.

01 02 19 16 LMP All SPS circuit breakers, CLOSED.

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Day 2

119

01 02 19 19 CDR All circuit breakers, CLOSED.

01 02 19 20 LMP Circuit breakers GIMBAL MOTOR CONTROL, four, CLOSED.

01 02 19 23 CDR One, two, three, four. They're all CLOSED.

01 02 19 27 LMP DIRECT RCS, OFF.

01 02 19 29 CDR DIRECT, OFF.

01 02 19 30 LMP One ROLL CHANNEL, ENABLE.

01 02 19 32 CDR B/D, ENABLE.

01 02 19 34 LMP BMAG MODE, three of them, RATE 2.

01 02 19 36 CDR Three, verify, RATE 2.

01 02 19 38 LMP SPACECRAFT CONTROL, CMC, AUTO.

01 02 19 41 CDR CMC, AUTO ...

01 02 19 45 LMP SCS TVC, both RATE COMMAND.

01 02 19 46 CDR TVC RATE COMMAND, PITCH, YAW.

01 02 19 48 LMP TVC GIMBAL DRIVE, PITCH and YAW, AUTO.

01 02 19 50 CDR PITCH and YAW, AUTO.

01 02 19 53 LMP TVC SERVO POWER, one and two, AC 1, AC 2.

01 02 19 57 CDR One, AC 1; two, AC 2.

01 02 19 59 LMP HAND CONTROLLER POWER to 1.

01 02 20 00 CDR HAND CONTROLLER, 1.

01 02 20 02 LMP Rate HAND CONTROLLER 2, ON.

01 02 20 03 CDR 2, ON.

01 02 20 04 LMP Stand by for BUS TIES.

01 02 20 06 CDR Roger.

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Day 2

120

01 02 20 15      CMP      BUS TIES, both ON.  
01 02 20 16      CDR      Roger.  
01 02 20 19      LMP      GIMBAL MOTORS, PITCH 1, YAW 1, START.  
01 02 20 22      CDR      PITCH 1, START.  
01 02 20 25      LMP      ON.  
01 02 20 26      CDR      YAW 1, START.  
01 02 20 28      LMP      ON.  
01 02 20 30      LMP      THC, clockwise.  
01 02 20 31      CDR      Clockwise.  
01 02 20 33      LMP      Verify no MTVC.  
01 02 20 36      CDR      Negative MTVC.  
01 02 20 38      LMP      GIMBAL MOTOR, PITCH 2, YAW 2, START.  
01 02 20 40      CDR      PITCH 2, START.  
01 02 20 43      LMP      ON.  
01 02 20 44      CDR      YAW 2, START.  
01 02 20 46      LMP      Both ON?  
01 02 20 47      CDR      Roger.  
01 02 20 48      LMP      Confirm set GPI trim.  
01 02 20 49      CDR      Roger. Minus 0.8 and minus 0.25.  
01 02 20 54      LMP      Verify MTVC.  
01 02 20 59      CDR      That's GO.  
01 02 21 00      CMP      GO.  
01 02 21 02      LMP      THC, NEUTRAL.  
01 02 21 04      CDR      NEUTRAL.

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Day 2

121

01 02 21 05 LMP HAND CONTROLLER POWER to BOTH.  
01 02 21 07 CDR BOTH.  
01 02 21 10 LMP Let's watch this goody here.  
01 02 21 22 CDR Verified.  
01 02 21 24 LMP DIRECT RCS, ON.  
01 02 21 26 CDR Verified.  
01 02 21 36 CDR Get a GO?  
01 02 21 41 LMP MANUAL ATTITUDE, three of them, RATE COMMAND.  
01 02 21 58 CDR ... Aw, looks like it's about 0.2. Okay.  
01 02 22 03 LMP BMAG's, three of them, ATT 1, RATE 2.  
01 02 22 10 CDR BMAG, ATT 1, RATE 2.  
01 02 22 12 LMP Standing by ...  
01 02 30 34 CDR Roger.  
01 02 30 38 CC Everything looked real fine down here.  
01 02 30 40 CDR Roger. It turned out real well. The surprise was the instantaneous start.  
01 02 30 46 CC Roger.  
01 02 34 01 CT ARIA 3, go REMOTE.  
01 02 34 28 CC Apollo 7, this is Houston. We'll be monitoring through ARIA 3 at this time.  
01 02 34 32 CDR Roger.  
01 02 48 20 CMP Probably showed the results of that ... exercise we did a few minutes after the NCC 1 burn. I started at - -  
01 02 48 31 CC Apollo 7 through Hawaii. Standing by.

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Day 2

122

01 02 48 35      CMP      Roger, Jack. I just did a preliminary P20 to look at the booster, and I think I saw it, but it was a little hard to tell because of all the debris out there. I picked it up just at sunrise, and the AUTO OPTICS put something right in the middle of the sextant which appeared to be an object rather than just a point light source, and I'm pretty sure that was it, but like I say, there was no - -

01 03 43 07      CC      Apollo 7, Houston through Tananarive.

01 03 43 08      CDR      Roger, loud and clear.

01 03 43 30      CC      Apollo 7, Houston through Tananarive.

01 03 43 36      LMP      Roger, we're reading you.

01 03 43 58      CC      Apollo 7, Houston through Tananarive.

01 03 44 00      CDR      Roger, we read you loud and clear, Jack.

01 03 44 49      CC      Apollo 7, Houston through Tananarive.

01 03 45 29      CC      Apollo 7, Houston through Tananarive.

01 03 45 31      CDR      Roger, loud and clear. How do you read?

01 03 45 55      CC      Apollo 7, Houston.

01 03 45 57      CDR      Go ahead.

01 03 46 19      CC      Apollo 7, Houston.

01 03 46 23      LMP      Roger, Houston, Apollo 7. Reading you loud and clear. How me? Over.

01 03 46 27      CC      You're 5 by now, Walt. We'd like you to switch your UPTHELEMETRY switch to COMMAND RESET, then NORMAL. We missed the COMMAND going out of Ascension.

01 03 46 40      LMP      Roger, COMMAND RESET and then NORMAL.

01 03 46 43      CC      Roger, you'll be OMNI A for the burn.

01 03 46 47      LMP      Roger.

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123

01 03 49 01 CC Apollo 7, Houston. You're 1 minute LOS  
Tananarive. We pick you up over Carnarvon in  
about 7 minutes.

01 03 49 08 CDR Roger. Will we be in touch during the burn?

01 03 49 17 CC Say again.

01 03 49 19 CDR Will we be in touch during the burn?

01 03 49 21 CC Yes, sir; you will.

01 03 55 26 CDR Valve closed?

01 03 55 28 LMP Circuit breaker GIMBAL MOTOR CONTROL, four,  
CLOSE.

01 03 55 32 CDR Four, CLOSE.

01 03 55 33 LMP DIRECT RCS, OFF.

01 03 55 35 CDR DIRECT, OFF.

01 03 55 36 LMP One ROLL CHANNEL, ENABLE.

01 03 55 38 CDR B/D, ENABLE.

01 03 55 44 LMP BMAG MODE, three, RATE 2.

01 03 55 48 CDR RATE 2.

01 03 55 49 LMP SPACECRAFT CONTROL, CMC, AUTO.

01 03 55 51 CDR CMC, AUTO.

01 03 55 54 LMP Okay, SCS TVC forward, RATE COMMAND.

01 03 55 58 CDR RATE COMMAND.

01 03 55 59 LMP TVC GIMBAL DRIVE, PITCH and YAW, AC 1, AC 2.

01 03 56 04 CDR AC 1, AC 2.

01 03 56 07 LMP HAND CONTROLLER POWER to 1.

01 03 56 10 CDR 1.

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Day 2

124

01 03 56 12 LMP Rotate the HAND CONTROLLER to 2, armed.

01 03 56 14 CMP Standby for bus tie.

01 03 56 24 LMP Bus tie, ON. GIMBAL MOTOR, PITCH 1, YAW 1, START.

01 03 56 27 CDR PITCH 1, START. YAW 1, START.

01 03 56 30 LMP Alright.

01 03 56 34 LMP The translation HAND CONTROLLER, clockwise; verify no MTVC.

01 03 56 39 CDR No MTVC.

01 03 56 41 LMP GIMBAL MOTOR, PITCH 2, YAW 2, START.

01 03 56 43 CDR PITCH 2, START.

01 03 56 45 CMP ON.

01 03 56 46 CDR YAW 2, START.

01 03 56 47 CMP ON.

01 03 56 49 LMP Confirm and set GPI trim, verify - -

01 03 56 52 CC Apollo 7, Houston.

01 03 56 55 LMP Roger. Stand by, we're in a - -

01 03 56 57 CDR MTVC, GO.

01 03 56 59 LMP Roger, THC, NEUTRAL: HAND CONTROLLER POWER to BOTH.

01 03 57 03 CDR NEUTRAL: to BOTH.

01 03 57 05 LMP Do your trim.

01 03 57 31 LMP Okay, DIRECT RCS, OFF.

01 03 57 35 CDR DIRECT, OFF.

01 03 57 36 LMP MANUAL ATTITUDE, three of them, RATE COMMAND.

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Day 2

125

01 03 57 38 CDR Verify.

01 03 57 40 LMP BMAG MODE, three, ATT 1, RATE 2.

01 03 57 43 CDR ATT 1, RATE 2.

01 03 57 44 LMP Standing by for 2 minutes.

01 03 57 47 CDR Okay, ... gimbals are set.

01 03 57 53 CC Apollo 7, Houston. Reading you 5 by, I'll give you a mark at 2 minutes.

01 03 57 57 CDR Roger.

01 05 01 11 LMP Alright.

01 05 01 14 CDR Okay. ... we normally do here.

01 05 01 29 CMP Boy, it really looks great out there.

01 05 01 30 CDR Yes.

01 05 01 38 CMP Now, we'll be out over the Atlantic shortly.

01 05 01 54 CMP A little sideways here. There it is. Want to write that one down, Walt? That's it, yes. That's the one we'll go for, and I'm not going to take any more marks.

01 05 02 07 CMP If I would have known it was going to be that fast, I would have waited, but see, those other ones took about 4 minutes apiece.

01 05 02 14 CDR Okay, let's go.

01 05 02 18 LMP Okay. Right. Got them? Okay.

01 05 02 26 CC Apollo 7, Houston through Ascension. Standing by.

01 05 02 29 LMP Roger. How is that time, Wally?

01 05 02 54 CMP Okay. It's night. Wally, I'm just going to let that sit there for awhile because I don't want to terminate P20 just yet.

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Day 2

126

01 05 03 19      CMP      May be some help in AUTO OPTICS here.

01 05 03 29      CMP      Really? Man, that's cool. Yes, I think we got her wired. What I'm going to do is sit here and let P20 cook away, now - -

01 05 03 38      CC      Apollo 7, Houston.

01 05 03 40      CMP      - - until after we get the backup data, and then I'll go on into P41, and you can start a slow pitchdown to start that burn attitude, and if it looks good, I suggest we go ahead and do the - -

01 05 03 50      CC      Apollo 7, Houston.

01 05 03 51      CMP      - - DAP again. Okay, let it take it to their attitude and - -

01 05 03 55      LMP      Go ahead, Houston.

01 05 03 58      CC      Just for your information only, the tracking data across the States indicated that TPI could occur about 30 seconds earlier. All our other values remain unchanged.

01 05 04 10      CMP      Roger. What was our time, Walt? 16 something, wasn't it?

01 05 04 14      CMP      16:45. That's pretty good because they give us - -

01 05 04 21      CDR      ... we show 16 plus 45 on that solution.

01 05 04 28      CC      Roger.

01 05 04 32      CMP      It's been backing off 30 seconds. They said - it could be 30 seconds late. That's pretty good, that's a minute and a half. We're well within the ground rule, so that makes the DSKY sound pretty good to me.

01 05 05 09      CMP      Yes, well, I didn't like that. Yes, I am, Walt. I'll just stay down here. It's easier. Hell, this timer down here is wiped out. It just jumped another 10 minutes.

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Day 2

127

01 05 05 40 LMP It's 11:07.

01 05 05 41 CMP What have we got, Wally:

01 05 05 43 CDR I'll give you a mark at 11.

01 05 05 45 CMP 11 minutes to go?

01 05 05 47 CDR Right.

01 05 05 48 CMP Okay, I think I'll just use my wristwatch.

01 05 05 50 CDR Okay, I'll still wait. I'll give you 10:30, or do you want 10?

01 05 05 54 CMP 10:30 is fine. Well, 10 would be better.

01 05 05 57 CDR Okay.

01 05 06 04 CDR 45 seconds.

01 05 06 05 CMP Okay.

01 05 06 37 CDR 10 seconds.

01 05 06 40 CMP Huh? 10.

01 05 06 44 CDR 2, 1 -

01 05 06 47 CDR MARK.

01 05 06 48 CMP MARK.

01 05 07 01 CMP No, I don't.

01 05 07 04 CMP Well.

01 05 07 16 CMP Man, this is going to be tough, I think. Well, it's getting - what the hell are you shining in my eyes, Walt?

01 05 07 23 LMP Oh.

01 05 07 25 CMP It's dark out there, and all I can see is a flashing light. It's not all that bright.

01 05 07 30 CDR Pretty good level?

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Day 2

128

01 05 07 32      CMP      No, not yet. Wait a second.

01 05 07 49      CMP      Wally, it's no longer in automatic attitude control. I mean, it's not a complaint, but it is just holding attitude in DAP.

01 05 08 00      CDR      Okay.

01 05 08 02      CMP      19 plus 41.

01 05 08 05      CDR      Now.

01 05 08 10      CMP      What are we supposed to be - -

01 05 08 14      CC      Apollo 7, Houston. Tananarive in 10 minutes.

01 05 08 23      CMP      Okay, give me a holler at 8 minutes, gang.

01 05 08 34      CMP      Yes.

01 05 08 43      CMP      Yes, it's okay for now.

01 05 08 47      CMP      Rate?

01 05 08 48      CMP      Okay.

01 05 08 50      CDR      You got about 2 seconds here, and I think I can clear it.

01 05 08 52      CMP      That's the same engine.

01 05 08 58      CMP      Wait a minute. No, I didn't - that's a better one, isn't it?

01 05 09 02      CMP      I screwed up. I didn't ...

01 05 09 24      CMP      Well. Well, I lost it now.

01 05 09 39      CMP      Well, where did you go, you little devil? Well, I pulled off the eyepiece for an instant, and it's disappeared. And it's not on the telescope either. It's only that slight line ... P54 to show up in the telescope. And the sextant field is really too dim, so there you are.

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Day 2

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01 05 10 08      CMP      Yes, I guess so; we'll have to. Well - I think it has gone to - AUTO OPTICS is gone now, and I've got to do it manually, and it's not there.

01 05 10 30      CMP      That's right.

01 05 10 47      CMP      Okay, Walt, I guess we better pitch down and go to the boresight attitude. And, well, we'll see what the hell we're going to get from the DSKY solution. I think we can go MANUAL if you want - probably be a little cheaper. And we could put it back to DAP when we get there.

01 05 11 13      CMP      Right.

01 05 11 14      CMP      Well, that was a surprise.

01 05 11 20      CMP      It's the ... attitude.

01 05 11 25      CMP      Okay, 52 degrees inertial is your pitch angle, Wally, and plus 9 degrees out of plane. Our vector should be less than out of plane at TPF of zero.

01 05 11 42      CMP      Well. Walt, oh, you don't have that. How did that check with the ground? They gave you some solutions, didn't they? Did they give you local vertical coordinates?

01 05 12 15      CMP      They didn't give us any local vertical?

01 05 12 22      CMP      Okay, let me see it.

01 05 12 30      CMP      Here we are, we're absolute - right on, 15.0, 7.9, and 1.9 out of plane. Wally, I suggest we take about half of that out of plane. Not, not all of it. Let's roll up about 5 down and then you take out about - about 4 degrees of yaw. How's that? Well, let it fly to its attitude, and then you can override it manually, and bring it into about 4 degrees. It'll be about 8 degrees out of plane and if we pull it back into about 4 or 5, I think it'll just about jibe with the ground.

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Day 2

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01 05 13 04      CMP      Yes. Okay.

01 05 13 10      CMP      You're at CMC hold?

01 05 13 13      CMP      Okay, let me check that beauty. Alright?  
Here we go.

01 05 13 24      CMP      Is it there?

01 05 13 32      CMP      Okay.

01 05 13 41      CMP      Yes.

01 05 13 44      LMP      Okay.

01 05 13 54      CMP      Well, you might, because you have less light  
loss in the window that I do in the telescope.  
I mean - whether or not you'll see it, I don't  
know. Hope we are a little closer now.

01 05 14 08      CMP      Okay.

01 05 14 17      CMP      Huh?

01 05 14 19      CDR      Well, just a minute.

01 05 14 25      CMP      What?

01 05 14 46      CMP      ... a lot. Sure wouldn't want to have to put  
up with it, though. Okay.

01 05 14 55      CMP      Well, that's interesting.

01 05 15 02      CMP      Okay.

01 05 15 05      CMP      Okay, I'd take about half of that yaw back  
out of there. Yes, go left about 4 degrees.  
Yes, you can do it right in CMC, AUTO. Yes.  
It'll go over. Okay, there you go. Just hold  
that. Okay, I'm going to proceed from this  
display now. Now, when those flop over, it'll  
be time to burn. Actually, it'll happen about  
15 seconds early.

01 05 15 45      CMP      What? This is your INERTIAL HOLD attitude.  
This is your ORB RATE, and it looks like it's

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Day 2

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going to be pretty close to 28 degrees. Move 17.6. Okay, Walt? 17.7.

01 05 16 05      CMP      Put it up after awhile. Okay.

01 05 16 16      CMP      15.7. Well, we'll overburn 0.01. Why don't you leave it propped here for a minute here, and then you can - -

01 05 16 25      CDR      Very good.

01 05 16 32      CMP      Good.

01 05 16 36      CMP      That's it. Yes, burn it out. Okay.

01 05 16 43      CMP      Yes.

01 05 16 49      CMP      17.3 on the DSKY. It would - I don't know, it's 3, and then 6, then he starts jumping, so - You almost had them right in there. Well, just a minute, you're all - you are essentially all fore and aft. Man, perfect! Okay, I don't know if you want to - I'd leave it. I don't think you're going to do any better than that. We've got plus 1, plus 3, and minus 3 on the residuals. There's a chance that we're going to press on from there.

01 05 17 36      CDR      ... residuals on the DELTA-V counter.

01 05 17 40      CMP      Okay, okay. Now, I want to - okay, LOW BIT RATE. I don't care.

01 05 17 56      LMP      Anybody seen my checklist? Goddamned thing, where did it go? Well, so much for that.

01 05 18 32      CMP      Wally, are you in CMC, AUTO? Okay, it should start maneuvering us back up there in a minute.

01 05 19 06      CMP      Okay.

01 05 19 16      LMP      There's my checklist.

01 05 19 20      CMP      Huh? You can keep that. Yes, okay.

01 05 19 34      LMP      ... manual ...

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Day 2

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01 05 19 36      CC      Apollo 7, Houston through Tananarive. Stand-  
ing by.

01 05 19 40      CDR      Roger. The residual was very low on that TPI.

01 05 19 48      CMP      Okay. I read them all, and they were very  
small.

01 05 20 03      CMP      Now, don't be scared, this is a phony mark.  
It's going to be a big number. At least,  
I hope it's a big number.

01 05 20 18      CMP      Not all that big, is it?

01 05 20 24      CDR      Houston, Apollo 7. We made the TPI with the  
onboard solution, that's the computer solu-  
tion, in DAP.

01 05 20 38      CC      Walt, we've got real bad COMM here at Tanan-  
arive. We can read that you are saying some-  
thing, but we can't make it out.

01 05 20 47      CDR      The TPI burn was on the computer; onboard  
solution.

01 05 21 00      CC      We couldn't make it out. We made out the  
word "TPI" and that was all.

01 05 21 05      CMP      Yes, I got it back, finally. Yes, I'll lay  
it there. I don't think we're going to - -

01 05 21 13      CC      Can you confirm that you've burned TPI?

01 05 21 15      CDR      That's affirm. Affirmative.

01 05 21 18      CC      Roger, we got it. Thank you.

01 05 21 32      CMP      Okay, I'll get you one in just a second. You  
want to give me a time hack?

01 05 21 40      CDR      Roger ... stand by.

01 05 21 41      CDR      Okay. 5, 4, 3, 2, 1 -

01 05 21 46      CDR      MARK.

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Day 2

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01 05 21 47      CMP      Okay, thank you. No, it's 5 minutes from the burn. I just wanted to see how long - how far away we were.

01 05 22 01      CMP      If you want to.

01 05 22 27      CMP      Wally, this thing is just barely visible in the telescope now. It is very bright in the sextant, however; flashing light.

01 05 23 09      CMP      Well, I'll tell you. That's really screwed up. We were doing fine up to then. I mean, hell, you lose it, you just have to - I didn't realize it would just flat disappear like that.

01 05 23 23      CMP      Man alive!

01 05 23 40      CMP      This flashing light is absolutely spastic, on the booster. It's bright as hell sometimes, and then again, you can hardly see it, and it's erratic, it's irregular, you know. It isn't - it's either moving around or else those lights are screwed up, I don't know which. Yes, probably turning around.

01 05 24 00      CC      ... a short pass at Carnarvon and - -

01 05 24 07      CMP      Okay, you guys give me a call for - we got about 8 minutes past or 52, whichever. Might as well. Okay, thank you. Okay, fine, I'll get it for you. Okay, I'll do one more mark, and then we'll go for the backup.

01 05 24 46      CDR      Houston, Apollo 7. Do you read now?

01 05 25 22      CMP      No, you didn't either, or else you're going to use them right here. Okay, VERB 85 coming up. Now, let's see. 10 seconds? Man, I didn't get so far, did I?

01 05 25 45      CDR      5, 4, 3, 2, 1 -

01 05 25 50      CDR      MARK.

01 05 25 51      CMP      That'll do it. Ready?

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Day 2

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01 05 26 05      CMP      Okay. I'm going to get a mark in between here.

01 05 26 43      CMP      Good deal.

01 05 26 53      CMP      Yes, he may, especially when he gets sunlight. I think once he gets out in the sun, it won't be so bad.

01 05 27 08      CMP      (Laughter)

01 05 27 11      CMP      Alright (laughter).

01 05 27 33      CMP      We should have a few minutes.

01 05 28 05      CMP      How many minutes, gang?

01 05 28 09      CMP      10. Okay. Don't lose track. I've got a watch running - after all, this timer down here is crummy - it's all screwy. Okay.

01 05 29 01      CMP      Okay, you finished? Okay.

01 05 29 07      CMP      Okay, I'm going to proceed at 22:30 and this will calculate a burn which we'll execute at this amplitude if it is big enough to be worthwhile. I hope it isn't. I'm going now.

01 05 29 26      CMP      We may be a little late. This thing is pokey compared to what our sim - the simulators show. If it's late, we'll just burn it late, Wally. I don't think it'll matter all that much.

01 05 29 43      CMP      Okay - that's about - hit it one more time - 3.6.

01 05 29 59      CMP      Yes, let's see what it says, first.

01 05 30 15      CMP      Okay. I don't particularly want to take off 3.7 feet per second. I'll go along with your value, Walt. Okay, let's take off about 2 and let it go. I can't believe it. I don't - yes, sir, it's 2.

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01 05 30 33      CMP      It'll - Okay, this is - Okay, yes. We're not - yes, just wait until I get to the ...

01 05 31 59      CMP      Okay, have I got time to do a mark, or do you want to watch your data?

01 05 32 12      CMP      Walt, what time is it? Wally?

01 05 32 18      CMP      16 or 44, whichever you got.

01 05 32 22      CMP      Okay, that's all I wanted.

01 05 32 50      CMP      Okay.

01 05 32 58      CMP      Yes, it'll do that now and then. I don't know what the hell's the matter with it.

01 05 33 08      CMP      Well, wait a minute. What the hell is it doing?

01 05 33 14      CMP      Okay, got it, Walt?

01 05 33 15      LMP      Yes.

01 05 33 16      CMP      I'm going to have to get at least a mark in here. Oops, I can't do that yet. I have to get out of this thing now.

01 05 33 55      CMP      Where are you now?

01 05 34 20      CMP      Well.

01 05 34 28      CMP      You're going to have to get this a little late then, because I - it's coming out of these marks.

01 05 34 35      CMP      Okay, good. I need it.

01 05 34 40      CMP      The DSKY is not pulling it in too well right now on the optics.

01 05 34 56      CC      Apollo 7, Houston through Carnarvon. Standing by.

01 05 35 00      CDR      Roger.

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01 05 35 07      CMP      I am almost tempted to do the marks in the telescope. The damn thing's jumping around so much.

01 05 35 17      CMP      Okay. You dirty bastard, you ran off again.

01 05 35 49      CMP      Okay. Got it?

01 05 36 01      CMP      Is that your first or your second one now?

01 05 36 07      CMP      Is that your last one? Recently? Okay. All right.

01 05 36 17      CC      7, 1 minute LOS; Guam in 7 minutes.

01 05 36 20      CDR      Roger. Coming up the pike.

01 05 36 23      CMP      Okay, we're performing our - -

01 05 36 24      CC      Roger.

01 05 36 25      CMP      - - midcourse and we're calculating for a minute and a half. I do have Orion, Wally, and think if we go on up, he'll come right up in your window when you get up there. Now, this thing never did pull it back into sextant, and it got it in within a couple of degrees in the telescope. That's about as good as it did, so I don't know what the hell - and the problem with the backup solution is that all I can see is the damn flashing lights, and they are all over the place, and it's just hard to, you know, say what's the middle of the booster. Okay.

01 05 36 56      CMP      Oh, sob! Hey, we're in! Look at that: 0.07! I can't believe it. Okay, alright, let me do the procedure. Call up 41 just for the hell of it - not for the hell of it, but just to see what it can tell us.

01 05 37 16      CMP      That's great. Look at that.

01 05 37 24      CMP      No, nothing.

01 05 37 26      CMP      That's right.

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01 05 37 29 CDR The last midcourse requires no correction.

01 05 37 32 CC Real fine news.

01 05 37 40 CMP Okay, don't - don't do any more thrusting because I'm going to P00, and it's - it's on to you, Wally, and I think if you pitch down to -

01 05 37 51 CMP Yes.

01 05 37 59 CMP What was our last angle, Walt?

01 05 38 01 CMP Okay, so if you pitch down to about 63, it ought to be there (laughter). I hope the hell it is.

01 05 38 10 CMP It's going to be bright. It's flashing, and it's erratic, and sometimes it's weak, and sometimes it almost blinds you. I don't know - it must be moving around. Well, I can't do much down here. I might as well.

01 05 38 20 CMP Yes.

01 05 38 36 CMP Okay, Wally, I'll bring the whole thing up there. There you go.

01 05 38 40 CMP Okay. Boy! I can tell we're -

01 05 38 44 CMP Wow! (Laughter)

01 05 38 48 CMP About -

01 05 39 08 CDR Apollo 7 coming right on up the pike.

01 05 39 13 CMP Boy! What a trauma. Jesus Christ! What would you do -

01 05 39 24 LMP I see it ...

01 05 39 32 CMP You know, if you could - okay.

01 05 39 34 CMP You are 2.7 miles by the DSKY and 31.8 closing. I don't really believe that.

01 05 39 46 CMP I'll - I'm very suspect of this DSKY solution.

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01 05 39 54      CMP      No, wait a minute, that's right. That's bleed-off.

01 05 40 07      CMP      Okay.

01 05 40 20      CMP      About 24-1/2 down. You are going to screw it up.

01 05 40 29      CMP      I hope we hit some daylight, for Christ's sake, before we get in there.

01 05 40 32      CDR      No, no, but - -

01 05 40 38      CMP      Okay, you're 29 feet per second closing, according to this. How big is he in your scope?

01 05 40 44      CMP      Okay. You can go DAP if you want to.

01 05 41 00      CMP      We're about to start. And let me get the program 47 - or 50, please.

01 05 41 06      CMP      Okay. Yes, you want a theta? See if he's on, I'll get it for you; coming up. Okay, I got 88.6. Is he in the middle, Wally?

01 05 41 22      CMP      Okay, then add one, Walt, because your sextant's a little off. No, subtract one, I guess you would. The hell with it! What the G&N is at this point doesn't matter - you're close enough to the line. It's just V going to - which way? Rotating, yes.

01 05 41 43      CMP      Wait a minute. Okay. Boy, we didn't get that! It won't matter. It doesn't matter; assume it'll just cost a little more; 47 hasn't come up yet, so if you want to get it all in - why - no. But that's all that you need, and hell, throw it in. We can estimate what you're shooting - what you're shooting here. It's okay. You can go now anytime. Yes. Either one. It matters not. Okay. It might be easier on SCS: you won't have to flip so many switches. Okay, he burned about a half a foot a second, right, Walt?

01 05 42 45      CMP      Yes, okay.

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01 05 42 49      CMP      Well, we're fatter than a hog right here; we've got more DELTA-V than we can - well, so far, we've only used about 24. So, you're going to have about - What's that? I hope they'll be coming to daylight pretty quick. Hold it there for your DELTA-V's. Okay.

01 05 43 32      CDR      I'd say 1-1/2 miles.

01 05 43 35      CMP      Your - your DELTA - your - your - the DSKY solution at this point is - is fine. It's 23 feet per second, closing at a mile and six tenths out and that should bleed off to about - well, it just popped to 22, so I don't know which one's right, but we're - we're beating the zone and here comes daylight, thank God. Well, you may - (Laughter)

01 05 44 01      CMP      Well, okay. Daylight with 2 feet left. It's 1 degree - -

01 05 44 28      CC      Apollo 7, Houston through Guam. Standing by.

01 05 44 29      CMP      - 1 degree. You're better off ...

01 05 44 32      CMP      Okay, go SCS and we'll - huh? SCS is too sloppy? Why don't you turn down MIN DEADBAND? Well, you're not going to save enough from here on in to matter, I don't think.

01 05 44 55      LMP      (Laughter)

01 05 45 00      CMP      How big is he? Can you get a measurement on the diameter? Oh. Now - you mean he's whirling around. Yes. Can you? If you could - if you can just get a gross hack, like - is it a degree or a tenth or - okay. Okay, you better take off some. I'd take off so far - about 5 feet a second. Yes.

01 05 45 48      CMP      Just check it off. I got it on the - on the outfit here ... Well, okay. You don't have to take it all off then if he's not half a degree. Okay. Maybe we should take the stop on ... Okay. You didn't pull off the

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whole 5, did you? Okay. Alright. You mind if I reach over and jeer at that DELTA-V meter for you now and then? That'll help me, too. Okay. Fine.

01 05 46 42      CMP      What did he - if he's a degree, you better start pulling off. Okay. You better pull some off because he's coming in pretty quick. I'd pull off at least 5 more.

01 05 46 56      CMP      He's not a degree yet. Okay, even if he's a degree, he's 1200 feet. Now I'm talking the diameter, not the SLA panel. Good enough. Okay. Okay. Okay, you better pull some more off. Is he 1 degree yet? Okay, pull it off. I'd say pull off about 8. Yes. So make it 13 on your dial. Yes. I wish I could see him (laughter). Okay. Okay, I think it's just about on you from here on in. Well, good thing. She hit another ... , huh?

01 05 48 09      LMP      You devil.

01 05 48 18      CMP      You on HIGH BIT RATE? Okay. Okay. Slowly, I hope (laughter). Okay. Good. Fine.

01 05 49 14      CMP      What's that? 130 degrees? Yes.

01 05 49 18      LMP      (Laughter)

01 05 49 19      CMP      This is it. Yes. 123 degrees (laughter). Where the hell is he? I'm going to sneak up and look. Maybe I can see him now. Yes, I can. You're in good shape. You're still quite a ways out. Well, from here on it's just drifting in. What is it, about a degree in your scope or a little bigger than that? Okay. Well.

01 05 49 52      CMP      Yes, ... in a while.

01 05 49 59      CMP      No. I don't know. You've been watching. I can't tell if it's drifting or not ...

01 05 50 04      LMP      I wouldn't worry about it. You're in good shape.

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01 05 50 07 LMP Yes.

01 05 50 52 CMP This says 37 feet per second. I don't know whether that's right or not. That's NOUN 40.

01 05 51 15 CMP Okay. Yes. I figure the - if this thing's right, you got - you're up to that.

01 05 51 25 CMP Well, what the hell is it doing? It keeps integrating all the time.

01 05 51 35 CC Apollo 7, Houston. 1 minute LOS Guam; Hawaii in 8 minutes.

01 05 51 38 CDR Roger. We're closing - we're about 700 feet, and we're just about locked up inertially.

01 05 51 46 CC Real fine, Wally.

01 05 51 47 CDR Looks like we used between 50 and 60 feet per second at this point, but we're just essentially holding station, moving in slow.

01 05 51 56 LMP 90.

01 05 51 57 CC Real fine.

01 05 51 59 CMP You - I don't - I -

01 05 52 01 CMP Hell, I don't know what I have frankly because these Goddamn numbers are jumping around on that DSKY like I've never seen it before. And I never do believe NOUN 40 because that son of a bitch sits there and integrates when there's nothing going on. So - I guess I'll have to eat my hat on that comment about - -

01 05 52 17 CDR What were we calculating?

01 05 52 19 LMP We could in the simulator, however - -

01 05 52 22 CMP However, today it's just all over the lot.

01 05 52 28 CMP I think I got most of it - we were pitching left and right there, and I couldn't quite

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keep up with - and I got one big one in here, 12 feet a second, I don't believe, because I don't think you ever burned that long in one direction.

01 05 52 42      CMP      Great. This is - hey, dad! You got to find what film?

01 05 52 56      CMP      A-men! It's really in now. ... really rolling (laughter).

01 05 53 09      CMP      That's why it's so hard to see, you know. Sometimes those lights get you right in the face and the next time they don't even flash.

01 05 53 31      CMP      Upper or lower?

01 05 53 41      CMP      (Laughter) Hey. Break out the champagne, God damn it, we made it!

01 05 53 45      CDR      Right, I have a whole cup of coffee to celebrate that mother!

01 05 53 50      CMP      Yes. Get some 16's of that dude going around. That's great. That's a wild bomber, isn't it?

01 05 54 05      CMP      I need a drink (laughter).

01 05 54 13      CMP      How would you feel over there if that were a little bitty thing about 10 feet across and there were two guys in it? With no radar?

01 05 54 37      CMP      Huh?

01 05 54 44      CMP      Outstanding. Okay, watch it. He's coming in pretty fast. (Laughter)

01 05 55 07      CMP      I would say, Murphy, that you done made a rendezvous, or we done made a rendezvous. And we done stabilized it. Looks pretty good. See? Yes, I think that's close enough in ...

01 05 55 20      LMP      I want to record on tape, it looks like all four SLA panels are equally deployed now.

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01 05 55 27      CMP      Yes, and - she's still coming at us.

01 05 55 29      LMP      (Laughter) Just at you!

01 05 55 34      LMP      Looks pretty sturdy to me.

01 05 55 39      CMP      I think on this fuel budget I'm just going to  
take this ... number for what it's worth,  
and use whatever PIPA bias is built in there.

01 05 55 49      CMP      Okay.

01 05 55 56      CDR      20. She's coming up on 21.

01 05 56 01      CMP      Yes?

01 05 56 14      CMP      Okay, Wally. You've used about 80. I guess  
we'd better knock off, huh? If we can get  
her stabilized and sit there, fine. If not,  
I guess we'd better shove off.

01 05 56 29      CMP      Well, we're not very far. You've got 200 or  
300 feet, maybe.

01 05 56 37      CMP      Well, I don't know, I can't tell from where  
I'm sitting. How big is it in the sextant -  
in the reticle there, Wally?

01 05 56 46      CMP      Does he fill it? Is he - 10 degrees. Okay,  
he's about 120 feet, Walt. I gave you a bum  
steer.

01 05 56 55      CMP      Yes.

01 05 56 57      CMP      Nice job, Walt.

01 05 57 00      CMP      Yes.

01 05 57 01      LMP      ... 10 degrees.

01 05 57 03      CMP      Yes, look at that.

01 05 57 05      CMP      No, your midcourse solution saved our ass.  
If we'd burned that DSKY solution, which I  
wouldn't have believed anyway, but if we'd

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burned that midcourse on the DSKY we would not - probably slid up in there at night.

01 05 57 16      CMP      You didn't have any up until now, did you?

01 05 57 20      CMP      No, I mean at the end there. You didn't do any Z at all hardly.

01 05 57 34      CMP      What - what time is it? Well, the time was about right, too. We were pretty close to nominal.

01 05 57 35      CMP      Yes.

01 05 57 36      CDR      You look like ...

01 05 57 38      CMP      (Laughter) Hey, we're 2 minutes early, gang.  
(Laughter)

01 05 57 43      CMP      29:57. No, actually - with the TPI on here. We were just about on the nominal. I - I'd judge we've been here about 5 minutes station-keeping.

01 05 58 11      CMP      (Laughter) Okay. 19 and -

01 05 58 31      CMP      Okay. I'm going to have to say we used about - well, if I believe this NOUN 40, which I really don't, I don't think we used that much, but if you do, then we've used up about 80 feet a second, 78 - or so. Something like that. But I don't believe NOUN 40 because, according to the word I got, that thing integrates PIPA pulses both ways, and you know that -

01 05 59 03      CMP      Oh - -

01 05 59 20      CMP      ... Isn't that pretty? That thing - -

01 05 59 25      CC      Apollo 7, Houston over Hawaii.

01 05 59 29      CMP      Go, man.

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01 05 59 30 CDR Roger, we're in station with it. About 150 out. It's - and tumbling in almost any random direction.

01 05 59 37 CC Roger. Understand.

01 05 59 42 LMP It looks like the fourth SLA panel finally deployed fully.

01 05 59 52 CC We got some poor COMM this time, Walt. We'll stand by a little bit until we get in a little closer.

01 06 00 02 CDR Roger. Do you understand we are in station-keeping with the S-IVB?

01 06 00 09 CMP I guess he doesn't (laughter).

01 06 00 12 CC Roger, we copy stationkeeping.

01 06 00 14 CMP He did. Good.

01 06 00 28 CMP Wow!

01 06 00 35 CC Apollo 7, Houston. How do you read now?

01 06 00 38 CDR Loud and clear, Jack. Go.

01 06 00 39 CC Okay. You're real fine now, Walt. We have just switched to S-band.

01 06 00 44 CMP ... we had a DSKY solution of 3.6 to the midcourse. Walt had a 1.7 solution on his charts, and we split the difference and did 2 feet per second aft that slid us right in there, and except for a little bit of cross-point corrections that Wally had to make at the tail end, we were nominal, right up the pike. According to NOUN 40 guesstimates of fuel used, we've used about 70 - 60 feet per second. However, NOUN 40 integrates velocity when you are not thrusting, so I think we used somewhat less than that, probably on the order of 60 to 65 feet per second.

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01 06 01 31 CC Roger, copy that.

01 06 01 36 IMP On your PCM high data, we had a loss of contact with the S-IVB just prior to TPI, and in the confusion here, I didn't get a HIGH BIT RATE data. The TPI burn we had a high bit data on the midcourse burn and final RCS thrusting on in.

01 06 01 54 CC Okay, copy that.

01 06 01 58 CC Walt, I have your separation pad whenever you are ready to copy that.

01 06 02 02 LMP Wait 1.

01 06 02 04 CDR ...

01 06 02 10 CC Apollo 7, Houston. How close are you now?

01 06 02 13 CDR Pretty close. We're about 70 feet. It's tumbling rather wildly, so we're trying to stay away from it.

01 06 02 20 CC We understand.

01 06 02 22 LMP Ready to copy, Jack. Go.

01 06 02 24 CC Okay, separation pad 030, 20 - -

01 13 47 01 LMP ... if it's big enough to ...

01 13 48 20 CC Apollo 7, Houston.

01 13 48 23 LMP Go ahead.

01 13 48 24 CC At your first ... turns out from lift-off until Canaries then because the rewind and everything, we do not have that on voice.

01 13 48 30 LMP You don't have that, huh?

01 13 48 38 LMP Okay, when we get the tape back, we'll probably try to put some on it.

01 13 48 42 CC Okay.

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01 13 48 47 CC Apollo 7, Houston. We're about - we're close to LOS, and you're going to have the tape back. We're just about finished on the rendezvous dump.

01 13 48 57 LMP Roger, thank you. We just finished chlorinating the water again.

01 14 08 03 CC Apollo 7, this is Houston. We have acquisition at Redstone.

01 14 08 11 CMP Roger, Houston. Loud and clear.

01 14 15 32 CC Apollo 7, Houston. We have 1 minute to LOS Redstone.

01 14 15 37 CDR Roger. We got it.

01 14 20 09 LMP At about 38, 8 minutes and 30 seconds, I spotted a satellite passing through the Southern Cross - at varying degrees.

01 14 20 41 LMP I observed it by reflected light.

01 14 34 28 CC Apollo 7, Houston through Ascension.

01 14 34 32 CDR Houston, 7. Standing by.

01 14 34 36 CC Roger. Read you about 4 by, Wally.

01 14 34 41 CDR Roger, we're reading you weak, too.

01 14 34 52 CDR That's the time ...

01 14 40 28 CC Roger. Well, we're about 1 minute to LOS Ascension, Wally. And we'll catch you next time over the Pacific.

01 14 40 35 CDR Roger.

01 14 42 34 CC Apollo 7, Houston.

01 14 48 15 LMP At 38 hours 48 minutes into the flight, we're taking color pictures over Africa; magazine Q. These are up around frame 6. There's a beautiful shot of a crater. It might be Tabol.

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01 14 51 03 LMP At 38:50:35, got another picture of Africa.  
It's ...

01 15 05 17 LMP LMP took one Actifed at 39 hours into the  
flight.

01 15 12 10 LMP Houston, Apollo 7. How do you read?

01 15 12 21 CC Apollo 7, Houston.

01 15 12 24 LMP Roger, reading you 5 square. How me?

01 15 12 29 CC We read. I have block data to give you over  
Guam in 10 minutes - about 5 minutes.

01 15 12 41 LMP Roger, block data over Guam.

01 15 21 50 CC ... 0662, 049:15:09, 4650. Coming up on  
LOS.

01 15 23 15 CDR Roger, understand. I'll read back later,  
then.

01 15 23 19 CC Roger. Thank you.

01 15 42 35 CC Apollo 7, Houston.

01 16 14 24 CC Apollo 7, Houston. Acquisition Canary.

01 16 14 29 LMP Roger, Houston.

01 17 26 53 CDR This is CDR with ATC high light. I suspect  
the same problem we had earlier. Except that  
I hadn't had time to ...

01 17 27 13 CDR Alright.

01 17 34 08 CMP Time, 41:34; I'd like to record the results of  
the P23 sextant calibration test. On this test  
I used Canopus as the bright star and Rigel as  
the dim star. Unfortunately, there wasn't any  
third star within the field of view of Canopus,  
but I just went ahead and put Canopus at the  
center reticles for the only other star we  
could get to, and that's Rigel. I started the  
P23 as per checklist, and ... The only comment

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I have is that it's a rather tedious, time-consuming, and fuel-costly procedure, and the benefits we gain by it, I don't think, justify it.

01 17 35 01      CMP      The trunnion bias check: when it was first displayed, NOUN 87 - P23 came up with 00000.

01 17 35 20      CMP      The second NOUN 87 which is the shaft and trunnion one - I had the two stars superimposed - was plus 29188, plus 1764 - correction plus 17674. The time was 41 hours 24 minutes into the flight.

01 17 37 45      CMP      At 41 hours 37 minutes, I'd like to record a fecal elimination. It took place about 40:45. My experience is about the same as Cunningham's. It's not too bad, if you take your time. I did strip down, took underwear off to do it. It's a process of hooking - reconnecting the BIOMED afterwards. I could only get one of the little screw-in plugs to stay up.

01 17 38 47      CC      Apollo 7, Houston.

01 17 38 50      CMP      Houston, go.

01 17 39 14      CMP      Houston, Apollo 7. Go.

01 17 39 38      CC      Apollo 7, Houston.

01 17 39 40      CMP      Houston, Apollo 7. Go.

01 17 39 44      CC      Roger. In reference to the water dump, we're reading 70 percent now; predicting a 90-percent level at approximately 45 hours, but no later than 46 hours. We'll have to dump at that time. It - it's right in the middle of the sleep period. Suggest dumping it as soon as you can in order to prevent interrupting them in the middle of their sleep cycle.

01 17 40 15      CMP      Roger, I got you, Bill. They're already asleep, and the way we got it rigged, it won't disturb either one of them.

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01 17 40 21      CMP      So I'd just as soon wait to 45 hours.

01 17 40 29      CC      Okay.

01 17 40 31      CMP      Good thinking!

01 17 40 34      CMP      Bill, could you give me those flight plan updates that Tom called awhile ago? I was right in the middle of a G&N exercise, and I didn't get to write it down.

01 17 40 42      CC      Okay, I'll start talking. I have about a minute and 15 seconds.

01 17 40 49      CC      Okay. At 44 hours, we'll give you the MCC update previously scheduled for 44 plus 40.

01 17 41 03      CMP      Roger.

01 17 41 06      CC      Okay. At 44 plus 36, perform "S-IVB tracking," which was previously scheduled at 46 plus 10. At that time - this new time - the S-IVB will be 169 nautical miles. The last item, at 45 plus 30, delete "P52 IMU realign."

01 17 41 48      CMP      Roger, understand, delete the P52 IMU realign. You want us to do a fine align at that time?

01 17 46 54      CC      Apollo 7, Houston.

01 17 46 56      CMP      Roger, Houston, go.

01 18 59 47      CC      Apollo 7, Houston. 1 minute LOS Redstone; Antigua at 3 plus 12.

01 18 59 58      CDR      Roger ... You got the ... okay.

01 19 01 00      CDR      Houston, Apollo 7. Go.

01 19 11 14      CC      Apollo 7, Houston.

01 19 11 17      CDR      7 to Houston, Apollo 7. Go.

01 19 11 20      CC      I have a couple of things for flight plan update.

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01 19 11 27 CDR Roger.

01 19 11 28 CC The first one is fuel cell O<sub>2</sub> purge at 45 plus 30; that's over Carnarvon.

01 19 11 49 CDR Roger. Fuel cell O<sub>2</sub> purge at 45 plus 30.

01 19 11 56 CC Roger. And just as a matter of information, have you checked any of the G&N control modes?

01 19 12 07 CDR Roger. We've used - I think it's normally to STOP and ... about half degree per second ... We've set AUTO maneuvers on our circuit breakers, and I think that - I also use the interlink panel controllers ...

01 19 12 27 CC Roger. 5 degrees per second, minimum DEADBAND, AUTO trim, minimum DEADBAND, and a minimum impulse controller in the LEB.

01 19 12 37 CDR Roger.

01 19 17 33 CDR ... , Apollo 7.

01 19 17 45 CMP Houston, Apollo 7.

01 19 17 48 CC Roger, Apollo 7, Houston.

01 19 17 50 CMP Roger. There's a high-pitched interference coming over VHF. Have you got any idea what it is? Are you picking it up down there?

01 19 18 01 CC High-pitched interference on VHF A. Negative. Stand by.

01 19 18 08 CC Donn, it was about the same place last night where you picked up the music?

01 19 18 13 CMP Roger, that's the ...

01 19 18 30 CC Apollo 7, Houston. The net is looking at it.

01 19 18 33 CMP Okay. It's gone now.

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01 20 03 52 CC Apollo 7, Houston. You're about 1 minute LOS Canaries. We'll pick you up over Carnarvon in about 28 minutes.

01 20 32 00 CC Apollo 7, Houston. 1 minute LOS Redstone.

01 20 32 10 CMP Roger, Jack. Read you very weak.

01 20 32 14 CC You're 5 by, Donn.

01 20 43 25 CC Apollo 7, Houston. Standing by.

01 20 43 29 CMP Roger, Jack.

01 20 43 32 CC Roger.

01 20 43 34 CMP I'll check the target out over Texas.

01 21 31 54 CC Apollo 7, Houston through Carnarvon. Standing by.

01 21 48 14 CMP Roger, Jack.

01 22 57 39 CC Apollo 7, Houston. 1 minute LOS Tananarive; Carnarvon in about 9 minutes.

01 22 57 47 CMP Roger.

01 23 06 57 CC Apollo 7, Houston through Carnarvon. Standing by.

01 23 07 02 CMP Roger.

01 23 07 08 CMP Jack, could you get us a map up, please?

01 23 07 12 CC Will do; we're working on it.

01 23 40 44 CC Apollo 7, Houston through the Huntsville.

01 23 40 52 CMP Roger, Houston. This is Apollo 7.

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02 00 25 56      CC      Apollo 7, Houston through Tananarive.

02 00 26 02      CMP      Roger.

02 00 29 20      CMP      Houston, Apollo 7.

02 00 29 24      CC      Go ahead, 7.

02 00 29 25      CMP      Roger. We've got a lockup in the COMP cycle of program 21. Would you get a G&N guy to give us a handy-dandy on what to do to correct that? There's a little procedure for me to get out of it.

02 00 29 42      CC      Okay. I understand that you're locked up in program 21?

02 00 29 46      CMP      Roger, it's in the COMP cycle. I loaded in present time and then hit the PROCEED button and the COMP light's been on ever since.

02 00 30 06      CC      Okay. Stand by, 7. We are getting somebody to help us down here.

02 00 30 10      CMP      Okay.

02 00 31 00      CC      Apollo 7, Houston.

02 00 31 03      CMP      Roger. Go.

02 00 31 05      CC      Donn, can you tell us what display you had in the program when you hit the PROCEED button?

02 00 31 12      CMP      Roger, I had the time in, the NOUN 34 display. I loaded in present time, hit the PROCEED button, and it went into its normal COMP cycle. It usually takes about a minute to calculate your position, and it's been there ever since for several minutes now.

02 00 31 28      CC      Could you say again? We missed the display.

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02 00 31 31      CMP      Roger. NOUN 34. I loaded the data, hit PROCEED, and it's been in COMP ever since.

02 00 31 49      CC      Apollo 7, Houston. I understand you had the time in there, and it was going to integrate ahead to figure out where you were, and that is the procedure you are talking about?

02 00 31 58      CMP      That's right.

02 00 32 14      CC      What time did you put in there, Apollo 7?

02 00 32 18      CMP      I put in 48:26 - 25 or 26. I don't remember now.

02 00 32 48      CMP      Houston. We've got a downlink path light also on our program alarm.

02 00 34 05      CC      Apollo 7. We're going to have continuous coverage through ARIA 1 unit until we reach Carnarvon.

02 00 34 11      CMP      Roger, understand. Ask him if I can do VERB 99? See if that will fix it.

02 00 39 13      CMP      Houston, Apollo 7.

02 00 42 03      CC      Apollo 7, Houston through Carnarvon.

02 00 42 05      CMP      Roger. Go, Carn - Houston.

02 00 42 08      CC      Roger, real fine. How did you - did you come out okay on P21, Donn?

02 00 42 13      CMP      Yes, it finally quit integrating, and I had already asked it to go to POO, so it went straight to POO.

02 00 42 21      CC      Okay, real fine, and I've got some discussion on the primary evaporator to take up with Walt here.

02 00 42 30      CMP      Okay, he's listening.

02 00 51 57      CDR      Got you, Jack.

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02 00 52 08      CMP      Rate check.

02 00 55 08      CMP      Roger. Go, Houston.

02 00 59 55      CMP      Eisele had 10 flicks of water at 48:59.

02 01 09 21      CC      Apollo 7, Houston.

02 01 09 23      CMP      Roger, Houston.

02 01 09 36      CC      Apollo 7, Houston through Hawaii.

02 01 09 38      CMP      Roger, Jack. Hey listen, on this G&N test, we don't want to build up a rate, then take it out. That wastes too much fuel, and we are a little shy anyway. What I was asking you is what rate setting you want on the DAP load, but I'll just use 0.2, and I suggest we just put it in wide DEADBAND, ATTITUDE HOLD, and let it sit there awhile.

02 01 09 59      CC      Apollo 7, Houston.

02 01 10 05      CMP      Houston, Apollo 7. Go.

02 01 10 18      CC      Apollo 7, Houston with an update.

02 01 10 27      CMP      Roger, Jack. What is the update?

02 01 10 32      CMP      Go with your update.

02 01 10 43      CC      Apollo 7, do you read Houston?

02 01 10 45      CMP      Roger.

02 01 10 48      CC      Okay, Donn, we have an update on DAP rate DEADBAND we'd like you to set in. We would like you to set in 0.2 degree per second for the rate DEADBAND for the G&N attitude control test.

02 01 11 05      CMP      Okay, I've already got that in. Jack, I'm not going to do the - -

02 03 17 59      LMP      10 clicks of water for the LMP at 5 - at 51 hours and 17 minutes.

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02 03 26 20 CC Apollo 7, Houston.

02 03 26 25 CDR Go ahead.

02 03 26 27 CC Wally, could you confirm your reservations about the SPS engine? Does that have to do with the GPI movement that you observed?

02 03 26 38 CDR Negative. We had a basic rule beforehand with the flight director that we would not go into the SM RCS reserve until we knew that we had a good SPS engine.

02 03 26 53 CC Okay. We copy.

02 03 26 54 CDR Roger. I would like one more burn - -

02 03 26 56 CC Okay.

02 03 27 00 CDR - - at this point.

02 03 27 02 CC We understand. Stand by. We'll be - discuss that.

02 03 37 06 LMP Gyro-torquing angles are minus 0.420, minus 0.175, plus 0.149.

02 03 37 32 CC Apollo 7, Houston through Tananarive.

02 03 37 36 CDR Roger. Apollo 7.

02 03 37 40 CMP You can log the gyro-torquing angles for this realignment, minus 0.420, minus 0.175, plus 0.149.

02 03 37 50 CMP I used Peacock and Antares. Star angle difference, 00001.

02 03 38 02 CC Roger. Donn, I've got - I've got 0.175, 0.149, I didn't catch the first one.

02 03 38 11 CMP Okay, the first one was minus 0.420.

02 03 38 16 CC 0.420. Star angle difference of 00001. And say again the stars.

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02 03 38 23 LMP Antares and Peacock. And on those torquing angles, the first was a minus, the second was a minus, and the third was a plus.

02 03 38 32 CC Roger. Copy.

02 03 38 39 CC Now, Walt, is - is Wally on the line?

02 03 38 42 LMP Yes.

02 03 38 43 CDR Go ahead.

02 03 38 45 CDR Go ahead, Jack.

02 03 38 50 CDR CDR here.

02 03 39 00 CC Apollo 7, Houston.

02 03 39 03 CDR CDR speaking.

02 03 39 05 CC Roger. About the SPS problem: after discussion down here, our feeling is that the SPS is GO. However, we have a DAP service module RCS deorbit capability at the present time. And we are within 10 feet per second of an SCS service module RCS deorbit capability.

02 03 39 37 CDR Roger. That was our figuring here, and we'd like to hold that in reserve as much as possible.

02 03 39 48 CDR After the third ... burn when we get to a lower perigee here, I think we'll feel much more comfortable.

02 03 39 54 CC Wally, we're not able to read you at this time. We'll pick you up with that last transmission over Carnarvon.

02 03 40 04 CDR Roger.

02 03 43 31 CDR Houston, Apollo 7.

02 03 43 46 CMP Walt's doing his second fine alignment. He did pretty well once he figured out that there weren't any numbers pasted on the star ball.

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02 06 05 39 LMP Houston, Apollo 7. Frame 34 on magazine Q, clouds approaching the western coast of Mexico.

02 06 05 51 CC Say again, Walt.

02 06 05 53 CC Opposite OMNI.

02 06 06 00 LMP Approaching the west coast of Mexico, frame 34, magazine Q, some cloud formations.

02 06 11 21 LMP Frames 41, 42, and 43 were Las Brisas Harbor, Acapulco, Mexico.

02 06 11 34 LMP You copy?

02 06 11 40 LMP Houston, Apollo 7.

02 06 12 16 CC Apollo 7, Houston. 30 seconds LOS; Tananarive at 46 minutes.

02 06 12 23 LMP Roger. Frames 42, 43, 44 were of Las Brisas Harbor, Acapulco, Mexico.

02 06 12 33 LMP Did you read?

02 06 12 43 LMP Magazine Q, frames 42 through 44 were taken of Las Brisas Harbor, Acapulco, Mexico. They were taken at 54 hours and 10 minutes into the flight.

02 06 18 54 CMP Roger, there are four stars hidden dimly in view at sunset minus 12 minutes.

02 06 19 11 CMP These stars are just sort of visible at the - if you look off to one side, you can see them a little bit. Dark adapting wouldn't do any good for this particular test, because there's so much daylight in the instruments and the telescope. The same light pattern I described before - an angular pattern around the edge of the thing and a broad belt across the center plus a big blob down at the bottom - it's not quite as bright as it was during the other test ..., but it is there, and it's going to prevent me from being dark adapted.

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02 06 22 29      CMP      I picked up about 25 stars at sunset minus 8 minutes. The light - no identifiable constellations at this time, I don't know what part of the sky I'm looking at. I can take a look at somewhere at the southern hemisphere, but - in the vicinity of Acamar or Achernar, whichever it is, there's this big void spot down there; it's hard to find stars in.

02 06 23 30      CMP      One of the things that obscured this star data is the fact whenever the jet fires or the overboard vent vents, you get a lot of particles that reflect light, and you can't see anything except that. All I see is a big field of bright spots out there.

02 06 26 08      CMP      This at sunset minus 4 minutes and still obliterated by the field of particles, not possible to see the stars for the little bits and pieces coming out of the vent.

02 06 29 50      LMP      Okay, this is sunset. We still have the same problem, these particles are flying around and there's no way that I can - particles are still flying around at sunset, and there's no way I can distinguish stars from particles. I think the reason we didn't see these at the test at sunrise was that the spacecraft has been running cool through the dark side of the earth and probably wasn't boiling any water at that time. That terminates the star count.

02 06 43 10      LMP      CDR, 10 clicks. And an afterthought, one Lomotil.

02 06 46 41      CC      Apollo 7, Apollo 7, Houston, Tananarive. Standing by.

02 06 46 44      LMP      Roger.

02 06 46 48      LMP      You can log another food bag failure on - We powered down at 54:35 for drifting flight configuration.

02 06 47 04      CC      Say again the time, Walt.

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02 06 47 07 LMP At 54:35, we powered down to the drifting flight configuration, and I have another food bag failure to report.

02 06 47 14 CC Roger. How did the second one fail?

02 06 47 18 LMP That's the second one, and it was day 3, meal B for the LMP - the chocolate pudding. And the failure occurred at the spout where it comes out, at the eating end, and the seam seems to have given away where the ... begins.

02 06 47 57 LMP Did you receive, Houston?

02 06 48 03 CC Walt, I got part of that, but I couldn't get it all. Chocolate pudding bag failed, but I'm not sure how, yet.

02 06 48 10 LMP Okay, it failed at the eating end. It was not one of the external seams, but it made it impossible to eat it.

02 06 48 19 CC Roger, I understand now.

02 06 48 22 LMP Chocolate pudding, day 3, meal B.

02 06 48 29 CC Roger.

02 06 48 33 LMP On that last pass along the western coast of Mexico, we got several nice pictures of Las Brisas Harbor in Acapulco, Mexico.

02 06 48 46 CC Roger.

02 06 49 27 LMP Houston, Apollo 7.

02 06 49 29 CC Houston, go.

02 06 49 30 LMP I'd like to give you a status on the way we're eating. We're eating, I'd say as much as we can get down, and this is about two meals a day so far.

02 06 49 46 CC Roger.

02 06 49 48 LMP Donn Eisele is maintaining the pace pretty well, about two and one-half meals a day.

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02 06 49 55      CC      Roger, Donn is a big eater.

02 06 49 59      LMP      Say again.

02 06 50 01      CC      Roger, Donn is the big eater.

02 06 50 04      LMP      That's affirm (laughter).

02 06 50 09      LMP      We've been on the Exer-Genie as much as 30 minutes at a time, and we've doubled the workload on it, and there's not much more we can do. If we're not hungry, we don't eat. I think we're all feeling pretty perky. There's no discomfort up here. My cold has improved considerably.

02 06 50 33      CC      Roger, that's good.

02 06 50 48      LMP      While on the subject, what we are concerned about is the chlorination of the drinking water. We're drinking about as much as we can. I don't think that we've consumed enough water to lower the quantity sufficiently to keep adding chlorine to it!

02 06 51 10      CC      Say again, Walt.

02 06 51 11      LMP      Roger, we're due to add more chlorine to our potable water. We have not consumed enough of it to warrant adding a lot of chlorine to it.

02 06 51 36      LMP      We can't say subjectively - we do not object to the taste at this point.

02 06 51 43      CC      Apollo 7, Houston. Say again about the chlorine and potable water.

02 06 51 48      LMP      Roger, we query the advisability of adding chlorine on schedule to the potable water. At this point, there is not an objectionable taste to the water.

02 06 53 11      LMP      Houston, Apollo 7: Still read? 10 clicks of the water gun for the LMP at 54 hours and 53 minutes.

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02 06 54 32 CC Apollo 7, Houston. 30 seconds to LOS;  
Mercury at 09.

02 06 54 39 CDR Roger.

02 07 10 01 LMP At 55:09 GMT or GET, 16 frames or test posi-  
tion movie was made of Orion with the moon in  
the background, known as the pigtail in space.

02 07 10 33 LMP To better illustrate the picture - -

02 07 39 10 CC Apollo 7, Houston. 1 minute LOS; Tananarive  
at 20 minutes.

02 07 39 18 LMP Roger. Thank you.

02 08 23 10 CC Apollo 7, Houston, Tananarive. Standing by.

02 08 23 14 CDR Apollo 7, Roger.

02 08 23 16 CDR Apollo 7, Roger.

02 08 23 18 CC Roger.

02 08 23 22 LMP Hey, Ron. Could you give me a readout on  
my oxygen manifold pressures if I turn my  
valves ON and OFF? Over.

02 08 23 34 CC Not this pass, Walt. We have no data here.  
We should be able to pick that up over  
Mercury, though.

02 08 23 42 LMP Roger, I'll stand by for Mercury.

02 09 15 59 CDR The center hatch window is smeared, and I've  
taken two photographs of it: 25 and 26,  
S0368, magazine N for November, N for  
November.

02 09 59 50 CC Apollo 7, Houston, Tananarive. Standing by.

02 09 59 54 CDR Roger.

02 09 59 56 CC Roger. Loud and clear.

02 10 00 24 CDR ... and we are chlorinating water at this time.

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02 10 00 30 CC Roger. A short pass; 1 minute to LOS.

02 10 00 33 CDR Roger.

02 10 15 49 CMP ... This is Donn Eisele (laughter).

02 10 15 54 LMP ... (Laughter)

02 10 15 57 CMP ... the darling lunar module pilot.

02 10 16 10 CMP CMP has his ... day 2, meal B to the LMP.

02 10 19 50 CC Apollo 7, Houston, Mercury. Standing by.

02 10 19 54 CDR Roger. Loud and clear.

02 10 19 57 CC Roger, the same.

02 10 20 24 LMP Houston, Apollo 7.

02 10 20 27 CC Houston, go.

02 10 20 29 LMP Roger. For your flight plan status, we've accomplished everything scheduled on the flight plan. We're having a little bit of trouble getting all the pictures; I think we've got a camera that isn't working too good.

02 10 20 47 CC Roger. Is this the Hasselblad that's not working too good?

02 10 20 53 LMP Roger. We got it fixed so it's clicking along now.

02 10 20 57 CC Roger.

02 10 21 02 LMP We only took two rolls of the S0368 on the 16mm: one for the separation and turnaround maneuver and one on the final phase of the rendezvous. We're going to be using more of it out the window as it seems appropriate.

02 10 21 19 CC Roger.

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02 10 37 44      CC      Apollo 7, Houston, Hawaii.

02 10 37 48      CDR      We're fine. How are you?

02 10 37 56      CDR      Houston, Apollo 7. Do you read?

02 10 38 15      CC      Apollo 7, Houston.

02 10 38 18      CDR      How-wah-ee?

02 11 22 29      CC      Apollo 7, Houston, Ascension. Standing by.

02 11 22 32      CDR      Roger, loud and clear.

02 11 22 36      CC      Roger. Same.

02 11 24 03      LMP      Houston, Apollo 7. Can you give me a map  
update for our map?

02 11 24 09      CC      Roger, stand by.

02 11 24 23      CC      Apollo 7, Houston. Ready to copy?

02 11 24 27      LMP      Ready to copy, go.

02 11 24 29      CC      Roger. REV 38, GET node, 59 plus 32 plus 03;  
longitude, 24.7 east; right ascension, 05  
plus 44.

02 11 24 50      LMP      Say again longitude again, please.

02 11 24 53      CC      Longitude, 24.7 east.

02 11 24 59      LMP      Is that 24.7?

02 11 25 02      CC      Roger, 24.7.

02 11 25 07      LMP      Thank you.

02 11 41 18      LMP      Frame 47, magazine Q: desert between Red Sea  
and the Gulf of Oman.

02 11 41 42      LMP      Frame 48, the same - frame 48, the same place.

02 11 43 25      LMP      Frame 48 and 49 - 49, 50, just south of Muscat -

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02 11 43 36 LMP - coming across the Gulf of Oman.

02 11 43 52 LMP 51 and 52 ... along the track, same area.

02 11 45 12 LMP 51 - 51 was an ... flying from Karachi to New Delhi.

02 11 51 33 LMP The center window hasn't been up to any decent pictures because of the way it fogged up. It would have been better had the lines extended only halfway as far out to the edge as they are, to the line.

02 11 51 54 LMP Right now, the lines look like they are about 3 inches long extending from the edge of the window. An inch and a half would have been plenty to get a reference for the horizon.

02 11 56 06 LMP Frame 53, magazine Q: Yangtze River near Chunking.

02 11 57 14 LMP Frame 54 was the ... Peninsula, and frame 53 was Chunking and the Yangtze River.

02 11 59 28 LMP Frame 55 ... That is ... near Kyushu.

02 12 05 11 CC Apollo 7, Houston. 1 minute LOS; Redstone at 26.

02 12 05 18 LMP Roger. We'd like to give you the results of the rendezvous radar self-test, but we're not clear on the use of the rendezvous radar power switch. Could you pass that up to us, Ron?

02 12 05 35 CC Say again, Walt.

02 12 05 37 LMP Would you happen to know the exact position of the rendezvous radar power switch, the - rendezvous radar self-test, we don't have that onboard with us.

02 12 05 52 CC Roger. Awful hard to understand. Something about a power switch and I'll guess which one. I'll find out.

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02 12 05 57 LMP Rendezvous radar power switch and it's a three-position switch ...

02 12 06 07 CC Roger.

02 12 20 12 LMP Frame 56 on magazine Q: a small island, at 60 hours 20 minutes and 10 seconds.

02 12 21 19 CDR There ought to be quite a bit - quite a ... RPM. Why I don't know.

02 12 26 23 CC Apollo 7, Houston through the Redstone.

02 12 26 27 CDR Apollo 7. Loud and clear. Go ahead.

02 12 52 59 CC Apollo 7, Houston.

02 12 53 04 CDR Houston, Apollo 7.

02 12 53 08 CC Roger. I can continue with that transponder check now if you want.

02 12 53 11 CDR I think I have the data for you, if you are ready to copy.

02 12 53 16 CDR Will give you radiator and heater pad.

02 12 53 20 CDR I've got 3.3. Over.

02 13 12 48 CDR Frame number 58 was of the shoreline of the Arabian coast.

02 13 22 13 LMP At 61 hours and 5 minutes into the flight, we had a MASTER ALARM and no caution-warning light lighted. And we didn't know really what caused that. At 61 hours and 22 minutes into the flight, we had a MASTER ALARM; AC BUS 1 and AC BUS 2 caution-warning lights came on, and ... both buses, all phases. The voltage was less than 90. Both buses reset and the voltage on all phases, all buses ... manual ... in between 114 and 116.

02 13 23 12 CDR Other than that, we have no problems!

02 13 30 00 CC Apollo 7, Houston. Acquisition Mercury.

02 13 30 05 CDR Houston, Apollo 7. Do you read?

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02 13 30 10 CC Apollo 7, Houston. Go.

02 13 30 13 CDR Roger, we had a fairly traumatic experience on the way to Pakistan tonight. Both AC BUS 1 and AC BUS 2 shut down and reset immediately after, but we had a ghost prior to that, where we had a MASTER ALARM and no readout on the caution-warning panel. Over.

02 13 31 26 CDR Houston, Apollo 7. Do you read?

02 13 31 33 CC Apollo 7, Houston. You are unreadable right now.

02 13 31 42 CDR Houston, Apollo 7. Say again.

02 13 33 59 CC Apollo 7, Hou - -

02 13 34 01 CDR Apollo 7. Did you read my last?

02 13 34 07 CDR Houston, Apollo 7.

02 13 34 14 CC Apollo 7, Houston. I read you about strength 1 and virtually unreadable.

02 13 34 21 CDR Roger. Do you read me now?

02 13 34 24 CC Roger. That's much better. Go.

02 13 34 28 CDR Apollo 7. Say again.

02 13 34 31 CC Apollo 7, Houston. At acquisition Mercury, you gave me a transmission. All I copied was something about caution and warning panel. Would you say again?

02 13 34 46 CDR Roger. This is Apollo 7. Just prior to crossing the Red Sea, we lost AC BUS 1 and AC BUS 2. Both buses reset almost immediately. Prior to that time, we had lost - had had a caution and warning alarm and no indication of what caused it. Over.

02 13 35 19 CC Apollo 7, Houston. Understand just after crossing the Red Sea, you lost AC BUS 1 and AC BUS 2. You have obtained reset. I am

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going to wait over Guam and go with this again. I am missing too much of the transmission.

02 13 35 37 CDR Roger. You have the story now.

02 13 57 09 LMP At 61 hours and 57 minutes, it's noted that the cabin temperature indicator now shows 70 degrees, and the suit temperature scale is showing about 53 degrees. Immediately subsequent to powering down to get to flight configuration, it was noted that the suit temperature was like 55 degrees and the cabin temperature was about 75.

02 14 09 03 CC Apollo 7, Houston. Coming up on LOS Redstone; Ascension at 27.

02 14 09 10 LMP Roger. We'll be standing by.

02 14 09 13 CC And the tape recorder is yours now.

02 14 09 16 LMP Okay.

02 14 09 20 CDR CAP COMM, this is Wally.

02 14 09 24 CDR Houston, this is Wally.

02 14 09 27 CDR Jack, you might just check into that configuration. There's a last-minute change on inverter safety wiring.

02 14 09 38 CC Roger. Check into the inverter safety wiring.

02 14 09 40 CDR There's a new change on - in the glitches that they had at the plant.

02 14 09 48 CC Roger.

02 14 09 50 LMP I think Wally is referring to the change when they disconnected the overload sensor.

02 14 29 33 CC Apollo 7, Houston.

02 14 29 35 CDR ... Apollo 7, go.

02 14 29 37 CC ...

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02 14 29 40 CDR Okay.

02 14 29 46 CDR ...

02 23 37 52 CC Okay, now after we finish WSMR, when we come up for the TV pass for - Walt, make sure that the tape position is OFF. Over.

02 23 40 05 CDR Roger, just stand by and keep panning.

02 23 40 06 CC Okay.

02 23 40 08 LMP Tape OFF now.

02 23 40 21 CC Okay, Walt. Again the tape should stop the DSE and the tape OFF at 71 plus 46.

02 23 40 28 LMP The tape is stopped now, and the DSE is running, and I can keep the DSE running - Can I keep the DSE running while the TV's on?

02 23 40 40 CC You sure can, Walt, no problem.

02 23 40 44 LMP Roger.

02 23 41 19 CC Apollo 7, Houston. Looks like we have a real pretty day down here.

02 23 41 22 CDR Roger, we'll try to look for you.

02 23 42 06 LMP Houston, Apollo 7.

02 23 42 08 CC Go ahead.

02 23 42 09 LMP Roger, at what time do you want the TV turned on?

02 23 42 12 CC Say again.

02 23 42 14 LMP At what time do you want the TV turned on?

02 23 42 16 CC Stand by.

02 23 42 17 CC Roger, we're ready for TV now. Turn it on.

02 23 42 35 LMP TV going on ...

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02 23 42 42 CC -- looking at it now --

02 23 43 38 CC Say again.

02 23 43 41 LMP Repeat the time for DSE stop.

02 23 43 44 CC DSE stop at 71 plus 46 plus 00.

02 23 43 48 LMP Roger, 46.

02 23 43 51 CC Apollo 7, Houston. Verify you're on OMNI Alfa.

02 23 43 56 LMP Verified.

02 23 43 58 CC Roger, looks like the signal strength is a little low down here.

02 23 44 01 CDR Okay, we're watching.

02 23 44 03 LMP I'm reading 1 volt is all, and we did not get a full 20 minutes to warm up on this thing --

02 23 44 12 LMP We're getting 1 volt on our test meter.

02 23 44 15 CC Okay.

02 23 44 25 CC Donn, turn your head to the right. There you go. Hey, we're picking up - I can read it, just a minute. It says "From That Lovely Apollo" something - you guys should write - "High Atop Something." It looks good, I can see Wally handle it now. "From the Lovely Apollo Room High Atop Everything."

02 23 44 52 CC The definition is pretty good down here. I can see the center hatch. Actually, I'm amazed. It looks real good. Donn, how about saying something, since you're panned.

02 23 45 07 CMP Say again.

02 23 45 09 CC I can read you - see you - loud and clear.

02 23 45 11 CMP Good.

02 23 45 15 CC It really looks good, I'm amazed.

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02 23 45 18      CMP      It's coming in heads down, you want us to point - -

02 23 45 22      CC      Lean back a little bit, you're too close to the camera - there you are.

02 23 45 26      CC      We'll have Cecil B. de Stafford down here, directing.

02 23 45 30      CMP      (Laughter.)

02 23 45 32      CC      You forgot to shave this morning, Eisele.

02 23 45 35      CMP      I lost my razor.

02 23 45 38      CC      Some of the reproductions here are real good. I can look out through Wally's rendezvous window. I can see the COAS up there and the ORB RATE ball.

02 23 45 49      CMP      We're traveling right down the Gulf Coast.

02 23 45 52      CC      What's the next one?

02 23 45 55      CC      Little closer, Wally.

02 23 45 56      CC      It says, "Keep Those Cards Coming" - "Keep Those Cards and Letters Coming, Folks." It's loud and clear.

02 23 46 12      CDR      Yes, sir, a funny show for the whole family.

02 23 46 15      LMP      Would you look out the window with the TV camera, I can give you New Orleans right here.

02 23 46 18      CC      Yes, let's take a look and see how New Orleans is this morning.

02 23 46 38      LMP      Roger. Coming up over the Mississippi River, I'm giving you an out-the-window picture. You should see - Lake Pontchartrain coming into view now.

02 23 46 50      CC      Okay, we're looking.

02 23 46 58      CMP      We're changing lenses; that's a pretty wide Lake Pontchartrain he gave you!

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02 23 49 39 CC Okay.

02 23 49 46 CC Okay, it looks like we lost TV, and we've done some spade work down here. Looks like we've found out what's wrong with the MARK button.

02 23 49 54 CDR Very good.

02 23 49 55 CC Yes, it looks like there's an improper exit to a program yesterday. If the IMU is aligned, we'll select program 20, if you got a piece of paper to copy it down?

02 23 50 05 CDR Okay, would you have somebody get our fuel right now, so we can get an idea of how much that cost us?

02 23 50 11 CDR Okay, ready to copy.

02 23 50 12 CC Okay, go ahead and select program 20. We'll then do VERB 57, ENTER. After that, you will key ENTER. Then you will select program - Now what that does is cause a reset of flag word 2, bit 14, which is set, which has prevented that mark from getting in.

02 23 50 42 CDR You broke off after key ENTER, Tom, program 20; VERB 57, ENTER, then key in ENTER, then program something.

02 23 50 48 CC Select P00, P zero zero.

02 23 51 31 CC Hello, Apollo 7, Houston.

02 23 51 33 CDR Go ahead, Tom.

02 23 51 35 CC Roger, did you get that procedure okay?

02 23 51 36 CDR Roger, we copied with program 20, VERB 57, ENTER, key another ENTER, go back to P00, and ENTER ...

02 23 51 45 CC Roger, and that should reset that flag word, and you should be all set to use program 51 and 52 as normal.

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02 23 51 52      CDR      Okay, we'll get her going.

02 23 51 56      CC      And again, I can't tell you how good the -  
that TV picture looked down here inside the  
spacecraft; just beautiful.

02 23 52 01      CMP      That's amazing.

02 23 52 02      CDR      Roger, we have some more cue cards for later.

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03 00 18 24 LMP Go ahead.

03 00 18 35 CDR From the period of 70 hours through approximately 72 hours, the timeline was rather awkward in that we had a problem with the MARK button on the computer. The whole team on board was a little behind the curve. They were sleeping well, finally, and I wanted for them to sleep awhile. We needed three men really to hook up the events in that - in a really effective time. The state vectors we were working normally would have been a very simple task for one man to run.

03 00 19 15 CC 7, Houston through Tananarive.

03 00 26 01 CDR Debriefing on the period from 70 hours to 72 hours: as a result of the delayed pickup of the total crew, the events snowballed, and we fell behind on the alignment. We did manage to get the canister change number 6 completed on time. About this time, we were getting some help on the problem that we're supposed to - -

03 00 26 31 CC Apollo 7, Houston. 1 minute to LOS Tananarive. We'll pick up ARIA 2 at about 2 minutes, and then on through to Carnarvon.

03 00 26 41 CDR Roger.

03 00 26 45 CDR And as a result of this, the rendezvous transponder test was pretty well blown apart. We did manage to get the TV camera out, in that that would seem to be the big crisis ever since launch day.

03 00 27 18 CDR We did attempt, and wasted some fuel, on the alignment. Finally, I noted the beginning of the constellation Orion in the number 2 window. And I had Donn pick that up in the LEB. In the mark procedure utilized in the 50-50 ... termination, the procedure used when the MARK

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button wouldn't work. The PMP called - correction, the command module pilot made the mark at the shaft and trunnion angle - CMP timed the shaft and trunnion angles while the spacecraft was in tight DEADBAND, SPS limit cycle ON. The angles were read off by the CDR, and recorded by the LMP. The CMP then proceeded to the next position to record the shaft and trunnion angle, and the LMP called them out, and the CMP inserted them.

03 00 29 46 CDR In this procedure, two stars were used for the first track in program 53. They were Rigel and Aldebaran, and the star angle difference was 00039. In program 54, the same two stars were used and relative ... holding, and the star angle difference was 00018. The gyro-torquing angle after this program 54 was 0002 on all four axes, less than 0.025 - less than 0.03.

03 00 32 28 CDR This task worked out to be satisfactory so that we could have used it for any type of burn if necessary.

03 00 32 41 CDR The - it was completed. We picked up Hawaii acquisition, and the call was made to get ready for the rendezvous radar transponder test.

03 00 33 04 CDR And this was rushing us much too fast. We didn't have but 24 minutes' lead time roughly to heat the transponder up to operating temperature.

03 00 33 15 CDR We used about 1 degree per second in pitch, using ACCEL COMMAND to attempt to get into the desired attitude for the transponder test.

03 00 33 26 CDR This at least did help us, if the transponder test had failed to get into an ideal attitude for a Gulf Coast pass for the television.

03 00 33 37 CDR The television camera results I assure - I'm sure, spoke for themselves.

03 00 33 41 CDR It is necessary to observe, however, that this is compounding a rather difficult test.

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03 00 33 48 CDR In retrospect, my decision not to use the television camera prior to the first SPS burn was sound. We had too much to do to get the television camera ready. There was too much attention paid to the results of the television camera rather than anything else, as was typical in this pass.

03 00 34 09 CDR I believe that television should be left as the last low-priority test objective in relation to any other event that may occur simultaneously.

03 00 34 28 CDR Typically, with a television camera on board, the crew reacted to it, and we fortunately had no problems occur, but we were paying much too much attention to the TV camera and not to the spacecraft. This is why I object to the TV camera in the first place.

03 00 34 47 CDR A candid-camera syndrome is a very awkward one to have in a spacecraft.

03 00 35 11 CDR And this is the end of a - -

03 00 35 13 CT ARIA 2; AOS in about 5 DB.

03 00 35 14 CMP This is the command module pilot. Time is 72 hours 50 minutes. I'd like to register a comment or two concerning the optics.

03 00 35 21 CMP In general, the optics drive is very smooth and much better than we've seen on any of the simulators. The visibility, however, in the telescope is no better, in fact, a little worse than what we experienced in the CMS at the Cape. It was most disappointing to find that you really do have to bury your eye in that thing for a good 5 to 10 minutes - -

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03 00 49 49      CMP      - - without a well-defined pattern, it's pretty hard to find anything by itself.

03 00 50 11      CMP      This is the command module pilot at 72 hours and 50 minutes into the flight of Apollo 7. I'd like to register a comment or two concerning the G&N optics. First, the optics seems to drive very smoothly, and it's very easy to control in both RESOLVED and DIRECT at all speeds for landmark-tracking purposes or star marking or whatever. It's much smoother than we've seen on any simulator. The part that's disappointing, however, is the extremely poor visibility in the telescope. It's no better, in fact, a little worse than what we saw in the CMS, and you really have to bury your eyes in the thing for about 5 to 10 minutes to get dark adapted before you can recognize anything. In general, if you have bright stars in a well-defined, well-known pattern you can find them. We have had a fair amount of luck with the pick-a-pair routine. It appears that as long as we're looking at all sky and not much earth in the field of view, the thing will work pretty well, so that's a help for doing P52. The tough part, of course, is doing 51's when you're coming up from scratch.

03 00 51 38      CMP      The field of view in the telescope ends at about 38 degrees trunnion. The field of view in the sextant, however, goes out beyond 50 degrees, which is a very curious thing, and we had not expected that. So, effectively, the field, the 20 - the 38-degree alarm that often comes up in the various programs is a real constraint as far as the use of the telescope.

03 00 53 26      CDR      This is CDR, we tried to - -

03 00 53 43      CDR      From the glycol evaporator, we tried to salvage the water flow, and it did not take. Procedurally, we went from STEAM PRESSURE, AUTO to MANUAL; worked in the INCREASE position for 45 seconds; waited over 5 minutes for steam pressure to increase - no sign of increase - flowed water with the H<sub>2</sub>O FLOW switch ON for 2 minutes - no sign of increase in steam

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pressure - terminated attempt at that point to bring water boiler on the line.

03 03 06 13 LMP Houston, I've been able to get this up to a normal range, so I suspect that with a little manipulation of the water flow, I can get that boiler operating again. That's the way I did it once before.

03 03 06 24 CC Roger, copy. And, Walt, the figure to update your onboard RCS chart is 800 pounds. Eight, zero, zero.

03 03 06 32 LMP 800 now, and we'll be standing by for one after the burn. What does quad C have now?

03 03 06 42 CC Stand by.

03 03 07 03 CC We'll pick you up over Ascension in about 6 minutes, Walt.

03 03 07 16 LMP Roger.

03 03 14 04 CDR Apollo 7, Houston.

03 03 14 08 CDR Roger, Houston. Loud and clear here.

03 03 14 16 CDR Houston, Apollo 7.

03 03 20 31 CC Apollo 7, Houston. 1 minute to LOS Ascension; we'll pick you up over Tananarive in 10 minutes.

03 03 20 37 CDR Roger.

03 03 31 13 CC Apollo 7, Houston through Tananarive. Standing by.

03 03 31 15 CDR Roger.

03 03 33 34 LMP Houston, Apollo 7.

03 03 35 40 CC 7, 1 minute LOS Tananarive; Carnarvon in 8 minutes.

03 03 35 44 CDR Roger, we're all set here.

03 03 35 46 LMP Hey, Jack. Do you want me to get this battery charge in battery C, then battery B, after ...

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03 03 42 29 LMP Okay, all SCS circuit breakers, CLOSED.

03 03 42 32 CDR All CLOSED.

03 03 42 35 LMP Circuit breakers GIMBAL MOTOR CONTROL, four, CLOSED.

03 03 42 40 CDR Four, CLOSED.

03 03 42 41 CMP DIRECT RCS, OFF.

03 03 42 43 LMP DIRECT, OFF.

03 03 42 44 LMP SCS ... OFF. SCS TVC, both to AUTO.

03 03 42 50 CDR PITCH, AUTO; YAW, AUTO.

03 03 42 54 LMP TVC GIMBAL DRIVE, PITCH and YAW, AUTO.

03 03 42 56 CDR PITCH and YAW, AUTO.

03 03 42 57 LMP TVC SERVO POWER, 1 ON, 2 ON.

03 03 43 00 CDR TVC SERVO POWER, 1 ON, 2 ON.

03 03 43 04 LMP HAND CONTROLLER POWER to 1.

03 03 43 05 CDR HAND CONTROLLER, 1.

03 03 43 06 LMP Rate HAND CONTROLLER 2, ON.

03 03 43 08 CDR ON.

03 03 43 10 LMP Stand by for me to break the ...

03 03 43 22 LMP Hey, GIMBAL MOTOR CONTROL ...

03 03 43 25 CDR PITCH 1, right. YAW 1, right.

03 03 43 30 LMP Right.

03 03 43 33 LMP Okay, for the SCS burn. Confirm trim control, now.

03 03 43 40 CDR 86 - and - 46.

03 03 43 44 LMP Thrust HAND CONTROLLER, clockwise.

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03 03 43 48	CDR	Clockwise.
03 03 43 50	LMP	Verify no MTVC.
03 03 43 52	CDR	No MTVC.
03 03 43 54	LMP	PITCH 2, YAW 2, START.
03 03 43 56	CDR	PITCH 2, START.
03 03 43 57	LMP	ON.
03 03 43 58	CDR	YAW 2, START.
03 03 44 00	LMP	ON.
03 03 44 05	LMP	Verify MTVC.
03 03 44 11	CDR	Verify.
03 03 44 13	LMP	Thrust HAND CONTROLLER, NEUTRAL.
03 03 44 16	CDR	NEUTRAL.
03 03 44 18	LMP	...
03 03 44 20	CDR	...
03 03 44 22	LMP	...
03 03 44 24	CDR	...
03 03 44 38	LMP	DIRECT RCS, ON.
03 03 44 40	CDR	DIRECT, ON.
03 03 44 44	LMP	Null error needles and DEADBAND MIN, we shouldn't have to do.
03 03 44 49	LMP	BMAG MODE, three, ATT 1, RATE 2.
03 03 44 52	CDR	All right.
03 03 44 54	LMP	Standing by for ...
03 03 45 03	CC	Apollo 7, Houston through Carnarvon.

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03 03 45 05 CDR Roger.

03 03 45 08 CC I'll give you a time hack at 2 minutes.

03 03 45 10 CDR Roger, standing by.

03 03 46 58 CDR 1 minute.

03 03 47 22 CMP EMS DELTA-V in AUTO.

03 03 47 26 CDR EMS DELTA-V in AUTO.

03 03 47 30 CMP Four-jet ullage in 15 seconds.

03 03 47 32 CDR Roger.

03 03 47 48 CC 10, 9, 8, 7, 6, 5, 4, 3, 2, 1 -

03 03 47 58 CC Zero.

03 03 48 14 CMP GIMBAL CONTROLS, OFF.

03 03 48 15 CDR Gimbals coming OFF, one, two, three, and four.

03 03 48 33 CMP You can forget that slosh-damping jazz.

03 03 48 37 CC Roger. Copy.

03 03 48 39 CMP It's just as solid as a rock.

03 03 48 41 LMP Jack, are you picking up our residual?

03 03 48 43 CC Affirmative. We copy.

03 03 48 44 CMP DELTA-V counter at 14.3, minus 14.3.

03 03 48 49 CC Copy the DELTA-V counter.

03 03 48 52 CDR Okay, I'm going to turn my channels OFF.

03 03 48 54 CMP DELTA-V thrust, A and B, OFF.

03 03 48 58 CDR A and B, OFF.

03 03 48 59 CMP SPACECRAFT CONTROL is SCS; GIMBAL MOTORS, four, OFF - they are. Circuit breaker GIMBAL MOTOR CONTROL, four, OPEN.

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03 03 49 06 CDR Four, open.

03 03 49 07 CMP TVC SERVO POWER 1 and 2, OFF.

03 03 49 09 CDR They're OFF.

03 03 49 10 CMP DIRECT RCS, OFF.

03 03 49 12 CDR It's OFF.

03 03 49 14 CMP MAIN BUS TIES are OFF.

03 03 49 22 CMP EMS MODE, OFF, STANDBY.

03 03 49 24 CDR EMS, OFF, STANDBY.

03 03 49 26 CMP HAND CONTROLLERS, LOCKED. We recorded the components, I assume.

03 03 49 32 CDR LOCKED and all channels are OFF.

03 03 49 35 CC Copy.

03 03 49 37 CDR Jack, the surprise really ... that thing really slaps you.

03 03 49 42 CC Roger. I bet.

03 03 49 46 CMP Jack, on this slosh damping, we get absolutely no firings at all, and at a 4-degree DEADBAND.

03 03 49 55 CC That's what we like to hear. That's good news.

03 03 49 56 CMP Right.

03 03 49 57 CDR Yes, that's good news. That saves a lot of fuel.

03 04 37 47 CC Apollo 7, Houston.

03 04 37 57 CC Apollo 7, Houston.

03 04 38 03 CMP This is Apollo 7. Say again.

03 04 38 09 LMP Houston, Apollo 7. Did you call?

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03 04 38 29 LMP Houston, Apollo 7. Did you call me? Over.

03 04 50 38 CC Apollo 7, Houston through Ascension.

03 04 50 42 LMP Roger.

03 04 50 51 CC Apollo 7, Houston. Your waste quantity is now - is at 77 percent. You have GO to dump at your convenience.

03 04 51 03 LMP Roger. We'll probably wait a little closer to 90, Ron.

03 04 51 08 CC Roger.

03 05 06 04 CC Apollo 7, Houston, Tananarive. Standing by.

03 05 06 11 CDR Roger, Tananarive.

03 05 06 14 CC Roger.

03 05 06 24 CMP Good afternoon, Ron.

03 05 06 27 CC Hey, I watched the tail end of your burn there. It looked real good.

03 05 06 34 CMP You ought to feel it!

03 05 10 24 CC Apollo 7, Houston. About 1 minute LOS; we'll have your block data at Hawaii.

03 05 10 30 CMP Roger, Ron, we'll copy them.

03 06 39 13 CC Apollo 7, Houston, Tananarive. Standing by.

03 06 39 18 CDR Apollo 7. Roger. We just finished with the housekeeping.

03 06 39 23 CDR Like sponging up a pint of water aft - off the aft bulkhead.

03 06 39 32 CDR Houston, Apollo 7. Do you read?

03 06 41 09 CDR Houston, Apollo 7. Do you read?

03 06 41 17 CDR Houston, Apollo 7.

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03 06 46 22      CC      Apollo 7, Houston. You're 1 minute LOS.

03 06 46 26      CDR      This is Apollo 7. Do you read now?

03 06 46 30      CDR      Houston, Apollo 7. Do you read?

03 06 46 38      CDR      Houston, Apollo 7.

03 06 49 26      IMP      78 hours and 10 minutes into the flight, we noticed a puddle of water that was formed between the suit stowage bag and the aft bulkhead. There was probably approximately 1 pint of fluid, which we identified as water. And by tracking around the spacecraft, we located the source as coolant line in - at the - below the commander's left shoulder in the curved panel at the corner, which has the perforated holes in it. We removed the panel with tool E and located the condensation on the line behind the panel. Apparently, this water settled to the aft bulkhead, probably during the last SPS burn, and it would probably be advisable for us to check that periodically and make sure we're not collecting any more condensed water.

03 07 29 13      CMP      Houston, Apollo 7.

03 07 29 16      CC      Roger. Go.

03 07 29 17      CMP      Roger. We also just discovered water coming out of our blue hoses, at least the one on center couch. I haven't checked the other two as yet, but we've got quite a bit of visible moisture blowing out of it.

03 07 29 34      CC      Roger, it's coming out of the blue O<sub>2</sub> hose.  
Is that what you said?

03 07 29 39      CMP      That's affirmative, and we have temporarily turned off the suit compressor so we can clean up - clean it up.

03 07 29 46      CC      Roger.

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03 07 29 54      CMP      Ron, there's no immediate problem here, but possibly the solution is a problem.

03 07 30 08      CC      Roger.

03 07 32 00      CMP      Houston, Apollo 7.

03 07 32 06      CMP      Houston, Apollo 7.

03 08 14 53      CC      Apollo 7, Houston through Tananarive.

03 08 14 59      LMP      Roger, read you 5 by, Ron.

03 08 15 02      CC      Roger. We sure could use your battery manifold pressure SYSTEMS TEST 4A.

03 08 15 10      LMP      We ran it just about a half hour ago when we used it to dump something, and it reads 1.4 until you open the vent, and when you open the vent, it reads about 0.5.

03 08 15 21      CC      Roger.

03 08 15 25      LMP      You read?

03 08 15 30      LMP      You read that, Ron?

03 08 15 32      CC      Apollo 7, Houston. Roger, I read: 1.4, and 0.5 when you open the vent.

03 08 15 38      LMP      Roger, and we checked our lithium hydroxide canisters. They're dry. We've checked the suits circuit water accumulator, and it's functioning in AUTO 1 and AUTO 2, remaining in AUTO 2.

03 08 15 56      CC      Roger.

03 08 16 00      CC      Have you come to any specific plan on the malfunction procedures?

03 08 16 06      LMP      Not yet.

03 08 17 48      CC      Apollo 7, Houston.

03 08 17 51      LMP      Go.

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03 08 17 53 CC Roger. Looks like our battery-charging current is decreasing a little faster than predicted, and we'd like your onboard reading.

03 08 18 05 LMP Roger. I'm reading 0.5 amps.

03 08 18 10 CC Roger, 0.5. We'll keep you advised on it.

03 08 18 28 CC Walt, that volcano, that would be about 30 degrees down and 20 degrees left at local vertical at 80 plus 57.

03 08 18 41 LMP At 80 plus 57, it's 30 degrees down, and 20 degrees left SEF?

03 08 18 46 CC No.

03 08 18 47 LMP What?

03 08 18 49 CC Roger. 30 degrees left - 20 down and 30 left - no, belay that - 30 down and 20 left of local vertical.

03 08 19 01 LMP 30 down and 20 left at 80 hours and 57 minutes?

03 08 19 06 CC Affirmative.

03 08 19 48 CC 1 minute LOS; Mercury at 35.

03 08 19 53 LMP Roger, Mercury at 35.

03 08 42 33 CC 30 seconds LOS; Hawaii at 53.

03 08 42 43 CDR What at 52? What island are we going by?

03 08 42 54 CC Roger, you'd be going south of the Big Island.

03 08 43 01 CDR Roger.

03 08 43 06 CDR Donn, turn those ... down, will you?

03 08 49 37 LMP CMP, 20 clicks of water; LMP, 11 clicks of water.

03 10 23 35 LMP CDR, one Actifed, two aspirins at 81 hours and 15 minutes; LMP, one Actifed.

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03 10 23 53 LMP CDR, one Actifed; 82:23.

03 10 23 59 LMP Correction, that's Lomotil at 82:23.

03 10 30 10 CC Apollo 7, Houston, Hawaii. Standing by.

03 10 30 17 CDR Houston, Apollo 7.

03 10 30 23 CC Apollo 7, Houston. You're real weak.

03 10 30 26 CDR Roger, I read you loud and clear. We are going to readjust our sleep cycle here to 5-1/2 hours. That's too appealing, with burn 3 already out of the way.

03 10 30 42 CC Roger.

03 10 30 43 CDR We'd like to add an hour and a half to each of our sleep cycles.

03 10 30 55 CC Copy that, Wally.

03 10 30 56 CDR Okay, that will give us each 7 hours, so let's stand watch for another hour and a half here, and PSYCH it out with Donn tomorrow or later.

03 10 31 06 CC Okay.

03 10 31 08 CDR Very good.

03 10 31 12 CDR What we'll do is just add an hour and a half to each of our sleep schedules.

03 10 31 19 CC So far it looks good down here.

03 10 31 23 CDR Roger.

03 14 13 46 CMP 86 hours 13 minutes; a filament failed in the right-hand LEB floodlights.

03 14 55 13 CC Apollo 7, Houston. Acquisition Mercury. Standing by.

03 14 55 18 CMP Roger, Houston, Apollo 7.

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03 14 55 27      CMP      Bill, could you get me the steady state update for our orbital map?

03 14 55 33      CC      Stand by.

03 14 56 16      CC      Apollo 7, Houston. The GET for the nodal crossing is 84 plus 49 plus 48.

03 14 56 33      CMP      Roger, understand. 84 plus 49 plus 48?

03 14 56 38      CC      Right, and it will be 3.1 west.

03 14 56 44      CMP      Roger, thank you.

03 14 56 52      CC      And it's REV 54.

03 14 57 01      CMP      Roger.

03 14 57 02      CC      Okay.

03 15 01 00      CC      Apollo 7, Houston. Acquisition Guam; I will have a flight plan update at Redstone, and it has several items.

03 15 01 09      CMP      Roger, understand.

03 15 24 29      CC      Apollo 7, Houston.

03 15 24 32      CMP      Houston - -

03 15 32 23      CC      ... , you can put in there P51.

03 15 32 34      CMP      Roger.

03 15 32 36      CC      At 91 hours 42 minutes, a P52.

03 15 32 48      CMP      Wait a minute; 91 hours is in the daytime.

03 15 32 52      CC      91:42. Donn, we're getting ready for LOS here. I'll talk to you at Antigua.

03 15 33 02      CDR      Roger.

03 16 01 20      CMP      About what time?

03 16 01 21      CC      98 hours.

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03 16 01 24      CMP      98 even?

03 16 01 27      CC      Affirmative.

03 16 01 30      CMP      I don't understand that. That's right in the  
middle of the night pass, isn't it?

03 16 01 37      CC      Roger, and it continues into the day.

03 16 01 39      CMP      Roger, Ken, that's going to be a little  
tight. We - you're going to realign at  
97:40 and then do the test - -

03 16 01 53      CC      Roger. Just on the further edge of LOS. If  
you read, that is affirmative.

03 16 01 57      CMP      Roger.

03 17 18 00      CC      Apollo 7, Houston.

03 17 18 05      LMP      Roger. Go.

03 17 18 07      CC      Roger, we have a state vector to send to you  
if you could go to P00, please.

03 17 18 15      LMP      Stand by 1.

03 17 19 10      CC      ... at Canary at ...

03 17 28 07      CC      Apollo 7, Houston.

03 17 28 11      LMP      Houston, Apollo 7. Go.

03 17 28 14      CC      Roger. We would like for you to cycle the - -  
Stand by.

03 18 05 30      CC      Apollo 7, Houston.

03 18 05 33      CMP      Houston, Apollo 7. Go.

03 18 05 36      CC      Roger, acquisition Carnarvon. Standing by.

03 18 05 39      CMP      Roger.

03 18 05 43      CC      Donn, I noticed you were going through the  
malfunction procedure, there - appeared to be

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just about the time we were losing you at Canary. Did you find out anything on that?

03 18 05 53      CMP      Roger, I found out whatever it was went away, I think - at least that's - up to now.

03 18 06 03      CC      Whatever it was went away, huh?

03 18 06 05      CMP      Right.

03 18 06 13      CC      Did you arrive at that just from going through this malfunction procedure, is that how you did that?

03 18 06 18      CMP      Well, not totally.

03 18 06 21      CC      Okay, good deal.

03 18 06 22      CC      Wait until Wally gets up here. He may want to run through it again.

03 18 06 26      CC      Okay.

03 18 31 28      CMP      1, 2, 3, 4. One - one update.

03 18 39 41      CDR      I suggest somebody for tomorrow get to work on the sleep plan. You've cut us out of an hour's sleep already.

03 18 39 49      CC      Roger.

03 18 39 55      CDR      We all three have our colds. I asked for an hour and a half sleep for each of us last night, and that apparently was ignored.

03 18 40 26      CMP      Houston, Apollo 7.

03 18 43 43      CDR      At 90 hours and 40 minutes -

03 18 43 53      CDR      The sighting by - of the red airglow that was reported on the Mercury flight was experienced. It was a reddish-brown glow about the color of the lower half of the night airglow. The night airglow is about 2.8 degrees above - the top of the night airglow is 2.8 degrees above the horizon. This particular glow is 4 degrees above the top of the night airglow and 1-1/2 degrees thick.

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Day 4

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03 18 44 56 CDR The glow faded approximately 1-1/2 minutes later. It was confirmed by Cunningham who also was looking out my window.

03 18 51 11 CC Apollo 7, Houston.

03 18 51 17 LMP Houston, Apollo 7.

03 18 51 20 CC Roger. I just checked in the flight plan here regarding Wally's query there over Redstone, and I didn't get all of it, but it was something about the sleep cycle being shortened. And when I came on, the timeline showed the commander and LMP sleep cycle extended to 91 hours. Is that the way you understood it?

03 18 51 44 LMP That's affirmative. What you did - someone moved up the radiator test right in the middle of it.

03 18 58 02 CC 7, Houston.

03 18 58 05 LMP Roger. Go ahead, Bill.

03 18 58 07 CC Hey, Walt, I have a DSE recording plan for this radiator degradation test, and I would like to pass it to you at Canary at time it would be convenient.

03 18 58 18 LMP Okay, I'm ready to copy any time.

03 18 58 22 CC It has to do with leaving it in HIGH BIT RATE for portions of the test.

03 18 58 27 LMP Okay. Why don't you pass it to the Canaries? We're losing - -

03 19 22 54 LMP At 91 hours and 20 minutes into the flight, we took some pictures of the coastline. Hey, Wally, could I have the data?

03 19 23 44 LMP 91 hours and 20 minutes into the flight, we took several pictures on magazine S, looks like from about 43 to 47, over a coastline ending up with a large island.

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Day 4

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03 19 37 35 CC Apollo 7, Houston. Acquisition Carnarvon.

03 19 37 40 CMP Roger, Houston.

03 19 51 13 CMP We got frames 43 to 47. We weren't quite sure where we were until we got that chart update. So it was frames 38 to - 43 to 47 on magazine F.

03 19 52 53 LMP Roger.

03 19 57 14 CMP We're recording the effect of the second P52 alignment in preparation for the radiator test. Time is 91 hours 57 minutes. Our gyro-torquing angles are 0.044, 0.019, and 0.001. Star difference was zero, and the stars were Canopus and Ajax - correction, Canopus and Acrux.

03 20 21 09 CMP Roger, Jack. Go.

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DAY 5

04 00 03 43 CC Apollo 7, Houston through Tananarive.

04 00 03 47 CDR Roger, you're very weak, Jack.

04 00 03 55 CDR Houston, we believe your - you still at Tananarive?

04 00 04 02 CDR Houston, Apollo 7.

04 00 04 15 CDR Houston, Apollo 7.

04 01 38 49 CC Apollo 7, Houston through Tananarive.

04 01 38 54 CDR Roger, loud and clear, Jack.

04 01 39 00 CC Roger, we're standing by.

04 01 44 08 CC Apollo 7, Houston. 1 minute LOS Tananarive; we'll try ARIA 1 at 97:51; Carnarvon at 97:53.

04 01 44 19 CDR Roger.

04 01 53 16 CC Apollo 7, Houston through Carnarvon.

04 01 53 19 CDR Roger, Jack. I just tried to put the primary evaporator back on the line, and it didn't make it.

04 01 53 27 CC Okay, I was trying to reach you through ARIA 1 to do that S-band DTO for ARIA.

04 02 01 24 CC Apollo 7, Houston. 30 seconds LOS Carnarvon; a short pass at Guam at 98:07; Hawaii at 98:18.

04 02 01 32 CDR Roger.

04 02 09 00 CC Apollo 7, Houston through Guam.

04 02 09 05 CDR Roger.

04 02 09 12 CC 7, we haven't had a window status check in a while. How are they doing?

04 02 09 19 CDR Well, they're - I think I'd rather give you a check the next daylight, Jack.

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Day 5

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04 02 09 23 CC Okay, real fine.

04 02 09 26 CC Another thing I was kind of curious about, Wally. Can you hear the thruster - the RCS thruster fire?

04 02 09 32 CDR That's affirmative.

04 02 09 34 CC Okay, real fine, then.

04 02 09 36 CDR Only when they light off, you can't hear them when they're burning.

04 02 09 41 CC Okay.

04 02 09 42 CDR What I'm now really getting at is, you can hear a pulse - it sounds like you're hitting a - as Donn described it, you're hitting a water barrel. A ponk, a klunk, no hissing sound to them at all.

04 02 10 26 CC LOS Guam; Hawaii at 98:18.

04 02 10 34 CDR Roger, you might pass that description on to John Healy.

04 02 10 39 CC Roger.

04 02 48 28 LMP Now run it back to zero again.

04 02 48 30 SC ...

04 02 48 32 CDR Zero clocked her, coordinated command, and gave it about 0.2.

04 02 48 44 CDR You might know it's not precise except in COMMAND, but it's much more precise than it is in a simulator.

04 02 48 50 CC Roger.

04 02 48 53 CDR I could call 0.2 and give it to you.

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Day 5

195

04 02 49 09 LMP Hey, Jack, how are we doing in our other consumables? I noticed in the flight plan that 60 percent hydrogen test was nominally at 102 to 103 hours. Are we running pretty much nominal there or a little behind or what?

04 02 49 23 CC We are about to lose you here over Antigua. We'll pick you up at Ascension at 56.

04 03 02 20 CC Apollo 7, Houston. 1 minute LOS Ascension; Tananarive at 99 plus 13.

04 03 02 27 LMP Roger, Jack. Did the doctors ever say anything about using this antibiotic as a preventative medicine up here?

04 03 02 39 CC Stand by.

04 03 02 56 CC Okay, Walt, on that question, there is really not any need to use any of the antibiotics. They don't feel that that would help or cure a cold.

04 03 03 10 LMP Well, so far I have been able to resist pretty much getting these things, but Donn's coming down I think a little bit better here, and if there is some way I can hold it off, I would just as soon take the pills. Or do they just want me to go ahead and catch it and then treat it?

04 03 03 21 CC Okay. We will pick you up over Tananarive.

04 03 13 51 CC Apollo 7, Houston through Tananarive.

04 03 13 54 LMP Roger, Jack.

04 03 13 58 LMP We have powered down to drifting flight configuration.

04 03 14 04 CC Roger. Copy that and we'll be standing by.

04 03 15 22 LMP Hey, Jack, I am going to try to activate the evaporator again. It gets awful stuffy in here if we don't have it running.

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Day 5

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04 03 16 06 LMP Houston, Apollo 7.

04 04 23 25 CDR Frame 69 at 100 hours 23 minutes 20 seconds ...

04 04 26 47 CDR Frame 72 at 100 hours 26 minutes 35 seconds, South America.

04 04 27 47 CDR Frame 72, 100 hours 27 minutes 30 seconds.

04 04 29 05 CDR Still shooting South America, frame 73, 100 hours 29 minutes.

04 04 48 21 CC Apollo 7, Houston.

04 04 48 58 CC Apollo 7, Houston through Tananarive.

04 04 49 04 CDR Roger, loud and clear.

04 04 49 18 LMP Houston, Apollo 7. Over.

04 04 50 02 CC Apollo 7, Houston.

04 04 50 05 LMP Roger, Houston, Apollo 7. How do you read? Over.

04 04 50 19 LMP Houston, Apollo 7. How do you read? Over.

04 04 50 28 CC Apollo 7, Houston.

04 04 50 30 LMP How do you read?

04 04 51 15 CC Apollo 7, Houston.

04 04 51 19 LMP How do you read, Ron?

04 04 51 29 CC Tananarive M&O, Houston CAP COMM. Are we getting out to you?

04 04 51 37 LMP Roger, CAP COMM, Apollo 7. Reading you 5 by.

04 04 51 44 CC Apollo 7, Houston. Transmitting in the blind. We're trying to find a piece of the data for the radiator degradation test around 96 hours. This was when we were considering terminating the test. And, Walt, can you confirm tape recorder ON at that time?

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Day 5

197

04 04 52 23 CC Tananarive M&O, did you copy?

04 04 52 32 LMP Houston, Apollo 7. Stand by.

04 04 52 48 LMP Houston, Apollo 7. We turned that ON, right on the minute.

04 04 52 54 CC Roger. Understand you did have it ON. Thank you.

04 04 52 58 LMP That's affirmative.

04 04 53 23 CC Apollo 7, Houston. 1 minute LOS; Mercury at 11.

04 04 53 29 CDR Roger, thank you. Good evening, Ron.

04 04 54 34 LMP Houston, do you still read?

04 05 11 52 CC Apollo 7, Houston. Mercury standing by.

04 05 11 57 CDR Roger.

04 05 11 58 LMP Hey, Ron. I wanted to confirm that we rechecked our switches - -

04 05 42 58 CC 30 seconds LOS; Tananarive at 20.

04 05 43 57 CDR This is CDR. Some of our equipment is starting to show signs of age. The Exer-Genie, although used somewhat extensively, is starting to fray and not run smoothly. The booties on my Teflon suit are starting to unravel and come apart. The microphone on my right-hand headset is cracked, and, except for being taped together, would not function.

04 05 44 33 CDR The ear tube on Walt Cunningham's right-hand headset is coming apart. The COMM carrier connectors to the suits are all getting frayed at the fitting where they make up to the suit. I think it is because we take these off and on with a great amount of frequency.

04 05 45 04 CDR We've had a problem with the wristwatch straps. They are much too long for a normal shirtsleeve attire and are just about right for the pressure

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suit. They should be made as small as possible for the pressure suit, and then they might have a chance of fitting the wrist with two turns around it.

04 05 45 25 CDR Now, one technique was used on Eisele's watch, to pass the watch through a Velcro band. And some technique similar to this might work for both suited and unsuited work.

04 05 46 04 CDR We've had a continuous problem with the 70mm back in that the slider plate for removal of the back will not prevent actuation of the shutter. This is not designed that way in the stock Hasselblad; it has been modified nicely to cause this effect in our crew camera.

04 05 46 38 CDR The last-minute changes in film seem to be par for the course in this business. And it's a big mistake to have four different ASA films onboard, particularly when we pass the camera back and forth rapidly in a drifting mode when a good target's available. We shot our S0117 the first day or so at ASA 64. And this was so we would not waste the 368 as well, which is also ASA 64. Now we have S0121, nominally for shooting at ASA 60, and soon we will be shooting Panatomic-X at ASA 45. This is not the way to run a railroad. There are many - there are many films available with a common ASA available. For high-speed work, naturally we prefer the ASA 1000.

04 05 48 06 CDR At this point in the flight, over 100 hours, it's almost impossible to believe we started this flight out with the pressure suit on. The environment just doesn't even seem to be acceptable to the big lumpy. And I suspect that we are going to put them on with great misgivings after the time required. If our head conditions are not cleared up in time, I believe we probably will reject using those suits. This is not a decision at this point, but merely an opinion.

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04 06 21 15 CC Apollo 7, Houston through Tananarive. Standing by.

04 06 21 19 CMP Roger.

04 06 27 45 CC Apollo 7, Houston. 2 minutes to LOS Tananarive; Mercury at 43.

04 06 27 51 LMP Roger.

04 08 38 46 CC Apollo 7, Houston.

04 08 38 48 LMP Roger, Houston, Apollo 7. How do you read?

04 08 38 51 CC Roger. Read you loud and clear now.

04 08 38 54 LMP Okay. Did you try to contact us over Mercury?

04 08 38 58 CC Affirmative.

04 08 39 00 LMP Sorry about that. I didn't get back in the right configuration after that relay check.

04 08 39 05 CC Yes, we were switching around here trying - -

04 08 39 11 LMP Okay, I'm ready to copy the block data and can you confirm our MAIN REG manifold pressure? Over.

04 08 39 34 LMP Houston, Apollo 7. Over.

04 08 39 55 LMP Houston, Apollo 7. Over.

04 08 41 35 LMP Houston, Apollo 7. How do you read?

04 08 59 57 CDR Houston CAP COMM, Apollo 7. Do you read?

04 11 19 27 LMP Frame 77 on Sierra back is of sunspots off the river in the valley just south of the Himalayas.

04 12 23 55 CC Apollo 7, Houston, Ascension. Standing by.

04 15 06 07 CC Apollo 7, Houston through Redstone.

04 15 06 11 CMP Roger, Houston, Apollo 7.

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200

04 15 36 15 CC Apollo 7, Houston.

04 15 36 18 CMP Houston, Apollo 7.

04 15 36 21 CC Roger, through Canary. I have a request. I'd like the reading on PYRO BAT A, B, and BAT C.

04 16 39 57 CC Apollo 7, Houston through Redstone. I have a flight plan update, when you're ready to copy.

04 16 40 08 CMP Roger, Houston. Go ahead with your flight plan update. Also we'd like an orbit map update, when you get through with this one.

04 16 40 19 CC Roger. I'll give you a map update as soon as I get through with the flight plan.

04 16 40 29 CDR Bill, did you log the 40 clicks on the water pistol and two aspirins, please?

04 16 40 36 CC How many clicks?

04 16 40 38 LMP 40 - four zero.

04 16 40 42 CC Roger. 40 clicks on - -

04 16 47 40 CC ... Roger. In case anything happens during your landmark tracking, you'll have a state vector to fall back on.

04 16 47 46 CMP I get you. Okay.

04 16 47 50 CC Okay, you can delete the reference to the star count test 3 at 122 hours.

04 16 47 58 CMP Roger.

04 16 48 03 CC Apollo 7. We're coming up on LOS Redstone. I'll pick you up at Antigua for the rest of the flight plan update.

04 16 48 11 CMP Roger.

04 16 48 14 CC Antigua at 58.

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201

04 16 48 16      CMP      Antigua at 58; understand.

04 16 48 29      CC      Apollo 7, Houston. If you're still reading,  
the map update is REV 72, node 112 plus 56.

04 16 59 06      CC      Apollo 7, Houston through Antigua.

04 16 59 11      CMP      Roger, Houston.

04 16 59 12      CC      Roger. I'll go ahead with the flight plan  
update. Before I start, did you read the map  
update?

04 16 59 22      CDR      I got as far as REV 72 and 112 plus 56.

04 16 59 27      CC      Okay. REV 72 - -

04 17 05 01      CC      - - Donn and Wally's - correction, Wally's and  
Walt's sleep period lasts until 116 plus  
00 hours.

04 17 05 18      CMP      Roger, I got that.

04 17 05 20      CC      Okay. We will have Canaries at 09.

04 17 05 28      CMP      Okay, see you then.

04 17 05 31      CC      Thank you.

04 17 09 51      CC      Apollo 7, Houston through Canary.

04 17 09 57      CMP      Roger, Bill.

04 17 38 17      CMP      113 hours 37 minutes; took four pictures of  
southern tip of India and Ceylon.

04 17 38 38      CMP      Frame numbers were 78, 79, 80, and 81,  
magazine F.

04 17 46 39      CC      Apollo 7, Houston through Carnarvon.

04 17 46 44      CMP      Roger, Houston, Apollo 7.

04 18 14 28      CC      Apollo 7 - -

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Day 5

202

04 18 20 19 CC Apollo 7, Houston. 1 minute LOS Redstone;  
Bahama at 31.

04 18 20 24 LMP Roger.

04 18 33 17 CC Apollo 7, Houston through Antigua.

04 19 34 10 LMP Roger.

04 20 01 36 CC Apollo 7, Houston through Texas.

04 20 01 38 CMP Roger.

04 20 01 40 CC I have a block data update when you are ready  
to copy.

04 20 01 44 CMP Okay, stand by, Bill.

04 20 02 15 CMP Go ahead with your update, Bill.

04 20 02 18 CC Roger, block data 075-1A.

04 21 07 00 LMP 10 clicks of water for LMP.

04 21 14 19 LMP On the sausage patties on the first series, I  
did not get enough water in it and could not  
eat it. This time I doubled the water supply  
... and it looks eatable.

04 21 57 06 CDR Jack, now notice this, zero yaw rate, zero pitch  
rate.

04 21 57 14 LMP Roger. I've got 117 plus 23 plus 02, 143.1  
west, and 04 plus 34, right ascension.

04 21 57 23 CC Roger.

04 21 57 36 LMP Say, Jack. Frame 86, magazine S, a ground  
formation over the western end of Africa.

04 21 57 54 LMP Do you read, Jack?

04 21 57 56 CC Roger. Walt, we're about 15 seconds LOS Canary;  
Tananarive at 118 plus 11.

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Day 5

203

04 21 58 02 LMP Roger. Magazine S, frame 86, a ground formation, west end of Africa.

04 21 58 51 LMP At about 116:30, magazine S, frame 86, taken over the desert, the western end of Africa, a ground formation just past the Canaries.

04 21 59 08 LMP Correction on that time - it was 117 hours 57 minutes and 30 seconds.

04 22 11 19 CC Apollo 7, Houston through Tananarive.

04 22 11 23 CDR Go ahead.

04 22 11 31 CDR Houston, Apollo 7. We read you.

04 22 11 35 CC Roger. I - Wally, we've been doing some looking into this torque business. There have been some calculations made that show that there is 0.5-foot-pound torque possible going through perigee when you are broadside - going through perigee broadside to the direction of flight. This produces a possible rate of 0.03 degree per second per second in pitch due to drag. I would like to ask you if this torquing rate that you experienced exists throughout a complete revolution, or if it's more pronounced or noticeable at perigee only?

04 22 12 23 CDR We've already discovered it's more pronounced toward perigee. We were looking at it last night going across the - the States, and then across the Atlantic, and it was very strong in there. Had a tendency to put a pitchup; it didn't matter what the roll was. As it came across perigee, then it would start torquing right back, and we tended to go into SCS most of the time.

04 22 12 48 CC Okay, copy.

04 22 12 52 CC And we do have some more information on your secondary switchover.

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Day 5

204

04 22 12 59 LMP Go.

04 22 13 00 CC Okay. Our best data for your onboard gage readings for secondary tank switchovers are as follows. Are you ready to copy?

04 22 13 12 LMP Go.

04 22 13 15 CC Okay. Quad A, 46 percent; quad B, switch with tank quad D, Dog; quad C, Charlie, 54 percent; quad D, Dog, 49 percent. And at present, quad C is the closest to switch-over. The predicted switchover time is the - approximately 140 hours GET.

04 22 13 51 LMP Roger, and our meter readings are 46, Baker goes with Dog, 54 and 49 percent. We should switch those quads when they are indicating that to us. Over.

04 22 14 07 CC That's affirmative, 7.

04 22 14 11 LMP Thank you.

04 22 14 27 LMP Hey, Jack. Has that correlation between our onboard readings and the actual quantities been fairly consistent - with regard to the quantities coming down?

04 22 14 43 CC That's affirmative, Walt. We think the numbers we've passed you are pretty good numbers right now.

04 22 14 51 LMP Thank you.

04 22 15 02 LMP O<sub>2</sub> purge will be complete in 30 seconds.

04 22 17 33 CC Apollo 7, Houston. About 20 seconds LOS Tananarive; Carnarvon at 118 plus 26.

04 22 17 39 CDR Roger.

04 22 17 41 LMP O<sub>2</sub> purge is complete.

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Day 5

205

04 22 40 30      CMP      The torquing angles are 00007, minus 00011, plus 00007. We're on VERB 6, NOUN 93 on the final line of ... 15.

04 22 40 46      CMP      The time, 1'8 hours and 40 minutes.

04 23 45 59      CC      Apollo 7, Houston through Tananarive.

04 23 46 08      CDR      Roger, Houston.

04 23 46 11      CC      We are standing by.

04 23 46 13      CDR      Roger.

04 23 47 33      LMP      Houston, Apollo 7.

04 23 47 36      CC      Go ahead, 7.

04 23 47 39      LMP      Roger, what are your ideas on putting the water boiler back on the line?

04 23 47 43      CMP      (Laughter)

04 23 47 47      CC      Walt, the COMM is real bad here at Tananarive, and I can hardly make you out. Could you say again?

04 23 47 55      LMP      Okay, it's the question on putting the water boiler back on the line.

04 23 48 01      CMP      (Laughter)

04 23 48 03      CC      Stand by.

04 23 48 27      CC      Apollo 7; Houston. You can bring the water boiler back on the line. We'll take a look at it over Carnarvon at 120 plus 00.

04 23 48 36      LMP      Okay, I'll put it back.

04 23 48 38      CC      Roger.

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DAY 6

05 01 03 44 CC Apollo 7, Houston through Ascension.

05 01 03 49 CDR Roger, Jack.

05 01 03 52 CDR This - -

05 01 10 04 CC Okay, we are just about to lose you over Ascension; Tananarive at 121 plus 19.

05 01 10 12 CDR Roger. Jack, ask the medics to save that strip of onboard for Donn, as the burn starts. It's a nice souvenir for him.

05 01 10 23 CC Will do, Wally.

05 01 10 25 CDR I still have that one from Mercury.

05 01 20 57 CC Apollo 7, Houston through Tananarive.

05 01 21 01 CDR Roger.

05 01 21 07 LMP Log the LMP 20 clicks of water.

05 01 21 14 CC Apollo 7, you might be interested in - tropical storm Gladys is now turned into a hurricane. It's present position is approximately over Havana. You'll be able to see it your next REV; you'll pass almost over it.

05 01 21 35 LMP Roger. Thank you very much.

05 01 22 54 CMP Houston, Apollo 7.

05 01 22 56 CC Go ahead, Apollo 7.

05 01 22 57 CMP Roger. We're scheduled for a P52 fine align at this time. I was wondering how critical that is. We're not in the proper attitude for it since we have to maintain a local vertical for the landmark track, and we would just as soon not bother with it.

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Day 6

207

05 01 23 20 CC Apollo 7, could you say again? The COMM through Tananarive is pretty poor.

05 01 23 29 CMP Roger. Regarding the P52 alignment at this time, I would prefer not to do that. Over.

05 01 23 39 CC Okay, copy. Stand by.

05 01 23 51 CC Apollo 7. We concur. Negative P52.

05 01 23 54 CMP Roger. Thank you.

05 01 24 00 CC And, 7, we have about 1 minute LOS Tananarive and we would like to try an S-band contact through ARIA 2 at approximately 121 plus 30.

05 01 24 15 CMP Wilco. We'll be up.

05 01 31 38 CDR Go ahead, Houston.

05 01 31 43 CDR Very good. Best ARIA we've had yet.

05 01 31 54 CDR Yes, I'm very impressed with it.

05 01 32 08 CDR I like it better than the work we've had with Tananarive.

05 01 32 21 CDR How long can we work this bird, Jack?

05 01 32 31 CDR Roger, do we overlap with ARIA?

05 01 32 45 LMP Roger, we'll stand by.

05 01 33 00 CDR Just to fill you in, Jack, I'm doing a slow - a very slow roll, near - near SEF.

05 01 33 14 CDR It's about pitched to about 26 degrees. And we're not getting the torquing effect we had before. We're getting some more water out of the suit loop hoses, and it may be a function of the burn to bring the water up, but obviously we're getting it.

05 01 41 41 CC ... , Guam at 121 plus 47.

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Day 6

208

05 01 41 48      CMP      Roger. We've got some stars in sight. We may do a 52 after all.

05 01 41 52      CC      Roger.

05 01 45 04      CMP      Time, 121 hours 45 minutes; P52. The fine align check. NOUN 93, minus 00104, plus 00003, plus 00025, and we had 00000 for the star difference.

05 01 51 50      LMP      Go ahead.

05 01 51 51      CC      It appears that your S-band AUX TV switch is ON. Is that affirmative?

05 01 52 00      LMP      Negative. TV is OFF. Tape is ON.

05 01 52 03      CC      Roger, I understand.

05 01 52 29      LMP      Jack, this is LMP. Give me 10 clicks on the water gun, and when you get a chance, could you get us a map update, please?

05 01 52 35      CC      Roger, in work. We're just about to lose you over Guam.

05 01 52 44      LMP      Thank you.

05 02 41 10      CMP      ... catch it, it got away from me. I finally picked it up just as it went outside the field of view, but it was too late to get any marks. On the third one, I loaded in the data out of the landmarks book here. And when I went to AUTO OPTICS, it indicated that the target was completely outside of the field of view through the ... And Wally and Walt actually saw the thing a little bit to the south of us, but should have been within the field of view. So, what it amounts to, I got faked out three times by the stupid AUTO OPTICS in here.

05 02 41 40      CC      Roger, copy.

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Day 6

209

05 02 41 42      CMP      The next time we do it I'm going to stick to the MANUAL mode as a rule. We plan to see if that works out a little better.

05 02 41 50      CC      Okay.

05 02 43 00      CC      Apollo 7, Houston. 1 minute LOS Ascension; Tananarive at 122 plus 54.

05 02 43 07      CMP      Roger.

05 02 54 28      CC      Apollo 7, Houston through Tananarive.

05 02 54 34      CMP      Roger. Loud and clear.

05 02 54 37      CC      Roger.

05 02 59 04      CC      Apollo 7, Houston. 1 minute LOS Tananarive; Carnarvon at 123 plus 09.

05 02 59 12      CMP      Roger.

05 03 11 30      CMP      ...

05 03 11 37      CC      Stand by.

05 03 11 41      CMP      Guess we're not really in perigee, by any means.

05 03 11 47      CDR      We're about 40 minutes away from perigee.

05 03 11 52      CC      Affirmative.

05 03 12 05      CC      Apollo 7, Houston. Affirmative, we'd like GDC on ball 1.

05 03 12 08      CDR      Alright. Coming up.

05 03 12 11      CDR      You've got it.

05 03 12 13      CC      Roger.

05 03 12 17      CDR      You want ORB RATE or GDC?

05 03 12 25      CC      GDC.

05 03 12 26      CDR      You've got GDC.

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Day 6

210

05 03 12 30 LMP Hey, Jack. This is Walt. I got a comment on this food you might pass on to Frank and his guys. This high-caloried stuff, where they got everything hiked with calories, is just getting to us something fierce. In order to get a lot of calories in small weight, everything is hiked up and it's all got a sweet taste, and something you think tasted real good to you, by the time you get to the end of the bag of it, you can't really look at it - look it in the eye very well.

05 03 12 59 CC Roger, I understand that.

05 03 13 01 CDR The criteria for this was to save stowed weight, and as a result the food is very caloric and it's all sweet stuff.

05 03 13 16 CC Roger.

05 03 13 18 LMP You also might pass on to their crew, Jack, in case they haven't selected their menu yet, that I had a tendency to pick out a menu which had the individual items that I liked a lot out of the samples. If I had to do it over again, I would try to make sure I had as wide a variety of acceptable foods.

05 03 13 38 CC Okay. Copy that, Walt. We're about 30 seconds LOS Carnarvon; Guam at 123 plus 19.

05 03 13 46 CDR You want to leave us on GDC ball 1?

05 03 13 50 CC Affirmative, we'll pick it up at Guam.

05 03 13 53 CDR Okay.

05 03 13 56 CC Is it about the same torque that we've observed previously?

05 03 13 59 CDR No, we're not near perigee at this time. We're trying to see if we can get some data, then we'll go back and realign the GDC.

05 03 14 06 CC Okay.

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Day 6

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05 03 39 44      CC      Apollo 7, Houston.

05 03 39 47      CMP      Go ahead.

05 03 39 49      CC      Donn, on this star horizon sighting here. If you have the roll, pitch, and yaw attitudes that we gave you and have the trunnion and shaft values that we gave you also set in, the horizon should be visible in the landmark line of sight, and the star visible in the star line of sight.

05 03 40 11      CMP      Well, I know it should be, but I'm just telling you I don't think there's going to be enough accuracy in the actual - well, you know. What are you going to use for the horizon? It's about 2 degrees wide out there.

05 03 40 26      CMP      The horizon's probably been 2 degrees wide since earth was created, but only two people know about it.

05 05 00 46      CC      Apollo 7, Houston. About 30 seconds LOS; Hawaii at 09. We'll give you a map update and block data at that time.

05 05 00 55      LMP      Roger. And we won't need the right ascension, Ron. We really don't make any use of it, so unless we ask for it, why don't we just skip those right ascensions?

05 05 01 06      CC      Roger, I concur.

05 05 13 22      CC      ... plus 56, 2856; 084-CC, minus 076, plus 1700, 132 plus 33 plus 15, 1858; 085-AC, plus 072, minus 0220, 133 plus 19 plus 17, 4077 ...

05 05 14 30      CC      ... 134 plus 53 plus 55, 3706. Houston, over.

05 05 14 41      LMP      I didn't copy the last three. Give it to me again.

05 05 14 46      CC      Roger. Area 086-2C, plus 184, minus 0250, 134 plus 53 plus 55, 3706. Over.

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Day 6

212

05 05 15 09 LMP Roger. Readback follows: 081-3A, plus 312, plus 1360, 127 plus 45 plus 11, 3382; 082-3A, plus 302, plus 1360, 129 plus 21 plus 34, 3524; 083-3B, plus 253, plus 1340, 130 plus 52 plus 56, 2856; 084-CC, minus 076, plus 1700, 132 plus 33 plus 15, 1858; 085-AC, plus 072, minus 0220, 133 plus 19 plus 17, 4077; 086-2C, plus 18, didn't get the last number, minus 0250, 134 plus 53 plus 55, 3706. Over.

05 05 16 22 CC Roger. Your latitude for area 086-2C is plus 184.

05 05 16 32 LMP Roger. Plus 184 and Wally's got a failure to report on his harness. He had one lead that was coming loose. He put it together the last time and taped it to keep it there, and apparently it's now in a state of failure down where it goes into the body connector at the signal conditioner and he wants to know can they receive data with only his three good sensors? Over.

05 05 16 55 CC Roger. What's your - what's the color of the signal conditioner that there's a plug that it's going into?

05 05 17 07 LMP It's the lower sternal lead.

05 05 17 15 CC Roger. Stand by.

05 05 17 19 LMP It's the blue signal conditioner.

05 05 18 26 LMP Roger. Go ahead, Ron. Houston, Apollo 7. Go.

05 05 18 34 CC Roger, real weak, Walt. We can work up a swap of the signal conditioners or the leads going to the signal conditioners and we'll try to pass that up to you over Tananarive.

05 05 18 48 LMP Okay, thank you.

05 05 18 54 CC Sorry about that.

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Day 6

213

05 05 18 58      CMP      Roger, thank you.

05 05 19 56      LMP      Houston, Apollo 7. How do you read through ARIA?

05 05 20 01      CC      Apollo 7, ...

05 05 20 14      LMP      Roger, read the same, thank you.

05 05 22 32      CC      Apollo 7, Houston. Did you call?

05 05 22 36      LMP      Negative, Ron. I'm just standing by.

05 05 22 41      CC      Roger, about 1 minute to LOS now and Tananarive at 01.

05 05 22 46      LMP      Roger.

05 05 22 56      LMP      Did you catch our TV pass today?

05 05 23 00      CC      Affirmative, it was a good one again. The quality wasn't quite as good as it was the other 2 days. I've got some dope on that ALC switch I'll try to pass to you at some time this evening.

05 05 23 10      LMP      Okay. It never seems to work as good with the ALC in.

05 05 43 10      LMP      Roger.

05 05 53 06      CDR      Frame 76, magazine Sierra, taken on the coast of Guayaquil, Ecuador, at 101 hours 53 minutes, approximately. It's right on the coastline.

05 05 57 42      LMP      LMP, 10 clicks of water at 125 hours 30 minutes.

05 06 05 02      CC      Apollo 7, Houston through Tananarive.

05 06 05 04      LMP      Roger, Ron. Reading you 5 by. How me?

05 06 05 08      CC      Roger, not too bad this time, Walt. Have a little question on the chlorination. Have you chlorinated yet?

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Day 6

214

05 06 05 15 LMP No, and it's not our intention to chlorinate today. We chlorinated yesterday. You haven't had any objections about chlorinating every other day, have you?

05 06 05 26 CC Roger, I understand your intent on the thing. Do you still have a bad taste in it? Is this the reason?

05 06 05 35 LMP We just now are starting to feel well enough about colds and the water is tasting palatable enough, so we feel like - like cutting down the cold by drinking as much fluid as we can. But if we chlorinate, the taste of it afterward would be very bad for several hours, and it's not really good until the next day.

05 06 06 00 CC Okay. We understand and do not chlorinate today, we'll pass up today and chlorinate tomorrow.

05 06 06 09 LMP Okay, very good. I think that's a pretty sensible schedule. We'll expect to chlorinate tomorrow.

05 06 06 16 LMP Got two questions for you, Ron, if you're ready to copy.

05 06 06 20 CC Say again.

05 06 06 22 LMP One, what is the precise inclination of our orbit? Second is, we'd like to get a chart update for our RCS chart onboard.

05 06 06 36 CC Roger. What's the precise inclination of your orbit? Is that what you said?

05 06 06 40 LMP Right, and Wally would like to hear the proposed fix on the BIOMED sensors because he is getting suited up again.

05 06 06 51 CC Roger. We'll get your information on the BIOMED sensors. Walt, your inclination is 31.25.

05 06 07 08 LMP Roger.

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Day 6

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05 06 07 10      CC      And on your BIOMED sensors - what we want to use - or use the two good ones in the middle of your chest, and those two good ones will have to be connected to the blue signal conditioner, which means you're going to have the wires that go into the signal conditioners.

05 06 07 33      LMP      Okay, you want the two single leads that go to the blue signal conditioner, right?

05 06 07 41      CC      Yes, that's affirmative.

05 06 07 43      CMP      Okay, that means that Wally would like to unhook the connector on the other signal conditioner and use those leads for the sternal lead?

05 06 07 51      CC      That's affirmative, that's affirmative.

05 06 07 54      CMP      Okay, we'll try. If that doesn't work, we will just have to write it off because he's been trying to keep that thing together for around 126 hours. He'll try it.

05 06 08 08      CC      Roger.

05 06 09 09      CC      Apollo 7, Houston. 1 minute LOS; Mercury at 24.

05 06 09 14      LMP      Roger, and when you can get it, we'd like an update for our onboard RCS chart.

05 06 09 21      CC      Wilco, we'll have it available at Mercury.

05 06 32 06      LMP      How did you ever get Baker to be 50 and Dog to be 52? .

05 06 32 10      CC      Not quite sure, but it works out that way.

05 06 32 34      LMP      You still there, Ron?

05 06 32 38      CC      LOS; I think I missed you.

05 06 49 03      CDR      Is that drogues or main?

05 06 49 17      CC      ... GETI, burn 8.

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Day 6

216

05 06 49 22 CDR I got more to go?

05 06 49 24 CDR What's the 6-day forecast on hurricane what-it's-name?

05 06 49 35 CDR I think the name is Gladys, but it's about over, isn't it?

05 06 52 16 CC Apollo 7, Houston.

05 06 52 19 CMP Go. Go, Ron.

05 06 52 26 CDR Go ahead, Houston.

05 06 52 47 CMP ... outside TEMP.

05 06 53 35 CT ... Houston, Apollo now is reading us.

05 06 53 39 CMP Houston, Apollo 7. How do you read?

05 06 53 42 CT Apollo - -

05 06 53 45 CT ... we haven't heard it since.

05 06 53 48 CC Roger.

05 06 53 51 CMP Houston, Apollo 7. We're reading you.

05 06 53 52 CT Clear, now, answering you on S-band downlink.

05 06 54 00 CC ... landing point yet.

05 06 54 11 CMP You're not sure whether it's a good landing point or do what?

05 06 54 13 CDR I got it; you want to ...

05 07 13 36 CMP Frames 93 to 97 were taken at 127 hours and 12 minutes into the flight: the coast of Chile and some inland features.

05 07 36 50 CC Apollo 7, Houston through Tananarive.

05 07 36 53 CMP Roger, Ron.

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Day 6

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05 07 36 57      CC      Roger, I have your present battery status  
ampere-hours remaining.

05 07 37 04      CMP      Roger, read it.

05 07 37 06      CC      Roger. Alfa 31.4, Bravo 29.0, Charlie 39.5.

05 07 37 24      CMP      Roger, thank you. I'm always kind of puzzled  
the way those numbers change. Dcesn't seem  
to be consistent with the ones you get  
earlier sometimes.

05 07 37 35      CC      I missed that. Say again.

05 07 37 38      CMP      Roger the battery numbers.

05 07 37 40      CC      Roger.

05 07 37 48      CMP      Ron, I have a comment to pass on to Frank ...  
at least as soon as you can. The hose that  
you vent the waste water in, it goes to a  
QD fitting that's covering the water control  
panel. But where it passes through the  
water control panel, it has leaked everytime  
we dumped the waste water, and a large bubble  
of water has formed there. We could possibly  
put on there a pressed-on fitting, there was  
no lowering in it and that could make a big  
difference.

05 07 38 27      CC      Apollo 7, Houston. I can't make too much  
out of that other than understanding there  
was a large puddle of water by the water  
fitting on the waste water disconnect.

05 07 38 38      CMP      Roger. That's affirmative. And you might  
look into putting a different type fitting  
for attaching to the water control panel to  
save the problem of water leaking there every  
time we dump.

05 07 38 54      CC      We'll play back our tapes. Maybe we can read  
it off the tapes. I couldn't read you that  
time.

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05 07 39 30      CMP      Hey, Ron, we got several nice pictures on the west coast of Chile as we passed over last night.

05 07 39 39      CC      Roger. That's good.

05 07 39 41      CMP      That's frames 93 to 97 of magazine S.

05 07 39 48      CC      Roger.

05 07 40 38      CC      Apollo 7, Houston. Did you receive my comment on Hurricane Gladys?

05 07 40 45      CMP      Roger. I understand it's the boat alarm.

05 07 40 50      CC      Roger. In reality, it's due to hit Tampa at 18:00Z tomorrow; that's tomorrow on Thursday.

05 07 41 01      CMP      Roger. What's the wind in it?

05 07 41 08      CMP      What are winds it's carrying, Ron?

05 07 42 08      CC      Apollo 7, Houston. 1 minute LOS; Mercury at 56.

05 07 42 13      CMP      Roger.

05 08 34 24      CC      Apollo 7, Houston, Redstone. Standing by.

05 08 34 28      CDR      Roger.

05 08 34 31      CMP      Hey, Ron, can you give us the readout on our O<sub>2</sub> manifold pressure on my mark?

05 08 34 38      CC      Wait 1, I don't have it yet.

05 09 41 28      CMP      Houston, Apollo 7.

05 10 50 48      CDR      Regarding the sunrise, the color: the earth itself is black, but the face of the airglow is a bright reddish orange, fading to a light orange - very light - almost to a white, then a purplish violet color, fading into a dark blue as it gets darker, and it's quite a dark

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blue ... Here are the lights and it comes up to a rough spot on the edge and then pure black space. This sighting is at 130 hours 51 minutes and 26 seconds.

05 10 51 30 LMP You know - it's significant to me, Wally, that we do flare before you run into black skies. It's as wide as all the rest of the colors put together.

05 10 51 38 CDR It is, isn't it? It's pretty wide out there, isn't it?

05 10 51 42 LMP Yes.

05 10 51 44 LMP I'd like to have all the ... looking at it.

05 10 51 53 CDR You see that pinpoint down there? That really shows there, doesn't it? That's a definite purple.

05 10 51 57 LMP Yes, it is a very definite ... back layer.

05 10 52 01 CDR Maybe it's just red a little bit.

05 10 52 04 CDR Now, it's an orange, yellow, pinkish red, isn't it? Pinkish, reddish, purplish, rather.

05 11 18 50 CC Apollo 7, Houston. 1 minute LOS; Redstone at 39.

05 11 18 54 CMP Roger. The islands I photographed are just off the East China coast of the East China Sea.

05 11 19 03 CC Say again; missed that.

05 11 19 04 CMP The islands I reported are just off the East China coast, on the East China Sea.

05 11 19 13 CC Roger.

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05 12 12 43      CC      About 30 seconds LOS; Mercury at 41.

05 12 12 47      CMP      Roger.

05 12 13 06      CC      Apollo 7, Houston. You might try center position BIOMED.

05 12 13 13      CMP      Center position on what?

05 12 13 16      CC      BIOMED switch.

05 12 13 17      CMP      Roger.

05 12 41 35      CC      Apollo 7, Houston through Mercury.

05 12 41 39      CMP      Roger.

05 12 41 43      CC      Roger. Loud and clear, Donn.

05 12 41 45      CMP      Okay.

05 12 41 48      CMP      Ron, I got a couple of comments relative to program 23 navigation.

05 12 41 56      CC      Roger, go.

05 12 41 57      CMP      Okay, the reason we knocked that off yesterday was that when we got into attitude at the rate for P23, there was no star in the sextant, and the horizon we had in the sextant for a fixed line of sight was very indistinct. In fact, it was pretty hard to pick out anything you could use. There was one line-of-sight pass though, a repeatable line - it was pretty ticklish. Subsequent to that, I did a P52 AUTO OPTICS check, and found that the star was up there, but it was at a slightly different shaft and trunnion angle. That was the reason we didn't pick it up.

05 12 42 34      CC      Roger.

05 12 42 36      CMP      So the gist of it all is that I don't think it was too worthwhile or realistic a way to perform that program. It wasn't designed

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to be used that way, but I'd suggest that if we have any time or fuel later in the flight, we try to use a lunar landmark and stars.

05 12 42 55	CC	Roger.
05 14 10 32	CMP	7, Houston. 1 minute LOS Redstone; Canaries at 17.
05 14 10 38	CC	Okay.
05 14 47 15	CC	Apollo 7, Houston.
05 14 47 17	CMP	Hello dere!
05 14 47 22	CC	This is Captain Moho from deep in the trenches of the Moaker.
05 14 55 16	CC	Apollo 7, Houston. 1 minute LOS Redstone; Canaries at 17.
05 14 55 23	CMP	Okay.
05 15 06 06	CC	Apollo 7, Houston through Redstone.
05 15 06 10	CMP	Roger, Houston, Apollo 7.
05 15 17 46	CC	Apollo 7, Houston through Canary.
05 15 17 50	CMP	Roger.
05 15 17 53	CC	Say, Donn, I have a rather extensive explanation regarding this landmark tracking. I'd like to start passing it up. It's a lot of verbiage, but I don't know how else to do it.
05 15 18 09	CMP	Okay. Stand by.
05 15 18 21	CMP	Go ahead, Ron.
05 15 18 25	CC	Right. I guess when I - when I get through here, all the talk is going to result in about only two changes in the procedure. But I would like to go through it so you

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get an idea of the thinking that has been going on here.

05 15 18 43      CMP      Okay, go ahead.

05 15 18 45      CC      All right. First point; tomorrow we will perform landmark tracking on the three REV's scheduled in the flight plan, that's on 90 - okay, 91 and 92. And the second point, on yesterday's, or today's, depending on how you look at it, landmark track - -

05 16 40 09      CC      Apollo 7, Houston.

05 16 40 16      LMP      Roger, Houston.

05 16 40 43      CC      Apollo 7, Houston through Antigua. I have a flight plan update, when you're ready - -

05 16 46 43      LMP      Okay.

05 16 46 48      CC      Now at 146 plus 40, we've put a P23 in there for midcourse, and that's the one you were just talking about, I think. We just added that.

05 16 47 03      LMP      Roger, say that one again, now.

05 16 47 06      CC      146 plus 35 or 40; somewhere right along in there.

05 16 47 14      LMP      And what are you going to do there?

05 16 47 16      CC      P23 midcourse.

05 16 47 19      LMP      Okay.

05 16 47 20      CC      We just stuck that in there in response to your remarks.

05 16 47 26      LMP      All right.

05 16 47 31      CC      We're coming up on LOS. I'll pick you up at Canary.

05 16 47 37      LMP      Okay.

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05 16 51 00 CC Apollo 7, Houston through Canary. How do you read?

05 16 51 05 CDR Loud and clear.

05 16 51 06 CC Very good. Okay, I'll - -

05 16 58 34 CC Apollo 7, Houston. Coming up LOS Canary; we'll have - -

05 17 27 11 CC Apollo 7, Houston through Carnarvon.

05 17 27 14 CMP Roger, Houston.

05 18 13 26 CC 36.0. Thank you.

05 18 13 28 CMP Okay.

05 18 33 17 CMP ... I read you just for a minute there, Bill, and it's breaking up now.

05 19 59 32 CC Apollo 7, Hou - -

05 20 48 42 LMP Hey, Jack, do you have a map update handy?

05 20 49 12 LMP Any time.

05 20 49 38 LMP Roger.

05 20 49 45 LMP This is P52, option 2. Gyro-torquing angles, minus 00080, plus 00692, minus 01378. This is a torque align to a nominal REFSMMAT - that's the fine align, Jack. That time is 140 hours 50 minutes.

05 20 50 14 LMP Right. This is torque align, and these are the angles needed to torque it in for a fine align.

05 20 53 34 LMP This is a P52 again. This is option 3 with the REFSMMAT alignment. The one we did just a minute ago. The time is 140 hours 52 minutes. This time, the angles are 00008, 00002, and minus 00012.

05 21 50 27 CDR 141:50:20; we took frame 124 on magazine F.

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Day 6

224

05 21 50 37      CMP      Lake Chad.

05 21 50 47      CMP      Lake Chad.

05 21 53 53      CC      Houston through Tananarive. Standing by.

05 21 53 55      LMP      Loud and clear.

05 21 58 25      CC      Houston, 1 minute LOS Tananarive; Carnarvon  
in 142 plus 08.

05 21 58 28      LMP      Roger.

05 22 04 35      LMP      142 hours and 4 minutes into the flight; we  
have another failed food bag. This time it  
was fruit cocktail, and it was what you would  
call a failed safe mode. The tube which  
brings - is supposed to get the food out of  
the bag is sealed completely at the bottom  
for about a quarter of an inch width. But  
where there is a will there is a way, and I  
will find a way to eat this fruit cocktail.

05 22 05 05      CMP      Speaking of failures, at 135 hours, one of  
the elements in the left-hand floodlight  
of the LEB failed, so the configuration now  
is position 2. You can have either fixed or  
dimnable, and on position 1 you have nothing,  
so both number 1 elements are out down in  
the LEB.

05 22 20 55      CDR      Roger, Jack.

05 22 20 58      LMP      We rose to the bait on that S-band. We've  
got a big lock on it now.

05 22 22 08      LMP      I'll trade you four puddings for a package  
of bacon squares.

05 22 22 13      CDR      One bacon square?

05 22 22 15      LMP      Half a pack? Four?

05 22 22 17      CDR      No sale.

05 22 22 18      LMP      How about two beef bites for one bacon  
square? That's what I'll give you.

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05 22 22 25 CDR You mean two small bites?

05 22 22 26 LMP Two packages of beef bites for one single  
bacon square (laughter).

05 22 22 31 CDR I don't care for it. Thank you.

05 22 22 37 CMP That's like trading a dump - dump truck  
load of trash for a diamond.

05 22 33 11 CMP We have an old gripe that we have not  
recorded. On the MDC MET, there is a crack  
in the glass in the upper right corner that  
passes over unit seconds and cuts into the  
middle of tens seconds.

05 22 36 05 CC Apollo 7, Houston through Hawaii.

05 22 36 09 CDR Aloha.

05 22 36 13 CC Roger, Wally, you are coming through loud  
and clear.

05 22 36 16 CDR Very good.

05 22 36 25 CMP Hey, Jack, this is Donn. Log me 20 clicks  
on the water gun, will you?

05 22 36 39 CMP Houston, Apollo 7.

05 22 36 41 CC Go ahead.

05 22 36 42 CMP Roger, log the CMP 20 clicks on the water  
gun.

05 22 36 46 CC Will do. Hey, Donn, on this second landmark,  
this is going to be a fairly difficult one  
to acquire. You - -

05 23 10 00 CDR Frame 131, magazine zero, is of F-0-G-0  
Island in the Cape Verde group islands.  
Mark time 143:10 - 143, 09 minutes.

05 23 10 49 CMP Time, 143 hours 10 minutes; just completed  
the third landmark of the first pass, Fogo  
Island, the volcano. I got five marks on

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it. First update of the first mark is 00000, 00000; second update, first mark is 00000, 00000.

05 23 11 28      CMP      First update, second mark is 00000, 00000.

05 23 27 15      CC      Apollo 7, Houston through Tananarive.

05 23 27 19      CMP      Roger. Loud and clear.

05 23 27 21      CC      Roger. You're loud and clear, also. How were the results of that third landmark, Donn?

05 23 27 27      CMP      I got five marks on it. And all the updates to the state vector were zero, again. And a small correction to the landmark locations - something on the order of 0.03 or 0.04 mile. I think it is rather presumptuous of the computer to assume its own state vector's perfect, and that the landmark is in the wrong place.

05 23 28 04      CC      Donn, you started out real good, and then you faded out. We'll catch you over Carnarvon on that report. We copy that the updates on the state vector were all zips.

05 23 28 15      CMP      That's affirmative. I'll talk to you later.

05 23 31 57      CC      Apollo 7, Houston.

05 23 31 59      CMP      Go ahead. Go ahead, Houston.

05 23 32 03      CC      We're about 1 minute LOS Tananarive. We'll have ARIA on S-band at 143 plus 38, and Carnarvon about 4 minutes later.

05 23 32 14      CMP      Roger,

05 23 32 15      LMP      Roger.

05 23 37 43      CT      ARIA 1, go REMOTE.

05 23 38 13      CC      Apollo 7, Houston through ARIA.

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Day 6

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05 23 38 15 CDR Roger. Loud and clear, Jack.

05 23 38 17 CC Loud and clear, Donn.

05 23 38 19 CDR Roger.

05 23 38 29 CDR Jack, what's the predicted path of Gladys at this time?

05 23 38 38 CC Say again, Donn.

05 23 38 40 CDR This is Wally. What's the predicted path for Gladys?

05 23 38 45 CC Okay. Stand by and I'll have you a real good hack on that as we come up through Carnarvon here.

05 23 38 52 CDR Okay.

05 23 49 06 CDR Roger.

05 23 49 19 CC I'll give you part of the news. The front-page headlines this morning on the mission says, "Big Storm Tracked by Apollo 7," and describes the spacecraft as a manned weather satellite.

05 23 49 33 LMP The witch is out, Bentley.

05 23 49 37 CC We are about 1 minute LOS Carnarvon. We'll pick you up at Hawaii at 144 plus 07.

05 23 49 49 LMP One day we are COMSAT. Now we are NASAT.

05 23 49 55 CC Roger.

05 23 49 58 LMP Our Navy boy says he's worried about being UNSAT.

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DAY 7

06 00 58 26      CMP      Time - time, 144 hours 58 minutes; just completed landmark tracking on landmark 225. I've got five marks. Four showed up as processed after the marking was done, and all the updates were zeros. The updated landmark coordinates are minus 22879, plus 07227, plus 0015. That's NOUN 89. Correction, Bill, I have - register 3 is plus 00015. Again, the computer chose to update the landmark position rather than its own state vector.

06 01 02 26      CC      Apollo 7, Houston through Tananarive. Standing by.

06 01 02 30      CMP      Got that.

06 01 02 47      CMP      Houston, Apollo 7.

06 01 02 50      CC      Go ahead, 7.

06 01 02 51      CMP      Roger, we got landmark on that last one and got five good marks and all zeros for updates, and I put the coordinates of the landmark, the update coordinates, on the tape. You should get them when it comes down. It will change them a very slight amount.

06 01 03 20      CMP      It appears we are not updating our own state vector at all. We are merely letting the computer decide where it thinks the landmarks are located.

06 01 05 32      CC      Apollo 7, Houston. We are close to LOS Tananarive. We will have ARIA on S-band at 145 plus 12.

06 01 05 47      CMP      Roger.

06 01 07 19      CT      Ascension, Houston.

06 01 07 23      CT      ... How do you read?

06 01 07 24      CT      This is Houston COMM TECH.

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Day 7

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06 01 07 31 CT Ascension COMM TECH, Houston COMM TECH, net 1.

06 01 07 35 CT I read you 5 by. How me?

06 01 07 37 CT Roger, you are loud and clear. Thank you.

06 01 09 54 CC Apollo 7, Houston through Ascension.

06 01 09 56 CDR Roger, thank you.

06 01 09 58 CMP Okay, CDR 15 clicks on the water gun.

06 01 14 41 LMP I don't know if it has been reported up here before but I have seen Magellanic clouds on several different occasions at night out here.

06 01 16 09 CC Apollo 7, Houston through Carnarvon.

06 01 16 12 LMP Roger, Houston.

06 01 26 29 CDR The two stars sighted were Fomalhaut and Diphda, star angle distance 00001, tracking angle minus 00039, plus 00042, minus 00007.

06 01 26 44 LMP That was at 145:26:30.

06 01 28 37 LMP Been rolling, been rolling, single CHANNEL ROLL. We counted the pulses. We developed a 2-degree-per-second roll rate, 0.2-degree-per-second roll rate, rolling to the left (laughter). It took seven pulses. It put on a two-tenths of a second, - degree-per-second - roll rate. Seven pulses put out nicely to zero, and in rolling back, it would take eight pulses for 0.2 degree per second.

06 01 29 41 CC Apollo 7, Houston through Guam.

06 01 29 44 LMP Roger.

06 01 29 55 CC And, 7, we'll have a state vector update to send you over Hawaii.

06 01 30 03 LMP Roger. You mean you don't believe all these good landmarks?

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Day 7

230

06 01 30 47      CC      Apollo 7, Houston.

06 01 30 51      LMP      Go ahead, Jack.

06 01 30 52      CC      Okay, I have the pad on this landmark tracking information pad test that you are going to do here over the pass beginning Hawaii.

06 01 31 14      LMP      Go ahead, partner.

06 01 31 18      CC      Okay, the first landmark, 10; it's south of ground track 65 miles, GET 145 plus 56, shaft 043, trunnion 34. The weather is clear at this landmark. Second landmark, 142; 18 miles north of ground track, GET 146 plus 17, shaft 347, trunnion 31. Looks like it is about five-tenths covered.

06 01 32 25      LMP      Roger, we just got two this time, Jack?

06 01 32 29      CC      Affirmative.

06 01 32 30      LMP      Okay. I'll try to squeeze an unknown one in the middle somewhere.

06 01 32 34      CC      Okay, good.

06 01 32 52      CC      Walt, could we get you to switch the S-band AUX TV switch OFF?

06 01 33 01      LMP      That's a good idea.

06 01 33 44      CC      We pick up Hawaii at 145 plus 41.

06 01 33 51      LMP      Roger.

06 01 33 56      CC      The last of the news that I didn't finish this morning, the National Institute of Health announced today that they had a development of a vaccine to prevent German measles. Tommy Smith won a gold medal in the 200-meter dash with a world record time of 19.8, Bob Seagren picked up the United States' sixth gold medal by winning the pole vault with a world record of 17 feet, 8-1/2 inches. George Foreman of

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Day 7

231

Houston won a split decision in the open round of the Olympic boxing.

06 01 34 33 LMP Sounds like the home team is doing okay down there.

06 01 34 37 CC It sure is.

06 01 35 01 CDR Jack, that hurricane was really a doozy. I haven't seen anything like that, ever.

06 01 35 07 CC Roger, it's moving north, Wally. It should hit the coast of Florida around Tallahassee.

06 01 35 13 CDR What are the highest winds on the outside?

06 01 35 33 CDR It is quite interesting to see the vortex, it really is pronounced.

06 02 19 00 CMP ... and the first mark ... was ... went down to about ... 50 to 60 so we either had a wrong state vector or somehow ... Anyhow, we managed to get two marks, and we got ... updates ... all we got were zeros. We got a huge difference on the landmark coordinates. The landmark coordinates now for landmark 142 on the DSKY are minus 02731, minus 20998, minus 00012. That's NOUN 89 in program 32.

06 02 20 04 CC Apollo 7, Houston through Ascension.

06 02 20 10 CDR Roger, go.

06 02 20 11 CMP Roger, Jack. We just had a very anomalous total on the COMP area, loaded in some data on the ... program 52 ...

06 02 38 03 CC Apollo 7, Houston.

06 02 38 06 LMP Go ahead.

06 02 38 09 LMP Go ahead.

06 02 38 16 CC Apollo 7, Houston.

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Day 7

232

06 02 38 17 LMP Loud and clear.

06 02 38 20 CC Donn, we got real poor COMM here at Tananarive. I'd like to give you an updated GET for this moon/star sighting of 147 plus 00 plus 00.

06 02 38 37 CDR Say again, Jack. What time is the what?

06 02 38 44 CDR Is that for the lunar landmark?

06 02 38 45 CC Roger. That's P23, moon/star sighting. Time should be 147 plus 00 plus 00.

06 02 38 53 CDR Roger. I thought you were a little early on that.

06 02 38 57 CC Okay.

06 02 38 59 CDR Okay, that update costs us about 20 minutes of ATTITUDE HOLD, gang.

06 02 39 05 CC Roger. Copy.

06 02 39 07 CDR We are in attitude right now.

06 02 39 11 CC Copy.

06 02 39 14 LMP Say, Jack. Log another food bag failure - corn chowder. Day, whatever today is, meal B.

06 02 39 24 CC Walt, I didn't copy that; COMM is pretty poor here over Tananarive because of the low-elevation angle on the antenna. We'd like for you to switch your PMP POWER to AUX for this COMM test that we are going to do over Guam.

06 02 39 41 LMP Roger. When do you want me to switch?

06 02 39 46 CC Right now, Walt.

06 02 39 49 LMP PMP is in AUX.

06 02 39 52 CC Roger.

06 02 40 33 CC 7, we're about 1 minute LOS Tananarive. We have a real low-angle pass at Carnarvon 146 plus 52.

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Day 7

233

06 02 51 41      CMP      Wally and I want to give away our butterscotch pudding, but nobody will take it.

06 02 51 48      CMP      Walt and Wally are trying to con me out of my ham and applesauce by offering me a whole meal for it.

06 02 51 54      LMP      It's worth it. Sight unseen, I'll give a whole meal for it.

06 02 51 57      CMP      Walt likes cocoa, so we can palm off the cocoa on him.

06 02 52 01      LMP      I guess I am the only sucker - -

06 02 52 03      CC      Apollo 7, Houston.

06 02 52 06      LMP      Roger.

06 02 52 09      CC      Roger. We just got you in the middle of your transmission there, Donn. Could you say again?

06 02 52 12      CMP      Roger, we were just recording some comments on our food up here. If you like, I will repeat them.

06 02 52 19      CMP      I was saying that Wally and I are trying to give away our butterscotch pudding, but nobody wants it. Walt likes to collect cocoa, so we can give our cocoa to him. And both of them are trying to con me out of ham and applesauce. Walt has offered me a whole meal for one dish.

06 02 52 37      LMP      I guess what we're trying to say is that we get a little tired of the very rich, sweet things, and we still go for the meats and the soups and the solids.

06 02 52 46      CC      Okay, copy that.

06 02 52 50      LMP      Hey, Jack, when I tried to call you before over the last station, I had a corn chowder bag failure. It's the second one of this type. It fails down where the spout comes out. It fails down right down where it goes into the bag itself, and the meal comes out some other hole.

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06 02 53 09      CMP      And it always happens to my favorite food  
(falsetto voice).

06 02 53 11      CC      Roger.

06 02 53 21      CC      This is about the best COMM we've had - it's  
an elevation angle less than 1 degree.

06 02 53 26      CMP      That's pretty sensational.

06 02 53 58      CC      We're 1 minute LOS Carnarvon. We'll pick you  
up at Guam at 147 plus 01.

06 03 01 52      CC      Apollo 7, Houston through Guam.

06 03 08 59      CC      Apollo 7, Houston. 1 minute LOS Guam; Hawaii  
at 147 plus 16.

06 03 12 49      LMP      Day 7, meal B, we - -

06 03 12 52      CMP      - - are we going to review the next one?

06 03 12 56      LMP      - - corn chowder food bag failed where the  
drinking spout goes into the bag. It pulled  
apart down - it was not an external leak. It  
was internal, it was where the drinking spout is  
scored. That's a similar failure to an earlier  
chocolate pudding bag failure. That's the third  
food bag failure that the LMP has sustained..

06 04 05 30      CMP      CMP, 20 clicks from the water gun; LMP,  
15 clicks; CDR, 15 clicks.

06 04 11 39      CC      Apollo 7, Houston through Tananarive.

06 04 11 43      CDR      Roger, Jack. Read you loud and clear.

06 04 11 47      CC      Wally, I'd like to ask you if you powered down.

06 04 11 50      CDR      That's affirmative.

06 04 11 52      CC      Okay, thank you.

06 04 11 53      CDR      And our suit - suit loop goes to a peak at  
about suit temperature - just about 64 degrees

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Day 7

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just before power down and held that for a while after power down. I assure you that long period to power up, plus holding ORB RATE for 4 or 5 minutes, then it's pretty hot.

06 04 12 19 CDR We felt the heat very easily.

06 04 12 24 CDR Now - did you read that?

06 04 12 27 CC Roger, You were a little bit garbled, but I think we've got most of it.

06 04 12 32 CDR Okay.

06 04 12 34 CDR On the star track, only the two stars called up on the program was seen. No others, in the sextant.

06 04 12 48 CC Roger. Understand.

06 04 12 50 CDR We thought today was very busy, and tomorrow we have the big burn - burn 5. We'd like to consider deleting the TV pass tomorrow.

06 04 13 12 CDR Houston, Apollo 7.

06 04 13 14 CC Roger, we copy that. We are digesting that, Wally.

06 04 13 17 CDR Say again.

06 04 13 20 CC We copy all that.

06 04 13 22 CDR Okay, we were moving along like mad today, and TV pass is one reason why I didn't want to do it before our first burn because it can foul up our timelines considerably.

06 04 13 34 CC We copy.

06 04 13 35 CDR Roger.

06 04 13 40 CDR But I'll leave that up to you.

06 04 14 06 CC Apollo 7, Houston.

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Day 7

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06 04 14 08 CDR Go ahead.

06 04 14 10 CC Wally, is the suit temperature or cabin temperature getting a little more comfortable now that you've powered down?

06 04 14 16 CDR That's affirm, I should have told you. 58 SUIT IN right now.

06 04 14 21 CC Okay. Copy.

06 04 14 23 CDR We're doing fine.

06 04 14 42 CDR Now, Jack, in your planning for subsequent maneuvers, I think we should try to avoid being out of SEF or BEF by more than 20 degrees until we've passed the perigee. Over.

06 04 14 57 CC Okay. I copy that, Wally.

06 04 14 59 CDR Alright, because that will help us save a lot of that - -

06 04 15 12 CDR ... that burn 4. On burn 5 we better ease up a little bit on fuel on that attitude.

06 04 15 19 CC Okay, understand. We're getting pretty close to LOS Tananarive. We'll pick you up at Guam at 140 plus 26.

06 04 15 28 CDR Roger.

06 04 15 30 CC And then Mercury at 140 plus 33.

06 04 33 55 CC Apollo 7, Houston through the Mercury.

06 04 33 59 CDR Roger. Read you loud and clear.

06 04 34 05 CC Roger, read you also.

06 04 34 07 CDR ...

06 04 34 22 CDR Hello, Jack.

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06 04 34 23 CC Go ahead, Wally.

06 04 34 24 CDR Okay. I guess we'll chlorinate water tonight, about 149:50.

06 04 34 33 CC Okay, Wally, you're about 2 by here. You're pretty garbled. We might have a little better luck over Guam, which is coming up here.

06 04 34 41 CDR Okay. We - will - chlorinate - water - tonight.

06 04 34 55 CC Okay. We understand.

06 04 36 15 CDR ... down about 52 ...

06 04 36 47 CDR Houston, Apollo 7.

06 05 43 40 CC Apollo 7, Houston through Tananarive.

06 05 43 44 LMP Roger, Ron. Nice of you to get up and get to work.

06 05 43 53 LMP How do you read?

06 05 44 27 CC Apollo 7, Houston, Tananarive. Standing by.

06 05 44 31 LMP Good evening, Ron.

06 05 44 48 CDR Houston, Apollo 7.

06 05 50 14 CC Apollo 7, Houston. 1 minute LOS; Mercury at 06.

06 05 50 18 CDR Roger. We read you.

06 05 50 24 CC Roger. I read you that time.

06 05 50 26 CDR Good evening, Ron.

06 06 13 35 CC Apollo 7, Houston. About 1 minute to LOS.

06 06 13 38 LMP Roger.

06 06 13 40 CC Now, your preburn inclination is 31.22, and postburn is 30.08.

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06 06 13 48 CC That GETI will be about 165 plus 00.

06 06 13 54 CDR We'll probably drive her in a little bit. We calculated that over dry land, and we're okay.

06 06 14 01 CC And DELTA-V, 1646, burn about a minute and 6 seconds.

06 06 14 15 CDR Roger. Will that get us to the Colorado River, or won't we get to for a while?

06 06 36 39 CDR Apollo 7, S-band up, please.

06 06 36 45 CC Apollo 7, Houston. You broke up that time. Say again.

06 06 36 48 CDR Roger, if you turn that S-band up, and we were a little behind.

06 06 36 54 CC Roger, you're still breaking up.

06 06 36 58 CDR Roger, we hear you very weak.

06 06 37 03 CC Roger, COMM's not too good this time.

06 06 37 07 CDR Okay.

06 06 37 09 CDR You've got a real high squeal in the background.

06 06 37 14 CC ...

06 06 38 59 CC ...

06 06 39 03 LMP Say again, Ron.

06 06 39 15 CC ...

06 06 54 36 LMP 150 hours 55 minutes and 10 seconds into the flight; magazine F, frame 153: it's just south of ... and ... in the area of Chile.

06 07 18 30 CC Apollo 7, Houston through Tananarive. Standing by.

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06 07 18 33 CDR Roger, loud and clear.

06 07 18 36 CC Roger, the same.

06 07 23 05 CC Apollo 7, Houston. 1 minute LOS; Mercury at 41.

06 07 23 09 CMP Roger.

06 07 46 27 CMP On magazine Sierra.

06 07 46 29 CC Roger.

06 07 46 38 CC 7, Houston. If you've attempted BIOMED fix, we still have no joy.

06 07 46 44 CMP Hey, Ron. I went ahead and checked all these things. They're all made up, and I don't think there is anything else I can do. I'll check them again when I go to bed in a little bit, but they look to me like everything is okay.

06 07 47 01 CC Okay, we might have an internal break or something in one of the wires.

06 07 47 16 CC And we'll work on it later, no sweat.

06 07 47 18 CMP Frame 155, along the peak of Mount Fujiyama.

06 07 47 25 CMP There's snow on the top.

06 07 47 32 CC Say again.

06 07 47 34 CMP Frame 155 is Mount Fujiyama.

06 07 47 38 CC Roger.

06 07 58 12 CC Apollo 7, Houston through Hawaii.

06 07 58 18 CMP Roger, Ron. Can you give me a readout of our O<sub>2</sub> manifold pressure?

06 07 58 27 CC Roger, we're standing for lockup. We don't have it yet.

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Day 7

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06 08 15 05 CC Apollo 7, Houston through Redstone. Standing by.

06 08 15 08 LMP Roger.

06 08 18 41 CC Apollo 7, Houston. About 30 seconds LOS; Walt, you might be advised that the sternal connectors on the BIOMED seem to be acting up.

06 08 18 51 LMP Both sternal connecotrs?

06 08 18 53 CC Affirmative.

06 08 18 55 LMP Okay, I'll check it over good before I go to bed.

06 08 18 58 CC Roger.

06 08 18 59 LMP We'll have all engines astern full.

06 08 19 10 LMP I took care of my stern problem.

06 08 19 15 CC Roger.

06 08 41 40 CC Apollo 7, Houston through Ascension.

06 08 41 43 LMP Roger. Thank you.

06 08 41 46 CC Loud and clear.

06 08 41 52 LMP Anything more in the news around there, Ron?

06 08 42 00 CC Roger, we're working on some.

06 08 42 02 LMP Okay. Anyone happened to have the Lima Sierra update?

06 08 42 09 CC Roger. Your hydrogen margin is 2.6 pounds now, and your O<sub>2</sub> margin is 58 pounds; Lima Sierra 073/061; Sierra Foxtrot 075; Echo Kilo plus 003.

06 08 42 55 LMP Roger. Thank you.

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06 08 43 19 CC The Olympics are getting started tonight some-  
time. We don't have any information coming  
in on that, yet.

06 08 43 27 LMP Roger.

06 08 44 08 LMP Hey, Ron, how are the surgeons doing on curing  
colds from long range tonight?

06 08 44 16 CC Well, they're still working on it. Some guy  
down here is also working, facetiously that  
is, to determine if you would have gotten a  
cold had you not flown.

06 08 44 30 LMP Had we not what?

06 08 44 33 CC You not taken the flight.

06 08 44 36 LMP Roger.

06 08 44 38 LMP That's very significant.

06 08 44 41 CC I don't know how he is going to do it, but  
he's working on it.

06 08 44 45 LMP It could prove to be invaluable data.

06 08 44 58 CDR I wonder what would have happened if our  
fathers hadn't met our mothers!

06 09 \_\_ \_\_ CT Mercury, Houston COMM TECH, net one.

06 09 \_\_ \_\_ CT This is Mercury COMM TECH. How do you read?

06 09 \_\_ \_\_ CT Roger, you are loud and clear. Thank you.

06 09 17 05 CC Apollo 7, Houston through Mercury. Opposite  
OMNI.

06 09 17 10 CDR Roger. Stand by.

06 09 17 41 CC Apollo 7, Houston. I have a one-line flight  
plan update.

06 09 17 49 CDR Wait 1.

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Day 7

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06 09 17 55 LMP The only thing we have to look forward to is China and Japan if you want us to write.

06 09 18 02 CDR Okay. Go, Ron.

06 09 18 05 CC Okay, it's at 154 plus 00, the fuel cell O<sub>2</sub> purge.

06 09 18 15 CC This is a little early, but it allows us to get another one in just prior to the burn.

06 09 18 21 CDR Roger.

06 09 18 31 LMP Hey, Ron, tell the doctors not to worry about the cold. I always understood that it takes a week to get rid of it if you treat it, 7 days if you don't. Tomorrow is our 8th day, so it will probably be gone.

06 09 18 45 CC Roger.

06 09 18 53 CC The doctor really confirms that.

06 09 19 04 CC Apollo 7, Houston. Verify UP TELEMETRY command to NORMAL.

06 09 19 10 CDR All day.

06 09 19 19 CC Roger. By the way, the guy I was talking about before on the cold, I just heard that over the news. It's not one of our guys.

06 09 19 31 CDR That's encouraging anyway.

06 09 19 33 CC Roger.

06 09 19 39 CDR Thank God I'm not paying that cat.

06 09 19 43 CC Concur.

06 09 20 00 CC We have a little information here if you are concerned about maybe the drop in the battery voltages that we were - -

06 09 20 06 CDR Go ahead.

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06 09 20 09 CC Roger. It looks like a nominal-type thing. This downward shift corresponds to a nominal transition from the test to the plateau on the volt-amp curve.

06 09 20 25 CDR Roger.

06 09 20 26 CC And - it normally happens just about where we have now, 8 to 14 amp-hours discharged out of the battery. And - -

06 09 20 35 CDR Roger.

06 09 20 36 CC - - We're predicting an end-of-mission voltage on BAT A and B of - -

06 09 20 51 CC Roger. Lot of snow?

06 09 20 54 CDR The usual white peaks.

06 09 20 59 LMP Ron, how about somebody marking our position now and letting us know how far away we are from Fiji.

06 09 21 06 CC Wilco.

06 09 21 10 LMP 159 and 160: 159 of Shikoku and 160 along the side of Fujisan.

06 09 21 17 CC Roger.

06 09 23 39 LMP Hey, Ron, are you still with us?

06 09 25 11 LMP A triangular island in the Pacific; at 153 hours 25 minutes and 12 seconds, we were almost directly over it; frame 161, magazine S.

06 09 25 32 LMP 153 hours 25 minutes and 12 seconds; we were almost directly over a triangular island in the Pacific, frame number 161, magazine S.

06 09 46 48 CC Apollo 7, Houston through Redstone. I have block data number 17.

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Day 7

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06 09 46 52 LMP Ready to copy. Go.

06 09 53 38 CC Walt, I have your present battery ampere-hours, if you have a minute.

06 09 53 43 LMP Roger. Go ahead with them.

06 09 53 45 CC Roger. A, 30.8; B, 28.4; and C is 39.0.

06 09 53 59 LMP Roger. Thank you.

06 09 54 18 CC AOS; Ascension at 12.

06 09 54 21 LMP Thanks for the news, Ron.

06 10 12 27 CC Apollo 7, Houston through Ascension. Standing by.

06 10 12 35 LMP Roger, Houston, Apollo 7.

06 10 12 38 CC Roger. Good morning.

06 10 12 40 LMP How are you?

06 10 12 42 CC Good shape.

06 10 12 43 LMP Fine. I'd like to log in two aspirins and 15 clicks of water each for the commander and the LM pilot.

06 11 20 16 CMP Okay.

06 11 27 09 CC Apollo 7, Houston. 1 minute LOS; Ascension at 46.

06 11 27 16 LMP Roger.

06 11 46 20 CC Apollo 7, Houston through Ascension.

06 11 53 23 CC Apollo 7, Houston. We've lost your BIOMED now.

06 11 53 30 CDR Roger. BIOMED was disconnected temporarily.

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06 11 53 56 CC Roger.

06 11 53 58 CC Apollo 7, Houston. Verify O<sub>2</sub> tank fan OFF.

06 11 54 08 CDR Roger, it's OFF.

06 12 23 10 CC Apollo 7, Houston through Mercury. Standing by.

06 12 34 27 CMP Houston, Apollo 7.

06 12 34 30 CC Houston, go.

06 12 34 32 CMP Roger. Would like to advise that the tissues have been tested with a reasonable degree of success.

06 12 34 38 CC Roger.

06 12 54 55 CC Apollo 7, Houston through Redstone.

06 13 02 04 CC Apollo 7, Houston. LOS; Canaries at 25.

06 13 02 11 CMP Roger, Ron.

06 13 25 34 CC Apollo 7, Houston through Canaries. Standing by.

06 13 27 26 CC Apollo 7, Houston through Canary.

06 13 30 00 CC Apollo 7, Houston. 1 minute LOS; Redstone at 28. And you're in your 100th REV.

06 13 30 10 CDR Roger.

06 14 28 16 CC Apollo 7, Houston through Redstone.

06 14 28 28 CDR Roger, Houston, Apollo 7.

06 14 35 38 CMP Okay.

06 14 35 43 CC Apollo 7, Houston. 1 minute LOS Redstone; Antigua at 49.

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06 14 35 54 . CMP Roger, Antigua at 49.

06 14 50 25 CC Apollo 7, Houston through Antigua.

06 14 50 31 CMP Roger, Houston. Apollo 7.

06 14 58 06 CC Apollo 7, Houston through Canary.

06 16 02 18 CC Apollo 7, Houston through Redstone.

06 16 02 23 CMP Roger, Houston, Apollo 7.

06 16 02 28 CC Hey, Donn, this waste water quantity is getting pretty high. And we've been taking a look at this. It probably would be a good idea perhaps to dump this stuff before you do any NAV sightings, well before.

06 16 02 43 CMP Yes, it's a good idea. Thanks, Bill.

06 16 02 48 CC Go ahead and do it anytime, I suppose - -

06 16 02 51 CMP Alright.

06 16 02 52 CC - - also when I was updating the flight plan, if you have it there, you'll notice there's still an "H<sub>2</sub> heater ON" at 160 hours and 5 minutes, and, of course, I should have had that deleted.

06 16 26 46 CDR Houston, Apollo 7.

06 16 26 49 CC Apollo 7, Houston. Go.

06 16 26 51 CDR Roger. Could you give me a map update, please?

06 16 26 54 CC Roger. Stand by.

06 16 27 24 CC Apollo 7, Houston. Map update for REV 101, GET 158 plus 48 plus 46, node at 59.3 west, 59.3 west.

06 16 27 50 CDR Roger, okay.

06 16 27 53 CC We're coming up on LOS Antigua. We'll pick you up at Canaries in about 3 minutes.

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06 16 27 59 CDR Okay.

06 17 07 56 CC Apollo 7, Houston.

06 17 08 02 CMP Roger, Houston, Apollo 7.

06 17 08 05 CC Roger. I have a map data update and also a maneuver pad, and if you'll go to POO and ACCEPT, we'll send up your new state vector.

06 17 08 18 CMP Roger. Going to ACCEPT.

06 17 08 24 CC Donn, I have the - -

06 17 20 01 CMP Roger. SPS5/PUGS, 165, 00, 0000, plus 01110, plus 16300, plus 02034, 2406, plus 0898, plus 7280, 29494, minus 078, minus 049, 106, 34, 3548, 201, 164, 18, 4000, 3062 - minus 3062, plus 11248, plus 039, and all balls for attitude.

06 17 21 54 CMP Say, I ran out of room to write. What was those numbers again - the backup alignment?

06 17 37 24 CC Apollo 7, Houston through Redstone.

06 17 37 29 CMP Roger, Bill.

06 17 37 34 CC Roger. I'd like to clarify one item in the comments regarding the bias. The manual cut-off at DELTA-V counter equaled 100 feet per second.

06 17 37 59 CC I read it as "one zero zero" and just wanted to make sure that you understood that there's not a decimal point there.

06 17 38 07 CMP Roger, I get you. You've deliberately loaded in a bigger number, and they cut off at a plus number manually, then go to switch DOWN. Right?

06 17 38 15 CC That's affirmative, but it's 100 and not 10.

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06 17 38 19      CMP      Right, I got that.

06 17 38 22      CC      Also, you did get the R, P, and Y align?

06 17 38 27      CMP      Roger. I'll get that a little later. I'm  
right in the midst of an alignment here.

06 17 38 31      CC      Okay. Sorry to have bothered you.

06 17 38 32      CMP      No sweat.

06 17 41 05      CC      Apollo 7, Houston. 1 minute LOS; when it's  
convenient, you can go to BLOCK on your TM.

06 17 41 14      CMP      Roger.

06 17 52 32      CC      Apollo 7, Houston through MILA.

06 17 52 35      CMP      Roger, Houston. Apollo 7.

06 18 01 21      CMP      105-1A, 314, minus 0627, 164 46 06, 34446;  
146-1A, plus 286, minus 0631, 166 21 55,  
3485; 146-4A, plus 283, minus 1628, 168 59 03,  
3038; 108-4A, plus 0002, minus 1625, 172 00 38,  
2787, 109-4A, plus 275, minus 1625, ... 02248,  
...; 110-3A, plus 299, plus 1390, 173 34 54,  
2890.

06 18 05 53      CC      Apollo 7, Houston through Canary.

06 18 05 57      LMP      Roger.

06 18 12 10      CC      Apollo 7, Houston. About 1 minute and a  
half here to LOS, and we're transmitting  
through S-band. How do you read?

06 18 12 18      LMP      I read you fine, Bill.

06 18 12 20      CC      Okay, good. Thank you.

06 18 12 47      CDR      Houston, Apollo 7.

06 18 12 48      CC      Go.

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06 18 12 50 CDR Roger. Bill, do you - could you find exactly how many frames we have in this big cassette camera pack? It's - The nominal number is something like 165. We appear to have more than that. I was just wondering if anybody knows - down there knows exactly how many.

06 18 13 06 CC I'll check. I'll try to get the word to you, but we're coming up on LOS.

06 18 13 10 LMP Yes. Well, whenever it's convenient, there's no rush on it.

06 18 13 31 CC Apollo 7, Houston. We'll have Carnarvon at 40.

06 18 55 40 CDR Roger.

06 19 20 53 CC Apollo 7, Houston through Guaymas.

06 19 20 58 LMP I'd like to have - -

06 19 35 03 LMP - - read out as quantities in H<sub>2</sub> 1 and H<sub>2</sub> 2.

06 19 35 12 CC Stand by.

06 19 35 30 CT Try again.

06 19 35 38 CC Walt, we're reading 42.6 in number - H<sub>2</sub> number 1, and 39.2 in H<sub>2</sub> number 2.

06 19 35 49 LMP Roger, I'll balance it after the burn. Tell Rita Rapp that the ham and applesauce is a great dish.

06 19 35 59 CC Roger. Ham and applesauce. We're coming up on LOS. We'll have Canaries at 39.

06 19 36 09 CDR So far as CDR is concerned, the steak and eggs are better.

06 19 36 12 CC Amen.

06 19 39 46 CC Apollo 7, Houston - -

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06 19 45 57 CC - - We may be able to get you at Tananarive at 01. Also, we'd like the BIOMED to CDR, and note we've lost CMP EKG; request check harness.

06 19 46 19 LMP Lost CMP EKG, roger. You notice that my main BUS voltage, Bill, is running right at 26 volts down here, so it triggered these lights ON and OFF.

06 19 46 30 CC Roger, I just checked on that a minute ago and we were reading 26.9. Let me check again here.

06 19 46 37 CC 26.7 - 26.6 we're reading here, Walt.

06 19 46 42 LMP Okay. Well, it triggered off the MASTER ALARM a minute bit ago. And I'm reading right at 26 the onboard meter.

06 19 46 47 CC Thank you very much.

06 19 59 41 LMP Frames 5 and 6, taken at 163 hours, 59 minutes into the flight on the east coast of Africa.

06 20 03 41 CC Apollo 7, Apollo 7 through Tananarive. Over.

06 20 03 46 CDR Roger. We're just now over Tananarive, and loud and clear.

06 20 03 54 LMP Houston - Houston, do you read Apollo 7?

06 20 04 46 LMP Houston, Apollo 7.

06 20 14 26 CC Apollo 7, Houston through Carnarvon.

06 20 14 32 LMP Roger, loud and clear. On the EMS bias test for the duration of the burn plus 30 seconds, which is when we turned it ON, was 0.3 feet per second.

06 20 14 42 CC Roger, 0.3.

06 20 14 46 LMP That's a minute and 36 seconds.

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06 20 14 50      CC      7, - -

06 20 14 57      CDR      Bill, I'd like to have you go over again, what you had proposed for the DELTA-V counter setting on this burn.

06 20 15 07      CC      Okay, the DELTA-V counter setting will be 1728.0. What this does, it's 100 - 100 feet higher than the DELTA-V that you want to get, and you will turn the thrust switches OFF at 100.0 indication on the DELTA-V counter. In other words, with the hundred feet remaining.

06 20 15 35      CDR      What's the reasoning behind that? The thing is built to turn itself OFF at zero. That's one of our primary checks on the SCS cutoff on the DELTA-V counter.

06 20 15 46      CDR      I'll turn it OFF if it doesn't turn itself OFF at zero. ... I'll complete the ...

06 20 27 40      LMP      ... Can you read me, Jack?

06 20 28 20      LMP      ... average 140, the condenser exhaust temperature 178, it looks like now.

06 20 28 25      LMP      Okay. It seems to start coming down after I put two on the line, but I can't figure out as regards the condenser exhaust temperature.

06 20 44 30      CDR      The time is 164 hours and 45 minutes. We are now in DAP control, NAV DEADBAND, 0.02-degree-per-second rate, and we are letting the DAP turn the spacecraft to the burn attitude. And then we are holding there.

06 20 48 24      CC      Apollo 7, Houston through Huntsville.

06 20 48 28      CDR      Roger, loud and clear.

06 21 13 11      CDR      The changeover from the G&N control on the number 5 burn through the MTVC was very smooth. The error needles did not displace more than

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about 1 or 2 degrees, and the system responded very well coming back into null. And the roll went off about 2 degrees at the beginning of the burn on the G&N phase and came back in before I took over. I took over when all error needles were practically null, and the displacement was very minute, meaning that the ground update on the Q-ball was very good.

06 21 13 53 CDR The burn proceeded normally until cutoff. One, the DELTA-V counter was hit by direct sunrays and was almost impossible to read. Two, a change in procedure that had not been planned for was implemented just before the burn. An extra 50 feet per second was added to the DELTA-V counter to permit a DELTA-V thrust cutoff rather than a DELTA-V counter cutoff. And this, coupled with the sunrays on the DELTA-V counter, caused us to overburn 50 feet per second.

06 21 16 01 CC ... prior to 48 hours elapsed, and apparently they're not particularly worried about that.

06 21 16 19 LMP Thank you. I'm glad they are not.

06 21 16 21 CC That's very reassuring.

06 21 16 29 LMP If you read, rock your tower, will you?

06 21 16 43 CC Well, we had to have some practice.

06 21 16 46 LMP Yes. You'll have something to say in your press conference today.

06 21 16 54 LMP Aren't you having those duty press conferences when you break up?

06 21 16 59 CC I've been working the graveyard shift. I haven't had any of those.

06 21 17 04 LMP The press corps goes to bed when you are working?

06 21 17 06 CC Right. Donn and I have been having conversations.

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06 21 17 10 CDR Bill, we have been getting briefed during the day.

06 21 17 54 CC Apollo 7, Houston. 1 minute LOS Canaries; Tananarive at 31.

06 21 17 59 CDR Roger.

06 21 18 07 CDR Looks like our residuals have gone up exactly 50 feet per second.

06 21 18 15 CC Say again, Wally.

06 21 18 16 CDR Looks like our residual is exactly 50 feet per second.

06 21 18 20 CC Roger, copy that.

06 21 24 10 CDR The time, 165 hours 24 minutes; I don't remember if I recorded this or not, so I will do it again. The field of view in the sextant goes out to about 57 degrees; the field of view in the telescope is limited to about 38 or 39 degrees.

06 21 30 51 CMP Time, 165 hours 30 minutes; I just mapped the field of view in the telescope and the sextant against the bright earth background. I find the telescope - both of them are symmetrical, that is, they are the same trunnion angle out to the edge of the field of vision all the way around. Telescope is about 42 degrees from the trunnion and the sextant is about 56 degrees. I noticed when we are looking at stars, that the field of view in the telescope seems to be more like 38 or 39. I think probably this is because there may be some greater light loss out at the edges that obscures stars, but does not obscure bright earth objects.

06 21 32 05 CDR Frame 11, magazine R, Lake Chad, Africa.

06 21 32 29 CC ...

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06 21 32 34 LMP This is Apollo 7. Say again.

06 21 32 50 CC Apollo 7, Houston through Tananarive.

06 21 32 52 CDR Roger, loud and clear. I recorded on the on-board tape Lake Chad. That was Lake Victoria, frame 11, magazine R as in Romeo.

06 21 33 04 CC Roger. Wally, there is just one thing on the T align for the passive thermal control test. If you study the T align we've given you prior to 166 plus 50, you'll have to do it over again.

06 21 33 21 CDR Getting good now. Did you say 166:50? Jack?

06 21 33 36 CDR You guys better get organized down there today.

06 21 34 01 CDR Houston, Apollo 7.

06 21 34 06 CC Go ahead, 7.

06 21 34 07 CMP Do you have the coordinates of the station at Tananarive? We'll try and get a picture of them. Do it fast, though.

06 21 34 12 CC Roger, stand by.

06 21 34 34 CC Apollo 7, Houston.

06 21 34 40 CMP Go ahead.

06 21 34 42 CC Donn, if you set in the T align that we gave you for this passive thermal control test prior to 165 plus 50, you will have to redo it again.

06 21 34 55 CMP We understand that ... your update ...

06 21 34 59 CC Okay, real fine.

06 21 35 00 CDR Yes, that's two for today. We've already got it in.

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06 21 35 05      CMP      Jack, why do I have to do it over, offhand? Is it that far in error, or are you just saying you want to fine tune it?

06 21 35 12      CC      Well, what it does, you'll be over one REV ahead on the integration there.

06 21 35 20      CDR      Houston, Apollo 7. Over.

06 21 35 23      CMP      Yes, that's it.

06 21 35 25      LMP      Hey, Jack, are you still there?

06 21 35 26      CC      Roger, Walt.

06 21 35 28      LMP      Are you familiar with our fuel cell problem, fuel cell 2? I've got fuel cell 2 back on the line. Do they want me to leave it on until the condenser exhaust temperature hits 200 and starts cycling it back and forth between 200 on condenser exhaust and 380 on the skin TEMP, or just save it for when I need it? I would just as soon leave it on the line if nobody else has strong druthers.

06 21 35 57      CC      Okay, Walt, we would like to leave fuel cell on the line to see if  $T_{ce}$  goes on up toward 200 again.

06 21 36 03      LMP      I understand that; it is going on up towards 200 again, and if it is okay with you, I will just leave it at 200 and cycle it back and forth as per the malfunction procedures.

06 21 36 21      CC      Affirmative, Walt.

06 21 36 25      CMP      Forget the Tananarive coordinates.

06 21 36 33      LMP      Houston, are you still there? Are you still there, Jack?

06 21 36 37      CC      Apollo 7, Houston. Go ahead.

06 21 36 39      LMP      Roger, we had another large puddle of water on the aft bulkhead after that last burn. It

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looks like it is probably a good pint. We marked the perimeter of the puddle on the aft bulkhead, and somebody can calculate how much water was in there.

06 21 36 58 LMP You might make a note. They're going to have to make some allowances for kind of a reverse meniscus effect because this water kind of bunches up off the floor.

06 21 37 16 CDR We also had water coming out of the water gun during the burn on my lap.

06 21 37 21 CC Okay, copy that.

06 21 37 24 CDR It was dribbling out in big drops. Have you been briefed on the problem we had, the new kind of number 5 burn with 50 feet per second added?

06 21 37 42 CC Okay, Wally, the COMM here at Tananarive isn't too good. We'll pick you up over Carnarvon, and let's get a good rundown on it then at 165 plus 47.

06 21 37 55 CDR Wilco.

06 21 38 18 CDR We're getting a free ride.

06 21 38 33 LMP On the onboard tape, we are getting a free ride again due to perigee torque.

06 21 39 02 CDR At 165 hours 39 minutes, the water gun is putting out more gas than it is water at this moment. The local vertical attitude as to the perigee torque is 240 degrees pitch.

06 21 39 19 CC Roger, I copy that, Wally.

06 21 39 22 CC We're just about to lose you over Tananarive. We'll pick you up at Carnarvon.

06 21 39 25 CDR Okay, you're copying our perigee torque, here? I'm getting a 3 - about 0.35-degree-per-second pitch rate. Our pitch is about 250 degrees local vertical - now it's about 270.

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06 21 45 03 CDR Frame 13, magazine R for Romeo, horizon check at apogee of 240 miles.

06 22 00 57 CDR Houston, Apollo 7.

06 22 01 01 CDR Will you please check and see if the Maurer movie camera, 18mm lens at 1 frame per second - whether we overlap on frame exposures. Over.

06 22 01 30 CDR Okay, the subject is the movie camera.

06 22 01 38 CDR Okay, I'll wait.

06 22 06 23 CDR The time is 166 hours and 6 minutes. I've just done the P52 to align for the passive thermal control test, and I've got some torquing angles here which reflect the error inherent in the coarse align. The numbers are plus 00970, minus 05627. That's 5-1/2 degrees in pitch, either gimbal, minus 00370.

06 22 45 22 CC Apollo 7, Houston. We're about to lose you at Antigua. We pick you up at Ascension at 53.

06 22 45 27 CDR Roger. We'll be passively thermaling.

06 22 54 16 CC Apollo 7, Houston through Ascension.

06 22 54 18 CDR Roger, loud and clear - -

06 23 11 42 CC Houston - Apollo 7, Houston through Tananarive. Standing by.

06 23 11 48 CDR Roger, loud and clear.

06 23 16 45 CDR The 36-minute point ended up almost exactly SEF, about 10 degrees - a little less than 10 degrees bank velocity. Pitch and yaw are essentially zero.

06 23 18 37 LMP Houston, Apollo 7.

06 23 18 59 LMP Houston, Apollo 7.

06 23 23 55 CDR Roger.

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06 23 34 40 CDR Notice the yaw is decreasing because we're flying across the narrow band now.

06 23 41 29 CC Apollo 7, Houston through Guam.

06 23 41 33 IMP Roger, Jack. Incidentally, I'm manually balancing my hydrogen tanks now, and I'd appreciate it if you'd try to keep an eye on those quantities and let me know when you think we're getting close on the balancing. You're a little more accurate than I am.

06 23 41 48 CC Will do.

06 23 51 45 CC Apollo 7, Houston through Hawaii.

06 23 51 49 CDR Roger.

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07 00 22 10 CDR .. put that in there, but too faulty ...  
cycle.

07 00 30 28 CC Apollo 7, Houston through Ascension.

07 00 38 40 LMP This is LMP, 20 clicks of water.

07 00 46 14 CC Apollo 7, Houston through Tananarive.

07 00 46 19 CDR Roger, loud and clear. Do you read me, Jack?

07 00 46 24 CDR Houston, do you read Apollo 7?

07 00 46 37 CC Apollo 7, Houston through Tananarive. Stand-  
ing by.

07 00 46 41 CDR Roger, loud and clear. How me?

07 00 46 46 CDR Houston, Apollo 7.

07 00 47 05 CDR Houston, Apollo 7. Do you read?

07 00 47 35 CDR Houston, Apollo 7. Do you read now?

07 00 47 46 CT That's affirmative.

07 00 47 47 CDR Houston, Apollo 7. Do you read?

07 00 48 04 CDR Houston, Apollo 7. Over.

07 00 48 30 CC Apollo 7, Houston through Tananarive. Stand-  
ing by.

07 00 48 35 CDR Roger, do you read now?

07 00 48 38 CDR Houston, Apollo 7.

07 00 52 50 CC Apollo 7, Houston. 1 minute LOS Tananarive;  
Carnarvon on the hour.

07 00 52 55 CDR Roger, do you read me now, Jack?

07 00 53 00 CDR Houston, Apollo 7.

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07 00 53 44 LMP Houston, Apollo 7.

07 01 00 18 CDR Hello, Houston, Apollo 7 here.

07 01 00 22 CC Roger, 7. Go ahead, we're standing by.

07 01 00 24 CDR Okay, Jack, I understood that you're to knock off the attitude hold at 169 hours and 10 minutes. Does that mean you want to terminate the test at that time as well?

07 01 00 36 CC Stand by, Wally.

07 01 00 40 LMP Jack, a little further on that. We're sitting at 65 now on the SPS propellant tank temperature, and it's the lowest it's been and not about to get down to any 45 by the end of this test.

07 01 00 56 CC Roger. Understand, Walt. Stand by.

07 01 02 03 CC Apollo 7, Houston.

07 01 02 06 LMP Go, Jack.

07 01 02 08 CC Okay, Walt, on the SPS temperatures, we've had a data loss here, and we hope to be back in shape at Guam, and we'll take a look at the temperatures there and give you a little bit further hack on this cold-soak test. And on the termination of the attitude control test at 10, that was for the MIN DEADBAND, HIGH RATE. Then we pick up the MAX DEADBAND, LOW RATE test from there on. We should be through with that before we get down into perigee.

07 01 02 38 LMP I'm MAX DEADBAND, LOW RATE now.

07 01 02 41 CC Okay, real fine.

07 01 02 42 LMP What do you want at 10 - MAX DEADBAND, HIGH RATE?

07 01 02 51 CC Roger.

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07 01 02 52 LMP If you go MAX DEADBAND, HIGH RATE, that will be good enough for the cold soak, so I'll do that at 10.

07 01 02 59 CC The attitude before should have been MIN DEADBAND, HIGH RATE. Now we should be MAX DEADBAND, LOW RATE.

07 01 03 06 LMP Okay, I'll reverse it, and we had (laughter) MAX DEADBAND, LOW RATE, so far.

07 01 03 13 CC Okay then, pick it up MIN DEADBAND, HIGH RATE, and we'll try to get that before we go through perigee.

07 01 03 20 LMP Okay.

07 01 03 21 CDR I'll flip it now then, Jack, just to make it early.

07 01 03 25 CC Okay.

07 01 03 31 LMP Hey, Jack. You may have lost your data readout, but I've got good ones onboard here. And I've checked the oxidizer line temperature down below, and looks like it's a little something, little under 170, propellant tank temperature 165, and that should be as good as your data readout. What I'm saying is we're never going to get down to the point where I'm going to check the heater out. I might suggest that when we do terminate this test, it would be useful to turn on the SPS line heaters to A/B and watch for a rise - at least to see if they're working at all.

07 01 04 03 CC Okay, we copy that.

07 01 04 05 LMP Okay, do you concur with that?

07 01 04 09 CC We're going to put that in the mill and discuss it here.

07 01 04 15 LMP Jack, on Tananarive, it turns out you can broadcast it in the blind to us there, and the odds are we'll get it.

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07 01 04 21 CDR We can't seem to talk back to you.

07 01 04 25 CC Okay, fine, Wally.

07 01 04 26 CDR I'd like you to pass that on to one of the flight controllers.

07 01 04 30 CC Will do.

07 01 04 32 CDR Thank you.

07 01 06 16 CC - - BAND, HIGH RATE, then you can return to normal cold-soak attitude configuration.

07 01 06 35 CDR Understand that, in the new switch configuration, you want 40 minutes' worth, and then you want to keep going with this cold-soak test?

07 01 06 44 CC Affirm, we'll look at it over Guam and see what the trend is there.

07 01 06 49 LMP Okay, if you guys lose data you can always ask me over the loop, and I'll give you my readouts. They're supposed to be prime.

07 01 06 57 CC Okay. We've got data now.

07 01 07 03 CDR Just remind the guys that's possible, though.

07 01 07 12 CC Say again, Wally.

07 01 07 14 CDR Just remind the console operators that we are prime on those numbers.

07 01 07 28 LMP Hey, Jack, can you give me a readout of hydrogen tank 1 quantity and hydrogen tank 2 quantity, what you show?

07 01 07 35 CC Okay, stand by.

07 01 07 47 CDR Jack, the reason I made that remark, after about 8 days of staring at clocks from out here, I'm sure you guys are beginning to think they're all right.

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07 01 07 57      CC      Roger, Wally, we're - we'll get back to you on that. We're discussing that pretty closely, and I'm getting your tank quantities, Walt.

07 01 08 06      CDR      Very good.

07 01 08 15      CC      Walt, on that hydrogen - quantities: tank 1, 39.8; tank 2, 37.6.

07 01 08 24      LMP      Roger, I'll continue with the balancing. I'm wondering about the feasibility of maybe of over - overshooting about 1 percent with tank 1.

07 01 08 37      CC      Roger.

07 01 08 52      CC      And, 7, we're about 1 minute LOS Carnarvon. We pick up Guam at 169:12.

07 01 08 57      CDR      Roger, that means perigee is 36 minutes away. If you want 40 minutes on this control mode, that should be interesting.

07 01 09 06      CC      Roger, Wally, we had intended to do the MIN DEADBAND, HIGH RATE, first to minimize the RCS firing as we went through perigee.

07 01 09 15      CDR      They're about the same.

07 01 12 48      CT      Apollo 7, Guam.

07 01 12 49      CT      Okay, go ahead.

07 01 20 35      CC      Walt, we'd like to balance these hydrogen tanks as close as possible to each other.

07 01 20 42      LMP      Understand, I'll stand by for your call, because I show right now that they're getting pretty close, I'd say maybe a percent apart.

07 01 20 53      CC      We'll give you a call.

07 01 20 58      CC      And we're 1 minute LOS Guam. We pick you up at Hawaii at 27.

07 01 21 02      CDR      Very good.

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07 01 54 36 CDR I'd like to restate on the chlorination that we find every other day is satisfactory if you have no objection to that.

07 01 54 44 CC Okay. Copy that, Wally. Do you think that you could wipe off this brown spot?

07 01 54 48 CDR I guess we could. I'm not sure what it is, that's my problem. That's what I'd do in my own home, but I'm not sure if that's appropriate in a biomedical lab.

07 01 55 06 CDR It's way back ... up here.

07 01 55 09 LMP If we wipe it off, who's going to get a chance to take a look at it to see what it was?

07 01 55 17 LMP Are you reading my biomedical data now?

07 02 05 59 CC Apollo 7, Houston through Ascension.

07 02 06 02 LMP Roger. How do you read, Jack?

07 02 06 09 LMP Houston, Apollo 7. How do you read?

07 02 06 12 CC Roger, Walt. Standing by.

07 02 06 14 LMP Roger. Could you check the log and find out what time I turned the H<sub>2</sub> 1 and H<sub>2</sub> 2 heaters off this morning?

07 02 06 22 CC Wilco.

07 02 07 27 CC Apollo 7, Houston.

07 02 07 30 LMP Okay, Jack.

07 02 07 31 CC Roger. The best data we had there was 167 plus 53.

07 02 07 37 LMP Thank you.

07 02 07 51 LMP And what are the readouts, now, on H<sub>2</sub> 1 and H<sub>2</sub> 2 quantities?

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07 02 08 03 CC Including - 39.4, Walt, and 37.6.

07 02 08 08 LMP Okay. They seem to be coming apart. If that's a little bit too slow, I can turn the fans off if you want to; just mix it up occasionally.

07 02 08 20 CC Just hold what we got, Walt.

07 02 08 23 LMP Okay.

07 02 10 47 CC Apollo 7, Houston. 1 minute LOS Carnarvon; Tananarive at 170 plus 20.

07 02 10 57 CDR Roger.

07 02 20 48 CC Apollo 7, Houston through Tananarive. Standing by.

07 02 20 52 CDR Roger.

07 02 29 41 CC Apollo 7. 1 minute LOS Tananarive; Mercury at 46.

07 02 29 48 CDR Roger.

07 02 47 23 CDR Roger. Houston, Apollo 7 here.

07 03 17 33 CC Roger. 614 quad A is still the limiting quad, but still above all RCS redlines.

07 03 17 42 CDR Very good.

07 03 17 44 CC And, Walt, could you give us a BAT C readout when you have a minute?

07 03 17 52 LMP 36.2.

07 03 17 54 CC Roger. Copy. And your hydrogen imbalance is improving now, it's - we've gone from 3.4 to 1.8 difference.

07 03 18 04 LMP Roger.

07 03 18 15 CC Wally, I missed some of the answers to the question I asked about the FDAI problem you

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had. Did the 180-degree flip occur when the ORDEAL and the GDC were on ball number 1?

07 03 18 28 CDR Negative. We got up here ... ball number 1 ... ball number 1 ... GDC. Do you read?

07 03 18 40 CC We aren't getting the data right now, Wally.

07 03 18 42 CDR You are not? You are or are not?

07 03 18 45 CC Negative - -

07 03 18 47 CDR No data?

07 03 18 48 CC - - we've got a low-antenna angle here at Guaymas.

07 03 18 50 CDR I'll hold on a second.

07 03 19 10 CC Okay, Wally, it doesn't look like we're going to get any data at all here at Guaymas because of the keyhole.

07 03 19 15 CDR Okay, I'll give you the ... on this thing ... I got about 172 pitch on number 1, and the ball slipped on over to 022 pitch, so I can't seem to get GDC lock on ball number 1.

07 03 19 39 CC Okay.

07 03 19 41 CDR But it's fine on number 2.

07 03 19 43 CC Does this flip occur just at the time that you're switching the GDC to ball number 1?

07 03 19 49 CDR That's correct.

07 03 19 50 CC Okay. Copy.

07 03 19 53 CDR All this is clocked now. Do you want the data, Jack?

07 03 20 00 CC Okay. We're just about to lose you at Guaymas. We pick you up at Tananarive at 56.

07 03 20 05 CDR Roger.

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07 03 57 37 CC Apollo 7, Houston through Tananarive.

07 03 57 40 LMP Roger, Jack.

07 04 06 45 CC Apollo 7, Houston. 1 minute LOS Tananarive; Mercury at 172 plus 21.

07 04 06 51 CDR Roger, Jack. Do you read?

07 04 21 29 CC Apollo 7 - -

07 04 45 50 CDR Roger, 112 - CC and tell John Llewellyn that I've got a whole book full of unused block data.

07 04 45 59 CC Copy that. Okay.

07 04 46 26 CC Apollo 7, Houston.

07 04 46 28 LMP Go ahead, Jack.

07 04 46 33 CC Okay, Walt, you're pretty weak. But on your question on the primary evaporator, we would like to return the primary evaporator to AUTO.

07 04 46 43 LMP Going to AUTO now.

07 04 46 46 LMP Should I bring it into operation as we've been doing before?

07 04 46 53 LMP I'll go ahead and bring it on the line as we have been.

07 04 47 17 CC Okay, Walt, if you just place that primary evaporator in AUTO, it will cycle by itself, and we're expecting a cycle sometime tonight.

07 04 47 28 LMP Well, it's liable to also dry up again sometime tonight. If that's okay with you, I can go ahead and bring it on down but - okay, going to AUTO.

07 04 47 39 CC Roger. Copy.

07 04 47 44 CC And, Walt, we've been doing some discussion down here on a possible manual resericing

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procedure for the secondary evaporator in the event it dries out. We've run some tests and have come up with the procedures if you want to copy it.

07 04 48 03 LMP Is this something that somebody dreamed up after all these months? I've been told you can not reservice the secondary evaporator.

07 04 48 11 JC That is correct. We've come up with a procedure to do it.

07 04 48 16 LMP I don't know how everybody gets so smart in one week's time, but I'll go ahead and copy it. How long is it?

07 04 48 23 CC Four steps.

07 04 48 24 LMP Very long steps?

07 04 48 27 CC No, real short.

07 04 48 28 LMP Hit me with it.

07 04 48 31 CC Okay, you want to turn the evaporator and water control switch secondary to AUTO.

07 04 48 39 LMP That's where it is anyway, isn't it?

07 04 48 43 CC Roger. Then you want to turn your secondary coolant loop EVAP switch to EVAP for 5, plus or minus 1, seconds, then reset for 10, plus or minus 1, seconds.

07 04 49 31 CC Roger. You copy that, Walt?

07 04 49 33 LMP I got evaporator water control secondary to AUTO, which is where it normally is when it is running. I go to the EVAP position for 5 seconds and then reset for 10 seconds, I assume immediately afterwards. Is that correct?

07 04 49 45 CC Affirmative. 5 seconds, plus or minus 1 second, and then reset to plus or minus 1 second. Okay, then repeat this - this step above for 40 - for a recommended 40 cycles.

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07 04 49 58 LMP Forty times I do that, huh?

07 04 50 01 CC Roger, 40 cycles is the desired, but 20 cycles is the minimum number needed to bring your evaporator on the line. It'll give you 0.03 pound - 20 cycles will.

07 04 50 14 LMP Okay, I just might do it, but go on record here as saying, people that dream up procedures like this after you lift off, have somehow or other been dropping the ball for the last 3 years if they have a procedure where you can reservice. And this is kind of Mickey Mouse, but I'll do it if I have to. I've got the second step repeated for 40 cycles if necessary?

07 04 50 38 CC Okay. We just wanted to get you thinking about it in case you needed it.

07 04 50 39 LMP What? Did you read me then?

07 04 50 43 CC Affirmative, Walt.

07 04 50 46 LMP Okay. I'll do this Mickey Mouse procedure if necessary, but you seem to come up with these things a lot further in the flight plan.

07 04 50 54 CC Okay, we've got it. We're about to lose you over the Huntsville, Walt. We pick you up at Tananarive at 173 plus 32.

07 05 33 11 CC Houston through Tananarive.

07 05 33 14 CDR Roger.

07 05 41 21 CC Apollo 7, Houston. 1 minute LOS Tananarive; Mercury at 57.

07 05 41 28 CDR Roger.

07 06 04 37 CC Apollo 7, Houston. 30 seconds to LOS; Hawaii at 16.

07 06 04 43 CDR Roger. We'll tell you when we're placing our ... on.

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07 06 04 47 CC Roger.

07 06 21 48 CDR Well, okay.

07 06 21 51 CC Roger.

07 06 21 53 CDR Okay.

07 06 22 14 CC LOS; we'll pick you up at Ascension at 57.

07 06 22 17 CDR Roger, 57, Ascension.

07 06 57 10 CC Apollo 7, Houston through Ascension. Standing by.

07 06 57 14 CDR Roger, loud and clear. You want to check Walt out now? He has a new upper-sternal electrode on.

07 06 57 29 CDR And it worked out real fine.

07 06 57 39 CDR Houston, Apollo 7. Do you read?

07 06 57 46 CDR Houston, Apollo 7. Do you read?

07 06 58 20 CDR Houston, Apollo 7.

07 06 58 30 CDR Houston, Apollo 7, ... S-band.

07 07 11 59 CC Apollo 7, Houston, Tananarive. Low-elevation pass.

07 07 12 05 LMP Roger, do you read?

07 07 12 07 CC Roger, read you loud and clear.

07 07 12 09 LMP That's unusual. Can you read S-band there - no, you can't, can you?

07 07 12 20 CC And that didn't come through.

07 07 12 23 LMP Roger, did you have any news flash for us? We heard you at Ascension, but you could not hear us.

07 07 12 32 CC Roger, copy that.

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07 07 12 52 LMP Ron, do you read?

07 07 12 55 CC Affirmative.

07 07 12 57 LMP At Hawaii, can you give me a readout of hydrogen tank 1 quantity and hydrogen tank 2 quantity?

07 07 13 04 CC Roger. H<sub>2</sub> tank 1, 37.4; H<sub>2</sub> number 2, 36.8.

07 07 13 15 LMP I see we're making it. Give Donn a call when they're balanced up, and have him turn both heaters back ON, huh?

07 07 13 26 CC Apollo 7, Houston. Say again.

07 07 13 29 LMP Would you give Donn a call when they're balanced up, and have him turn both heaters on the hydrogen tanks to AUTO?

07 07 14 04 CC We will call Donn when they get balanced; Mercury at 33.

07 07 14 10 LMP Roger.

07 07 36 01 CC Apollo 7, Houston through Mercury. Standing by.

07 07 40 28 CMP Hey, Ron, you got any hot news for us?

07 07 40 33 CC Roger, the paper says your SPS burn was the mightiest maneuver ever made by a manned spacecraft.

07 07 40 39 CMP That's right.

07 07 40 42 CC Yes.

07 07 40 48 CC The stock market is at its highest level since February of '66.

07 07 40 54 CMP Outstanding.

07 08 13 40 CC Apollo 7, Houston. 30 seconds LOS; Ascension at 31.

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07 08 13 43      CMP      Roger.

07 08 14 01      CMP      Say again?

07 08 14 06      CMP      Roger ...

07 08 33 37      CC      7, Houston. The good doctors say, "Thank you."

07 08 33 43      CMP      That's what he wanted, huh?

07 08 33 46      CC      Affirmative.

07 08 45 14      CDR      (Sneeze) 176 hours 45 minutes; this water gun  
is still spitting air at us.

07 09 10 03      CC      Apollo 7, Houston, Mercury. Standing by.

07 09 10 08      CDR      Roger, Houston, Apollo 7.

07 09 20 44      CC      Apollo 7, Houston. 1 minute - or 30 seconds  
to LOS; Redstone at 40.

07 09 20 50      CMP      Roger. We'll be waiting.

07 09 20 52      CC      Roger. Been curious to know is that - did  
you notice much of the deviation from perigee  
to apogee in this orbit?

07 09 21 00      CDR      I haven't picked it up yet. I haven't been  
looking out the window that much, but they  
should expect to see some.

07 09 40 56      CC      Apollo 7, Houston through Redstone. Standing  
by.

07 09 41 01      CDR      Roger, Houston.

07 10 17 25      CC      Apollo 7, Houston. 30 seconds LOS; Mercury  
at 45.

07 10 17 31      LMP      Roger. I understand.

07 11 45 31      CC      Apollo 7, Houston through Ascension. Stand-  
ing by.

07 11 45 37      CMP      Roger, Houston, Apollo 7.

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07 11 48 53      CC      Roger, we'll take a look at it. I think it has something to do with that secondary loop test.

07 11 49 00      CMP      I believe you're right. But the secondary loop test is still going on, while that's going on. But tell them to check into it anyway and see what they say.

07 11 49 13      CC      Will do.

07 11 49 15      CMP      Thank you.

07 11 53 04      CC      Apollo 7, Houston. 30 seconds LOS; Guam at 28.

07 11 53 08      CMP      Roger, Guam at 28.

07 12 29 50      CC      Apollo 7, Houston.

07 12 29 53      CMP      Roger, Houston. Go.

07 12 29 56      CC      Roger, Donn. Looks like we're going to move the TV one orbit before. I can change your times if you're ready to copy.

07 12 30 06      CMP      Okay. Stand by. Go ahead with it.

07 12 30 15      CC      7, Houston. Did you say go ahead?

07 12 30 18      CMP      Right.

07 12 30 33      CC      7, 30 seconds LOS; I'll catch you at Redstone at 52.

07 12 30 38      CMP      Okay, fine. I'll talk to you then.

07 12 31 10      CMP      180 hours 30 minutes -

07 12 31 35      CMP      180 hours 30 minutes; one of the sensors on the BIOMED harness is heating up, getting too warm, and I've got to take the whole rig off until I find out what the problem is. It's getting a bit warm like it is.

07 13 22 05      CMP      181 hours 22 minutes; log the commander 15 clicks on the water gun, 15 clicks. And

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while we're at it, log the CMP 20 clicks on the water gun, 20 clicks. This covers the period of the last 3 hours or so.

07 13 24 16      CC      Apollo 7, Houston through Canary. Standing by.

07 13 24 23      CMP      Well, real good.

07 13 24 26      CC      Roger. Loud and clear.

07 13 24 28      CMP      Roger.

07 13 31 39      CC      Apollo 7, Houston. 30 seconds LOS; Honeysuckle at 11. That will be USB only.

07 13 31 47      CMP      Okay, 11 for Honeysuckle and I'll turn it up.

07 13 32 01      CC      7, Houston. My mistake. Honeysuckle is not up this pass. It'll be Redstone at 27.

07 13 32 07      CMP      Okay, Redstone, 27; look for you then.

07 13 32 13      CC      Roger. We're going to be in a quandary in the morning. You're supposed to pass right over Houston at the same time you're shooting down a TV picture, so we'll probably look at the TV instead of look for the spacecraft.

07 13 32 24      CMP      (Laughter) Okay. Take your choice. Get a portable and watch it outside.

07 14 10 15      CMP      Time, 182:08; magazine R, frames 20 through 23: Northern Australia, the Great Barrier Reefs.

07 14 28 15      CC      Apollo 7, Houston through Redstone.

07 14 48 25      CC      Apollo 7, Houston through Antigua.

07 14 48 28      LMP      Roger.

07 15 07 47      CC      Apollo 7, Houston. How do you read?

07 15 07 50      LMP      I read you loud and clear, Bill, but we've got an echo in the background.

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07 15 07 54      CC      Roger, I hear you 5 by, also with an echo.

07 15 08 00      LMP      Do you understand the reference that Donn gave you when I flowed the secondary radiator? Like to have somebody watch it pretty close.

07 15 08 07      CC      Yes, they said they had every intention of doing that. And they understood what you said. ...

07 15 08 14      LMP      Okay.

07 15 08 29      LMP      Alright, let's look at the flight plan, here, let me take a look here. 183, it's in work, now.

07 15 36 15      CC      Apollo 7, Houston through Carnarvon.

07 15 36 22      CDR      Roger.

07 15 36 23      LMP      Roger, Bill.

07 15 36 31      LMP      Hey, Bill, we had the primary evaporator put on AUTO yesterday afternoon late in the hopes that it would stroke sometime during the night and get reserviced. I can't verify it because I wasn't awake, but I don't believe it has operated all night long. We're on a low power, and it has been almost 48 hours, and I'd like to find about water servicing it, whether we ought to go ahead and manually run it ... before I do the secondary coolant loop.

07 15 36 57      CC      Right.

07 15 47 51      CMP      Roger. Say again, Bill, you just came in.

07 15 47 58      CMP      Roger, I understand.

07 15 48 03      CMP      Looks good here, Bill.

07 15 49 16      LMP      Hey, Bill, can you pick up a map update for us, and if you can't get it to us this station, we'll get it at the next one?

07 15 49 41      LMP      Go ahead.

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07 15 51 26 LMP Roger, Bill.

07 16 13 18 CC Apollo 7, Houston. 1 minute LOS Redstone; Mila at 22. Secondary loop looks real good.

07 16 13 26 CDR Roger.

07 16 23 40 CC Apollo 7, Houston through Mila.

07 16 23 42 LMP Roger, loud and clear.

07 16 23 46 CDR Bill, we got a ... for the day.

07 16 23 52 CC You were garbled. Say again, please.

07 16 23 54 CDR We have a problem for the day.

07 16 23 57 CC What's that?

07 16 23 58 CDR We are very worried about the ears. They're all blocked up with these colds. Every once in a while I get one to clear. And we are seriously considering reentering shirtsleeve. I mean, we're afraid we can't clear out ears on the way down. If we do have to clear them on the way down, we have to take the helmets off, and then they become a hazard bouncing around the cockpit. We feel the risk of rupturing our eardrums is higher than the risk of injury from not having the suits on. We realize the restraint harness will fit us closely.

07 16 31 51 CC 7, Houston. That secondary coolant loop is looking very good.

07 16 31 54 CDR I concur.

07 16 32 24 CC ... , Houston. Coming up on LOS; Canary at 35.

07 16 32 29 CDR Roger.

07 16 35 28 CDR Houston, Apollo 7.

07 16 43 09 CC Apollo 7, Houston on S-band through Madrid. How do you read me?

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07 16 43 14 CDR Roger. Loud and clear with a slight echo.

07 16 43 17 CC Roger, 1 minute until LOS; Carnarvon - -

07 16 43 23 LMP Roger, Carnarvon ...

07 16 44 00 LMP Hey, Bill, log IMP 15 clicks of water, will you please?

07 16 44 12 LMP Give the CDR 15 clicks also.

07 16 51 02 LMP Frames 28 and 29 taken on the upper Nile at 184 hours and 51 minutes into the flight.

07 17 53 14 CC Apollo 7, Houston through Texas.

07 17 53 16 CDR Loud and clear.

07 17 54 28 LMP Nassau Bay CAP COMM, this is Apollo 7. Over.

07 17 54 34 LMP Roger. On the secondary coolant loop test, I'm logging fuel cell currents at three different times. I logged them when we started the test. What were the other times for them to be logged?

07 17 54 48 CC Would you say again the last part there, Walt? I didn't quite understand.

07 17 54 53 LMP On the secondary coolant loop DTO, I logged the fuel cell currents when we started the test. What are the other two blanks for? What time? One's when you've got the high power ON, I would imagine, but I don't know when the third one's for.

07 17 55 08 CC Stand by.

07 17 55 14 CDR Timber Cove CAP COMM, do you have any word on the GDC problem on ball 1?

07 17 55 17 CC Negative.

07 17 55 39 CC Walt, we are checking on those times.

07 17 55 46 LMP Roger, La Porte CAP COMM.

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07 17 55 57 CC I feel like I'm going to be had.

07 17 56 00 CDR No, that's Friendswood.

07 18 07 24 CC Apollo 7, Houston. 1 minute LOS; we'll have Canary at 11, and we will have a - have an S-band backup voice check.

07 18 07 34 CDR Roger.

07 19 47 54 CC Apollo 7, Houston through Canary.

07 19 48 01 CDR Roger, loud and clear.

07 19 49 02 CC Apollo 7, Houston.

07 19 49 07 LMP Go ahead.

07 19 49 10 CC Roger, Walt, I'd like you to go this relay COMM mode test.

07 19 49 18 LMP Roger, Bill, we've already done that once, and we'll just configure it the same way we did then. Right?

07 19 49 25 CC This is for USB up and VHF down.

07 19 49 30 LMP Roger, it's the same configuration for either one. Is there any exception to the exceptions?

07 19 49 51 CC Apollo 7, Houston. Say, Walt, they say the test didn't work last time, and EECOM would like them to go ahead and go through this check the way they had written it, to see - to make quite sure that they had covered all their bets here.

07 19 50 09 LMP Well, I wondered if - Say, what are they getting on their slide rule?

07 19 50 15 CC Apollo 7, Houston. Opposite OMNI.

07 19 50 18 LMP Roger, compare what they've got for you with our slide rule and pass up the differences, will you?

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07 19 50 26      CC      Roger. Okay, you configure the center audio panels per side 2, the COMM slide rule.

07 19 53 00      CC      7, Houston. 1 minute LOS Canary; Tananarive at 06.

07 19 53 07      CMP      Roger.

07 20 08 37      CC      Apollo 7, Houston through Tananarive.

07 20 08 42      LMP      Roger, Houston, Apollo 7.

07 20 08 46      CC      Roger.

07 20 09 17      CDR      Bill, could you get me a map update and a right ascension for the star chart, please?

07 20 09 22      CC      Roger, will.

07 20 09 45      CC      REV 121 - 192 plus - stand by, disregard that one - for REV 121, it's 191 plus 49 plus 39, nodal crossing at 147.0 east. Right ascension for star chart update is 02:33.

07 20 10 22      LMP      Roger, I understand. The right ascension is 2 hours and 33 minutes, right?

07 20 10 26      CC      Affirmative.

07 20 10 27      LMP      Thank you.

07 20 10 28      CC      And for one - did you just want a star chart update?

07 20 10 32      LMP      No, I wanted both.

07 20 10 36      CC      Roger. Then for -

07 20 10 53      CC      Walt, when you said you wanted that for two REVS ahead, did you mean to go to the second REV beyond, like 121?

07 20 11 04      LMP      Forget that, Bill.

07 20 11 05      CC      Okay.

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07 20 11 08      CMP      I don't think it matters that much, Bill.

07 20 11 09      CC        Okay, Donn.

07 20 50 52      CC        Apollo 7, Houston through Hawaii.

07 20 50 54      CMP      Roger, Bill.

07 20 52 12      CC        Apollo 7, Houston through Hawaii.

07 20 52 19      CMP      Roger.

07 20 52 22      CMP      Do you read?

07 20 52 26      CMP      This is Apollo 7. Do you read? Over.

07 20 52 29      CC        Roger, Apollo 7, Houston - -

07 21 17 09      CMP      Okay, read out what the water quantity was  
at the start of this test, and what we are  
showing now.

07 21 17 17      CC        Right now the waste water quantity is 55.8 per-  
cent. Stand by for the previous reading.

07 21 17 25      CDR      Roger, at 83 - at 183:40.

07 21 17 31      CDR      Bill - we welcome suggestions for tomorrow's  
bit.

07 21 17 34      CC        Go.

07 21 17 37      CDR      We need some.

07 21 17 40      CC        I'm sorry, you were cut out. Say again.

07 21 17 41      CDR      (Laughter) We want some suggestions for  
tomorrow's bit.

07 21 17 50      CC        I - I'm sorry, I didn't get that, Wally.

07 21 17 52      CDR      We welcome a new script for tomorrow.

07 21 17 54      CC        I'm sorry. Okay, I guess you've got as many  
ideas as we do. That was actually very good  
today. The - that was the best that I have

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Day 8

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seen the pictures. I thought the - the pictures of the - of the instrument panel were very good.

- 07 21 18 08 CDR I'm talking about that other part.
- 07 21 18 12 CDR No acting awards today?
- 07 21 18 14 CC I'm afraid to say anything!
- 07 21 18 22 CDR Okay, if you're so smart, you come up here and do it.
- 07 21 18 26 CC Hey, I welcome the opportunity!
- 07 21 37 15 CMP 189 hours 29 minutes into the flight; magazine R, frame 34, that's southwest - no, the African coast ...
- 07 21 39 07 CMP That last picture of the tape might be the Luanda area ...
- 07 21 40 59 CMP Frame 35, Lake Salisbury, magazine R.
- 07 21 42 24 CC Apollo 7, Houston through Tananarive. Standing by.
- 07 21 42 29 CMP Roger.
- 07 21 43 17 CMP Magazine 35 - correction, frame 35, magazine R for Romeo -
- 07 21 43 30 CMP - is the southeast coast of Africa.
- 07 21 43 46 LMP Frame 47, same magazine, southwest coast of Africa, a little farther north.
- 07 21 49 05 CC Apollo 7, Houston. We're about LOS Tananarive. Do you want to turn up your S-band volume? We have ARIA aircraft in about 3 minutes.
- 07 21 49 09 CC ARIA 2, go REMOTE.
- 07 21 53 12 CMP Roger, I'm reading you reak but weada - weak but readable. How me?

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Day 8

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07 21 53 36 LMP Houston, Apollo 7.

07 21 55 13 CC Apollo 7, Houston through ARIA.

07 21 56 24 CC Apollo 7, Houston through ARIA.

07 21 56 30 LMP Roger, Houston, you sounded a little louder that time.

07 21 56 34 CC Roger, Walt, you faded out also. We'll just stand by here at ARIA and pick you up at Carnarvon in a few minutes.

07 21 56 42 LMP Okay, I've got a little dope on the pictures we've been taking with the 16mm that you can pass on to the photo lab. I've labeled the reels as we take them one, two, three, four, et cetera, and we'd like to keep them in order, so they stay in together, if they will.

07 21 57 01 CC Roger.

07 23 42 44 LMP Do you want to leave the primary evaporators on the line?

07 23 42 51 CC Affirmative, Walt.

07 23 42 54 LMP Okay. It will probably end up drying out again.

07 23 42 56 CC Okay. We're about 1 minute LOS Carnarvon here. We pick you at Guam - up at - well, we won't get you there at Guam. It's too short a pass. We will pick you up at Hawaii on the hour.

07 23 43 10 CDR Okay, did you notice that fuel cell 2 seems to be stabilized out right at the caution and warning trigger line?

07 23 43 18 CC Roger. We're following that real close.

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DAY 9

08 00 37 04 CMP 192 hours 36 minutes; magazine R, frame 43 is a picture of ... and landmark 141 on the northeast corner of South America.

08 00 38 55 CC Apollo 7, Houston through Ascension. Standing by.

08 00 38 59 CDR Loud and clear.

08 00 42 11 LMP ... number. 331, 000, 50, dash 204. There's a Hasselblad 50 series.

08 00 42 29 CC Okay.

08 00 42 32 CDR Jack, you better check with Helmut Kuehnel on the color corrections for that. It sounds like a pretty good red filter, but it may be pretty harsh.

08 00 42 42 CC Okay, Wally.

08 00 43 57 CDR Hello, Houston, Apollo 7.

08 00 44 02 CC Go ahead, 7.

08 00 44 03 CDR Roger. The COAS is just barely bright enough for tracking against the clouds. I'm not sure it will be acceptable.

08 00 44 17 CC I didn't get the first part, Wally.

08 00 44 19 CDR The COAS sight at full bright just barely shows. I'm not sure it's bright enough for tracking the various objects.

08 00 45 10 CC 7, we're 1 minute LOS Ascension. We pick up Tananarive at 54.

08 00 45 18 CDR Roger.

08 00 56 15 CC Apollo 7, Houston through Tananarive.

08 00 56 17 CDR Roger.

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Day 9

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08 00 56 21 CC Wally, on your question on the Panatomic-X film, and the red filter. Weather says that they agree with your decision to use this film photographing clouds with the red filter on there. They do request that land, water, and clouds be included in the pictures that you take.

08 00 56 46 CDR Roger. It's pretty hard to eliminate any one - any two of those three.

08 00 56 56 CC I didn't copy that, Wally.

08 00 56 57 CDR It's pretty hard to eliminate more than one of those three, anyway.

08 00 57 08 CDR Power is GO.

08 00 57 09 CC We couldn't copy that, Wally.

08 00 57 11 CDR Roger.

08 00 57 12 CC We'll pick you up over Guam, here.

08 00 57 19 CDR Roger.

08 01 02 00 CC Apollo 7, Houston. 1 minute LOS Tananarive. We pick you up at Carnarvon at 10.

08 01 02 07 CDR Roger.

08 01 13 15 CC Apollo 7, Houston through Carnarvon. Standing by.

08 01 13 18 CDR Standing by.

08 01 16 46 CC Apollo 7, 1 minute LOS Carnarvon; Guam at 21.

08 01 16 50 CDR Roger. That mark was ...

08 01 16 54 CC Roger, copy that.

08 01 16 57 CDR You're reading our DSKY, I assume. Did you get the star angle difference on this one from our program 53?

08 01 17 05 CDR 00018.

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Day 9

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08 01 17 07 CC You went through that before we had data.

08 01 17 09 CDR Okay, 00018.

08 01 21 40 CDR That's 00026, star angle difference, on P54.

08 01 21 56 CDR ... Houston.

08 01 30 40 CC Roger, Wally, just a minute.

08 01 30 45 CDR Our navigator is arguing with that "3," violently up here. Soon as he gets his head-set on, he'll start talking.

08 01 30 52 CC Okay.

08 01 30 54 CDR You reading the DSKY?

08 01 30 58 CC Roger, 00001.

08 01 31 00 CDR Okay, I just finished the fine align check. I won't read them back to you, then.

08 01 31 05 CC Okay, just going over the hill here, the brown material that you see there and the subsequent salt development was observed on 2TV-1. What we're doing is recommending that the material be wiped off the injector, and the wiping cloth stowed for observation when you get back down, and the chlorination proceed as per schedule on the flight plan.

08 01 31 30 CDR Okay, we note it crystallized out today. It was a white powder all over the place. I suspect that gray stuff is inside the plumbing, too.

08 01 31 43 CC Roger, copy that.

08 01 31 46 CDR We'll chlorinate on schedule.

08 01 31 51 CDR We'll expect full dentures after we get back.

08 01 32 19 CDR Houston, Apollo 7.

08 01 34 20 LMP Star angle difference is 00001; gyro-torquing angles minus 00008, minus 00006, plus 00003.

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Day 9

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08 01 36 49 CDR The 53, 54 combination goes back very well. The one problem, of course, that we discovered during the flight and then forgot about, was that a urine dump dropped just before sunset, and we were deluged with frost particles that light the spectrum. In addition, we had a dump, probably from the water bottle, and that kept us blinded for a good 10 minutes into the sunset. This is not fatal on this particular run, but it's something to remember in debriefing for the lunar crew - -

08 01 37 26 CC Apollo 7, Houston through Hawaii.

08 01 55 35 CC Apollo 7, Houston. 1 minute LOS Texas; Ascension at 17.

08 01 55 41 CDR Roger.

08 02 05 03 CDR Magazine R, frame 45 is a - toward the water. That's the river - it looks large, it might be the Amazon, we're guessing. It goes into the Amazon, but the cloud formation does not form over the river all the way down to the Atlantic Ocean, and that's the reason for the picture.

08 02 12 59 CMP Magazine R - I dropped it behind the tanks -

08 02 13 06 CMP Magazine R, frames 47 and 48, the east coast of South America and Brazil, north of Rio and south of Salvador.

08 02 17 26 CC Apollo 7, Houston through Ascension.

08 02 17 30 CDR Roger, League City. Loud and clear.

08 02 17 35 CC Wally, you're loud and clear also.

08 02 17 37 CDR Roger.

08 02 17 51 CC Wally, one point. Because of the visibility problem that we've had in window number 3, if you'd like, we have some simple instructions which would provide you with 55- and 90-degree roll lines on window number 2.

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Day 9

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08 02 18 10 CDR It's cleared up enough to where we can hack a sort of delta in the sun the last couple days. I think we can live with it. We can't shoot pictures out of it, or see detail out of it, but the horizon will show.

08 02 18 25 CC ...

08 02 18 26 CDR You're cut off, Jack.

08 02 18 33 CDR Are you on S-band?

08 02 18 37 CC We're transmitting both.

08 02 18 40 CDR Okay, window 3 is satisfactory for bank angles on reentry.

08 02 18 45 CC We copy that, Wally.

08 02 18 47 CDR Roger.

08 02 18 52 CC 40 seconds LOS Ascension; we pick up Tananarive at 29.

08 02 18 56 CDR Roger.

08 02 22 57 CDR On the COAS star alignment, programs 53 and 54, the star dimmed considerably through the reticle plate of the COAS, I would say exactly the same as I'm used to seeing on the simulator. I don't know how to use the split-eye image, but I looked at the star with my left eye, I looked at the COAS with my right eye to bring the two together, and these stars that reach to infinity ... it's a real nightmare.

08 02 30 21 CC Apollo 7, Houston through Tananarive.

08 02 30 25 LMP Roger, do you hear through Tananarive yet?

08 02 30 30 CC Say again.

08 02 30 34 LMP Just checking to see if you could hear through Tananarive.

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Day 9

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08 02 30 38 CC Roger, we're reading you 5 by.

08 02 30 43 LMP It's dinner time here.

08 02 30 52 LMP We like to eat dinner at the continental hour, and I'm sure some place in the world, it's the right time.

08 02 39 12 CC Apollo 7, Houston. 1 minute LOS Tananarive; the Mercury at 54.

08 02 39 19 CDR Roger.

08 03 24 06 CC Apollo 7, Houston. 1 minute LOS Huntsville; Tananarive at 196 plus 05.

08 03 24 15 CDR Roger.

08 03 42 32 LMP Magazine R, frame 49, east coast of the southern part of Africa. Correction. That's the west coast of the southern part of Africa.

08 03 43 46 LMP Try again. Frame 40 - let's try again. Frame 49, magazine R, is the west coast of South America - -

08 03 44 07 LMP - - near Peru.

08 03 48 25 LMP Frame 51, magazine R, Sao Paulo, Brazil. Frame 50 is the area just south of Sao Paulo.

08 04 05 52 CC Apollo 7, Houston through Tananarive. Standing by.

08 04 06 41 CC Apollo 7, Houston through Tananarive. Standing by.

08 04 06 56 LMP Roger, Jack.

08 04 15 12 CC Apollo 7, Houston. 1 minute LOS Tananarive; Mercury at 30.

08 04 15 23 LMP Roger, Jack.

08 04 55 13 CDR - - come off at 10 000 or where we are right now is kind of academic.

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Day 9

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08 04 55 23 CC Okay, well, I guess -

08 04 55 24 CC Well, we've been thinking to clear the air on this a bit, is that - probably that you ought to don the suits in any case, and have the heel protection. Okay, then the question of whether you put helmets on or whether you release them, whether you can clear your nose at the start with it on, and not tied to the neck ring, or off. I think that's all subject to some discussion. You guys got a better feel for that than anybody else.

08 04 55 49 CMP Yes.

08 04 55 52 CDR Okay. Well, we will - we'll just go ahead and work on it. We've been thinking about this for a week.

08 04 55 56 CMP We'll stand by.

08 04 55 58 CC ... about LOS. We'll ask you about it in some later information.

08 04 56 01 CMP Okay. We'll work on it.

08 04 57 57 CC Apollo 7, Houston. 1 minute LOS Huntsville; Tananarive at 42.

08 04 58 03 CDR Roger.

08 05 44 21 CC Apollo 7, Houston, Tananarive. Standing by. Good afternoon.

08 05 44 26 CDR Good afternoon.

08 05 49 55 CC Apollo 7, Houston. 1 minute LOS; Hawaii 25.

08 05 50 00 CDR Roger.

08 05 59 54 CC Apollo 7, Houston. 1 minute LOS; Mercury at 06.

08 05 59 58 CDR Roger.

08 06 30 36 CC LOS; Redstone 40.

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08 06 30 39 CDR Okay.

08 06 41 07 CC Apollo 7, Houston through Redstone. Standing by.

08 06 41 11 CDR Roger, Houston.

08 06 41 13 CC Roger, loud and clear.

08 06 44 29 CC Apollo 7, Houston.

08 06 44 32 CDR Go, Houston.

08 06 44 34 CC Roger. Verify O<sub>2</sub> tank 2 fan OFF.

08 06 44 40 CDR Roger, that's still ON. I'll get it in a minute.

08 06 44 43 CC Roger.

08 06 45 21 CC Apollo 7, Houston. 1 minute LOS; Ascension at 05.

08 06 45 28 CDR Roger.

08 07 43 32 CC Apollo 7, Houston through Mercury. Standing by.

08 07 43 36 CMP Roger, Houston, Apollo 7.

08 07 43 40 CC Roger. Loud and clear.

08 07 49 34 CDR Hey, Ron.

08 07 49 36 CC Roger.

08 07 49 37 CDR Now we've - we've, at least Walt and I have started drinking out of our little plastic bags instead of the water gun, because it's too hard to work anymore. Something is wrong with the trigger, very hard to operate, now I estimate I had about 16 to 20 helpings of water in the last hour or so; used the plastic bag.

08 07 51 41 CC Apollo 7, Houston.

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08 07 51 44      CMP      Go.

08 07 51 47      CC      Roger, did the drink gun stick completely now, or is it still just hard to operate?

08 07 51 51      CMP      No, it works. It's just real hard to operate.

08 07 52 48      CC      7, Houston. LOS; Redstone at 14.

08 07 52 52      CMP      Roger.

08 08 22 39      CC      Apollo 7, Houston. 30 seconds LOS; Ascension at 40.

08 08 50 33      CC      Apollo 7, Houston. About LOS; pick you up at Mercury at 18.

08 08 50 38      CMP      Right.

08 09 30 12      CC      Apollo 7, Houston. 30 seconds LOS; Redstone at 49.

08 09 30 17      CMP      Okay, could I get your block update now?

08 09 30 21      CC      Roger.

08 09 50 40      CC      Apollo 7, Houston through Redstone.

08 09 50 43      CMP      Roger, Houston. Apollo.

08 09 51 09      CC      Apollo 7, Houston.

08 09 51 12      CMP      Roger, Houston, Apollo 7. Go.

08 09 51 54      CC      Apollo 7, Houston. Trying again.

08 09 51 59      CMP      Say again.

08 09 52 22      CC      Apollo 7, Houston. How do you read?

08 09 52 26      CMP      Read you 5 by, Ron.

08 09 52 45      CC      Roger, Donn. You're not getting back to us. The Redstone M&O is relaying, and if you want me to read the block data up, you can read it back over Ascension.

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08 09 52 58      CMP      Okay.

08 09 53 24      CC      Redstone M&O, does he want me to read the data?

08 09 53 28      CMP      Roger. Go ahead.

08 09 53 33      CC      Redstone M&O, Houston CAP COMM. Does Apollo 7 want me to read the data to him?

08 09 53 43      CMP      Roger, Apollo 7 would like to do an update.

08 09 54 34      CC      Apollo 7, Houston. Transmitting in the blind; I'll give you block data for area 129, the rest of them over Ascension.

08 09 54 43      CMP      Roger.

08 09 54 45      CC      129-AC, plus 080, minus 0250, 203 plus 23 plus 55, 5190.

08 09 56 18      CC      Apollo 7, Houston. In the blind, we will send your W-matrix over Ascension. Keep the CMC powered up.

08 09 57 20      CC      Apollo 7, Houston. Ascension at 16.

08 09 57 27      CMP      Roger, 16.

08 10 16 02      CC      Apollo 7, Houston through Ascension.

08 10 16 08      CMP      Roger.

08 10 16 10      CC      You're loud and clear this time, Donn. We have the block data when you're ready.

08 10 26 23      CC      Ascension must have good radar. They've beat our LOS times every time.

08 10 26 28      CMP      Yes, they're doing alright.

08 10 57 05      CT      This is Mercury on trial voice check. Report.

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08 11 00 29 CC Apollo 7, Houston through Guam.

08 11 00 31 CMP Roger, Houston.

08 11 01 04 CC ... tracking ...

08 11 05 29 CC At 215 plus 30, MCC update, P22 landmark data.

08 11 05 49 CC At 216 plus 00, MCC update, state vector if required.

08 11 06 07 CC At 216 plus 15, start P22 landmark tracking pass.

08 11 06 23 CC At 217 plus 15, power down.

08 11 06 57 CMP Okay, let's see if I got this right now. We're going to have a nominal flight plan as it's written here, adding a fuel cell purge at 207:20, and it will run right up to the burn at 210:08, roughly. And we're going to do P22 horizon sighting at 211:40. Is that correct?

08 11 26 12 CC Apollo 7, Houston through Redstone. Standing by.

08 11 26 16 CMP Roger, Houston.

08 11 26 18 CC Roger. Loud and clear, Donn. Did you copy everything on that?

08 11 26 23 CMP Yes, wait just a second.

08 11 26 35 CMP Remind me to check waste water in about a minute or two.

08 11 26 40 CMP Okay, what I got was - on a normal flight plan adding a fuel cell O<sub>2</sub> purge at 27:20. Is that what you gave me? At 207:20, rather. On up through burn at 210:08. I have at 211:30, P22, the land sightings. Is that right?

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08 11 27 11 CC Yes, I'll update you. The information, at that time, - it is an MCC update at that time.

08 11 27 16 CMP Okay, that's the information; wait a second.

08 11 27 31 CMP On that 213 on there, I only get state vectors, ... , and P22 landmark data, right?

08 11 27 40 CC Affirmative.

08 11 27 41 CMP Okay, and then it's TV pass at - running at 12 and running through 24. Was that it?

08 11 27 49 CC Roger, through 23.

08 11 27 51 CMP Okay, we turn the TV on in 10 minutes anyway at ...

08 11 27 55 CC Roger.

08 11 27 56 CMP And then we got P22 horizon check, whatever this is, at 213:40?

08 11 28 04 CC Roger.

08 11 28 11 CMP A P22, option 3, at 213:10, the start of P22 landmark tracking. And about 214:45, I guess it is - anyway the day passage. Then we get more P22 data at 215:30.

08 11 28 32 CC Roger.

08 11 28 35 CMP We're going to update the state vector at 215 if we need it, start P22 again at 216:15; I then power down at 217:15.

08 11 28 50 CC Roger.

08 11 28 53 CC Roger, and if you notice, this goes into your sleep period, so we recommend that you change your sleep period to - back 2 hours - everybody back 2 hours.

08 11 29 06 CMP Stand by 1, I've got to shut the water off.

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08 11 29 10 CC Roger, we show 24 percent now.

08 11 29 16 CMP Did you say 24?

08 11 29 19 CC Oops, we just lost data again.

08 11 29 23 CMP Okay, I read about 15 in here.

08 11 29 26 CMP Okay now, I'm going to shut it off.

08 11 29 31 CC Roger, we concur.

08 11 29 56 CMP I've still got that big water bubble around the fitting.

08 11 30 04 CC Great.

08 11 30 11 CMP It's really funny looking. It's a big - almost a sphere. It's as big around as a silver dollar. It's just hanging on the wall by the fittings for the water dump.

08 11 30 22 CC I'll be darned.

08 11 30 46 CC Is the leak between the hose and the fitting, or between the fitting and the panel?

08 11 30 51 CMP It's between the fitting and the panel - the water service panel. It leaks around that ... , the area you have to take the panel off to put that fitting on.

08 11 31 01 CC Roger.

08 11 31 06 CMP It doesn't hurt anything. It just forms that big blob and just stays there until you wipe it up.

08 11 31 47 CC 7, Houston.

08 11 31 49 CMP Right. Go.

08 11 31 53 CC Roger. On this passive thermal control test tomorrow, we don't want to use the same procedures that you have onboard except we want to pitch, instead of roll.

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08 11 32 11    CMP    Okay, this is the one at 212, is that it?

08 11 32 15    CC    Say again.

08 11 32 16    CMP    This is the one that's taking place at 212 hours?

08 11 32 22    CC    That's affirmative.

08 11 32 23    CMP    Okay.

08 11 32 29    CC    Your procedure is written up to roll, but we want the pitch about the Y-axis.

08 11 32 34    CMP    Okay, you say it'd be only be substitute pitch for roll. Is that right?

08 11 32 38    CC    Affirmative.

08 11 32 39    CMP    You want the same rate, three-tenths?

08 11 32 43    CC    Affirmative.

08 11 32 44    CMP    Okay.

08 11 34 30    CC    Apollo 7, Houston. 1 minute LOS; I'll have some good news for you at Canary at 57.

08 11 34 39    CMP    Roger, say again.

08 13 01 43    CC    Apollo 7, Houston through Redstone.

08 13 01 47    CMP    Houston, Apollo 7.

08 13 01 48    CC    Roger, loud and clear.

08 13 01 50    CMP    Roger.

08 13 04 40    CC    Apollo 7, Houston. I have the procedures for your P20 horizon sighting if you would like to copy.

08 13 04 48    CMP    Roger, stand by.

08 13 04 53    CC    Roger. Select P22, use unknown landmark option. Do steps 1, 2, 6. Go to optics mode MANUAL and proceed to step 9. Disregard R-1, R-2, -3. Make five marks 10 seconds apart, and then exit

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program at step 12. We will give you the gimbal angle for starting with ZERO OPTICS if you so desire.

08 13 06 10 CC Apollo 7, Houston. Opposite OMNI.

08 13 06 14 CMP Right.

08 13 06 21 CMP Okay, I get - select P22 and use unknown landmark - go through the program to step 6 in optics MANUAL - proceed to step 9, ignoring the display, make five marks 10 seconds apart, then exit at step 12.

08 13 06 38 CC That's affirmative.

08 13 06 42 CMP Okay, I don't think they need gimbal angles for ZERO OPTICS. What do you want to use, just the - the sextant, or the telescope? I guess the sextant would be quicker, huh?

08 13 06 55 CC They would prefer the sextant and use the upper horizon, what you think is the upper horizon, anyhow.

08 13 07 02 CMP Yes, whatever that is.

08 13 07 05 CC Roger.

08 13 07 06 CMP Okay, we'll try it. These done in daylight, are they?

08 13 07 15 CC That's affirmative, in the daylight.

08 13 07 18 CMP Okay, I don't think we need any gimbal angles. We'll just set up for small-end-forward ORB RATE.

08 13 07 27 CC Okay, if it's going good and you could get it at different shaft and trunnion angles, the more data we get, the better off we'll be; but don't waste any more fuel on it.

08 13 07 39 CMP Okay, what's the purpose of this anyway? I guess I don't understand what - why we're doing it.

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08 13 07 43      CC      Okay, the purpose is for - to get an idea on the difference between the apparent horizon and the real-earth horizon for the calculations on some midcourse direction.

08 13 07 57      CMP      Yes, I understand that, but I don't understand what use it is because midcourse navigation is some several thousand miles out from the earth. And at that point, this horizon jazz doesn't mean anything. Hell, it's all going to be one. I mean, the point is the airglow is not going to be 20 feet wide anymore when you're out a 1000 miles. It's the only place this program applies anyway.

08 13 08 23      CC      Roger, we see what you're saying, but we still don't have a hack on what this difference is; we don't have any hack what the difference is, so we'd like to get at least one data point on that.

08 13 08 33      CMP      Yes, okay, we can go ahead and do it.

08 13 09 13      CC      7, Houston.

08 13 09 15      CMP      Go.

08 13 09 17      CC      Roger. Antigua acquisition at 21, and we'd like to have you be in P05 at that time to send a load to you.

08 13 09 31      CMP      Okay, I'm going to power up before then and try to do P51.

08 13 09 36      CC      Roger.

08 13 11 03      CC      Apollo 7, Houston. 1 minute LOS.

08 13 11 07      CMP      Roger.

08 13 41 36      CMP      Roger, Houston.

08 13 41 49      LMP      Roger, I'll get it up for Honeysuckle, too.

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08 14 19 47      CMP      Roger, Houston, Apollo 7.

08 14 20 02      CMP      Houston, Apollo 7. Say again. Roger.

08 14 20 17      CMP      Yes, I was. I was just answering.

08 14 24 15      CMP      Roger, Bill. See you at 36.

08 15 07 57      CC      Apollo 7, Houston through Canary.

08 17 18 37      CC      Apollo 7, Houston through Carnarvon.

08 17 18 41      CDR      Roger.

08 17 18 48      CC      Apollo 7, Houston. I'll give a time hack on  
209 plus 19. Coming up in 5 seconds.

08 17 19 10      LMP      Missed that one.

08 17 19 15      CC      I'll give you a mark on 209 plus 20.

08 17 19 17      CDR      Roger.

08 17 39 53      CDR      Mark that star within two or three tenths of  
a degree. Star is HM.

08 17 58 53      CC      Apollo 7, Houston through Guaymas.

08 17 58 57      CDR      Loud and clear.

08 17 59 02      CC      Roger. Apollo 7, Houston. You can confirm  
SPS line heaters OFF?

08 17 59 10      LMP      They were coming OFF at the 5-minute, 30-second  
checklist.

08 17 59 14      CC      Roger. Thank you.

08 17 59 16      LMP      Have you noticed anything being accomplished  
by those line heaters onboard? I'm reading  
exactly the same temperature on mine -  
repeater.

08 17 59 26      CC      Yes. We did show an increase at Carnarvon on  
your valve TEMP.

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08 17 59 31 LMP Okay, you might leave a request there. You might not be able to get it on your watch - I'd like to find out how much water we burned yesterday on the secondary coolant loop test.

08 17 59 41 CC Okay.

08 17 59 44 CC Checking on it.

08 18 31 50 CDR Frame either 53 or 55 - can hardly tell on the magazine; it's Lake Chad on magazine R.

08 18 32 00 CDR I'll correct that number later.

08 18 41 26 CC Apollo 7, Houston through Tananarive.

08 18 41 31 LMP Roger, Bill. Are you reading through Tananarive okay?

08 18 44 40 CC Apollo 7, Houston. 1 minute LOS Tananarive; Carnarvon at 54.

08 18 44 46 LMP Roger.

08 19 11 57 CMP Okay, doing a P52 with a T-align time of 210 hours and 31 minutes, used Rigel and Aldebaran. Star angle difference 00001, torquing angles, 2 - plus 00780, plus 01308, minus 03096.

08 19 16 32 LMP I've done a fine align check on that last P52, I got 00000. Torquing angles are plus 00001, minus 00004, minus 00012.

08 19 27 47 CC Apollo 7, Houston through Huntsville.

08 19 27 50 CDR Roger.

08 19 27 53 CC And we'd like the O<sub>2</sub> tank 2 fan ON 3 minutes, and then OFF.

08 19 27 59 CDR Roger, we'll get it ON.

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08 19 28 58 CC Apollo 7, Houston. Would you say again last?

08 19 29 01 CDR Roger. We will turn them on. We're not very good at turning them off.

08 19 29 33 LMP Hey, Bill. You know we've got the SPS line heaters OFF and are leaving them OFF now?

08 19 29 39 CC Okay. Roger.

08 19 58 59 CC Affirmative.

08 19 59 00 CMP ... Is that correct?

08 19 59 03 CC Affirmative.

08 19 59 05 CMP Okay, and you want to go through it twice? Or do you want me to do my mark twice ..., twice?

08 19 59 11 CC Two marks.

08 19 59 14 CC That's right.

08 19 59 18 CC But we only need two marks each time.

08 19 59 22 CDR Just two marks, huh?

08 19 59 25 CC Affirmative.

08 20 01 48 CMP Hey, Bill, do you read?

08 20 01 55 LMP Starting with frame 35 on magazine B - 34 or 35 - I started skip-mapping with alternate red and green filters across Africa.

08 20 03 15 LMP I started skip-mapping the multispectral photography across Africa. I'm taking two pictures in a row with the red filter and then two pictures in a row with the green filter, so I can get one of each over the same site.

08 20 04 54 LMP All right, the photographing was handicapped by the presence of a tremendous amount of cloud cover over Africa at this area.

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08 20 10 32 LMP Well, those pictures that were shot on magazine B - that was the multispectral stuff coming across Mauritania on down through Ghana and the beginning of Gabon. They're all wasted film. The slide was in, and thanks to the modification of the Hasselblad camera - this thing will shoot very nicely with that slide in.

08 20 22 08 CC 1 minute LOS Tananarive; Carnarvon at 29.

08 20 22 11 CDR Roger.

08 20 22 46 CDR Houston, Apollo 7.

08 20 29 46 CC Apollo 7, Houston through Carnarvon.

08 20 29 50 CDR Roger.

08 20 56 45 CC Apollo 7, Houston through Hawaii.

08 21 46 25 CDR ... main block test is going into BMAG ATT 1, RATE 2, which is a display system ... The problem shoots the whole thing. As a result, the crew is all screwed up.

08 21 49 01 CMP Time, 213 hours 49 minutes; they are attempting to perform the horizon landmark test, which is going to ... marks on the horizon. The first mark is done with the sextant. They got as far as step 3 and proceeded to take it to step 4, which is unknown landmark. They got a PROGRAM ALARM and a RESTART. These lights ..., and they were unable to enter a VERB, a NOUN, or anything like that. After waiting several minutes and deliberating, they decided to take the option of performing the so-called NO-GO effort, to punch the MARK 3 REJECT button and the RESET button simultaneously. This did, in fact, release the RESTART. However, it called up the PROGRAM ALARM, and we have a 1302. It's a SQRT augment negative argument. Apparently we're in the reentry. The problem was, first, marking on the horizon and accepting those marks, somehow calling upon the computer to work with square roots of negative numbers. And it didn't like that too well.

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08 21 52 54 CC Apollo 7, Houston through Tananarive.

08 21 52 57 CMP Roger, Jack. I just gave you a great P22 bitch and a dandy readout problem. I've got a PROGRAM ALARM and a RESTART light. I'm unable to get out of it because of this GO jam thing that's part REJECT and RESET. This wiped out the RESTART finally. Called up the alarm 1302, which has the practical effect that the computer was trying to work with negative square roots, or square roots with negative numbers, rather. I'd like to compliment all the fine planners who had a hand in that one.

08 21 53 32 CDR Yes, Jack, we have a comment. Do you read me?

08 21 53 37 CDR Houston, Apollo 7.

08 21 54 03 CC Apollo 7, Houston.

08 21 54 05 CDR Houston, Apollo 7. Do you read?

08 21 54 06 CC Roger. You're about 2 by, Donn. We're standing by here.

08 21 54 12 CDR Okay, you're getting us - you're going to get some sweet remarks.

08 21 54 17 CC Roger, Donn. Could you give me an approximate GET? The tape stopped on that P22.

08 21 54 20 CMP Jack, I repeated a long list. Don't you read me down there?

08 21 54 30 CC I'd rather get to wait until Carnarvon to get the rundown so I don't miss anything.

08 21 54 35 CMP You're going to miss a hell of a lot if you don't get it here. Okay, if you like, I'll wait for them to brief you. We did not get the results that you were after. We didn't get a damn thing, in fact. All we got was a PROGRAM ALARM and RESTART light and a CMC light.

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Day 9

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08 21 54 51 CC Roger, understand, copy. You got a PROGRAM ALARM, RESTART, and CMC light.

08 21 54 56 CMP You bet your arse we did. I got rid of it by going to GO jam which was ... the computer ... consecutive numbers. And it happened when I punched the PROCEED button at step 10 in the program of P20 - I think it's a result of marking on the horizon rather than on real landmarks.

08 21 55 29 CC Okay, Donn. You faded there. I didn't quite get it all.

08 21 55 35 CMP I didn't get anything ... brief you over Carnarvon?

08 21 55 51 CC Okay, Donn. Copy. You didn't get anything in P22. We'll be with you over Carnarvon in - at 05.

08 21 56 01 CMP Roger. As far as we're concerned, somebody down there screwed up royally when he laid that one on us.

08 21 56 08 CMP Jack, do you read?

08 21 56 11 CMP Houston, Apollo 7.

08 22 19 14 CMP I just completed a P51, star angle difference 00000.

08 22 22 52 CMP Time, 214 hours and 22 minutes; program 52, option 2, gyro-torquing angles, plus 00724, plus 00376, minus 01696, star difference angle was 00000.

08 22 23 13 CC Okay. Copied that, Donn.

08 22 23 16 CMP Oh, you're up, are you?

08 22 23 19 CC Roger. Read that.

08 22 26 02 CMP Houston, Apollo 7.

08 23 10 57 CC Houston through Ascension. Standing by.

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Day 9

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08 23 11 00 LMP Roger.

08 23 27 29 CC Apollo 7, Houston. Standing by at Tananarive.

08 23 27 33 LMP Roger, loud and clear.

08 23 28 05 CC Apollo 7, Houston. Standing by through Tananarive.

08 23 28 09 LMP Roger, loud and clear.

08 23 32 40 CC Apollo 7, Houston. 2 minutes LOS Tananarive; Carnarvon at 41.

08 23 32 46 LMP Roger. Who was the supernumerary a while ago?

08 23 37 45 CDR At 215 hours (laughter) 37 minutes, it's easy to observe the bell of the big engine from the number 2 window of the command module. The attitude is approximately zero roll, zero yaw, 180 degrees pitch at sunset, and when the urine dump occurred, there were a large number of sparkles that formed a light pattern down to the number 2 window. Now, the sun in the background in back of the command module would light up the sparkles. You could see a tunnel of silvery stuff which lasts for many hundreds of feet. And the silhouette of the command module, including that of the big engine, the bell exhaust, is very easy to discern.

08 23 54 10 CC Apollo 7, Houston, now through Guam. Standing by.

08 23 54 14 LMP Roger, loud and clear.

08 23 54 16 CC You, also.

08 23 54 18 LMP Roger. Donn and I tried out the oxygen masks. It was a requirement.

08 23 54 29 LMP We think that they work.

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Day 9

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08 23 54 32 CC

Say , wally.

08 23 54 37 CC

Apollo 7, Houston. We're about 1 minute LOS  
Guam. We get Hawaii at 08.

08 23 54 43 LMP

Roger.

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DAY 10

09 00 02 23 LMP Who's that supernumerary with you?  
09 00 02 28 CC That's the number 1 substitute.  
09 00 02 39 LMP She's going along pretty well today ...  
09 00 02 46 LMP Going to have to ask you to watch those new flight plan revisions, though.  
09 00 03 00 LMP ... moving east or north - I mean west or north.  
09 00 03 05 CC Say again, you're coming in garbled.  
09 00 03 07 LMP Have you been moving west or north?  
09 00 03 17 CC Oh, north.  
09 00 03 20 LMP How is it looking?  
09 00 03 22 CC Pretty good.  
09 00 03 41 LMP Did you get the word that we've tried out the oxygen masks?  
09 00 03 48 CC We are just about LOS. We'll pick you up at Hawaii.  
09 00 03 51 LMP Roger.  
09 00 45 04 CDR And the sixth magazine, R for Romeo - -  
09 00 45 17 CDR Landmark 144.  
09 00 47 45 CC Apollo 7, Houston through Ascension.  
09 00 47 48 CDR Roger. Loud and clear.  
09 00 47 51 CC Roger, Wally. We've got an update on the flight plan for a sleep period here.  
09 00 48 00 LMP Go ahead, Jack.

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Day 10

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09 00 48 02 CC Okay, CMP sleep period from 216 through 225; CDR and LMP from 225 to 234.

09 00 48 16 CDR That's fine. 9 hours apiece. We'll see what we can stuff into it.

09 00 48 40 CC Walt, the nodal crossing on REV 137 is 114.1 east.

09 00 48 48 LMP On 137?

09 00 49 37 CDR On that last one, we got 00000 and corrected the landmark.

09 00 49 44 CC Copy that.

09 00 49 45 CDR It was wide open on the coast only. Apparently, the landmark had a 3/4-mile uncertainty, and we picked it up and got a picture of it, too.

09 00 49 58 CC Sounds real good, Walt.

09 00 50 03 CDR We're planning to get pictures of the landmarks that don't have any.

09 00 50 07 CC Okay.

09 00 50 27 LMP Hey, Jack.

09 00 50 30 CC Go ahead, Walt.

09 00 50 32 LMP Roger, we've taken numerous packs of 70mm, S0121.

09 00 50 39 LMP The first pack we took we shot at ASA 64 so we wouldn't have to reset the light meter for S0368. And all the other S0121 packs have been shot at an ASA of 50. And I'd like to make sure you get that to the people who process these. I've marked the pack that was shot at ASA 64.

09 00 51 00 CC Okay. Copy that.

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Day 10

301  
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09 00 51 13 CDR This is really a great machine for taking pictures. With five windows, almost every time we go over someplace, one of them is on it.

09 00 51 22 CC Sounds like a pretty good technique there, - looking out one of the five windows, there.

09 00 51 27 CDR Yes, we're really in great shape. Even in drifting flight, we've got a lot of good pictures.

09 00 51 32 CC Good show.

09 00 51 33 CDR I wish we had a heck of a lot more film up here.

09 00 51 38 CC Okay, we have 1 minute to LOS over Ascension, and we are going to get a data dump over Guam this time, Wally.

09 00 51 44 CDR Very good.

09 00 59 13 CDR On magazine R for Romeo, on landmark 227, on the east coast of Africa, the landmark is wrong. There's a bridge over what was a strip of land. There's a photograph on magazine R, and the landmark-checking exercise may not have worked out. The frame number on magazine R for Romeo is 63.

09 01 03 34 CC Apollo 7, Houston through Tananarive. Standing by.

09 01 03 40 CDR Roger, we're powering down the SCS only now.

09 01 03 49 CDR Jack, do you read?

09 01 04 02 CDR Houston, Apollo 7.

09 01 10 51 CC Apollo 7, we're about to lose you over Tananarive. We'll pick you up at the Mercury at 28.

09 01 10 56 CDR Roger.

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Day 10

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09 02 00 49 CC Apollo 7, Houston. 1 minute LOS Guaymas;  
we'll pick you up at Tananarive at 37.

09 02 00 56 CDR Roger.

09 02 38 48 CC Apollo 7, Houston through Tananarive.  
Standing by.

09 02 38 54 LMP Roger, are you reading at Tananarive today?

09 02 41 38 CC Apollo 7, Houston through Tananarive.

09 02 41 40 LMP Roger, Tom, how do you read?

09 02 41 43 CC Roger, you read us loud and clear?

09 02 41 47 LMP There's the usual amount of noise.

09 02 42 00 LMP Hey, Tom, we've decided we're only going to  
stay up here one more day.

09 02 42 05 CC Say again, Wally.

09 02 42 07 LMP We think - all of us have decided we're  
only going to stay up here one more day.  
We're going to come back Tuesday morning  
regardless.

09 02 42 13 CC Roger. Evidently you're reading us. We  
can barely read you. I'll give you a social  
update. Father is taking Jo to the ballgame  
this afternoon and, in fact, Lo and Harriet  
are also going to the ballgame.

09 02 42 30 LMP Lo and Harriet going to the ballgame, too?

09 02 42 33 CC Roger.

09 02 42 36 LMP That's news.

09 02 44 10 CC Apollo 7, Houston.

09 02 44 12 LMP Go ahead.

09 02 44 14 CC We'd like to do a fuel cell O<sub>2</sub> purge.

09 02 44 20 LMP Go ahead, we have acquisition.

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Day 10

311  
311

09 02 44 27 CC Thank you.

09 02 46 57 CC Apollo 7, Houston. 1 minute LOS Tananarive;  
Mercury at 01.

09 02 47 03 LMP Roger.

09 03 01 55 CC Apollo 7, Houston through Mercury.

09 03 01 59 CDR Roger, Jack.

09 03 12 28 CC Apollo 7, Houston. 1 minute LOS Guam; we  
pick you up at Hawaii at 21.

09 03 12 33 CDR Roger.

09 03 12 35 LMP I don't know if we told you, but the water  
that seems to be the freest of gas is the  
hot water spout.

09 03 12 43 CC Okay, copy.

09 03 12 50 CDR I think that's why we're fans of the  
reconstitutable food.

09 03 12 56 CC Roger.

09 03 26 16 CC - - take any attitude control or anything;  
just some heater ON times.

09 03 26 41 LMP How long will this thing take to run?

09 03 26 42 CC It's total of 6 hours. I've got some times  
here for you.

09 03 26 50 LMP Okay, I'll stick it in the flight plan, and  
it'll probably get finished up when Donn is  
up.

09 03 26 54 CC Okay, real fine. Let me know when you are  
ready to copy.

09 03 26 58 LMP Okay. These are the SPS line heaters that  
I asked to turn on and check about 2 days  
ago?

09 03 27 02 CC That's affirmative.

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Day 10

312  
312

09 03 27 06 LMP Okay. Incidentally, I hope we use the A/B position. I saw no change at all with the A position today.

09 03 27 14 CC Roger.

09 03 27 19 LMP Go ahead.

09 03 28 31 CC Walt, let me know when you are ready to copy this in the flight plan.

09 03 28 34 LMP I'm ready to copy.

09 03 28 37 CC Okay. At 220 plus 57, put the heater switch in A. SPS line heater switch to A.

09 03 28 58 LMP Go.

09 03 29 00 CC Okay, at 223 plus 57, put the SPS line heater switch to A/B.

09 03 29 19 LMP Go.

09 03 29 30 CC At 2 - you want to terminate the test at 227 plus 11, or any time the lines, the propellant temperature, or oxidizer feed-line temperature reaches 75 degrees?

09 03 30 01 CC Did you copy that, ??

09 03 30 03 LMP Hey, Jack. I read the termination, and I read the 223 plus 57 entry. I didn't get anything in between.

09 03 30 13 CC Okay, let me give it again. We're over the Huntsville here, and I'm only reading about 2 by. At 220 plus 57, the SPS line heaters to A; 223 plus 57, SPS line heaters to A/B; terminate the test at 227 plus 11, or any time the propellant temperature or line - oxidizer line temperature reaches 75 degrees.

09 03 30 53 LMP Roger. I assume you're collecting the data on it. Do you want any data from me?

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Day 10

313

09 03 31 02 CC Okay, Walt. The only thing we want you to note if you switch the heater position when you are not in station contact, would you log the time?

09 03 31 11 LMP Okay. Will you be in station contact at 220 plus 57?

09 03 31 18 CC Affirmative. These times are all predicated on being in station contact at that time.

09 03 31 23 LMP Okay. Thank you.

09 03 31 27 CC Okay, we're about 1 minute LOS Huntsville. We pick you up at Tananarive at 220 plus 13.

09 03 31 36 LMP Roger.

09 04 14 20 CC Apollo 7, Houston through Tananarive. Standing by.

09 04 14 26 LMP Roger, Jack.

09 04 14 56 LMP Jack, would you check on running these hydrogen stratification tests at about 20 to 15 percent - some place in that range, no lower, and the O<sub>2</sub> stratification test between, say, 30 and 45 percent, no lower than that?

09 04 15 18 CC Walt, you're coming in weak and garbled. Copied the "did I check about the stratification test." We're in the process of doing this now, seeing if we can move it up a little.

09 04 15 31 LMP Roger. I'll check with you at Mercury.

09 04 22 32 CC Apollo 7, Houston. 1 minute LOS Tananarive; pick you up at Mercury at 37.

09 05 30 33 CMP Magazine R, 64, 65, and 66, of the east coast of South America and Argentina.

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Day 10

314  
314

09 05 30 52      CMP      Argentina, Uruguay or - oh, that's in very -  
it's the very southern tip of Brazil.

09 05 39 31      CC      Apollo 7, Houston through Ascension.  
Standing by.

09 05 39 36      CMP      It's about time you're getting up, Ron.

09 05 39 44      CMP      How are you reading?

09 05 39 45      CC      Roger. A little garbled there, but good  
afternoon.

09 05 39 48      CMP      Good afternoon.

09 05 41 54      CMP      Hey Ron, we'll all be off COMM ...

09 05 41 58      CC      7, Houston, say again.

09 05 42 03      CMP      I'll be off COMM for about 30 seconds here.

09 05 42 07      CC      Roger.

09 05 43 14      CMP      Back with you, Ron.

09 05 43 18      CC      Roger, about LOS. We still show your  
secondary glycol loop activated.

09 05 43 23      CMP      Yes, I've got them secured there now. We've  
been all tied up with trying to simulate  
the few things about reentry now. We're  
trying to rig couches so it's okay with  
heads - helmets off.

09 05 50 24      LMP      CDR, 35 clicks of water in the last few  
hours.

09 05 52 31      CC      Apollo 7, Houston through Tananarive.  
Standing by.

09 05 52 35      LMP      Roger, Ron.

09 06 34 50      CC      Apollo 7, Houston through Hawaii. Standing  
by.

09 06 34 54      CDR      Roger, we hear you loud and clear.

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Day 10

3/7  
315

09 06 34 56 CC Roger, the same.

09 06 34 58 CDR What's the late news on a Sunday evening?

09 06 35 04 CC I've got a final on the Dallas and Minnesota football game: Dallas 20, Minnesota 7.

09 06 35 10 CDR A-ha. Got a score on the Oilers yet?

09 06 35 14 CC They just started at 03:00.

09 06 35 15 CDR I see.

09 06 35 16 CC I don't have the score yet.

09 06 35 24 CC Looks like this Kansas boy, Jim Ryun, got second in the 1500 meter in the Olympics.

09 06 35 30 CDR Really? He's the miler, isn't he, Norman?

09 06 35 33 CC Roger.

09 06 35 35 CDR Who got first?

09 06 35 36 CC I guess Keino of Kenya.

09 06 35 40 CDR Yes, he's pretty reliable on that.

09 06 35 43 CC Roger.

09 06 57 30 CDR The time, 221 hours 57 minutes and 7 seconds; ... magazine U for Uncle.

09 07 03 54 CDR Magazine 12 on mag - frame 12, magazine Uncle, a high-weather phenomenon, blowing from across the Andes in Chile at time 222 hours 04 minutes.

09 07 20 39 CC Apollo 7, Houston. 1 minute LOS; Mercury at 50.

09 07 20 42 CDR Roger.

09 07 52 27 CC Apollo 7, Houston through Mercury.

09 07 52 31 CDR Roger, Ron. Loud and clear.

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Day 10

3/6

316

09 07 52 35 CC Roger, the same. We have no data from Mercury this time.

09 07 52 40 CDR Okay.

09 07 52 43 CC We'd like to delay switching to A/B on the SPS line heaters until we acquire Guam.

09 07 52 50 CDR Okay. How are they doing with the storm out there?

09 07 53 01 CDR Ron, did you read that?

09 07 55 56 CC Apollo 7, Houston.

09 07 56 00 CDR Go ahead.

09 07 56 03 CDR Go ahead, Ron.

09 07 56 04 CDR Roger. We're using the FM BIOMED channels for some special instrumentation that are different instrumentation. So we'd like to cycle the CRYO fans, tank 2 fans, once we acquire Guam. I'll let you - I'll give you the GO on it.

09 07 56 23 CDR Roger.

09 07 58 39 CMP Hey, Ron, do you have a map update for us?

09 07 58 43 CC Affirmative.

09 07 58 58 CC 7, are you ready to copy?

09 07 59 00 CMP Go.

09 07 59 02 CC Roger. REV 141, GET 233 plus 26 plus 34, longitude 21.7 east.

09 08 00 58 CC And, 7, I have a one-line flight plan update.

09 08 01 02 CMP Go.

09 08 01 04 CC Roger. At 224 plus 47, it's a downvoice backup check over Ascension. We will command all switching from the ground.

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Day 10

317  
317

09 08 01 21      CMP      Roger, I'll stand by here.

09 08 01 22      CC        Roger.

09 08 01 53      CC        Approaching LOS; Redstone at 21.

09 08 01 59      CMP      Roger. Redstone, 21, and see if downvoice  
backup mode's on our COMM slide rule, Ron.

09 08 19 12      CMP      On magazine N, frames 40 and 41, the  
Tuamotu Archipelago, southeast of the Canton  
tracking station about longitude 140 to 145  
west.

09 08 47 46      CC        Apollo 7, Houston through Ascension.

09 08 47 52      LMP      Roger, Ron.

09 08 47 56      CC        Roger.

09 09 26 27      CC        Apollo 7, Houston through Mercury. Standing  
by.

09 09 26 30      CMP      Roger, Houston, Apollo 7.

09 09 26 33      CC        Roger, loud and clear.

09 09 27 24      CC        Apollo 7, Houston. Opposite OMNI.

09 09 37 10      CC        Apollo 7, Houston. 1 minute LOS; Redstone  
at 57.

09 09 37 16      CDR      Roger, understand.

09 09 37 18      CC        Roger.

09 10 05 48      CC        Apollo 7, Houston. About 30 seconds LOS;  
Ascension at 23 and your state vector is  
good.

09 10 05 57      CDR      Okay. Thank you.

09 10 29 55      CC        7, Houston. You can turn the H<sub>2</sub> heaters ON  
now, and the stratification test at your  
convenience.

09 10 30 01      CMP      Okay, heaters going on now.

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Day 10

2/3  
318

09 10 30 04      CC      Roger.

09 10 30 13      CC      On this optics degradation, what we want you to do is remove the sextant and telescope eyepieces and observe the internal lens of both the sextant and the telescope. This would be with your eyeball about a foot away from the panel, during a dayside pass, with the optics pointed somewhere above the horizon.

09 10 30 42      CMP      Optics pointed where? About on the horizon?

09 10 30 44      CC      Optics above the horizon - -

09 10 30 46      CMP      Okay.

09 10 30 51      CC      - - should be able to observe some deposits on this objective lens, similar to the ones that are on the windows.

09 10 31 01      CMP      Well, there may be some, but it sure doesn't affect the view that you get through the optics eyepieces.

09 10 31 10      CMP      They're as good now as they were when we took off.

09 10 31 15      CC      Say again, Donn.

09 10 31 17      CMP      I say the - with the eyepieces on, the view through the sextant telescope is as good now as it was when we lifted off.

09 10 31 33      CC      I still didn't copy that very well, Donn.

09 10 31 37      CMP      Well, disregard it. I'll - -

09 10 31 40      CC      You're clear now. Say again.

09 10 31 42      CMP      Okay. If the eyepiece is installed, the view through the optics is as good now as it was when we started the flight.

09 10 31 51      CC      Roger, understand. What we'd like to do is get your evaluation with the eyepieces off, and see if you can see any deposits on those lenses, though.

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Day 10

319

09 10 32 00      CMP      Okay.

09 10 33 42      CC      Apollo 7, Houston. 30 seconds LOS; Mercury at 03.

09 10 33 48      CMP      Roger, Houston.

09 11 03 10      CC      Apollo 7, Houston through Mercury. Standing by.

09 11 03 14      CDR      Roger, Houston.

09 11 03 17      CC      Roger.

09 11 10 20      CC      ... 256 and 254.

09 11 10 27      CMP      Ron, you faded out. Say again.

09 11 12 02      CC      Apollo 7, Houston. Verify SPS line heaters OFF.

09 11 12 07      CMP      Roger. Line heaters are OFF now. The maximum temperature we got was 72 degrees.

09 11 32 47      CC      Apollo 7, Houston through Redstone. Standing by.

09 11 32 50      CMP      Roger, Houston.

09 11 41 59      CC      ... 237 plus 30 ...

09 11 42 25      LMP      Roger.

09 11 42 31      CC      ... at 238.

09 11 42 33      LMP      You're fading out, Ron.

09 11 42 36      CC      Roger. We're about LOS. I'll pick you up at Canary at 03.

09 11 42 41      LMP      Okay.

09 12 12 04      CC      30 seconds LOS Canary; we'll get Madrid for about 1 minute.

09 12 12 12      LMP      Roger.

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Day 10

320

320

09 12 12 16 CC It will be Redstone at 08.  
09 12 12 21 LMP Roger, Redstone at 08.  
09 13 08 08 CC Apollo 7 - -  
09 13 08 13 CDR Roger, Houston.  
09 14 17 44 CC Apollo 7, Houston through Carnarvon.  
09 14 17 47 CMP Roger, Houston.  
09 14 17 50 CC Hi, Donn. Would just like to confirm fuel  
cell O<sub>2</sub> purge.  
09 14 17 58 CMP Roger, that's in work.  
09 14 30 59 CMP Roger.  
09 16 32 22 CC Apollo 7, Houston through Texas. Standing  
by.  
09 17 25 33 CC Apollo 7, Houston through - -  
09 18 02 39 CC Apollo 7, Houston through Huntsville.  
09 18 02 44 CDR Roger, Houston, Apollo 7.  
09 18 04 21 CC Apollo 7, Houston through Guaymas. Standing  
by.  
09 18 04 25 CDR Roger.  
09 18 33 13 CC Apollo 7, Houston. Coming up on LOS  
Tananarive at 46 and Carnarvon on the hour.  
09 18 33 21 CMP Roger. We'll see you then.  
09 18 33 24 CC Roger.  
09 19 00 53 CC Apollo 7, Houston through Carnarvon.  
09 19 00 56 CMP Hello there.  
09 19 13 01 CDR Roger.

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Day 10

721

321

09 19 57 49      CMP      There's 0.2 degree per second already in yaw, just as we thought.

09 19 57 55      CC        Yes, I see it.

09 19 57 56      CMP      Okay. Let's take it out now.

09 19 57 57      CMP      ... tenth of a degree on the other two axes.

09 19 57 59      CC        Roger.

09 19 58 05      CMP      Let's go to LOCK now. We don't want to go any farther. It's pretty fast to get 0.2 degree per second.

09 19 58 09      CC        Okay. I'm making a comment.

09 20 02 31      CMP      Hello, Bill, did you read?

09 20 02 32      CDR      Negative.

09 20 02 37      CMP      Okay, on the water - waste water dump. I let the rate build up to almost 0.2 degree per second in VENT and corrected it back to the opposite direction to about 0.1 degree per second. It's now at 2.2 degrees per second back again. Report use considerable. The vent, of course, is causing the spacecraft to go to the right.

09 20 03 37      CDR      The last remark on the water vent - coupled with the perigee-torque phenomenon, so the two may be complementary, even if they are aligned out of plane at this time.

09 20 23 16      CC        Apollo 7, Houston through Tananarive. Standing by.

09 20 23 22      CMP      Roger, Houston, Apollo 7.

09 20 23 25      CC        Good morning, Donn.

09 20 23 26      CMP      Hi, Jack. How are you?

09 20 23 28      CC        Fine.

09 20 23 29      CMP      Have a good weekend?

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Day 10

312  
322

09 20 23 37 LMP Good morning, Jack.

09 20 28 08 CC Apollo 7, Houston. 1 minute LOS Tananarive;  
Carnarvon at 36.

09 20 28 13 CDR Roger.

09 20 46 15 CC ... if you want to turn up S-band.

09 20 46 20 LMP Wilco.

09 20 46 21 LMP I'm going to go ahead and shut it down,  
Jack.

09 20 46 24 CC Okay. Does it look strange to you, Walt?

09 20 46 26 LMP Yes. I'm going to shut it down.

09 20 46 28 CC Okay. Okay. We don't have Honeysuckle, so  
we'll pick you up at Hawaii at 02.

09 20 46 36 LMP Wilco. 02.

09 21 59 53 CC Apollo 7, Houston through Tananarive.

09 21 59 55 LMP Roger.

09 22 00 01 LMP Hey, Jack, fuel cell 2 seems to be a little  
more temperamental today than it has been in  
the last 3 or 4 days. It's climbing a little  
faster and a little higher. Does the trend  
indicate that for the next hour and 6 min-  
utes it will stay below 200?

09 22 00 19 CC Okay, Walt, you are about 3 by here at  
Tananarive. Copy fuel cell number 2 being  
a little more temperamental today than pre-  
viously.

09 22 12 03 CC Apollo 7, Houston through Carnarvon. Stand-  
ing by.

09 22 12 08 CDR Roger, loud and clear.

09 22 12 10 CC Apollo 7, we're about 1 minute LOS Carnar-  
von. We pick up Guam at 25.

09 22 12 14 CDR Roger.

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Day 10

313

323

09 22 22 11 CDR A check on the EMS bias test with a 30-second count in the burn, and the duration of the burn was 21 feet per second.

09 22 22 21 CC Roger. Copy that.

09 22 22 23 CMP A pretty good DELTA-V. I wish the upper half were like that.

09 22 23 29 CDR You look in your lens?

09 22 32 16 CC 7, we're 1 minute LOS Guam. We pick up Hawaii at 38.

09 22 32 41 CMP Did you stop downlink, Jack?

09 22 32 44 CC Negative, we've lost downlink, Walt. We get it again at Hawaii.

09 22 32 48 CMP Okay, on the sextant star check, that's 28314; 27699 is the shaft and trunnion to be right on the star.

09 22 32 57 CC Okay.

09 22 33 02 CC Could you say again the trunnion, Donn?

09 22 33 05 CMP Trunnion, 27699.

09 23 19 46 CC 7, Houston through Ascension.

09 23 19 51 CMP Go ahead.

09 23 19 55 CMP Go ahead.

09 23 23 05 CC ... at 245:40. That's the H<sub>2</sub> line heaters ON and at 246, an H<sub>2</sub> fuel cell purge.

09 23 23 \_\_\_ CC You'll be deleting the canister change at 247 and you're picking that up at 250.

09 23 23 \_\_\_ CC ...

09 23 23 50 CDR Okay, let's do our stowage ... of the cockpit today. We'll have to drop that humidity survey. We've filled in the block on that anyway.

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Day 10

3:4  
324

09 23 23 57 CC Okay, we'll - and -

09 23 24 03 CDR We'll do the humidity survey at 245:20.

09 23 24 05 CC We will - we'll let you know on that over Tananarive. Your chart value updated is 503. And the doctors have come up with a recommended Actifed schedule that will give you the maximum crew comfort on reentry. They're recommending a - each crewman take a tablet at 241, another tablet at 249, and a third one at 257. And this is, the 257 one, is the most important.

09 23 24 40 CDR Okay, got it.

09 23 24 43 CDR Jack, broadcast in the blind at Tananarive if we don't answer.

09 23 24 47 CDR Okay. Will do, Wally.

09 23 24 51 CC ... Tananarive at 32.

09 23 24 58 LMP Hey, Jack. Is the O<sub>2</sub> cryo test then deleted for the rest of the flight?

09 23 36 22 CC Apollo 7, Houston through Tananarive.

09 23 36 27 CDR Roger. Loud and clear, Jack.

09 23 36 29 CC Okay, you're about 4 by.

09 23 36 32 CDR Well, very good.

09 23 36 42 CDR Jack, our CO<sub>2</sub> is really quite low, less than 0.1 mm of mercury. Why don't we ride on that for a little bit longer? That seems to be a pretty reliable gage.

09 23 36 58 CC Okay, Wally, we are going to have to wait until Carnarvon until we get a - we got an 8-minute pass at Carnarvon. I got something about 0.1 mm, but I didn't quite catch it all.

09 23 37 11 CDR Say again.

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Day 10

305  
325

09 23 37 14 CC Let's wait until Carnarvon to get - receive the last transmission. We pick up Carnarvon at 48.

09 23 37 21 CDR Okay, what was the other question?

09 23 37 39 CC No, Wally, we don't have any other information for you. We'll see you at Carnarvon.

09 23 37 45 CDR Roger. Standing by.

09 23 53 41 CC Okay, Wally, I've got some recommendations for RCS fuel, here.

09 23 53 48 CDR Go ahead.

09 23 53 50 CC Okay, A and D are your best quads; B and C are above the DAP redline, not uncomfortably now, but I recommend that you be very sparing when you use quads Baker and Charlie, and so when you're maneuvering, don't use more than 5 pounds of RCS fuel for this - your picture taking.

09 23 54 15 CDR Roger, that's about all we need.

09 23 54 17 CC Okay, fine, and we're recommending B and D ROLL.

09 23 54 22 CDR B and D ROLL, Roger.

09 23 54 27 CMP Jack, are you getting these PIPA bias numbers on downlink?

09 23 54 43 CC Okay, we're getting them now.

09 23 54 55 CMP Would you like me to read you the results or have you gotten all the stuff off the tape?

09 23 55 02 CC Roger, we're copying them now, Donn. Just give us a few seconds here, and we'll have it all down.

09 23 55 07 CMP Okay.

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Day 10

226  
326

09 23 55 13 CDR And, by the way, on the schedule for the Actifed, we worked out a schedule like that about 3 days ago. Doctor Walt Cunningham was the finalizer, and it was 1 hour earlier than the whole schedule.

09 23 55 29 CC Okay.

09 23 55 33 CDR So the doctors are doing pretty well down there.

09 23 55 37 CC Okay, Donn, would you read out the PIPA bias, I guess we lost it - we lost the data.

09 23 55 41 CMP Okay, Jack, the PIPA bias I got was: X plus 0 - 0.09, Y is zero, Z is plus 0.08. The bias compensation that's presently loaded is plus 10504, plus 0, plus 0.07440. So they're all very close to the actual.

09 23 56 09 CC Okay, copy that.

09 23 56 11 CDR Jack, unless I don't understand this EMS - what I do to the EMS bias is run it in DELTA-V and AUTO with - 30 seconds prior to burn and the duration of the burn. That's the only thing we're going to do in flight anyway. If anybody has any better ideas, I'll do it. That's all - that's all you use it for.

09 23 56 34 CC Okay. We copy that.

09 23 56 38 CC Okay, we're about to lose you over Carnarvon. We'll pick you up at Guam on the hour.

09 23 56 42 CMP Roger, we're going to coarse align and plane enroute.

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DAY 11

10 00 33 30 CC Have you - you initiated a battery charge on B yet?

10 00 33 34 LMP Just now closing the battery relay circuit breaker.

10 00 33 37 CC Okay, fine. We want to take a look at it for you before LOS Texas here.

10 00 33 48 LMP It's about the same thing it started at the other day, I think, a little over 2 amps.

10 00 33 53 CC Okay.

10 00 35 00 CC Say, Walt, we're about 1 minute LOS Texas. We pick up Ascension at 54 for a short pass.

10 00 35 06 LMP Roger. Do we need a battery TEMP there?

10 00 35 10 CC Roger, showing 2.3.

10 00 35 12 LMP Roger. I make this a normal pass, down to Pretoria?

10 00 35 16 CC Affirmative.

10 00 55 02 CC Apollo 7, Houston through Ascension.

10 00 55 06 LMP Roger, Jack. We're just vacuuming up water in the bottom of the spacecraft - same situation we've had in the last - or so SPS burn.

10 00 55 15 CC Well, Walt, we got a keyhole effect here at Ascension. You're about 2 by.

10 00 57 41 CC Apollo 7, 1 minute LOS Ascension. We pick you up at Tananarive at 08.

10 00 57 47 LMP Roger, Jack. Do you read now?

10 00 57 54 LMP Do you read, Jack?

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Day 11

328

10 01 09 12      CC      Apollo 7, Houston through Tananarive. Standing by.

10 01 09 17      LMP      Roger, loud and clear.

10 01 10 19      LMP      Houston, Apollo 7.

10 01 10 25      CC      Apollo 7, Houston through Tananarive. Standing by.

10 01 10 29      LMP      Roger, do you read?

10 01 10 32      LMP      Houston, do you read Apollo 7?

10 01 16 51      CC      Apollo 7, Houston. We're about 2 minutes LOS Tananarive. We'll pick up Mercury at 34.

10 01 16 59      LMP      Roger, do you read Apollo 7 now?

10 01 43 13      LMP      4, 156-AC, minus 139, minus 0110, 246 plus 55 plus 49, 6280; 157-AC, 040 - minus 040, minus 0170, 248 plus 28 plus 57, 5782; 158-AC, plus 053, minus 0250, 250 plus 02 plus 00, 5113. Over.

10 01 43 47      CC      Roger, that's got it. We're working on the remaining block data.

10 01 43 52      LMP      Okay. I - we'd like one block, one REV pass, ...

10 01 43 59      CC      Okay. We're about 50 seconds LOS Guam; Hawaii at 52.

10 01 44 03      LMP      Roger.

10 01 58 00      CDR      Houston, Apollo 7.

10 01 58 12      CC      Say again, 7.

10 01 58 14      CDR      Roger, I wanted you to make note that we powered down about half of the SCS.

10 01 58 21      CC      Okay.

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Day 11

327

329

10 02 05 38 CC Apollo 7, Houston. We're about 1 minute LOS Guaymas. We pick up Tananarive at 44.

10 02 05 45 CDR Roger.

10 02 44 35 LMP CDR, 10 clicks of water; LMP, 15 clicks of water.

10 02 44 56 CC Apollo 7, Houston through Tananarive. Standing by.

10 02 45 18 LMP Roger, Jack.

10 02 45 21 CC Okay. Reading about 3 by, Walt.

10 02 45 25 LMP We're always surprised if you can hear us at all here.

10 02 45 29 CC Roger, coming up over Guam. I'll pass you some of that information on terrain photographic targets.

10 02 45 40 LMP Roger. We're chlorinating now.

10 02 45 42 CC Okay. Copy that.

10 02 45 45 LMP This is the last time.

10 02 53 49 CC . 7, we're about 1 minute LOS Tananarive. We'll pick you up at the Mercury at 08.

10 02 53 55 CDR Roger.

10 03 33 53 CC Apollo 7, Houston.

10 03 33 54 CDR Go ahead.

10 03 33 58 CDR Go ahead.

10 03 34 04 CC Apollo 7, Houston.

10 03 34 05 CDR Roger, loud and clear.

10 03 34 13 CDR Apollo 7, go ahead.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~ Day 11

330

330

10 03 36 47 CC Apollo 7, Houston. 1 minute LOS Huntsville;  
Tananarive at 244 plus 20.

10 03 36 54 CDR Roger. I read you ...

10 03 37 00 CC They were down below, Wally, and they're on  
their way back now.

10 03 37 07 CDR Okay.

10 03 37 13 CC They were -

10 03 37 38 CC Okay, Walt, we copy a battery-charging current  
of 0.41, so you can turn that battery charger  
off now at any time.

10 03 37 48 LMP Roger. Wilco.

10 03 37 52 CC See you at Tananarive.

10 03 37 53 LMP Roger.

10 03 37 54 LMP I'll come up at Tananarive.

10 03 37 57 CC Wally, you can turn that battery charger OFF  
on BAT B.

10 03 38 04 CDR What's that?

10 03 54 13 CDR ... pulses.

10 03 57 14 LMP Landmark 153 on magazine N, that's frames 42  
and 43. The first one is of the coastline  
right about Antofagasta, just slightly north  
of Antofagasta, and the second picture was  
roughly in the same spot.

10 04 09 27 LMP Magazine N, frames 44 and 45 were of the east  
coast of South America.

10 04 09 47 LMP Frames 40 through 45, magazine N, on the east  
coast of South America in the vicinity of  
landmarks 153 and 155.

10 04 21 23 CC Apollo 7, Houston through Tananarive.

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Day 11

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10 04 21 28      CMP      Roger, how do you read?

10 04 22 08      CC      Apollo 7, Houston through Tananarive.

10 04 22 10      CDR      Loud and clear.

10 04 22 14      CDR      Houston, Apollo 7. Do you read?

10 04 24 21      CC      Apollo 7, Houston through Tananarive.

10 04 24 25      LMP      Loud and clear. How me?

10 04 24 28      CC      Roger, you're loud and clear also.

10 04 24 31      CDR      Roger, you can correct that word in the  
flight plan from "landing" to "splash."

10 04 24 48      CC      Wally, for a point of information, we're  
assuming that the stowage will be nominal  
for retrofire. If you have any items that  
are stowed nonnominally, would you let us  
know for c.g. purposes? We would like to  
calculate c.g. rather closely.

10 04 25 12      CDR      Understand. We'll have the gloves and the  
suit stowage bag would also be ...

10 04 25 26      CC      Okay, the COMM is not the best here. You can  
give us a report over Mercury on that subject.  
We'll hit the Mercury at 44.

10 04 25 38      CDR      Roger.

10 04 28 24      LMP      Man!

10 04 52 25      CDR      ... I estimated about 3 pounds.

10 04 52 32      CC      Roger, LOS.

10 04 52 34      CMP      That was magazine C of S0168. The first few  
feet on it is part of a suiting exercise we  
took in the spacecraft a little earlier. And  
the last, from 40 on down on the meter reading,  
at least, was sunrise, which was completed  
at 244:51:30 this morning.

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Day 11

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10 05 22 53      CC      Apollo 7, Houston. 30 seconds LOS; Ascension at 33.

10 05 38 28      LMP      At 245 hours 36 minutes into the flight, we finished stripping the southern parts of South America across Chile and Argentina filling the bill. And I don't know which frame we started with on magazine U, but we ended up with mag - frame 33 on the eastern coast of South America.

10 05 39 07      LMP      Frame 48 and 49 - I am not sure if I taped that last on TRANSMIT or on the INTERCOM position, but at any rate, I am going to say that we stripped the southern part of South America, starting with some frame on magazine U, ending up with maga - with frame 33 on magazine U, on the eastern coast of South America.

10 05 39 38      LMP      Frames 48 and 49 of magazine N we're taking with S0368, but with a red filter still left on from the previous exercise, so they will not be very good - like no good.

10 05 39 56      LMP      Simultaneously, coming across the - at the same strip, we skip-mapped, using the 16mm camera with S0368 film at one frame per second from the west coast of South America and Chile, across the Andes, and out on the east coast of South America.

10 05 43 48      CC      Apollo 7, Houston through Ascension. Standing by.

10 05 45 50      CDR      Houston, Apollo 7.

10 05 45 55      CDR      Houston, Apollo 7.

10 05 46 04      CDR      Houston, Apollo 7.

10 05 46 08      CC      Houston. Go.

10 05 46 09      CDR      Roger, we shut down the SPS at 38 minutes after the hour. And there were 200 pulses out of the fuel.

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Day 11

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10 05 46 22 CC Apollo 7, Houston. Say that again.

10 05 46 24 CDR Roger, we shut down at 245 hours and 38 minutes on SPS. And we used 200 pulses of fuel.

10 05 46 39 CC Roger. Copy.

10 05 46 42 CDR That's about 4 pounds as we figure it, not nearly as bad as the 45 we blew yesterday on that crazy experiment.

10 05 46 53 CC Roger, got it.

10 05 47 18 CC Apollo 7, Houston. Your surge of power was observed, that time.

10 05 47 24 CDR (Laughter) Roger.

10 05 47 27 CDR That's pretty good when you're driving an Austin-Healey.

10 05 47 30 CC (Laughter)

10 05 47 36 CC Apollo 7, Houston. Opposite OMNI.

10 05 47 38 CDR Roger.

10 05 50 01 CC - - Mercury at 20.

10 06 45 15 CDR CDR ...

10 06 45 19 CDR CDR, 246 hours 44 minutes ...

10 09 03 26 CC 7, Houston. 30 seconds LOS; Mercury at 32. And do you show an O<sub>2</sub> purge at 30?

10 09 03 39 CDR Roger, I do.

10 09 03 41 CC Roger, thank you.

10 09 27 55 CMP Time, 249 hours 27 minutes and 58 seconds; frame 55, magazine M.

10 09 32 39 CC Apollo 7, Houston through Mercury. Standing by.

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Day 11

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10 09 32 44      CMP      Roger, Apollo 7.

10 09 32 47      CC        Roger, Donn.

10 09 32 49      CMP      The fuel cell purge is completed, Ron.

10 09 32 53      CC        Roger.

10 09 32 57      CC        And I've got a couple of updates for your  
S0368 and Pan-X.

10 09 33 02      CMP      Okay, go ahead.

10 09 33 05      CC        Roger, at 251 plus 15: We have some cloud  
formations over New Guinea. And they're on  
track; be good for S0368 film.

10 09 33 26      CMP      Okay, will do.

10 09 33 28      CMP      Could you give me a little fuel to use on  
that?

10 09 33 33      CC        Opposite OMNI, and say again.

10 09 33 36      CMP      Roger. What do you say about using a little  
RCS fuel to turn those ends so we can get some  
pictures?

10 09 33 45      CC        Roger, we are checking on it now.

10 09 33 47      CMP      Okay.

10 10 11 57      CC        Apollo 7, Houston. 1 minute LOS; Ascension  
at 32.

10 10 12 05      CMP      Roger.

10 11 01 13      CMP      Time is 251 hours 1 minute; frames 51 and 52,  
magazine N.

10 11 09 01      CMP      Corrections on that last frame number. Those  
were 56 and 57 on magazine N at 251 hours and  
1 minute.

10 11 20 44      CMP      251 hours 20 minutes; frames 57 and 58,  
magazine N, New Guinea.

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Day 11

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10 11 28 23      CMP      And in addition to the Hasselblad frame, we also had almost continuous strip coverage at one or six frames per second.

10 11 28 35      CMP      It started up in the area of the Ganges in India, all across Burma, the China coast, the Philippines, and New Guinea, and on out into the Pacific beyond New Guinea.

10 11 28 54      CMP      The time was roughly from 251 hours to 251:25.

10 12 01 27      CC      Apollo 7, Houston through Antigua. A one-line flight plan update.

10 12 01 33      CMP      Roger.

10 12 42 16      CMP      Frame 62, magazine N was of Borneo; time was 252:42.

10 12 46 49      CMP      Frame 62, magazine N; time, 252:46 and 40 seconds.

10 12 49 11      CMP      252 hours 49 minutes and 10 seconds; frame 64, magazine N.

10 13 13 53      CC      Apollo 7, Houston through Redstone. Standing by.

10 13 13 57      CMP      Roger, Houston.

10 13 23 34      CC      Apollo 7, Houston. 1 minute Redstone LOS; Antigua at 32.

10 13 23 42      CDR      Roger.

10 14 21 17      CC      Apollo 7, Houston through Carnarvon. Standing by.

10 14 21 26      CMP      Roger, Houston, Apollo 7.

10 14 35 08      CMP      Fine, Bill.

10 14 35 23      CMP      You're going to do what?

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Day 11

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10 14 35 30      CMP      Okay. Secondary evaporator at 258 hours;  
understand.

10 14 35 35      CMP      Isn't that logged yet?

10 14 35 47      CMP      Roger.

10 14 50 36      CC      Apollo 7, Houston through Redstone. Standing  
by.

10 14 57 32      CC      ...

10 14 57 37      CDR      Roger, Bill.

10 15 04 33      CMP      Getting gyro-torquing angles, 00001, 00362,  
00612. This is preliminary P52 for deorbit.  
We do not deorbit at this time, however. Time  
is 255 hours 4 minutes.

10 16 17 39      LMP      Hello. How do you read?

10 16 30 37      CMP      ... gyro-torquing angles, minus 1.84, plus  
858, minus 2.171. ... P52 alignment ...  
over ...

10 16 30 56      CMP      ... torquing angles ...

10 16 33 20      CMP      ... P52 ... plus 0004 ...

10 17 02 21      CC      7, we're about 1 minute to LOS Canary.  
We'll pick up Tananarive at about 19.

10 17 02 28      LMP      Roger.

10 17 02 29      CDR      Good morning, Jack. Houston, Apollo 7.

10 17 02 38      CC      Go ahead, Donn.

10 17 02 40      CDR      This is Wally, just saying good morning.

10 17 02 42      CC      ... Actifed at 257 - -

10 17 02 48      LMP      ... we all took it.

10 17 02 51      CC      Okay. Real fine.

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Day 11

237  
337

10 17 02 57 LMP We still got our nausea pills left to take.

10 17 03 03 CC Okay. The carrier reports wave height 1 foot out there.

10 17 03 07 CDR That's almost good enough for the Air Force.

10 17 03 12 LMP ... just a little bit.

10 17 03 28 CMP What's the carrier call?

10 17 03 33 CC Carrier call is Essex

10 17 03 36 CMP That's the name - is that the call, too?

10 17 03 42 CC We give you a good rundown on weather and call signs - as we go a little bit further here.

10 17 03 48 CDR Jack, Jack, do you read CDR?

10 17 03 51 CC Roger. 5 by, Wally. We're just about to lose you.

10 17 19 13 CC Houston through Tananarive.

10 17 19 16 CDR Roger. Loud and clear.

10 17 19 19 CDR Houston, do you read?

10 17 19 57 CC Apollo 7, Houston. 1 minute LOS Tananarive; we'll be coming to you at Carnarvon at 30 with an entry update.

10 17 20 07 CDR Roger.

10 18 05 06 CC Apollo 7, Houston through the Huntsville. Standing by.

10 18 05 12 CDR Roger. Loud and clear.

10 18 05 15 CC You're about 3 by, Wally.

10 18 05 17 CDR Roger.

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Day 11

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10 18 05 31 CDR Huntsville, Apollo 7. You should be able to get a lockup now.

10 18 26 31 LMP Time, 258 hours 26 minutes and 37 seconds -

10 18 26 43 LMP Pix frames 52 and 53 of magazine N were window photography, window 4, and frame 54 was an archipelago.

10 19 38 51 CDR ... and counting. 14 hours and 15 seconds.

10 19 38 55 CMP Roger.

10 19 39 03 CDR How much?

10 19 39 04 CMP Ten. DELTA-V is coming.

10 19 39 06 CC 10, 9, 8, 7, 6, 5, 4, 3, 2 -

10 19 39 15 CC One.

10 19 39 16 CC Retrofire.

10 19 39 18 CDR Coming in right on the mark.

10 19 39 29 CDR Cutoff very good.

10 19 39 34 CDR Gimbal is coming OFF.

10 19 39 37 CMP Purge your residuals. Got four CHANNELS, ON.

10 19 39 48 CC Check.

10 19 39 54 CC Walt, one last reminder. Turn the S-band volume UP before separation.

10 19 39 58 CDR Roger.

10 19 40 06 LMP 19.8 on the DELTA-V counter for the residual.

10 19 40 10 CC Copy that.

10 19 40 12 CDR We burned residuals to 0.01.

10 19 40 14 CC Roger.

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Day 11

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10 19 40 16 LMP DELTA-V thrust A and B, OFF. Spacecraft controls to SCS.

10 19 40 21 CMP SCS.

10 19 40 22 LMP Gimbal motors are OFF. Circuit breakers GIMBAL MOTOR CONTROL, four, OPEN.

10 19 40 28 CMP Four, OPEN.

10 19 40 29 LMP TVC SERVO POWER, 1 and 2, OFF.

10 19 40 31 CMP 1 and 2, OFF.

10 19 40 33 LMP Rotation HAND CONTROLLER number 1, LOCKED, Donn.

10 19 40 38 CMP CONTROLLER, LOCKED.

10 19 40 39 LMP EMS MODE, STANDBY. I've logged the residuals.

10 19 40 43 CMP Okay. 19.9.

10 19 40 46 LMP Okay, that's good, Wally.

10 19 40 50 CDR Move out.

10 19 40 58 LMP Call program 61.

10 19 41 07 LMP Now you've got the VERB 40, NOUN 20 to enter yet.

10 19 41 16 CMP Wait 6 seconds and KEY RELEASE.

10 19 41 18 LMP Primary glycol to RADIATOR, PULL, Wally.

10 19 41 22 CDR You like to gamble, okay! And she's pulled, babe.

10 19 41 25 LMP Okay. PLSS valve, ON.

10 19 41 27 CDR It's ON.

10 19 41 35 LMP Oxygen service module supply valve, OFF. You can be yawing 45 degrees out of plane, Wally.

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Day 11

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10 19 42 13      CMP      Okay, service module supply valve, OFF.

10 19 42 21      LMP      You got one more trip over there for the CAB  
VENT - CABIN PRESSURE RELIEF valve.

10 19 42 28      LMP      No, before, we want to go to BOOST ENTRY on  
those.

10 19 42 34      LMP      On both of them?

10 19 42 35      LMP      Yes. Right now.

10 19 42 38      LMP      Surge tank pressure is holding fine. I'm  
turning both VHF/AM's OFF. Antenna is on  
RECOVERY. S-band antenna is OMNI C.

10 19 43 02      LMP      Donn - Donn, service module RCS primary  
propellants A, B, C, D, ON, UP, talk-back's  
gray.

10 19 43 13      CMP      Roger, Walt, four gray ones.

10 19 43 16      LMP      Okay, we're standing by for Wally's call on  
the attitude.

10 19 43 23      CDR      In ATTITUDE.

10 19 43 28      CMP      Okay, CM/SM SEP, both ON. Now.

10 19 43 35      CDR      That work?

10 19 43 51      CMP      25-1/2 volts. That's all we got.

10 19 43 57      LMP      Okay, caution and warning mode, command  
module, RCS transfer. Did it transfer?

10 19 44 05      LMP      You got your ENTRY ATTITUDE, Wally?

10 19 44 07      LMP      Okay, RCS transfer - we verify command module -  
command module RCS LOGIC, OFF.

10 19 44 16      LMP      Okay, we've got ENTRY ATTITUDE. Do you want  
single channel? If you do, let me know.

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Day 11

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10 19 44 31 LMP You want to go RATES HIGH after that burn. Okay, well, I missed a callout.

10 19 44 58 CMP Okay, the computer appears to be working fine, despite the low voltage.

10 19 45 01 CDR ...?

10 19 45 04 CMP I'm just talking to - us.

10 19 45 13 LMP Yes, we ought to make note that the main BUS A and B undervoltages are down to 25-1/2 volts on both main buses. We're coming in, low batteries.

10 19 45 24 LMP Give me a call when you are ready for RING - single RING.

10 19 45 33 LMP Okay. B and D ROLL, PITCH, and YAW to CHANNEL A. And do you want RING A or B?

10 19 45 41 LMP Okay, then, close B and D ROLL 1, MAIN A, PITCH, MAIN A, and YAW, MAIN A. Reading you 5 squared, Jack. Everything came off hunky-dory.

10 19 46 03 LMP Standing by for a postburn update.

10 19 46 10 LMP We had a MAIN BUS A and MAIN BUS B undervoltage at SEP. And we got all three batteries ON, nothing more we could do. We're reading 25.2 volts.

10 19 47 03 LMP 25954.

10 19 47 44 LMP You have RANGE SET, RANGE TO GO, V<sub>0</sub> SET, ENTRY, EMS mode AUTO?

10 19 47 55 LMP Roger.

10 19 47 57 CDR Everything is working beautifully, Jack.

10 19 48 02 CDR It's a slap in the face when we separate.

10 19 48 05 LMP DEADBAND MAX, RATES HIGH.

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Day 11

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10 19 48 24 LMP BMAG MODE, three, up to RATE 2 and ENTRY ATTITUDE.

10 19 48 33 LMP The rest is on you, Wally.

10 19 52 02 LMP Ready to copy.

10 19 52 06 LMP Thank you.

10 19 52 07 CMP How about that?

10 19 52 13 CDR She's riding up.

10 19 52 20 CDR We're on RING A and she's - really nice control system.

10 19 54 42 CDR Roger, we're flying the pink cloud.

10 19 54 53 CDR Cut.

10 19 58 07 CMP EMS, stand by for -

10 19 58 10 CMP MARK, 21 000.

10 19 59 40 CMP Lines in the center hatch window line up beautifully.

10 20 01 32 CMP Roger. Everything is fine.

10 20 01 36 CDR Looking real good.

10 20 02 32 CDR Altimeter off the peg.

10 20 02 49 LMP At 30 000, ELS LOGIC, ON; ELS, AUTO, at 30 000.

10 20 02 59 LMP You'll have to give me some hacks on altitude.

10 20 03 02 CDR/CMP 35.

10 20 03 11 CMP 30 000.

10 20 03 32 CMP Cabin pressure increasing.

10 20 03 41 CMP 18 000?

10 20 03 46 CMP 18 000.

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Day 11

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10 20 03 51      CMP      16.

10 20 04 03      CMP      13 000.

10 20 04 09      CMP      Okay, standing by for mains, 12 000.

10 20 04 22      CMP      We've got three of them.

✓ 10 20 04 32      CMP      We've got three chutes out there, gang.

10 20 04 35      LMP      VHF to simplex A, beacon's going on, Donn could give his voice report.

10 20 04 41      CMP      Roger, Apollo 7. DSKY shows our position is 27.60 degrees - 27.63 degrees latitude north, and 64.18 west longitude. Please get the carrier out of the way.

10 20 05 04      LMP      Circuit breakers are OPEN. Floods going to POSTLANDING. Command module RCS propellants - oh, wait ... on that. I think we'll just go like we are.

10 20 05 13      CMP      Okay. We're at 7500, gang.

✓ 10 20 05 17      CDR      We have three good chutes and we're descending very nicely. Our attitude very stable on the main chutes. We have a slight pyro odor in the cockpit; that may be fuel. We'll check that against something else later. We're going through the clag now.

✓

10 20 05 37      LMP      Roger, we closed the command module RCS propellant at about 12 - 14 000 because of the odor in the cockpit.

10 20 05 53      LMP      Wally, if you have a chance, we could go to DUMP on the CABIN PRESSURE RELEASE valve, and all we'll have to do is close them later.

10 20 06 06      LMP      Let's go to DUMP.

10 20 06 10      LMP      We'll have to close them below a thousand.

10 20 06 15      CMP      Okay, I'll get my hand on it.

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Day 11

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344

10 20 06 16 CDR Broadcast everything we're saying.

10 20 06 18 LMP Roger. We go to DUMP on the command module CABIN PRESSURE RELEASE valves. We'll open them - go to CLOSE on them below 1000.

10 20 06 27 CDR My windows are steamed up.

10 20 06 29 LMP So are mine.

10 20 06 31 CMP I think that's probably from the moisture. That might dry off.

10 20 06 34 CDR Yes, we went through some clouds, that's for sure.

10 20 06 36 LMP An RC - R - IFR approach, isn't it?

10 20 06 39 CMP It sure is. We're cleared straight in, though.

10 20 06 44 CDR Right down the slot. This is Apollo 7, descending through 4200 feet on an IFR approach, expect straight-in clearance, no delay, got the wheels DOWN and LOCKED!

10 20 07 08 LMP Hey, Wally, this ELS - after landing, I'll hit the pyro circuit breakers here and you can get the LOGIC ON and the ELS OFF.

10 20 07 15 CC Apollo 7, read you loud and clear. How me?

10 20 07 17 CDR Roger. Watch out, we're coming down IFR. We have a straight-in, expect no delay on clearance.

10 20 07 23 CC Apollo 7, Houston through ARIA.

10 20 07 26 CDR Houston, loud and clear.

10 20 07 37 CDR Passing through 3800 feet now. Three very good chutes, very stable spacecraft. We are prepared for landing.

10 20 07 59 CDR I feel sorry for all you one-shoe people out there. I don't like it even now.

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Day 11

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10 20 08 06      CDR      2000 feet.  
10 20 08 22      CC      Apollo 7, Houston.  
10 20 08 25      CMP      Read you loud and clear, Houston. Stand by.

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