NOTICE: This document may be exempt from public disclosure under the Freedom of Information Act (5 U.S.C. 552). Requests for its release to persons outside the U.S. Government should be handled under the provisions of NASA Policy Directive 1382.2.
05 05 49 49  CDR  Okay, let me get this other one out, and I'll show you the --

05 05 49 52  LMP  We've each got a map and a camera; we can't miss.

05 05 49 55  CMP  Say, --

05 05 49 56  CDR  Oh, shoot, it's way down in the bottom of that bag.

05 05 50 03  LMP  7 hours plus ...

05 05 50 05  CDR  Oh, the heck with it. Listen, it's way down there. I'll get the other one.

05 05 50 09  CMP  Oh ho, we just came across here.

05 05 50 18  LMP  Look at this thing right here. Here is the map update right here. 119:10 ... 6 hours and 40 minutes. 6 hours and 40 minutes.

05 05 50 30  CMP  Oh, I see. I read out -- I was looking at the wrong --

05 05 51 35  CDR  You know where I think we are?

05 05 51 40  CMP  Did you say there was an SO 65 map in the ...?

05 05 51 43  CDR  Yes, ...

05 05 51 58  CMP  You know this is going to be the last of the ...

05 05 52 02  CDR  Yes. [

05 05 52 57  CDR  Well, this one here is, but it's all folded up ...

05 05 53 07  CMP  Hasselblad? ... for SO 65.

05 05 53 10  CDR  Okay, black is the Hasselblad, right?

05 05 53 15  LMP  Great! I think I got a bunch of them.

05 05 53 17  CMP  Did you, right there?

05 05 53 18  LMP  Yes.

05 05 53 30  LMP  ... we ought to have more of that SO 65 stuff ...

05 05 53 34  CDR  Yes, I think ...
Let's see, we don't have a ..., do we?
Yes, yes, by all means.
We also need a lithium hydroxide canister change.
Okay.
Put this away. Put the optics away, and let me see.
Where's our update book? Do you have that down there, Dave?
No, not ... --
Oh, it's here, Dave. I've got it; I've got it. You've got the procedures book there though. Hey, listen, tomorrow we don't even have burn. And tomorrow ought to be nothing but absolute ...
Jim, here's your ...
Okay. Stick it up there, we've got to find a place to put that.
How much film do we have left, Rusty?
Well, that was — Just going to add up, here.
Really?
Also, I need the procedures.
Okay.
... Oh, I know.
Waste water dump at 128:50.
128:50; why don't I put it over here then.
Hey, maybe having a lot of fuel in quad B is going to be a big help because we can use that for all our landmark tracking.
Say, you're right. Maybe they were thinking of that.
Okay, got that. Okay, CO₂ filter change at 26 hours; that's in about 4 minutes. You want to do that, Dave?

Yes, I'll do it right now.

Okay, change number 11. Take 13 and put in A, and put 11 in A-3.

Have we been using that grimy stuff every time?

I have, yes. I didn't last time.

(Laughter)

I've used it once at least every time. ...

You know, I've never done - I don't guess I've - I've always pulled the right one out, ... pulled that one out correctly, but when I started shifting the other one's around in there, I -

You think it's really necessary?

I don't know. I'd use it. Do it anyway; it pacifies everybody.

13 to A and 11 to what?

...

I can't ever remember it. Gees.

... 11 to A-3. And the tape - Let's see, what do you do with the tape? Here's the tape right here.

Oh, hey, we ought to clean the screens again. I bet they're full of gunk.

Oh, yes. They really are. I looked at that one down there. I guess I couldn't quite get to it; I was down underneath the couch. ... is steady.

Yes, in fact, the suit temperature's going up.

It sure has.

CONFIDENTIAL
05 05 57 02 LMP  I think this cabin temperature's up higher than it has been the whole damn flight. It's 75 degrees.
05 05 57 06 CMP  Yea!
05 05 57 07 CDR  (Laughter)
05 05 57 09 CMP  Tonight I'm going to bathe.
05 05 57 12 LMP  I was thinking the same thing. I'm going to take some hot water and a rag and really go over it all.
05 05 57 18 CDR  Well, don't put your grubby rag back in the drinking water ..., after you've bathed your balls with it.
05 05 57 24 LMP  I don't -- I don't smell ... It's not me that's generating all these odors.
05 05 57 30 CDR  I know, but I'm getting tired of drinking off of your urine bag.
05 05 57 35 LMP  You mean you don't like --
05 05 57 36 CDR  ... -- for me to stow my ... over the ..., I mean.
05 05 57 37 LMP  No, I don't. I keep the outside of me dirty, but the inside of me is clean.
05 05 57 39 CDR  What's the P CO₂, Rusty?
05 05 57 43 CMP  The P CO₂ is 1.7.
05 05 57 45 LMP  Hope they hear us over Tananarive.
05 05 58 00 CDR  So do I.
05 05 58 04 CMP  Hey, great, if he's back there, my stereo set's up back there (laughter).
05 05 58 09 CDR  (Laughter) Matter of fact, I didn't half believe that she ever even made it.
05 05 58 14 CMP  You know what, ...
05 05 58 19 LMP  Davey, how you going to get your car back?
Oh, I'll probably let somebody drive it.

Oh, yes. Well, who's going to drive it?

Well, I think I have, you know, somebody who's going to drive it; I'm not sure.

Oh, really? Well, listen. If you can't find anybody -

Did you have ...

What?

Did you have anybody to drive?

Well, I know what we can do. When we get over there, let's just ...

When we get over Tananarive, let's tell them we want to shut the IMU down. All we need is to keep an eye on the gimbal lock.

... what we're going to do; why don't you clean that other ...? Really got ...

Well, I haven't found E. Does anyone know where MAG E is?

I bet I know where it is --

I bet it's loaded in the camera, up there. James. Yes, it is. It's in the Hasselblad ... I just - I think I just saw it as I put that thing away.

How about checking to see how many there is?

Where did you put it? Magazine F, here.

That's F?

Yes.

Oh, what have you got left?

I've taken 49. That's about a 60 ... - 60 ..., 60 film pack.
Okay.

Dave, you said you have - E was on the ... Where did you put the ...?

In the - R-3 in the glove compartment where all the other stuff is, you know.

In R-3.

The one with the data cards and all that stuff is —

Okay. Got it.

... get away from you.

Somebody losing a lot of hair.

Okay, CO₂ canister has been changed.

Oh.

Want to break out the chow?

Might as well.

Where's a big bag of —

Dave, both the food bags are down on top of the lower part of the L-shaped bag.

I only find one!

Well, they're supposed to both be there. I kind of felt there, but that little one was —

... floating away.

Hey, you know what? We don't have nearly as much filth — ... filthy over here today. ... gathered it up last night.

Got rid of the LM.

Hell, yes.

Yes, and every time you go in that tunnel, boy, it just fills up.
Let me ... the flight plan up.

(Laughter)

... if we ever do. Wait until we get back and find out there's only ...

Oh, well. We tried.

Oh, hey, we aren't supposed to ...

126:04. Stow the SO 65 magazines and cameras. Now here's where the flight planner really did something right. He gave us 20 minutes to stow the magazines and cameras.

Oh, you're kidding (laughter).

(Laughter)

And they give us 15 minutes to restow the tunnel alone.

(Laughter) That's a hell of a ..., isn't it?

You know how long they gave us to unstow and install SO 65 cameras? 50 minutes.

50?

Five zero (laughter).

Well, that will be a nice one.

(Laughter) No, I guess that's toward the end of the ...

Figured we'd be tired.

Hey, there's another plan for today.

Another what?

That frapping exerciser.

Right. I had been thinking about that all day.
Oh, here's the grab bag. What's in the grab bag, today? Steaks. Ooh, ... I'm going to have fish ... Oh, it's pretty good.

I think I'll have some fish with you.

Is it Friday?

I don't know.

Hey, what day is it?

I don't know.

(Laughter) ... in the world.

Shoot, I don't even know ... must be Friday about. ... Friday or Saturday.

Probably catching up on our ...

Hey, there's ... I used to hate that stuff, but ... they've changed it.

Did you get those screens over here?

Yes.

Very good.

I'm going to ... and go in a corner and write some things down about the rendezvous, because I don't have anybody to talk to about what I was doing.

That's what I wanted to do, too. That's what I started to do last night, and I never got it done.

I'm afraid I'm going to forget some of those things like that vroom-vroom of the descent engine ...

Yes.

(Laughter)

No, fortunately, I'd like to ...
That'll happen when you ... I think ... might worry. Maybe we're just going to get a chance to do some of the NCC 109 maneuvers.

Damn it! There was one film pack I didn't look a... that right there.

You don't want your ... , do you?

Huh?

... you put the water in.

Did I get Rusty's hot or cold?

Cold. Gee, I'm really ... I got the camera, too.

Really?

Yes. Except my camera's got a ...

Hey, Rusty, are we in gimbal lock ...?

No, I can't even see. Oh, ... We would be in th LM, but we're not in this (laughter).

(Laughter)

I sure ... will be glad when I get back to flying airplanes and driving automobiles and to hell wit spacecraft.

They all have that ... , right?

I - I think I'm going to, take up ...

Oh, hell!

What?

I put the hot water in the chicken salad.

(Laughter)

I bet it doesn't taste very good now.

Now I have lukewarm salmon salad. God bless it!
Oh, shoot. That one film pack that I didn't look at, I don't know how the film ...

Where is it?

B-8.

What?

B-8.

B-8.

...

You are, huh? ...

However, this is the McDivitt corner.

What film pack is it, Rusty?

I think it's ... on the camera — on the 16 millimeter —

It's five film packs here.

Oh, wait a minute. Shoot, there's no 16 milli —

Let me tell you which film packs I have down here. I have I, M, K, R, and H.

Yes, the one I need is J. I'm trying to think where it is.

Oh, I know where J is. J, I think, is in A-7.

No, no.

What?

No. It's got to be on the camera. Where is — where is our camera? The CSM camera, Dave?

That's where it is, then.

No, ... and put it somewhere.
Here's J, right here. How about that?
J is ... It's full.
Full.
Crazy. We ought to do some -
... set ORB rate up, point ... X-axis to the ground -
Take some telephoto 75-millimeter movies.
Telephoto 75-millimeter pictures.
Okay -
Let me - let me -
-- you want a summary?
Yes, let me - I'm put this down here. I'm going to put J, I'm going J in B-8 down here. I'm going to put it on the log here. ... count on using all the film tomorrow and the next day.

Is that right?
How many days have we been up here; this is 6. We'll be up here 11 days. 6 from 11 - Okay, that ... we've got 2 days and divide that by 3. Okay, what have we got?
I think it's ... the 16 millimeter. Oh, we did use ... on the 16 millimeter, didn't we?
Yes, we've got 7.1 magazines left.
No, we've got ...
Of 16 millimeter?
Yes.
Well, how come we didn't use ... --
Two of them are C-IN, though, by the way.
05 06 13 15  CMP  Yes, but we had that planned to use them all.
05 06 13 17  LMP  I know; we - we were conservative.
05 06 13 22  CDR  We didn't use any of the C-IN; we didn't take a single picture of the ...
05 06 13 24  LMP  Yes, we did.
05 06 13 25  CDR  Did we?
05 06 13 26  LMP  Yes, I took a picture of Dave jetting the tunnel cleared out.
05 06 13 31  CDR  Oh, good.
05 06 13 33  CMP  Did you really?
05 06 13 34  LMP  Yes.
05 06 13 35  CMP  How many of these that are remaining are C-IN?
05 06 13 38  CDR  Two.
05 06 13 39  CMP  Two. Oh, that's right, we added - we added one C-IN to take care of the tunnel thing, didn't we? So there's one C-IN and six other ones. Gee, I didn't even know you were taking pictures down ...
05 06 13 53  CDR  You ought to run out these little bitty ones. 0.2, 0.3, 0.8 --
05 06 13 57  LMP  Yes.
05 06 13 58  CDR  -- because we really have 1, 2, 3, 4, 5. Now, the 70 millimeter.
05 06 14 06  CDR  606 frames; not bad.
05 06 14 11  CMP  606!
05 06 14 12  CDR  Yes.
05 06 14 13  CMP  Remaining?
05 06 14 14  CDR  Yes. 200 frames a day to take for the next 3 days.
05 06 14 19  CMP  Hey, that's ... --
Well, actually, let's take - save one of these for the last day just in case we need to shoot something for splashdown. I also think we probably ought to put the wide angle away, unless we've got some special shot for it. ...

Very good, Mr. Schweickart. ...

Yes, and the next thing I want to do is take all I - I've changed my mind on what I think we ought to do. I think we ought to take all the empty ones and stick them in the most inconvenient place.

Yes, that's quite right.

Like it's going to be load up B-8.

But B-8 only takes - only takes 16 millimeter.

I know it, but we've got enough - all of these 16 millimeters -

Right.

— to - 1, 2, 3, 4, 5, 6. Yes, we've got six empty ones, and there's room in there for six empties. We'll do that after dinner, okay?

And speaking of dinner -

Yes, I think I'd like some, too. I don't know what I'm going to eat, but I'm going to try.

Yes, how does your stomach feel?

Well, I don't know, it was pretty good at breakfast I ... dinner, but my stomach was good at breakfast. Honestly, I don't know if it's my stomach or what it is.

FLOODLIGHTS are going OFF.

Spaghetti.

That's good stuff.

That's not a very big seller up there, is it?
05 06 16 05 LMP  Not a very good what?
05 06 16 06 CMP  A very big seller. Bacon.
05 06 16 08 LMP  Oh, I've been eating it at least a package a morning.
05 06 16 12 CDR  Well, we seem to have an awful lot left. ... want it, I thought we could just ... complaining so much, I --
05 06 16 18 LMP  Well, me too, but -- ...
05 06 16 21 CMP  ... mine.
05 06 16 22 LMP  Yes.
05 06 16 23 CDR  No, I could eat --
05 06 16 24 LMP  It's awfully dry; in fact, so much drier than what it ever was on the ground, I can hardly believe --
05 06 16 27 CDR  Yes, well, you know, it's not all like that, Rusty. I had one the other day that was almost like powder. I had to take ... and eat it. But most of the other ones --
05 06 16 37 CC  Apollo 9, Houston through Tananarive.
05 06 16 40 CDR  Hello, Houston; Apollo 9 here. Is she there?
05 06 16 44 CC  Roger. Loud and clear, now.
05 06 16 47 LMP  Roger; is Charlie there?
05 06 16 53 CC  Affirmative.
05 06 16 55 CDR  Affirmative.
05 06 16 57 CDR  Okay, stand by, Charlie.
05 06 17 00 CDR/CMP/ Happy birthday to you, happy birthday to you, happy birthday, dear Charlie, happy birthday to you.
05 06 17 17 CMP  I wonder if they understood that.
05 06 17 20 CC  She's getting a great kick out of it and says, "Thank you."
Sorry we didn't have time to celebrate it before the launch.

She said it was beautiful.

Okay. We think she is, too.

Roger.

Hey, that's the first time Tananarive --

When you get a chance there, we could use the number of frames used on SO 65.

25 plus seven.

Okay, I used 25 frames on - what we were supposed to from California on toward Texas, and we used seven frames across Houston. We used one frame to check the film out when we put it up - in the window to make sure that all the - the film magazine worked and we bumped up against the film starter one time and took one other additional frame.

Roger; one additional, and one to start, and seven over Texas, and seven somewhere else. Is that correct?

You broke up a little, Ron. There was one to check things out to see if it worked, there's one accidental one, there were seven - I say again, seven over Houston, and there were 25, 25 across southwest U.S.

Roger. Copy the 25 and the rest of them.

Okeydoke.

35, that leaves - there was also the one that we wound through. ...

Oh, yes.

Houston.

Houston; go.
Roger; and we were supposed to wind one film - each film pack one frame forward by hand so that one is also gone.

Roger. I understand you wound one frame by hand.

Roger.

The...

Hey, did you ever disable...?

...

-- the B-3 thruster when we went MANUAL?

Hey, you want to ask him if we're going to power down?

Oh, yes.

Houston, this is Apollo 9.

Roger. Go.

Roger. How about turning off our IMU now? All we're doing is spending fuel keeping it out of gimbal lock, and we don't need it anymore.

Roger. Stand by. We're checking it.

Jim, did you get that thing aligned? ... get it aligned without the optics?

Apollo 9, Houston. Affirmative; IMU to STANDBY.

Say again, please.

Houston, Apollo 9. Say again.

Apollo 9, Houston. IMU to STANDBY. We still need the CMC.

You're breaking up, Houston. Say again.

Oh!

About 187.

CONFIDENTIAL
Where's the food?

Here's the grab bag.  ...

Well, ... while I'm in the mood to eat.

What?  Well, shoot, ... to power down ...

Where's the one in the LEB, Dave?

It's in that - Actually, Rusty, it's drifted over by you, a little --

Oh, I see it; it's up here.

Hey, where's the procedures book?  We did find that today.

Is that the one I want?  Yes.  I looked at that one; what other one is missing?  There's your update book, procedures book, crew log.  That's the one ...

You think so.  Boy, I thought it was awfully - really - Oh, I don't know ...

While I'm thinking about it, I ...

Well, that doesn't look bad.  Let me try it out.  There we go.  That's day 5, meal C.  ...

350-pound cake.  Good God, cake!  I can think of a lot better things that I want than cake!

Oh, that's right.

Boy, they sure use that helicopter 61 all the time.  60 and 61, they're all aides in the recovery.

Wonder what else we can take movies of outside.  You might be able to make a vertical pass across the western states or something.  ... try it ...

Hey, maybe we can take a vertical going across Australia.  Do we get there in the daylight, toward the end of the flight?  If we do --
Yes, I think we will. Matter of fact, I think we ... about another day or so. Well, matter of fact, I think we can see it right now. ... Well, let's see, it's coming up on daylight right now. But we're not going to Australia, are we?

Hmm, when do we get to Australia? Oh, shoot, we've already been over Australia.

Yes, we're north of it now, aren't we?

Not too far, only about two REV's ...

Well, let's see, ... daylight now ...

Oh, hey, you can see ...

Hey, are we going up over Vietnam, yet?

No, but that ... we should ... the next pass ...

Wonder if we ought to turn on VHF B.

We should see Sumatra, and Thailand, Borneo, Philippines. ... Let's see ... Yes. We could be coming up across all those islands between Australia and Asia. Would you believe that I'm going to be pointing at the sky, when you do that?

Hey, ..., more to eat. Where's the big bag?

It's right here?

Let me look at the little bag, first.

Okay, but there's one here, so -

Yes, throw me the big bag, please.

Okay.

Hey, also we ought to start debriefing on our tape.

Yes. I think ... dictate a tape on the rendezvous.
Hey, I looked at that burn for day after tomorrow, Dave; that's pretty short.

Boy, that was quite a bounce today, wasn't it?

It was a whop! ... the engine.

Boy, ..., it's a bigger residual than we had all day long in the LM.

... ... ... ... ... ... ... ... ...

(Laughter) Whop!

Do we get up early tomorrow morning?

Oh, I ...

(Laughter)


Do you really?

Yes. I really do.

You've found time somewhere to read?

Well, like right now, I think I would. You know, before I went to bed.

Yes, I kind of feel like, you know, involving myself mentally in something aside from the flight for an hour at a time or something. Maybe I'll play my music. You guys mind if I play my music?

What?

I want to use the tape recorder later on ... right now.

If we like the music, we'll let you play it; if ... don't like it, you can't play it. How about that?

(Singing) Oh, there's a big hunk of land down there. I wonder what that is?
... wild island. Look out - what island did I tell you we'd go over?

Sumatra. I don't know.

Huh?

Yes.

Yes. ... a little bit.

47:34.

Oh, this is a good attitude. Looking at the sun. ... right out.

Do you think so? Oh, yes.

Okay. At your normal powerdown time, we want you to perform the following: IMU to STANDBY - you already have that - SCS ELECTRONICS POWER switch to OFF; AUTO RCS SELECTION switches, OFF; ROTATIONAL CONTROL POWER, OFF; TRANSLATION CONTROL POWER, OFF; and leave all other equipment powered up. Over.

Okay, copy. IMU, STANDBY; SCS ELECTRONICS POWER, OFF; AUTO RCS, OFF; ROTATIONAL CONTROL POWER, OFF; TRANSLATION CONTROL POWER, OFF; everything else, ON. Is that correct?

Correct.

Let's go back to H₂ again. Do you want us to get both H₂ tanks to go to 200 or below and then keep it between 190 and 200 by cycling the tanks and fans as required and not to let it get above 200 before we go to bed, then let it go?

That is correct.

Okay, I guess we got that straight.

Yes, and before you - before you go to bed, we'll have you turn the tank 2 fans on.
Okay.
Yes, ... difference right there.
Because there's nothing that's going to bring it up, see.
This is where we are?
Yes. Hey, Jim, you ought to get your camera because the Galapagos ...
You're fading out. Would you say the last part again, please?
Roger. We'd just as soon call you early in your rest cycle, rather than in the middle of the night.
What's that for?
I think what he's saying is that it's ... earlier - I don't know what that might be.
Neither do I.
I think he's saying the same old thing. Just bring pressure down and then put the fans on.
You have to do it ...
Well, we did that earlier.
Oh.
Yes.
... south of the track.
We're a little bit north.
Hey, Jim, ...
... south.
No, I'm looking for that one.
Yes, yes, we're rolling to the left of it, so I think in about 10 - about 1 minute.

What was the time, Dave?

50:23 - 1 minute from now.

Why don't you roll left and get a couple of blips?

You're rolling right now.

No, we're rolling left, Jim. At least, out the window we're rolling left. ...

Yes.

Well, you see him out the side windows, Jim?

No.

... could now. You can see him through the optics.

Hey, here's another thing - this REV we come across South America through another one of those preferred Hasselblad areas, don't we. Right across Venezuela and all those?

I think it might be dark by the time we get there, Rusty.

Oh, let's see, it's 5:15 in Houston. That ought to be real close.

Yes.

... to get those cryos powered.

Did you say the fan in O - in H₂ tank 1, or both of them?

Both of them.

Jim?

Well, my understanding of what he said was ---
05 07 15 13 LMP  Maybe ... tape recorder --
05 07 15 14 CMP  Yes, that - that's kind of the way I heard it, both H₂ tanks ...  
05 07 15 20 CDR  Right, yes, that I got.  
05 07 15 22 CMP  That's right. 
05 07 15 23 CDR  Then I thought he said turn on the fan in tank 2 --  
05 07 15 25 CMP  That's what I thought.  
05 07 15 27 CDR  -- after I --  
05 07 15 28 CMP  By cycling H₂ tank heaters or fans as required.  
05 07 15 30 CDR  Right. To get it down. Okay. ...  
05 07 15 33 CMP  And - to keep it above 190. He said keep it between 190 and 200 by cycling the fans and heaters as required. Then he said for the night, leave it on.  
05 07 15 42 CDR  No. Put on H₂ tank 2 fans.  
05 07 15 47 CMP  I didn't hear anything about that, Jim --  
05 07 15 49 CDR  See ... is going to make it go up, Dave.  
05 07 15 52 CMP  It's going to fall down with the fans and heaters off; now what's going to make it go up?  
05 07 15 56 CDR  ... be a failure --  
05 07 15 58 LMP  That's right.  
05 07 15 59 CDR  -- leave them alone after we go to bed --  
05 07 16 00 CMP  Yes. You see right before that, he said - What he said was cut out.  
05 07 16 04 CDR  Are the fans and heaters off now?  
05 07 16 05 CMP  Yes. With the fans and heaters off, we're going to drop down. Well, that S-band kept dropping in and out. ...
Well, I don't think tank 2 is going to come down to 200. We're going to have to purge to get it down. It's been holding. It holds steady at 22C.

We'll ... Now, we're back to the right again.

Perhaps we did roll to the right.

Well, I'm just looking out the window; I can't figure out how we could have missed, but I guess, if the needles say it, it's true. If the earth - I was looking south before, Jim, when we were coming up on that pass and then the earth disappeared out of my -

Me, too.

Well, I guess I had it upside down. What else are we doing, anything?

No. Hey, here comes Guaymas.

Oh, shoot, ...

What the devil was that?

Jim.

Huh?

... know you could see it. ... lights out there.

Oh? Yes. Did you see it? What the hell are the

I'll be darned if I know. They're up in the sky?

No, no, they're below the horizon. ... fire.

... they're fire?

Yes.

They look awfully red.

Red ...

It's really something how they don't look like fi I don't know why. That one looks like two lights
05 07 24 33 CMP ... see any more of those.
05 07 25 09 CMP That is a weird sensation.
05 07 25 16 CMP ... cycle those ... fans ... before I got ... you were 19.4; and I was 19.5; you were 0.4; I was 0.5; you were ...

05 07 25 38 CDR Oh, that - that. Yes, yes. ... 05 07 25 40 CMP The one at the time ...
05 07 25 48 CDR Yes, but what was your time?
05 07 25 51 CMP The final solution ...
05 07 34 31 CMP (Sneeze) Wow!
05 07 38 08 CMP ... that DSE.
05 07 38 26 CMP Where - Who - who cleaned out this? Where's the toothpaste? Anybody know?
05 07 38 32 CDR Yes, I ...
05 07 38 34 LMP Toothpaste was hanging today. I didn't want it to get lost in that --
05 07 38 41 CDR Look in here. Is it in there?
05 07 38 44 CMP Yes.
05 07 41 12 CMP Anybody else want to use the toothpaste right now?
05 07 41 14 CDR ... I'll use it later.
05 07 41 17 CMP Where do you want to store it? You want to keep it up there in yours, Jim, or what?
05 07 41 20 CDR Yes, that's fine.
05 07 46 12 LMP Hey, Dave, you got a problem.
05 07 46 14 CMP Huh?
05 07 46 15 LMP You got the flight plan?
05 07 46 17 CMP Oh ...
What time is that waste water dump? ... we get the ... for that.

Should be at 128 something - 128:50. Okay. ... Now.

You know where the tape recorder is?

Yes.

Oh, in R-3. Yes. ... changed ... put on during the rendezvous yesterday. I don't even remember what they were. We didn't have time to write them down and I was going to do more and then I didn't even have time to do that.

That's probably a good idea.

Apollo 9, Houston through Tananarive.

Hi, Houston; Apollo 9.

Houston, Apollo 9.

What's the station again? That was never any good in Gemini. ... good in Apollo.

I never have heard Pretoria. How did Pretoria get in the flight plan?

Apollo 9, Houston through Tananarive.

Houston, Apollo 9.

Roger. I have you.

Roger. Say, did you have anything between discussions on the H2 and the powerdown? I think we might have missed something there if you had something.

9, Houston. Are we with you now?

Say again; you're broken.

Apollo 9, Houston.
Roger. I missed your answer. You're coming through loud and clear now. Did you have anything that you gave us between the discussion on the $H_2$ and the powerdown?

The only thing on the discussion on the $H_2$, I said that if, for some reason, you can't get it down to 200 psi before you retire, you can go ahead and do a fuel cell purge to decrease the pressure.

Roger. I caught that and the next thing I heard was the powerdown, the IMU to STANDBY, and that sort of thing, and I thought maybe you'd said something in between.

Negative.

Ask him if it's okay to purge --

Okay, did you say it's alright to purge number 2?

Oh, fuel cell.

Yes.

Stand by.

Okay, in other words, do we purge all three fuel cells?

Hey, Dave, and ... said that earlier, Jim, ... Ask him how he wants the cryos left overnight ...

Apollo 9, Houston. You can purge all three, if necessary.

Okay, and then overnight, do you want us to leave the fans on ON, AUTO, or OFF on the cryos? One tank or two?

On the cryos, we want the $H_2$ tank 2 fan on.

Roger; understand. $H_2$ tank 2 fan on.

Roger.

Okay. Thank you.
And I have - We have no site coverage for REV 83, and I have the ARIA AOS/LOS times in case you want to call us. Over.

Okay. Go ahead.

Roger. ARIA 6, 130 plus 42 to 130 plus 53; ARIA 2, 131 plus 35 to 131 plus 44. Over.

Roger. ARIA 6, 130:42 to 130:53; ARIA 2, 131:35 through 131:44.

9, Houston. Affirmative.

Apollo 9, Houston. About LOS. Stand by for block data at Hawaii, and I'll also give you a consumable update at Hawaii.

Roger. Understand, block data and consumables at Hawaii.

We probably ought to have a powerdown ... along about then?

Yes.

Oh, boy, it's a little bit warm, isn't it?

Where was that from, the Redstone?

Tananarive.

Oh.

So we have a long way to Hawaii.

Does anybody happen to know where that BIOMED stuff is? ...

Yes, it's in the medical kit -- ... the medical kit.

Hurry up and get it.

Huh?

... over there!
05 08 00 24  CMP  Wonder what ...
05 08 01 01  CDR  Oop, excuse me.
05 08 01 03  CMP  I think you might have got me.
05 08 01 10  LMP  What were you taking a picture of?
05 08 01 13  CMP  Sunrise through that hatch window.
05 08 01 17  LMP  Sunrise through the number 2 window.
05 08 01 20  CMP  It's even better now. There's some light. Do you have any ... over there, Rusty?
05 08 01 25  LMP  Yes.
05 08 01 36  CDR  Yes, it does.
05 08 02 38  LMP  Take it off and see.
05 08 03 15  CDR  Is it broken?
05 08 03 16  CMP  Looks like it. ...
05 08 03 28  LMP  Screwed up any ... pictures yet?
05 08 03 30  CMP  Oh. Is this wide angle? Whatever ...
05 08 03 34  CDR  ...
05 08 03 39  CMP  Aah.
05 08 03 44  LMP  That's right. ...
05 08 03 51  CMP  They may as well be there ... open or closed. Did it that time. The first two times - That's why I wondered when I took it off, I just heard it go click, but I didn't hear it go click-click. Heard click, but didn't go back click.
05 08 04 13  CDR  Very good ...
05 08 04 15  CMP  A quarter of a second.
05 08 04 17  LMP  I just heard it.
05 08 04 20  CMP  Click?
Click-click. It's getting a little higher than I figured.

That magazine doesn't fit on the other one, does it?

Yes.

It does? Click-click. Quarter of a second. ...

Click-click. That's not bad. Click-click.

That sounds about right.

Yes.

You know what I think we ought to do with that? We ought to stow that thing and let them look at it and decide --

Oh, yes, what the timing really is.

Yes, because I decided on about six different ones, and it looks like it's about - it looks like they're all different, but it looks like there are about four or five ... supposed to be - each one.

Yes. They could adjust the ... maybe --

Maybe - if they were consistent. Depending on when it happened.

I think you're right. We ought to stow that away somewhere.

Yes, sure do.

... all it was going to be was a simple little change of package.

No, I think ... Is that it, Dave?

Trouble is you know they take part of that film and process it. They just ... One frame out of the middle - one frame out of the middle to check i

You mean I'm going to play doctor for myself.
You want some help?
No, it's just the thought of me playing doctor.
It bothers me a little, too (laughter).
I bet they get a big kick out of having you do that. Oh, heck, Dave, at least you don't have to draw your own blood (laughter).
Boy, there's a squall line down there that's a classic example of a squall line. Really.
I'm afraid I...
See it? See that line of thunderstorms?
No, ... look out through your hatch window ...
Where did it go?
Shoot, I don't see it now. ... I lost it. Yes, way out that way; way in back (laughter).
Boy, this ... is falling apart.
Gosh.
Careful when you wash it off there; you're liable to get it really lost.
We're going to cross Vietnam this time. ... going across Vietnam, fellows.
Hey, should we turn on C?
Huh? Do what?
If you'd like to.
... U6 on the base to pilot.
There you go ... something "on the base to pilot."
TEMP is 709; winds 320 degrees at h; cleared to land.
320 at h; clear landing.
Roger. 44 percent FU; 13 percent hybrid DAP.

Okay, here we go. 127:44:13, 50, 16, 48, 17, 47, 17, 392, 30, 26, 26, 39, and then the redlines: 29, 37, 39, 39.

Roger. Dosimeter readouts - We got it all.

Want to tell him we'll get them later?

Ron, we'll have to do those dosimeters later. Would you call us at the next station and we'll pick them up?

We ought to get those things out and tape them on the wall somewhere.

Are you in the process of dumping things, there? ... for Scott? Would you get -

Okay.

(Laughter) That was a big one.

Hey, what the hell's going on? ... started moving in a funny direction. Well, I'm looking at a couple of them way out there, and they're going - Yes, that's what I was wondering. I - I got a -

Isn't that weird! Look at those - look at those - they're both going like hell. You're right - they're coming back this way.

Hey, you know what we're doing, Jim? We're looking ahead in orbit out there, at least I - I'm looking - I think almost down the orbit path; those damn things are coming back.

Yes, one of them came shooting right back past the right side of the spacecraft.

You - you're not on the intercom now, Jim.

They must have tremendous rotational velocity ...

Yes, they really do, they spin like mad, don't they? And they're also plastering your window.

CONFIDENTIAL
They must cling to the edge of the drain, and the bending moment must get too high or something huh?

No, I mean, why they go - why do they go out and then turn --

Oh, yes.

-- difference in the direction.

Maybe they - Do they close? Have you ever seen one actually turn or have you just seen it after it turns?

I've seen it after it turns --

Yes, so have I.

-- watch - watching a couple of them turn.

There's a tremendous velocity. Unusual.

Now here's one, sits right out in front of the spacecraft; it's spinning like mad, and now it's coming back.

Here comes three more.

If you could use your energy in the spacecraft, ... die.

Yes, that's right; it really is.

Holy smokes! Just look at that one! (Laughter)

That big piece?

(Laughter) If you ever got hit by one that size it'd kill you.

Yes. What, Dave? What?

Jim, can you see this one right here?

What did you say?

Yes. Is that one off? I've missed it.
Yes. ...

Did you get that one that went across in front of

Yes. Wait a second - Dave, be very careful of
those cracking ..., because that may come in two
pieces there.

Yes.

But if you tighten it down too tight ... If you
started off with that one, ... unscrewed ..., you
might not be able to get that off.

That's when the ... and give it a little squeeze.

Yes.

That ... came across in front of my window; came
all the way around the side and went out the back.

(Laughter) ... the curve; I saw one that I swear
was ...

There it goes, the big show has started.

Look at those big ones. Wow!

Yes. Here they come.

You know, I bet, if you'd let it dribble out real
slow, you'd really get big ones.

Here comes one back at us. Boing! It bounced off
the front of the spacecraft.

Not coming very fast, is it, Dave? Look, there's
one right there that actually - ... I can see it.

I know, I - One just turned around and came back
and hit the spacecraft, that I was watching. Here
comes another one.

Well, I saw this one curve and ricochet and go
back under the ... path. ...

Yes, man, I'm sitting here watching one - It turns
right around - it made a U-turn - and it's coming
back. Besides, it's going right -- it's going from right to left across the front of your window.

05 08 51 04 LMP And there's another one coming right now. Yoow!

05 08 51 26 CDR ...

05 08 51 31 LMP I hope it's gone down. Hey, you have the waste water tank servicing valve open. That's what happened.

05 08 51 48 LMP There it goes. Whoohoo! Look at that show.

05 08 51 56 CDR Fast one, wasn't he?

05 08 51 58 LMP My God. (Laughter) They're traffic whizzes. Her comes Florida down there, Jim.

05 08 52 18 CDR Yes.

05 08 52 24 LMP And here comes one right back through the whole damned storm.

05 08 52 26 CDR It has a lot higher velocity, too, doesn't it? ...

05 08 52 34 CMP Yes.

05 08 52 40 LMP Way out there, there's some of them that go 90 degrees to the --

05 08 52 45 CDR ... Maybe ... couple of particles out there.

05 08 52 51 LMP You know -- The last downlink -- cost me the last ... just before we ... him.

05 08 52 57 CDR Look out that window at the sunlight.

05 08 53 03 LMP Yes.

05 08 53 13 LMP Dave, get way down here and look out that window at the sunlight. Right into the sun? You ... Hey, I wonder if -- Hey, Jim, what -- what are our r doing? Can't they --

05 08 53 31 CDR Pick up ...

05 08 53 43 CDR Toward the -- The last few days -- According to Don Riggs, anyway, they want to try to get us to

CONFIDENTIAL
dump our waste water over - over some - tracking site. Some - These big telescopes - I think they call them the survey-type telescopes - so that they can watch the dispersion of the particles to tell something about whether they're going to hang around the spacecraft or the...

Hey, I could ... storage ... This is really something. Check ...

... do that.

How could you see the ..., Jim?

Oh, I'd try the ... put it on ...

Hey, I bet you put your ... right up against the window, you could probably see it even closer.

... 

Yes, that ... that small.

Oh, you're all the way down to 49 percent.

Did you get them all, Dave?

No, I didn't get ...

35.

29.

I guess we're really getting - 26 - 20 - but, my God, it goes down like a rock when it gets to 30.

Go ahead and shut it off.

You know, it's amazing. It dribbles down there until it gets to 30, and then it goes mmwhomp.

...

They didn't give us any time to purge that fuel cell, did they?

... Just before we go to bed.
What are you doing down there, Dave Scott?

... pretty.

You got a date on the ... the other night? Son of a gun.

Yes, ...

Going to change this homogenous atmosphere here to a positive cleanliness.

You know what I lost? I think I must have lost it during EVA. Can't see any other time I could have lost it. That's my tape.

Your tape. Oh, really?

... hide ...

Yes. ... came down off the peg ...

Oh, you got the valve open. That's a good warning. You know, if that warning ..., you'd run yourself out of oxygen.

(Laughter)

I'll tell you, ... sure have the mike ...

Yes, that's part ... cryo. Temperature control, isn't it?

Pressure.

Huh?

Yes, you do. Way up front here. Yes. Well, you guys are supposed to have one more than me. And I've got one on and one up there. You guys must have three. Hey, Jim. Are you guys down in from of my - if you're right in front of my suit, could you get my dosimeter right out of that pocket the...

Was there one in there?

Hey, we got 200 for the ... today. I think - 238 hours.
There's a piece of...

Whistle while you pee (singing).

Hey, Dave, thanks for the calls on that transmitting that thing.

Boy, that's really tough.

Yes, I know (laughter). Luckily, we had a good sensor. I said "Luckily, we had a good sensor."

You know, we ought to get that LM VOX.

With no A time, yes.

Hey, Dave, could you tell any difference between the antenna combination for that VHF test? I couldn't either. It sounded exactly the same whenever we did it, except when you got to the rendezvous configuration - on the rendezvous, Dave. Boy, all of a sudden things got garbled and I couldn't put - Yes. And I turned off my B receiver, and I turned off my DCR switch and all kinds of things, and I - I never could quite figure out why, but it seemed to get noisy when you went to that configuration. I never could figure it out.

Hey, Jim. Did your OPS work - check out okay on the - on the systems thing? What are we supposed to... that problem? Do you remember? 2 days, I remember, but - That's right, we just take the pressure - that's right; you're right.

I'm wondering how we can get rid of some. Throu the hose.

Hey, Dave, you ought to take a crap that way. Repeat that old wives' tale about not spitting into the wind or something. Hey, Jim, what time are we supposed to make that COMM check? (Laughter) Yes; okay, I'll make it now and note the timing. 120-129 - Okay, COMM TECH, 1, 2, 3, 4, 5; 5, 4, 3, 2, 1. 1, 2, 3, 4, 5; 5, 4, 3
2.1. Or in ... at 110, 11, 100, 101, - 100, 11, 101. And the time is 129:29. Okay.

Presumably, that was a CRYO PRESS; now, well, I don't know. No, it was O₂ FLOW HIGH. We dumping again?

Okay.

Hey, Jim, why don't you leave it open? It was - it was dumping quite a bit of stuff out. Yes. Right after you put that - the - valve back on the end there.

I guess it's done. Okay.

Okay. It's about done now. Oh, is that bright. Whoo!

Yes, you want it?

Yes, is that it?

Did - did you close the vent, Jim?

Yes, I guess so.

Huh!

... You don't think that had anything to do with the EVA, huh? Oh, hell, you wouldn't know. You ... EVA on anyway. It's really funny. Right around your eyes, you don't have it. It's almost like you had a pair of goggles on and you were skiing or something, you know, and - yes. You look like a chipmunk or something. It feels like a sunburn though. Kind of warm and throbbing. Yes, it looks a little duller red. It's still real red, but it's - Hey, where the hell are we?

China?

Yes, that's got to be China. Oh, man, there are some really interesting mountains down there. It's a geosyncline - or something.
LMP

05 10 10 34 LMP
We'll take a ... on 190.

05 10 10 58 LMP
Oh, yes, we ought to cycle these. 3 minutes on the O_2 fan.

05 10 11 40 LMP
Yes.

05 10 13 37 LMP
1, 2, 3, 4, 5; 5, 4, 3, 2, 1. Great. ...

05 10 14 33 LMP
Boy, that's a long purge on old fuel cell 2, I tell you. Gees!

05 10 14 53 LMP
Did - did we ever power down the spacecraft?

05 10 15 37 LMP
Yes.

05 10 15 44 LMP
Oh, what? The configuration?

05 10 15 49 LMP
The regular power on that ...?

05 10 17 04 LMP
We're not turning off the EMAG's either?

05 10 17 30 LMP
What am I turning off? Oh, the O_2 fan.

05 10 17 40 LMP
Oh, I was just trying to figure out what it - what it ... for.

05 10 17 46 LMP
Yes.

05 10 18 47 LMP
Boy, oh boy, that damn tank 2 won't come down.

05 10 18 58 LMP
Yes, and I don't want the damn thing waking me

05 10 19 06 LMP
You want to let it purge some more?

05 10 19 13 LMP
(Laughter) 15 minutes! Yes!

05 10 19 34 LMP
Hey, are we supposed to purge O_2 in the other

05 10 19 45 LMP
Oh, where's the - Hey, why don't you write down what time we did it, Dave? 130:20 - Okay?

05 10 19 59 LMP
Here you go.

05 10 20 21 CMP
Did you get it?

05 10 20 22 LMP
No, I haven't purged it.
Oh - Well, hell, I'll have to figure it out. Just a minute. It was at that Hawaii pass - I didn't - the time was about 01, so, it must have been about 18 minutes.

No, that - that time is all off, Dave. We get there about 130:01. It was about 18 minutes, I guess - 17 minutes.

Yes, we stopped that at the same time.

Yes.

Oh, okay. That's right.

Now we want to go to H2 tank to - fan, ON. Man, I - I'll bet that thing is going to go hooink.

Dave, you want to do exercises?

You want it out right now? Okay. I'll do it - I got a project. You want the bag? That's a good - that's a pretty good place for it, actually - so you don't knock your head on it.

Oh, where'd the tissues go, again?

I think there are two out, Jim, somewhere. Hey, what - what compartment are the towels in?

Are they wrapped up or something, Jim? Are they wrapped up in something?

Okay.

Yes, I got them. They were already out.

Oh, okay.


Hey, Dave, the only configuring you have to do up there is turn that H2 fan on. I think all the rest of it is all done.

Okay. You want to sleep under the couch, Jim?
Tell y'all what. Why don't we ...? One way to make it last.

Boy, does that poor gas thing - Hey! We got to chlorinate this thing!

We got to chlorinate the damn thing tonight.

You ready for the headset, Jim?

Okay, I'm on - I'm signaling through. Ooh.

9, Houston. Have a good night. We'll see you tomorrow.

Guten näben.

Should have a good pass; we'll see you tomorrow.

Hey, have a good night; see you tomorrow.

Apollo 9, this is Houston.

Go ahead, Houston; Apollo 9.

Houston, Apollo 9.

Ring-a-ring-a-ring! The alarm clock has just gone off, Apollo 9.

Roger, Houston.

Houston, Apollo 9.

Roger. We're reading you loud and clear.

Oh, very well.

How do you read me, Houston?

And a cheery good morning.

Houston, how do you read me?

I read you loud and clear.

Okay. Well, we're with you. What would you like to do first?
Okay. I've got some block data; I've got a short consumables pad, and I've got some changes to the flight plan. So, your choice.

Well, I've got the consumables sitting in front of me. Why don't you do that one?

Okay, and the - I'm not reading any of the quads; that's the same thing as the - as they gave you last night. I'm starting on the cryo O₂. That is 365, and if you compare it to the one you had be - -

---

095 Bravo, plus 333, minus 1640, 150:10:27, 28h4; 096 Alfa, plus 291, minus 1650, 151:44:00, 28h4; 097 Charlie Charlie, plus 174, minus 1610, 153:19:44, 28h4; 098 Charlie Charlie, plus 095, minus 1710, 154:51:55, 28h4; with a pitch trim of minus 0.89 and yaw trim of minus 1.15.

Oh, okay. You were sort of garbled there - 335, okay?

Okay, here comes the second one. 092 1 Bravo, plus 318, minus 0625, 14h:19:36, 28h4; 093 1 Alfa, plus 269, minus 0680, 145:52:18, 28h4.

Roger. Verify both of those.

Houston, Apollo 9. I'd like to have a map update, please.

Roger. Carnarvon at 43, and could we get a map update then?

Want it well done?

Yes.

... 145 ...

(Laughter)

Houston ..., don't they?

Want?
05 20 18 30 CDR    ... to get up.
05 20 18 32 LMP    Yes, I thought they were trying to wake us up with reveille or something.
05 20 18 42 CDR    Yes. You got about an hour or two to sleep.
05 20 18 55 LMP    You got what?
05 20 19 01 LMP    You got what?
05 20 19 14 CMP    No, no ... stay awake. You don't think there are any ...?
05 20 19 53 CDR    Okay.
05 20 20 04 LMP    Hey, I tried the classic sleep last night - like this.
05 20 20 07 CDR    (Laughter)
05 20 20 15 LMP    Just relax, you're not in front of anything.
05 20 20 20 CMP    ... loads P37.
05 20 20 26 CDR    God, it's too hot in here.
05 20 21 09 LMP    We ought to see some pretty scenery today. Okay, we're going to go right over Morocco.
05 20 21 24 CMP    I see them there and there and there.
05 20 22 47 CMP    Oh, I screwed up. ...
05 20 22 50 CDR    Well, I'm going to check you. You mind if I get a verification from the ground?
05 20 23 09 LMP    Hey, we're going to go right - No, that isn't too good.
05 20 23 12 CMP    I thought I screwed up, but I screwed up because I thought I screwed up.
05 20 23 14 LMP    Oh.
05 20 23 16 CMP    But I didn't screw up.
05 20 23 19 CDR    Not Dave Scott! ... screw up Jim.
Go!
Yes.
Put her in here and then checked all this -
Oh, are we?
State vector ...
Okay.
... camera?
My what? Oh? I'm not sure that it's the one up here, Dave.
I can't see it.
There's another camera in here, Dave.
Buh?
How about it?
What?
That must be the ... REPRESS. No.
Sure looks like a lot over.
I don't know.
What?
It looks like you've lost it.
(Laughter)
... anybody else -
No, no, no, no.
Check, it's 140. Oh, no!
Oh, yes!
05 20 29 27 LMP  We went by - and that's right, too. Yes. Add - ...
add.
05 20 29 39 CDR  That's right.
05 20 29 59 LMP  You like those, huh? Hey, we're going to go right over Carnarvon. Oh, man.
05 20 30 07 CMP  ... Carnarvon.
05 20 30 11 CDR  ... We should have been able to see Australia ...
05 20 30 34 CMP  Right here over Carnarvon. I've got you.
05 20 30 50 LMP  Get a map out.
05 20 31 03 CDR  The next time ..., we'll ... (laughter).
05 20 31 33 LMP  Yes, why don't we take it out? Yes, can you get the length? ...
05 20 31 47 LMP  We don't need all that other stuff. Take it out.
05 20 32 03 CDR  I'm going to have a hot chocolate. ... hot chocolate.
05 20 32 28 CDR  That's what I'm going to do.
05 20 32 31 LMP  ... get breakfast out of here.
05 20 32 36 CMP  There's only -
05 20 33 05 CDR  Hey, get to eating there - ... hot chocolate.
05 20 33 16 LMP  Okay -
05 20 33 18 CMP  Day 5, B and D.
05 20 33 47 CMP  ... hot stuff.
05 20 33 51 CDR  Yes, I got it.
05 20 33 54 LMP  Okay.
05 20 34 11 CMP  Yes, there isn't - On day 7, I've got one, you've got one - and Rusty's got one. All three day 7's have one.
05 20 34 26 CMP ... get two day 7's out ...
05 20 35 18 CDR Dave.
05 20 35 19 CMP Huh?
05 20 35 20 CDR Which day ...
05 20 35 23 CMP I can tell you I know it doesn't have any hot chocolate in it, but I'll tell you what it is. Do you?
05 20 35 30 CDR Number 2, isn't it?
05 20 35 31 CMP I don't know. Okay, bacon, applesauce, sugar-coated corn flakes, brownies, grapefruit, and grapes.
05 20 35 43 CMP Yes.
05 20 35 52 CMP Yes.
05 20 35 57 CMP I'll give you this one.
05 20 35 58 CDR No, no. I got cupcakes.
05 20 36 18 LMP How did I get salmon salad for breakfast?
05 20 37 39 LMP There we go!
05 20 38 03 CMP Here's your ...
05 20 38 04 LMP Okay. Okay. I ...
05 20 38 12 CMP I'll just keep it in these bags.
05 20 38 14 LMP No, ...
05 20 38 45 LMP Yes, why don't you go change it for us? Huh? What could be plainer than that?
05 20 39 37 LMP Who wants a squirt of water?
05 20 39 39 CMP I will if you let me cut this. Alright.
05 20 40 12 LMP Yes, right in the ...
Okay.

That's Thursday morning -

Yes.

In any case, I think we ought to ...

Oh, yes, make sure we get that.

But I --

...

... that we have ... specially ... get up ...

Yes.

Oh, we're going to come right across the southern tip of Florida on this one - between Florida and Cuba.

Boy, there's your longhorn steer.

Let's see if we can't find another place to put this thing.

Maybe we can get some pictures - that they want. Good ...

When is our first - our activity with the ...?

Oh, okay.

Okay, here's our first target ... that they want. Right there, we come right up across here and so we go right through that area. Right up here.

You still using that ..., Dave?

Not the computer -

... or what?

I'll keep my eye on it -

No, it doesn't matter. I just want to go through -
We're going to be pretty busy pretty quick. Yes, we have three landmarks - we got - just ... - we got all this - Here, let me see. Then, we come down here and do ... then, after tracking, we got three landmarks - oh, two.

Yes, yes!

SO 65. You guys probably ought to try a couple landmark tracks, huh?

At least, give each man the experience ...

... time, get data out of three ...

No - We're not here to find out if we can train people to ...

Accuracy is what you need - to pinpoint where you're at. Yes, ... view it with the sextant and I'm not sure that's ... AUTO optics - ... target in the sextant, too. You have perfect pointing or you're picking up a ... telescope and the sextant -

If you know the land.

-- if you know the land, you're in.

Hey, look here, my thermal underwear was ...

I couldn't - zip my bag up until -

I was very comfortable last night.

Yes, I started dreaming last night.

Hey, I had a dream last night, too. I ...

... he hollered out when ... end I could just see him reaching into ... and having a snake bite him. I don't know what made me think of that.

Hey, Rusty, let me get that -

I don't know where it is right now.

Okay. Let me tweak the optics and have my hot chocolate ...
05 21 01 31 LMP  I want to take one, too.
05 21 02 16 LMP  You got all those breakfasts out, didn't you, Jim?
05 21 02 31 LMP  Yes, that must be your toothbrush down in your S-thing. Whatever your number is, huh?
05 21 03 00 LMP  Hey, I was thinking of reentry stowage last night, too. We're not going to have to make some more changes to that. ... stowage garbage here sometime today.
05 21 48 04 CDR  Are you sure you did, Dave? How do you know?
05 21 48 05 CMP  ... What are you doing, Jim?
05 21 48 10 CDR  Oh, yes, yes, ...
05 21 48 50 CMP  Ooh, look at that! Holy cow, that's really neat.
05 21 48 53 LMP  You getting some good pictures down there?
05 21 48 55 CMP  C'my; oh boy! Boy, that's spectacular!
05 21 49 07 LMP  Hey, you got some lava flows or something coming up. Looks like it - it's black stuff anyway.
05 21 49 15 CMP  Yes, whooo. Boy, those are great! Isn't that spectacular?
05 21 49 41 CMP  It shifts like that, too, you know? I'll turn them on.
05 21 49 49 CDR  If you just knew where you were.
05 21 49 51 LMP  Oh, I can tell you where you are. 50 - Dave, go ahead and take it for another 2 minutes, and then we ought to go to the hatch window and start taking them - Oblique a little bit to the north and get Libya in there. Boy, those are beautiful!
05 21 50 21 CDR  That is really pretty.
05 21 50 36 CMP  I don't want to use all the film left, though. I've already used a hundred.
05 21 50 45 LMP  Not really.
Here's a little coming across right now. We can hit that one. I want to get that one there. Right here is where we're going to shoot that one.

There's where Lawrence of Arabia was. Yes, that reminds me of old Lawrence baby. God, that's spectacular. Look at the way it glows in there. Isn't that pretty? That's really something.

Hey, this sightseeing's great.

Hey, Dave, why don't you eat and let me take some out the hatch window here? Of this Libyan thing.

Here?

Let me get some here.

Let me take one more, Rusty.

Okay. Go ahead. I know.

Here's a --

... -- here's some more of that ... You're getting all the contours and the sand blowing and that stuff.

Okay, well, look. No, you got a better view there anyway. Go ahead. I thought it rolled farther and 53:30 is when you come across that Libya thing, so --

Okay.

No, I'm not saying that; I'm just saying keep taking pictures through 53:30.

Those clouds are going to move in.

A great big cloud. Ooh. Whoo! Geology and clouds. How can you beat that?

Oh, there is where a meteor hit, too. I got a meteor hole out there, right in the middle of all the lava and all that jazz.
Do you really? Where is it?
Yes, look at it right there. Looks like a big hole. A big round --
Oh, yes.
See?
Hey, look at --
What?
-- and the flow --
Yes.
-- the stuff flows around it.
Cuts into the flow?
Yes, right there.
Take a couple of them of that, Dave. ...
No, that's over on the coast.
Well, one's enough.
Yes, we're - we're way in there.
... is much more expensive than that.
That's real pretty.
Dave, the only thing is those - those other lines - those windblown lines kind of spread out and went around it, though. Kind of smacks like maybe it's a hill or something.
Okay, we're in the Sudan now, Dave.
Oh, yes?
Yes. And we'll be coming up on the Ethiopian plateau here, pretty quick, another couple of minutes. If you want to get some for Mr. Selassie.
Oh, yes.

Gimbal lock. Gimbal lock.

Okay, I'll get it.

Yes, sir.

I'll give you two points if you catch me.

Which one, Jim? No, I thought you said you wanted one.

Will we be going across here, Rusty?

Yes, we went across there and --

Right by that square, huh?

Right below it. Right -- you're down here.

That way?

Yes, and we're coming right across here right now.

Huh!

What is it, Cloudy? Here's one they want, just north of Addis Ababa, but we're --

Cloudy right now.

...

Okay, that's a good idea. Hey, Dave, why don't you finish out this camera right now? Okay?

Oh, we got a whole batch.

Yes.

We've millions of them. Yes, look ... The easiest -- the easiest ones to get are down here. There's a couple of them -- I think there's a small one in there, Jim. As a matter of fact, up on this end. A and B both have pictures left on them.

Gosh, that's really pretty.
Where's the photo log, Dave?

Photo - photo log. Oh, it's probably - No, yes, here it is; I got it.

You want this other film over there, Rusty?

Yes, I want - I want the empty one. Whichever one you've emptied.

... the little ones, either one of them.

Okay, go ahead and empty the little one, and then I'll put this new film back on it.

I thought maybe you wanted ...

Yes, the last one I took was a big one, magazine C ... 85.

85? Okay.

Jim, that was REV 89, wasn't it, that update? You remember? Was the map update REV 89?

You've got to get it over there now, Rusty.

Yes, but I think we're - Yes, we're over the Indian Ocean, right?

Yes.

Yes.

Yes, this thing says 65, and it - and it still looks like it's got film in it. 66. Looks like it's going to go up to 70.

Sure that ... take too much?

No, it doesn't say, because this just has the command module film in it, see, and it doesn't have the LM film back. And we didn't have any small ones in the command module, so - You know what we ought to do is, we ought to pick some fairly uninteresting shots and shoot away like mad and see - just to see what happens. See if it stops. Well. If
that's the case, we ought to quit then. Dave, what numbers did you take? You have any idea?

Yes, I'm through 65. I took four.

So you took 61 through 65? No, you must have taken more than that, because --

No really, I ... That must have been 59 through 65.

-- because you said there were only a couple -- you said there were about four left or something.

You said that; Jim said that, there were only a couple left. You said there were only a couple left ... right? Little ones? But I went up through 65 and I don't know whether ...

What MAG is it?

F.

Okay.

This one.

125 and 45.

No, just mine, here.

Yes. Hand me that camera, Dave, and I'll --

... Hasselblad? Yes. I don't think that's a good idea. Hey, no, I want the small one, Dave. Well, here, I'll change the small one for you.

Jim, you want to stow this one?

Sure ...

Yes. Okay, Dave, you got 40 left on there.

Have we ever found that? Is that part of the photo log? Yes, it is.
We're going to come right across between Sydney and Brisbane.

Just north of Adelaide. Oh, yes, because it's already getting dark. Yes, we have anything this night pass? We've - we've got to do that nominal align again. Right?

We do all the fuel cell purges and all that stuff? ...

No, as a matter of fact, no, we never did finish that part of our checklist. That's a good point.

That's a good idea.

... go across that plateau ...

He didn't mark anything for day 6. Today is day 7, isn't it? Yes, because 5 was the rendezvous day, yes.

Want to do a DSKY lamp test, David? Get the DAP activated; you don't want to do an erasable dump; in plane, align CDC; you're going to do that, huh?

Should I purge 8, too?

...

Purge hydrogen, okay.

Oh, turn the cryo fans on. Stir up the cryos a bit.

Let's go ahead and start your alignment, Davey.

Dave, how about turning your floods down over the 14:37.

It's 2.0.

Are we rolling left, Dave?
We're rolling right.

We're rolling right?

Okay.

Oh, my God!

Ohh —

Wow!

Hey, wasn't that something?

Man!

Let's see the — What's the time of that first tracking ...?

142:56.

Hey, that gouge for Atria off the bottom of Scorpio really works nice.

Dave, where are those cards that you had that were just the plain slick?

Hey, I've got one here. You want this one?

Let me turn around — Let me have that pad again. Thank you.

You got any tissue stashed away — around here? Do you have any tissue stashed away? Here, I'll find them. Don't — don't go looking for them. You have too much work to do.

Here.

Oh, okay. Thank you.

Is there anything I can do to help you guys over there?

Think so, Rusty. Hang on to this thing. Keep it available for both Dave and I.

Reading, or anything like that?
Yes, I tell you, there is one thing you can do. Get the flight plan and make sure we've done all that stuff that we're supposed to do, starting --

I'll get it.

Here, start on this page, and make sure we've done all that stuff.

Get the filter changed this morning?

I got the ...

Okay, the "chlorinate potable water" we're not going to do.

No.

The block data. Did they give you block data, Dave?

Yes. I got it over ...

Okay.

Did you damp the rates, Jim?

Yes. Damped the rates.

Okay.

Okay, Dave, it's 142:36.

20 minutes.

Alright, we've - we've done everything so far, Jim.

Okay. Thank you.

That's not right.

Why not?

You got the right landmark?

Yes. Looks pretty rough to me. That's why we're back to them.

05 22 42 23 CMP 021?
508 Day 6

05 22 42 26 CDR  Huh?
05 22 42 30 CMP  The landmark ID is 21?
05 22 42 32 CDR  Yes.
05 22 42 33 CMP  And we're going by the Redstone? 4 minutes before the landmark?
05 22 42 37 CDR  We're very short of track, Dave.
05 22 42 39 CMP  Huh?
05 22 42 40 LMP  I got it right here.
05 22 42 42 CDR  Look at the track.
05 22 42 45 LMP  Here, Dave. We're coming up here. On this REV.
05 22 42 54 CMP  Okay.
05 22 42 56 CDR  We should be coming across the - the ... of the tip of Baja. You might be able to see that. Then you can see the Gulf, and then across Mexico and into the Gulf of Mexico. You're going to see -
05 22 43 12 CMP  This is north of ground track, right?
05 22 43 15 CDR  South of ground track. We'll be facing south. If we were facing north, we could get some nice picture of the states.
05 22 43 20 LMP  We're going right over Houston.
05 22 43 22 CDR  Okay, but we probably won't see it.
05 22 43 24 LMP  This map update's out of date then already. According to here, we're going right over Houston, or - -
05 22 43 31 CMP  Yes.
05 22 43 32 LMP  Yes.
05 22 43 33 CMP  If the target's south of track - -
05 22 43 35 CDR  The target's Corpus Christi.

CONFIDENTIAL
Yes, this map is already out of date, then, because this — On this route, it shows us going south of Houston by a long way.

That doesn't sound very right, for some reason.

No. Let me check this ...

Yes, I think so, because it's still dark out there. How can you get a landmark ...?

We're at 44 now. It's starting to get light up to it. It's coming up on sunrise.

Oh, really?

You know, it's not dark at Corpus Christi.

I know it.

It shouldn't be.

Well, I don't know what time it is —

A quarter to — a quarter to 9 at Corpus Christi.

Oh, really?

Yes.

... 123, 123. Well, the map is still set right, but — it could be that the inclination was what's different, but — Why don't we ask them what our inclination is ...

Boy, that's a pretty sun - sunrise. Woowee!

Well, it would have to be a hell of a difference in inclination. We'd have to be around 38 degrees to be north of Houston, if this map is right.

Look at that, Jim.

Would you believe I see a satellite ricocheting across the sky out there?
Where, Jim?

Just right over the sunset. The center. I don't want the map, Rusty.

Okay.

Sure looks like it, doesn't it? Is he really moving? I'm not sure he's moving, Jim.

Oh, looks like he's moving with respect to the ground. He should be moving with respect to the sky.

I got him on the edge of my window, and he doesn't seem to be doing anything.

I'll be darned.

What—what's the second landmark?

On the coast of Africa.

Oh, okay.

... Dave, I can't hear you. Is your interphone on?

Yes. Can you hear me now?

Yes, I want to be sure I can hear you when we're doing this.

Yes.

Ye old spacecraft is in the sun.

Good.

True ... ye old telescope isn't in the sun.

Okay. I'm going to start rolling us out now.

Okay. Now it comes in.

Can you see the horizon?
05 22 46 58  CMP  Not yet. It's dark.
05 22 47 01  CMP  ... can't really tell ...
05 22 47 02  CDR  The horizon's not dark. It's well lighted.
05 22 47 05  CMP  Let me take a look.
05 22 47 07  CDR  And I think I'm banked around enough here for you.
05 22 47 10  CMP  You're pointing south.
05 22 47 12  CDR  We're pointing south. Want to pitch down about 30 degrees.
05 22 47 20  CMP  You know, the middle two words you did there, completely disappeared.
05 22 47 24  CDR  ...
05 22 47 25  CMP  Yes. You said, "I'm banked around" and then you said that "mm-mm-mm" and "I'm pointing you south" or something.
05 22 47 32  CDR  Hmm!
05 22 47 37  LMP  This mike seems to be very directional.
05 22 47 39  CDR  Yes.
05 22 47 48  LMP  Boy, this thruster over here really kicks out a bunch of crap. You ... fire yaw right?
05 22 47 55  CDR  Yes.
05 22 47 56  LMP  Okay.
05 22 48 13  CMP  Oh, I'm getting to the horizon. Good, Jim.
05 22 48 15  CDR  That okay there?
05 22 48 16  CMP  Yes.
05 22 48 17  CDR  Alright, I'll - You want to stop it right there?
05 22 48 19  CMP  That's - that's -
05 22 48 20  CDR  Huh?
-- Oh, you could roll - No, I think that'll be fine, Jim.

Now the horizon ought to be parallel to the bottom of your window.

... Yes, that's a pretty good gouge.

Okay, Davey, I've got the attitude I'm going to...

Okay.

And it's 14250:24.

Your times and everything are real well - real good, and AUTO optics seems to be doing real good.

Okay, copy. I'm going to lose you in about 30 seconds off Canary. We'll see you in Tananarive at 35.

Okay.

Next on there is south of track 2. One's way south; one's way north. No, one's way south and one's a little north.

Alright. ... landmark -.

Hey, yes, that - that's good, Rusty, telling me what - what you see on there, because I can - I don't have to take my eye out of there.

Yes, if that's ... pass me the thing there; I want to see if I really got a picture of the landmark. Whether I was looking that far south of track.

Okay, this is the one I got a picture of. I thought so, because it didn't look exactly like that.

Yes, I know.

Did you see that? Well, then I got a picture of it today. I looked at the shape of him, and it didn't look exactly like that.

... makes him more ...

CONFIDENTIAL
05 23 23 04  LMP  It's hard to tell - The scale ...
05 23 23 08  CDR  I think this is ...
05 23 23 15  LMP  How far north of the track were we on that one? 60 miles? I want to go to ACKNOWLEDGE, here.
05 23 23 23  CMP  Hey, I tell you, that's - very interesting.
05 23 23 28  LMP  Dave's got the ...
05 23 23 31  CMP  0649 000. That means I took five perfect ones.
05 23 23 39  CDR  No, we just ... to be perfect.
05 23 23 41  LMP  No, that means our state vector is perfect, David.
05 23 23 43  CMP  No, I didn't get any marks there, I guess. Hey, I wonder if we were doing something wrong procedurally.
05 23 23 48  CDR  Well, I don't think so.
05 23 23 51  CMP  We didn't have any trouble on the ... this time.
05 23 23 53  CDR  I know it.
05 23 24 21  CMP  I'll take it. ... update the state vector.
05 23 24 26  CDR  Did you get any marks here?
05 23 24 28  CMP  Five.
05 23 24 29  CDR  Did your mark counter say five ...?
05 23 24 31  CMP  No.
05 23 24 32  CDR  Can you check the mark counter?
05 23 24 33  CMP  Yes.
05 23 24 35  LMP  Maybe you have to check it before, Dave.
05 23 24 38  CMP  Maybe I do. Maybe before - maybe before I proceed - No, the mark counter should stay put. Let me look into that. I zero the mark counter when I proceed to - to incorporate them, but I don't do that in a rendezvous program.

CONFIDENTIAL
Oh, it got them. Hey, good show! It did incorporate the marks, and my doggone DMAP-V were zero.

What's that? How do you know that -

That's a new latitude and longitude.

Of - of what? Of the point you marked?

Yes. That's what our state - that's what our updated state vector is.

Well, wait a minute now. That looks like we got the wrong option. Looks like we're locating what's on the ground, rather than our state vector.

Well, you just changed it. We've just changed our state vector, and we reidentified the landmark coordinates with our new state vector. That's what that is.

Well, that - that sounds like we're ... a landmark.

Yes, that's the --

No, no, no, no, no - no landmark does that.

Hey, Dave, what's that latitude? Should that latitude be the point? ...

Latitude.

Yes.

That's the point.

Well, if you're a lati - if you're doing a known landmark, shouldn't that come up the same?

No, no, not after you update the state vector.

No, you're saying that, just because you update the state vector, you can't use a point on the ground. You don't change that, Dave.

Yes, you do.

Dave, how can you? That's fixed to the earth.
I know, but - it's - it's fixed to the earth, but not in the state vector. It's not --

What you're trying to do is change your state vector, aren't you? Not the - not that point on the ground.

... 0649, not you.

Now wait a minute. This tells you where your landmark - that landmark coordinate - where the coordinates of that landmark are now due to the incorporation of the marks into the state vector.

Yes, but that sounds to me like that's an unknown landmark.

No, that's a known landmark. Now it says if the known landmark is there.

I don't - That doesn't make sense to me.

That doesn't to me either, Dave.

Well, that's the way it is.

Okay. Fine --

Well, how would you do an unknown landmark, then?

Okay, an unknown landmark you'd take some point, and it'll define the coordinates of that landmark; and then --

Yes. Isn't that what this is doing here?

No, this has changed the coordinates of that landmark, I put in - Okay, let's start from the beginning. Okay, we got a state vector. I put in the first bunch of coordinates for the state vector. Then I said, "Okay, I want to go to that point on the world, AUTO optics." Okay. It goes to that point on the world; I take a bunch of marks, and I tell the state vector that that point on the world is - is there, relative to us. Okay, then it says, "Alright." When I incorporate those marks, that goes in and says, "What are the
coordinates of that point on the world, latitude-and longitude-wise, from the update? Then I ask the DAP and this is what it tells me the coordinates for that point are.

05 23 27 46 CDR Oh, it seems like if you know - -
05 23 27 48 CMP Well, that's the way it works, Jim.
05 23 27 49 CDR -- well, it seems, Dave, if you're using a known landmark, that that's the input; and the output, the thing that you're refining, is your known - is your orbit; it's not your knowledge of where it's fixed down on the ground - -
05 23 27 57 CMP That's right.
05 23 27 58 CDR -- because that's the thing that the whole update is based on. Do you see what I mean?
05 23 28 03 CMP Yes, but this - -
05 23 28 04 CDR You can even - -
05 23 28 05 CMP -- Jim, in that landmark coordinates - the landmark coordinates for that landmark have now changed, because we updated the state vector.
05 23 28 13 CDR But they really haven't changed. Your update - That point - that point's fixed on the ground.
05 23 28 16 CMP I know, but ... our state vector.
05 23 28 17 CDR ... drop out our DELTA-V.
05 23 28 19 CMP That's right. How about giving me my landmark for a second - -
05 23 28 23 LMP Yes.
05 23 28 24 CMP -- so I can find the ... Do you know what time it is and all?
05 23 28 41 CMP It's after we get into daylight; it's -
05 23 28 44 CDR Oh, we've got to go through a night pass first.
Where's the block update?
Did I give you that?
No, no. You kept that down there.
... I had it.
Could I have that? Next landmark is 10 plus 42.
Hey, I - I know this is right, so I guess there's no sense - -
Well.
-- going any further. I even got it written down right here in the book.
Alright. It doesn't make sense, David. I don't see how you can - I ... if you know your orbit perfectly, you're changing the world underneath you.
Right.
If you are not remapping the world, you're trying to find out where you are with respect to it.
That's right.
And if you get a DELTA-R or DELTA-V display, what you're saying is that that thing should never be anything but zero, and I can't believe that that would be right.
Well, okay.
It looks to me like - Do you have any option codes going in there, Dave?
Yes, I've got a bunch of them; let me get ready for the next one.
Yes, go ahead ... 
I'll get ready - Teach you how to do it when we get through.
Okay, go ahead.
I'm not interested in learning; I want to make sure that we're just doing it right, now.

I'm doing it as best I know how.

Okay.

I've never had any time to spend on it --

I realize that.

-- ... this writeup.

I realize that.

I'm just telling you what the writeup says, Jim. So I guess we can't change the writeup.

Where did you get the writeup, Dave?

No, but I guess the thing is, Dave, by chance, and I don't say we are; but if by chance we are doing it wrong, we have time to correct it.

Hey - oh, shoot! What are the numbers on those things, Dave?

10 ...

Oh, shoot! We got a whole - a whole hour.

Yes. That's what I said; we've got to go through the nightside pass.

Oh, oh, okay.

Let me see the ... flight plan there a minute.

Okay, let's just look through here ... let me get a rundown ...

Okay.

... is off of California.

Okay, it all makes sense to me. I don't know why you guys - it didn't make sense to you.
Well, Dave, it just seems like if you're trying to refine your orbit, which it seems to me is what you're - is what we're trying to do —

That's right.

— that you ... be moving the points around on the ground, but you'd be getting DELTA-R's and DELTA-V's into the thing.

Okay, well, let's - let's - let me go through it again. I give it - We got a state vector.

Right.

And I give it a certain latitude and longitude.

Right, for a known landmark.

Right.

You give it the - the actual latitude and longitude of the landmark.

Yes.

I give it a - some landmark. I know there's a point on the ground, and I know that the latitude and longitude of that point really is something.

Yes, yes, if you - if you - know that.

That's not an unknown; that's a known ...

Right.

Okay. Then I go to AUTO optics, and it drives ... somewhere over here. Because the state vector isn't perfect.

Right.

Okay, and it thinks that the latitude and longitude - say they're, you know, 3 and 1.

Yes.
It thinks they're over there and really they're right there.

Right.

Okay. Now, I go through and I mark, and I improve my statement.

Right.

Okay. Now it says that it thinks the latitude and longitude is here, and it's better.

No, no --

Why isn't it?

-- No, let's go back even further. If this is the real point, and I have an orbit that runs down here, I think I'm on an orbit that runs down here. If this is the real point, and I take the mark, then it points over here.

What points over there?

The optics. I'm going to -- I'm going to --

You can't take a mark over there.

Alright, wait. I do AUTO optics on this point over here. Landmark's through there, and the point over here. But you see where it is, and you move the optics over here.

Right.

And you make a mark.

Right.

This is known. The thing that's not known is your orbit.

No, no, that's -- that's --

That's known.

No, it's not. It doesn't have it stored in its mind.
05 23 33 24 CDR No, but that's what you're putting in there. You're putting in the latitude and longitude.

05 23 33 27 CMP That's right, but it's —

05 23 33 28 CDR It's a known landmark. Now, let me finish. You've got an orbit which you're not sure of. You've got a landmark which you're positive about. And you take - You do AUTO optics, and it points the thing over here. You say, "That's not it." You go over here to your known landmark, take some marks on the thing, and then you approve them. You can't approve this because this is known. The unknown is here.

05 23 33 48 CMP Right.

05 23 33 49 CDR So, rather than move the landmark from here to here, move the orbit from here to here.

05 23 33 52 CMP That's right.

05 23 33 53 CDR Okay. So you should get a DELTA-R and a DELTA-V to move the orbit across here, and not a change in latitude and longitude moving the point from here to here.

05 23 34 00 CMP Okay. Well, that's - I -

05 23 34 04 CDR Now, I don't know how to do the program - but that's just what it seemed like to me. I've never even looked at the program.

05 23 34 10 CMP I know it; I really - I haven't looked at it much either, but I've looked at it enough to know that there are a number of different options -

05 23 34 16 CDR Yes.

05 23 34 17 CMP — and it's not a known landmark in the sense that you have known landmarks around the moon.

05 23 34 21 CDR No, those are unknown landmarks.

05 23 34 23 CMP No, those are known landmarks. Those are known, stored landmarks. And we have two kinds of known landmarks: stored and unstored.

05 23 34 30 CDR Okay.
Okay, this is an unstored, known landmark.

Okay.

Not a stored landmark.

Right.

Around the moon you have —

You'll have to put it in latitude and longitude to ..., if you want to milk it.

That's right.

Okay.

So what you're saying — now, that point on the ground —

I'm saying that that point is the known thing, and we inputted it, that we ought to get a change in the orbit rather than a change in the landmark. Do you see what I mean?

... 

Huh?

Yes, but I think we're getting that. This says that the coordinates, the state vector coordinates of the landmarks that I marked on, now are the —

But that's not right.

That's right, because you're comparing the state vector. It still doesn't know perfectly where this place is; but it says that that point on the ground there, that I marked on, was located at this set of coordinates. Now, what I can do with this is store this in the computer, this data.

Okay.

Then when we come back on the next RIV — —

Okay.
if it's stored in the computer, I can say, "Go there."

Okay, if you're trying to do some of that with a lunar landmark tracking option, where you don't know the coordinates or anything, maybe what you're saying is right; but, on the earth, that sure doesn't make sense to me. It would seem that the thing we ought to change is the DELTA-R and DELTA-V.

... through Tananarive.

Hello, Houston; Apollo 9.

... through Tananarive.

Roger. I have an update to your landmark tracking update.

Who's got the book?

I got it.

Stand by 1.

Okay.

Where did it go?

Where's the book?

I don't know. You just handed it to me. I saw it.

Obviously – obviously, I've got it. Okay. Go ahead with it.

Okay, for landmark number 10, your next one coming up, your time of closest approach is 14h:30:07. And now the east coast is overcast so you're not going to be able to get your Carolina pass in there. Your fourth landmark will be number 212; the time over the horizon, 14h:50:3600; time of closest approach, 14h:54:10. And since we have moved it, we want to delete that 16-millimeter film of that – of the thunderstorm over Africa. We'll get something on that later.
Okay, and this 212, is that north or south of track?

Houston, Apollo 9 here.

I tell you, I think for the purposes of this pass, it really doesn't make any difference, Dave.

No, I don't think it does either, but we might as well try and work it right.

Yes, and we ought to work it right; and it seems to me, if you get a DELTA-R and a DELTA-V display, it ought to switch the DELTA-R's and the DELTA-V's.

You're right. I agree with that.

Okay, Apollo 9. Situation is normal here at Tananarive, but I'm not reading you, and we'll see you at Carnarvon at 51. We'll still be here for about another 3 minutes, but Carnarvon at 51.

Roger, Houston; Apollo 9. Do you read?

Roger; read you loud and clear.

Okay, is landmark 212 north or south of track?

I'm sorry. It's 3h miles south of track.

Okay, I'll read back: 212; 1h4:50:36; 3h south; closest approach, 1h4:5h:10; closest approach to landmark 10 is 1h4:30:07.

Roger. Your readback is correct, and we're deleting the 16-millimeter film of the African thunderstorm.

Okay, delete 16-millimeter film. Rusty, I don't know where that hunk of information is.

Okay, and your readback is correct. Thank you.

What hunk of information?

About thunderstorm picture. I guess that's in the flight plan, isn't it? Or is that on here?

The flight plan. Dave, what's the offset designator?
05 23 39 32  CMP  That's meaningless in earth orbit. It's zero.
05 23 39 36  IMP  Okay. Oh, yes, okay. I didn't know that.
05 23 40 12  CDR  Okay, both of these are south of track again, Dave, so we can go ahead and -
05 23 40 15  CMP  Okay.
05 23 40 18  IMP  How about - There must be some more stuff on this that's really pertinent to the technique rather than the program. I'll ... I identify the landmark.
05 23 40 31  CMP  Okay.
05 23 40 32  IMP  And --
05 23 40 3½ CMP  Why don't you log this stuff, Rusty? We ought to get a - You got a piece of paper where we can log this?
05 23 40 39  IMP  Yes, I'm logging it.
05 23 40 40  CC  And Apollo 9, Houston. If you're still - reading me, we - there is a transducer that might be erratic on your helium pressure on quad Baker. It will not affect our gating or our predictions; I just want to let you know this in case you see some funny readings.
05 23 41 03  CDR  Okay, did you hear what the transducer was, anybody?
05 23 41 05  CMP  Yes, helium pressure.
05 23 41 06  CDR  Helium. Okay. Roger, Houston. Helium on quad B.
05 23 41 1½  CMP  Hey! Here's the - update. Let me see what that -
05 23 42 09  CDR  Hey, that's another nice one, right on the coast.
05 23 42 1½ IMP  Dave, what do you put into a landmark ID if it's latitude and longitude, but not a - not an ID number?
05 23 42 20  CMP  Zero zero. Or you can put in a 01 if you got it stored. You can store one landmark in earth orbit.
05 23 42 20  CDR
Dave, can I ask you a question here?

Did you say something?

Yes, can I ask you a question here?

Well, yes, but I would like to sit here and think about this stuff for a while. What?

Okay. No --

I really would like to go through it and see what --

Okay, I'm - I'm - I'm - I don't - I don't - That's alright. I'm just trying to come up with clues also.

Boy, you know, we've got a pretty high cabin TEMP ...

That's what I thought ...

Oh, yes?

Did it really?

Yes. Especially toward the end of the daylight pass, it tends to get up there, and then it drops down a little bit, when it's at night ... It might do that --

Hey, the only thing that puzzles me is the DELTA-R and DELTA-V, and that ought to have a change ..., but --

Yes.

-- this, I think, is the flow where you change - where now if we wanted to go back to that landmark again, we can store this data --

Yes.

-- and the AUTO optics would take this and point it better, because it knows better - where the thing is. It stays on the mark, to do any good.
Dave, let me ask you a question.

Okay.

You get an 0689 over here before you take the mark, and that's where you load in the stuff, right?

Yes.

Now, if, after you take the mark, you get the 71 again, and, yes, I guess you put a 1 in there, right?

Yes.

Okay, now, when you get this one, is this the same 89, or is this a new one?

That's the same one that allows you to check what you put in before.

Okay.

... That's weird as hell. What happens on that last display if you PROCEED?

It stores it.

PROCEED stores, 32 doesn't store, and 34 exits, huh?

That's right. Then you have - then you store your one landmark for earth orbit. Now, the next time, I can call that landmark.

Certainly isn't very explicit, is it?

No, it's not very explicit.

Hey, I wish to hell we had a GSOP.

Hey, listen, I went through the GSOP, and it was useless.

Was it...
Well, I didn't have time to go through it - I skimmed through it one time, and I asked Vince Parker to go through it and straighten it out and simplify things for earth orbit. It was really designed for lunar orbit, and I just didn't have time to - to dig into it. I got instructions ...

Right, by me. ...

Well, I don't know, I think everything you've been saying sure gets backed up by what's in there --

No, except ... 0649 or use this display.

No, I said that --

I can't believe that.

-- couldn't understand where that 0649 has to be. If that would give us a number, then I would think that I really understood it, but I don't get any number.

The thing that bothers - It looks like the difference between earth known landmarks and lunar known landmarks is that - that earth known landmarks, you know them; but lunar known landmarks, you don't really know them.

They're stored, too.

Yes. You do really approve your knowledge of the lunar landmark.

That's why it bothers me. It's almost just like there's an option code way somewhere in the beginning --

That's right.

That's not even in here.

-- Yes, that's not even in that program thing; that makes the difference.

Hey, am I supposed to do an alignment - here?

Oh, shoot, I think you are.
05 23 50 13 CMP  ... unfortunately, I'm not in the right attitude. Should be -
05 23 50 15 CDR  Sorry.
05 23 50 16 LMP  Yes, planet option - Jupiter.
05 23 50 17 CMP  Yes. No, I think ... well ...
05 23 50 22 LMP  ... see if I can find it ...
05 23 50 27 CMP  Oh, boy!
05 23 50 28 CDR  Why don't we get out the star chart, so we can figure out where Jupiter was? ... see if he's over there.
05 23 50 36 LMP  Okay. Big Jupe's by Leo.
05 23 50 40 CDR  Is he?
05 23 50 41 LMP  I think so.
05 23 50 54 CMP  False cross?
05 23 50 56 LMP  Either by Leo or Scorpio, I don't know.
05 23 50 58 CMP  No, it's right by Spica.
05 23 51 00 LMP  Okay, good.
05 23 51 01 CMP  Makes an equilateral triangle with Corvus and Spica.
05 23 51 07 LMP  Okay. Great! That's over by Leo.
06 00 01 55  CDR  That's nice to have it back there, isn't it?
06 00 02 05  CMP  Hey, what does the flight plan say on the kind of
alignment I'm doing here? Nominal again?
06 00 02 10  LMP  Yes, you're doing a REFSDMAT.
06 00 02 11  CDR  ... REFSDMAT.
06 00 02 12  CMP  Oh, yes. Thank you.
06 00 02 14  LMP  (Laughter)
06 00 02 16  CMP  Well, I thought maybe you wanted to go through the
nominal again.
06 00 02 18  LMP  You got two guys watching you, buddy.
06 00 02 20  CMP  Yes, I can tell that.
06 00 02 22  CDR  Actually, the one before was a REFSDMAT, too, I
believe.
06 00 02 24  LMP  No, the last one was a nominal to the time. Then
this one is a REFSDMAT to the same alignment.
06 00 02 35  CMP  It looks like you did the REFS - you did the
nominal, earlier, too, didn't you?
06 00 02 38  LMP  Yes, we just did one extra nominal before we got
our state-vector update.
06 00 02 56  LMP  Sure are. (Laughter) Here, I'll get it, Jim.
06 00 03 11  LMP  How are we doing? Holy smoke, we're upside down!
06 00 03 16  CDR  Yes. Now I don't know where in the heck we are.
06 00 03 21  LMP  Hey, I can give you a good idea, Jim. Let me see -
Leo's ahead - Hey, you're in pretty good shape, now.
06 00 03 26  CDR  I think we are ...
Yes, I can see the Big Dipper; and, therefore, Leo's right down there. Oh, he may be down a little bit too far though, Jim.

Hey, I don't think ... --

We may have - we may have to pitch down.

Hey, let me take a look out here and see if I can find him, either.

Hey, Dave, here, look at this. Turn up your lights for just a second.

Okay, look. See, here he is here. Right here's --

Okay, Leo is right by the tail.

Yes, just down below the tail.

... Hey, wait. He's just coming up over the horizon. Boy, he's not very bright.

Well, let's give it the real test and see if AUTO optics will find it.

Yes, man.

Out of the field of view.

Yes, I'm going to pitch down.

From what I can see, we sure do. Out of 90 degrees.

Yes, I think we've got to pitch down a long way, Jim. Hey, hey, wait - wait until they call it from the ground on this one.

Alright, we've got quite a ways to go.

But he should come up in the bottom of your field of view, Dave.

Okay, ...
Let's see, I've got - What?

Yes, Jin, see, the Big Dipper is over here, and from the Big Dipper you go down that way to get to Leo, because he's down there.

Heck, no, you're in the southern sky, Jim. I'm looking at the Southern Cross right now.

Yes.

We've got to pitch down and roll a little bit right.

Yes, roll right. Yes.

... right out of the ...

Yes, in fact, if you roll right now more, Jim, he's going to come up in Dave's field of view from the bottom right.

He's right about over there now.

I'm sorry - Roll left. I'm sorry. God damn it! I'm backwards.

What?

I'm sorry, Jim. Yes, roll left. I'm sorry. God damn!

... 

Yes, yes. You're right. I - I'm looking at them. I got my gyros R cross Z. Okay, Dave, he should be coming into your field from the lower right-hand side.

Yes, I think it is. Let me see, go right up from -

... radar ...

You're doing good. I've got to where I can track in there a little bit ... Okay, he should be coming in there now. Just keep ... to rolling, keep rolling.
Corvus, that's Corvus. Okay, Corvus. There's Spica, a little bit more. There he comes. I think I got him ...; let's see if I can see ...

Say again, Houston; Apollo 9.

Say again about Jupe [Jupiter].

We're still tracking it down here.

Okay, I've got him, Jim.

Hey, do you want to stop here?

Yes.

We just found him.

I want to see if AUTO optics will do the trick here, while we're at it.

Oh, look at that thing! Wouldn't do it.

Wouldn't do it!

No. It goes out of the field of view. I could have the wrong -

Numbers in?

I just copied them right out of the book. We'll mark on it.

David, if you put in the wrong numbers, it'll really torque you around the wrong way, babe. Oh, no, that's just for AUTO optics. Is that - let me see, is that right? No, you've got to get the right numbers in.

You have to have the right numbers for the ...

Yes, you sure do. So if AUTO optics doesn't work, that's because you must have the wrong numbers. Hey, why don't you mark on them and let me look at some numbers, and we can always reject it? Let me see if I can puzzle that out.
534 Day 7

CONFIDENTIAL

06 01 10 22 CMP I can't mark on him, until I get by the numbers.

06 01 10 24 LMP Oh, that's right; that's right. You've got to mark and then load. Backwards, from the way --

06 01 10 29 CMP No, I'm sorry. No - Well, I've got the right numbers. GMT, we're third month, ninth day, and 16th hour, aren't we? Tell me that. We launched on the third day.

06 01 10 44 CDR Yes.

06 01 10 46 CMP Of March, which is the third third, right?

06 01 10 47 IMP Right.

06 01 10 48 CMP Okay, now tell me where we are now. I figure we're third day, ninth month, and 16th hour.

06 01 10 52 IMP No, we're not ninth month; that's sure.

06 01 10 55 CMP I mean ninth - third month, ninth day.

06 01 10 59 CDR Sixth day.

06 01 11 01 IMP Hey, Smokey, is this the ninth?

06 01 11 08 IMP Thank you. We've kind of lost track here. The ninth.

06 01 11 16 CDR Do you have to put in right-now's time?

06 01 11 21 CMP You have to put in right-now's coordinates, yes.

06 01 11 23 CDR ...

06 01 11 24 CMP Oh, no, but it's not - No, it doesn't move that fast, Jim.

06 01 11 26 CDR Yes. Well, I'm just trying to --

06 01 11 41 CDR Pretty close to 6 hours, isn't it?

06 01 11 47 CMP It depends on the planet. Venus is real fast and Mars is fairly fast, and Jupiter is real slow. I don't know what the --

06 01 11 59 CDR How about orbits --

CONFIDENTIAL
06 00 12 00 CMP  -- ... timing --
06 00 12 08 CDR  We got the update book, okay?
06 00 12 11 CMP  -- ... I'll try one more. Hey, it got through. Okay.
06 00 12 17 CDR  Alright.
06 00 12 18 LMP  Just got to it, huh?
06 00 12 20 CMP  I don't understand it. I took it out of AUTO to try and just get to it, so I could mark on it and see how it comes up. The AUTO optics didn't work.
06 00 12 32 LMP  They did that time. Great.
06 00 12 37 CMP  No, I'm just going to go ahead and - go over here and mark on it.
06 00 13 06 CMP  Which ... should I mark on?
06 00 13 09 CDR  (Laughter) Have you got her?
06 00 13 11 CMP  Yes, I've got it. I'm - I'm going - I don't understand why AUTO optics rejected it, but we'll see what kind of data we get.
06 00 13 19 LMP  Well, I know that's --
06 00 13 20 CDR  If it's all screwed up, don't torque the platform around --
06 00 13 23 CMP  Don't worry.
06 00 13 24 CDR  -- until - get the next landmark tracking in.
06 00 13 34 CMP  Okay, one mark on Jupiter. Proceed, and then we go get another fairly deep star here.
06 00 13 43 LMP  That's 0171, Dave. Don't you have to put Jupiter in there?
06 00 13 47 CMP  Well, I just - Yes, that says --
06 00 13 51 LMP  What star did you mark on?
536 Day 7

<table>
<thead>
<tr>
<th>Time</th>
<th>Designation</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>06 00 13 52</td>
<td>CMP</td>
<td>- - that I was proceed here and go - go 688; there's Jupiter.</td>
</tr>
<tr>
<td>06 00 13 55</td>
<td>IMP</td>
<td>Oh, okay.</td>
</tr>
<tr>
<td>06 00 13 56</td>
<td>CMP</td>
<td>Yes, and we proceed here. Just not there, and we've got to load a new star. I just had to set all this in.</td>
</tr>
<tr>
<td>06 00 14 04</td>
<td>IMP</td>
<td>Planets are zero, huh?</td>
</tr>
<tr>
<td>06 00 14 06</td>
<td>CMP</td>
<td>Yes. ...</td>
</tr>
<tr>
<td>06 00 14 07</td>
<td>CDR</td>
<td>...</td>
</tr>
<tr>
<td>06 00 14 09</td>
<td>CMP</td>
<td>Okay, I'm going to go get Acrux ...</td>
</tr>
<tr>
<td>06 00 14 22</td>
<td>CMP</td>
<td>Get a good - good angle ...</td>
</tr>
<tr>
<td>06 00 14 25</td>
<td>CDR</td>
<td>Would you believe we have 12 minutes until the - we start tracking on the next landmark?</td>
</tr>
<tr>
<td>06 00 14 29</td>
<td>CMP</td>
<td>Yes, I'll be through in a jiff.</td>
</tr>
<tr>
<td>06 00 14 30</td>
<td>CDR</td>
<td>No, I'm just trying to keep you up to date on where you are.</td>
</tr>
<tr>
<td>06 00 14 33</td>
<td>CMP</td>
<td>Yes, that's fine. Good. I'm just -</td>
</tr>
<tr>
<td>06 00 14 35</td>
<td>CDR</td>
<td>I'm not rushing you.</td>
</tr>
<tr>
<td>06 00 14 36</td>
<td>CMP</td>
<td>... hurry me. Acrux, 49.</td>
</tr>
<tr>
<td>06 00 14 43</td>
<td>CDR</td>
<td>What did I do with the update book?</td>
</tr>
<tr>
<td>06 00 14 45</td>
<td>LMP</td>
<td>This it?</td>
</tr>
<tr>
<td>06 00 14 46</td>
<td>CDR</td>
<td>Yes.</td>
</tr>
<tr>
<td>06 00 14 49</td>
<td>CMP</td>
<td>We'll skip that NAV check. ...</td>
</tr>
<tr>
<td>06 00 15 00</td>
<td>IMP</td>
<td>You can probably get that NAV check back there. Get it while Dave's getting his map set up.</td>
</tr>
<tr>
<td>06 00 15 06</td>
<td>CDR</td>
<td>Yes, I've got to get the spacecraft in the right spot, too. We're a long way from it.</td>
</tr>
</tbody>
</table>
Okay. Tell you what, want me to run the NAV check after Dave gets back?

Okay.

Yes, that's a nothing.

Let me -

Jim, could you take your rates out, please?

Yes.

I can't hold it. Okay, that's good.

How about that in the nick of time?

Put it back - -

Let's see what it comes out, David.

-- put it back in the ...

67.94 degrees.

That's not very good, is it?

Sure isn't.

I would suggest we reject that?

Yes. I want to - I will, but I want to write it down here.

(Laughter)

Yes.

Okay, I'm going to start maneuvering, Dave, for the next attitude.

Fine.

... Oh, yes.

Hey, you guys give me credit for being able to find Jupiter and Acrux?
06 00 16 22 IMP No (laughter).
06 00 16 23 CDR Yes. Yes.
06 00 16 26 IMP (Laugh) But not knowing the day of the month. (Laugh)
06 00 16 29 CMP I want you to check my numbers; I must have done something wrong with the numbers.
06 00 16 31 CDR Yes.
06 00 16 32 IMP Jupiter I'll give you credit for; Acrux - Let me think of Acrux as a half-bright star ...
06 00 17 04 CMP Hey, I think we got the ...
06 00 17 06 CDR ...
06 00 17 18 IMP Hey, Dave, let me get this ...
06 00 17 20 CMP Yes. Okay.
06 00 17 21 IMP Just tell me what landmark it is.
06 00 17 23 CMP Okay.
06 00 17 33 IMP You want that? Okay, I'm going to take the computer and make a NAV check, Dave, for just a second.
06 00 17 40 CMP Yes, ...
06 00 17 57 CMP Jim, we're in the hundreds of hours now.
06 00 18 01 CDR Holy ...
06 00 18 03 CMP ...
06 00 18 07 CMP Oh, boy, we're going to go into Punta Yayahmoko, Mexico. The west tip of Point Yayahmoko.
06 00 18 25 CDR Okay.
06 00 18 28 IMP You've got the computer, Dave, and we're - we got a good NAV check.
06 00 18 33 CMP Okay.
06 00 47 26 CMP ... Once we get the high spacecraft rates, then it's pretty easy to track it with the sextant.

06 00 47 37 CDR Stu, if we do any of these things tomorrow, we might jack up the rate in that erasable load. Okay?

06 00 47 44 CC Real good, Jim.

06 00 48 07 IMP Let's see, we're supposed to do a state vector - supposed to do a P52 again and ... to Jupiter.

06 00 48 15 CDR Yes.

06 00 48 20 CDR Houston, on this next night pass, we'll do that P52 to Jupiter if we can.

06 00 48 38 CDR You broke up.

06 00 48 42 IMP Maybe we just lost him.

06 00 48 45 CDR Okay, Davey, we're 5 minutes and 25 seconds out from being overhead.

06 00 48 49 CMP Okay, it's coming up on the horizon. Hey, the telescope hasn't hung up for a long time.

06 00 48 55 CDR I think it just needs to be exercised a little.

06 00 48 56 CMP Yes, maybe it does, because it's doing pretty good now.

06 00 48 58 CDR Maybe it's just the attitude we're going through ...

06 00 49 04 CMP ... It's doing the whole region where it used to get stuck.

06 00 49 18 CDR Tell you what we'll do, Rusty. When I finish this thing, I'll pitch it down a little so that the windows will be pointed down towards the ground when we go across Africa, and you can get some of that stuff down there at the bottom.

06 00 49 31 IMP Okay. Say, what's the time of this landmark?

06 00 49 43 CDR Time over it?

06 00 49 44 IMP Yes.
06 00 49 45 CDR 144:52.
06 00 49 51 LMP Check. What number is it?
06 00 49 54 CDR 212.
06 00 49 56 CMP Hey, that's the smartest set of optics I ever saw.
06 00 50 02 CDR Know what it just did?
06 00 50 03 LMP What?
06 00 50 30 CDR We hit the 370-degrees limit on shaft around the other way, and it stopped and came all the way be around the other way. That is a smart fellow! I about that. I was looking through the sextant, it started moving real fast and I thought, "Oh oh" (Laughter) Gosh, come look at - Oh, look at the clouds - gray clouds.
06 00 50 31 LMP Oh, yes, get some pictures of that, Rusty.
06 00 50 34 CDR Yes. That stuff ... right down there?
06 00 50 40 LMP Oh, yes, get some pictures of that, Rusty. ... -
06 00 50 42 CDR ... - Okay, Jim, hey about --
06 00 50 45 LMP ... this set up here, too, get some of those as go across.
06 00 50 50 CDR Mark when I tell you I can identify it, okay? Yes, I'll get that, Dave; I'm logging all the crew log in.
06 00 50 52 CMP Okay.
06 00 50 54 CDR Okay, in 2 minutes ... must be over the hill ...
06 00 51 04 LMP No, it probably is --
06 00 51 05 CDR ... 3 minutes and 11 seconds out from being direct overhead.
06 00 51 08 CMP Yes, I'm with you. I can't see it yet.
06 00 51 12 CDR You and I are having trouble speaking time to each other.

CONFIDENTIAL
06 00 51 16  LMP  No, I'm with you on the time, there.
06 00 51 19  CMP  Oh, there's an island. By damn.
06 00 51 20  CDR  Yes, those - We're right around the Canaries. Those look like those are very ...
06 00 51 24  CMP  Holy smoke.
06 00 51 27  CDR  Try to get as many of them as you can.
06 00 51 28  CMP  Oh, here is a tremendous vortex pattern out here in front of us, Rusty. You got to get those!
06 00 51 33  LMP  I'm getting all these islands.
06 00 51 34  CDR  Oh, yes. Where?
06 00 51 36  LMP  Those cloud patterns - those ... they'll lose their gourds over that.
06 00 51 41  CMP  Hey, you guys.
06 00 51 44  CDR  Sorry, Dave (laughter). You're 2 minutes and 25 seconds out.
06 00 51 48  LMP  You are a big part of the flight, Dave, but you're not everything, I'm sorry.
06 00 51 51  CMP  Oh.
06 00 51 52  CDR  I'm going to start the rates now, so that we don't --
06 00 51 56  LMP  Oh, there's clouds down there --
06 00 51 58  CDR  Are there really?
06 00 52 02  LMP  Hey, I think we got a picture of every one of the Canaries.
06 00 52 05  CDR  Okay, get a picture of these clouds, too.
06 00 52 06  LMP  Oh, yes.
06 00 52 07  CDR  They don't look as vortexy at this angle.
06 00 52 10  LMP  No, I already got them all, Jim.
06 00 52 11  CDR  Okay.
06 00 52 18  CDR  You're a minute 51 out.
06 00 52 20  CMP  Okay. It's tracking, but I haven't been able to identify it yet, because of the clouds.
06 00 52 26  LMP  You don't think we ought to start rolling now, Jim?
06 00 52 27  CDR  Yes, I already have. Oh, don't take any for just a minute here. Dave, let me get up a little farther. Tell me before you start taking them --
06 00 52 33  CMP  Okay.
06 00 52 34  CDR  -- I can take some of the rate off.
06 00 52 41  LMP  It's getting cloudy.
06 00 52 45  CMP  Is that another piece of land we're ... up over here?
06 00 52 49  LMP  Houston, 9. No, there isn't, Dave.
06 00 52 51  CC  Go ahead, 9.
06 00 52 52  LMP  Roger. Did you compute that into degrees per second, yet?
06 00 52 57  CC  That's negative. I'm sorry, we don't have it.
06 00 53 00  LMP  Okay.
06 00 53 02  CDR  It looks like we're in pretty good shape right here, Dave; we're finally under ... tenths of a degree per second, and we should --
06 00 53 10  CMP  If we could find the thing, yes, we would be.
06 00 53 19  LMP  Oh, boy, it really is cloudy down there.
06 00 53 22  CMP  Yes, it really is. We're not having much luck.
06 00 53 25  LMP  Well, it's just a question of, is it going to clear right at the coastline.
06 00 53 28  CMP  No, it's not.
06 00 53 29  LMP  It's not?
Day 7

06 00 53 30 CDR  Oh, yes - No - Dave, I think it's coming out into the clear right now. I can see - -

06 00 53 36 CMP  ... you're right, Jim. Okay, let me know when.

06 00 53 39 CDR  You've got 30 - you have 30 seconds to go.

06 00 53 43 LMP  You've got a flashing 51.

06 00 53 45 CMP  Okay. I can't use it, though.

06 00 53 50 CDR  Okay, we're going to be just right on the roll rate, it looks like. We've got 19 seconds to go until we're - -

06 00 53 56 CMP  Oh, I've lost it.

06 00 53 57 CDR  Did you identify it yet?

06 00 53 59 CMP  I thought I did. It's really tough down there; it's hazy.

06 00 54 03 CDR  I'll ...

06 00 54 04 CMP  Oh, now, I got it.

06 00 54 05 CDR  You got it?

06 00 54 06 CMP  Yes - -

06 00 54 07 CDR  Okay.

06 00 54 08 CMP  - - ... get a picture of it.

06 00 54 09 CDR  I flew right over it right now.

06 00 54 10 CMP  How do I read - Oh, reject mark; that's it. Hey, that might be an idea - Oh, no, rejects it automatically. The sextant is no good at all; it's too hazy.

06 00 54 23 CDR  Yes.

06 00 54 29 CMP  Roll, Jim, roll.

06 00 54 35 CDR  Program alarm.

CONFIDENTIAL
We're going to have to slow down the roll --

Yes.

-- or else get ahead of it, and then slow it down.

That's what I did, and we went right over the thing at 0.4 degree per second.

Why don't you hit the reject on that? The hell with it, the RESET, I mean. ... get another one.

Yes. Could you roll it up? I might be able to see it if you could just crank it on around.

Okay, I've got a program alarm again.

Yes, it's just the ...

Yes, why don't we reset it so we know?

Boy, that sextant is useless when it's hazy like that.

Okay, is that enough, I put in --

No, you got to go more. It's - The culprits are the side of the spacecraft right now. It's coming, it's coming. Keep cutting at it.

No.

Now?

No, you've got to go more.

I'm going more.

Oh, it's over the horizon now.

Doggone, not a - What?

Pretty damn close.

Yes, Dave, ...

Okay, let's give it up, I guess.
Okay, I think you got two marks in, Dave, before it gave the program alarm.

Okay. Yes, don't - don't - Well, it's coming. It almost looks like you got a pitchdown and I can see it. Right in there, that's right.

It might be.

What!

Forget it, Jim.

We got to be past it.

Don't use any more fuel.

I'm not; I'm just taking the rates out now.

Okay, Houston; Apollo 9.

No, they're not on.

Oh, they're not, okay.

No.

Yes, I got two real good marks on it, when we were right overhead, but I just couldn't find it --

Yes.

-- through those cloud covers. It's a good landmark.

Hey, I kind of think that we've demonstrated the technique works fine.

Yes.

Yes, it really was hazy down there, wasn't it?

Yes. Gee, and the sextant is just - almost useless in the - -

Really?
546 Day 7

CONFIDENTIAL

06 00 56 50 CMP
Oh, I couldn't see any definition. The telescope wasn't bad, but the sextant was really - There's a lot of reflection - That's something that I'm going to ask them about. Some stuff that I'm seeing through the sextant - There's a double image in the sextant, one image is the --

06 00 57 08 CDR
Why don't you call off that program alarm? I hate to see it clunking around, there. There's a double image in the sextant? Yes.

06 00 57 27 CDR
You rejected one mark. Was that because it was the wrong target or you just --

06 00 57 30 CMP
Yes, it was the wrong target.

06 00 57 32 CDR
It was very hazy. I was looking out there a second and, "Well, there isn't any land out there at all." There wasn't any land out there at all, and all of a sudden, I could just barely see the coastline through the haze.

06 00 57 40 CMP
Yes.

06 00 57 41 CDR
And it wasn't like we were coming up on it this way; we were already over it, we're just going down the coast like this.

06 00 57 54 CDR
... in Houston. It still has a pretty good ... in there.

06 00 57 58 CMP
It's 11 o'clock in Houston unless my watch stopped. Yes, 11 o'clock.

06 00 58 50 CMP
Hey, I did a perfect on doing 0649 again.

06 00 58 52 CDR
That's right, you're really good there. Why don't you change the landmark on the other side of the earth?

06 00 59 41 CMP
Hey, that was an interesting exercise.

06 00 59 43 CDR
Boy, I'll tell you; I don't think we ought to get any pictures out here, Rusty. It's just nothing but clouds, and the way the sun is shining on the clouds. You just can't even hardly see the water. Really had a low angle here ...
Hey, why don't we put this back to LATCH?

Where do we go next? An SO 69?

Yes.

Why don't I get it out and put it up right now?

Yes, that's what I was just thinking.

Good; I'd like to come up and sit down and write for a while on all of this stuff -

Okay.

Hey, do we get to do any more? I think if we have a clear one now, you know, where we get a good clear target, we ought to be able to get some real good landmarks. That one I did yesterday afternoon for practice, that was clear as a bell.

Yes. I bet we could really - even with setting that roll rate, so you don't have to get - You fix it on that. Because, man, it's really easy to track. I mean, boy, it's good in that RESOLVE mode; boy, you can hold it right down at the point.

Yes, Dave, you're supposed to do another REFPOINT here, another 10 minutes or so.

I'd like to do that right.

Okay, I'll tell you what. While you're getting set up for that here's the numbers.

... right now. Dave, we're coming over the coast of Africa.

Have you got those numbers? Yes, the ones in the middle there; I've interpolated them -

Oh, good, good. Okay, let me write them on my checklist.

How, let's find out again where all this mess is. Up to the north. Doggone, you know it's dark over southern Africa already?
That's surprising. There's the coastline right down there.

Yes, right down there.

No pictures were to be taken now, huh?

No, it was all socked in, and then it - it's dark right down there.

You know, that's like a noon launch, and this is South Africa, but -

That's no fun; real-time it.

Hey, I'm seeing stars in the daytime. How do you like that? I've got a lit horizon, and I'm seeing stars. And what am I looking at? I'm looking at urine dump! I may be looking at the Donnola. I can't be; I'm looking south. I'm looking at - No wonder, I'm looking at the - either the false cross or the Southern Cross - I may be looking at the Southern Cross. That's not too surprising then that I can see it in the daytime - Yes, I'm looking at the Southern Cross, because I can also see ...

Hey, I'd say roll left.

Roll left?

Yes. Is that what you would say? That's what I would say.

That when it's - that's when the ... we're banked about that.

Oh, wait a minute now; hold on. Where is it from the Southern Cross, Dave?
From the Southern Cross, if you go - Can I say "up"? Does that make sense?

Okay, then we don't want to roll left - we want to pitch up.

It's up from the third Cross. Go from Acrux up through the Cross.

Okay, and which way then, to the right or the left?

Almost straight.

Okay, then pitch up, Jim.

Boy, look at the crap that's coming out of those thrusters, will you? (Laughter)

It's amazing, isn't it?

You notice - They don't even - they don't go out as fast as - -

No.

- - say, the water dump does. Yes, it's -

Well, there's a star over there; what's that? You mean, there's nothing out there except that little fellow?

Boy, a whole bunch of stars. Codles of them.

Ooh, do they grow them big in Africa. Those thunderstorms down there are really wingdingers.

Got a very interesting double star out here ... There are these two real close together. Hm!

Okay, I can see Jupiter.

Can you?

Yes.
Good. Oh, let's see... out the middle window.

You see it, Jim? It's right out in front of you. It's up - just a little up and to the left of you -

I don't see any stars out there.

You don't?

No, I got Acrux.

Above the horizon, Jim?

Is that it right above the horizon?

Yes.

Yes, I got Acrux alright now.

Well, that was the thing I said, "Well, I see something out there; it must be a planet."

Yes, that's it; it is; it's called Jupiter, big Jupe with the red spot.

Over here to the left. I don't see any other stars around. I don't see - -

Yes, well, Gienah's down to the right of them, and Denebola is up there - -

... turn out my lights.

- - and Regulus is up there, and - - and there went a satellite above it; in fact, there's two of them going right over - Holy smokes, are they moving. That's funny, two of them - one right behind the other.

Hey, I just looked out there and saw some of the stuff that was - that was from the thrusters going by that looked like a satellite.

No, it's going the other way. And it's dark, I think -

How we doing, Dave?
Well, you're doing pretty good; I'm a culprit as far as Houston goes.

(Laughter)

Ouch.

You're doing pretty good ...

No, it's not dark out there. Do that again, Jim. Look at that; big ball of white stuff that goes out there.

Yes, but there's a black spot in the middle of it. What the hell is the black spot; it's a shadow of something.

Let me come up here and look out these windows, see what you guys are talking about.

Hey, look out this window here, Dave.

What do you see?

... Ready? Look straight out the center.

Hey! You know what that is? That's our own shadow; the sun is directly behind us. Gegenschein.

(Laughter) Yes, it looks like it.

Hey, we need a movie of that, Jim –

Think our camera would take a picture of that?

That interior stuff would. Maybe it would. The sun must be directly behind our heads ...

Get Jupiter, will you?

We're not hitting the ...

Sorry about that. It's just about on our X-axis now.

Is AUTO optics ...

I haven't got it yet.
Oh, hey; let's all turn the lights way down when Dave is going to do that, because we're looking right at the gegenschein, too; Jim, we might want to try and see that.

I've already seen her once; let me look and see if I can find her again. Yes, it looks like gegenschein, and airflow — airglow, I mean, and all kinds of funny games like that on Gemini IV. By gosh, they were all there.

Apollo 9, Houston through Tamanarive.

Roger, Houston; Apollo 9. Reading you loud and clear.

They're all there; do you see the gegenschein?

All I see is the thing out of my ...

Apollo 9, this is Houston. I am not reading you. I may be coming through to you. If so, on the P52 alignment, I'd like to have you check the unit vectors for Jupiter on the last page of section 7.

Last page of section 7 something.

Yes. Roger; we got that, Houston. Do you read? Let me try the other antenna.

He has already said he's not reading us.

Well, yes, but I'm going to switch antennas then.

Oh, yes, he's just telling us that — where the numbers are here, huh?

Yes.

Yes.

Houston, we got the numbers on that.

Okay, Jim, you're in —

Okay, Apollo 9. I got that transmission.

... okay?
Yes.

Alright, we'll stop you here.

AUTO optics is driving; AUTO optics has driv;
AUTO optics is on Jupiter.

Beautiful.

Right in the center. Very, very good. Okay - stop the rates, old buddy.

I think they're all stopped.

Now that we got the right numbers in there, it works pretty good.

Will you turn your lights off, Dave, when you mark?

Turn them off anyway.

Okay.

... thunderstorms down there. Whoose!

Well, I'm looking right where it's supposed to be, and I'll be damned if I see it.

Where's it supposed to be now?

An equilateral triangle between Regor, Denebola, and then down below the line. Gee -

Well, I don't understand that.

What did you get?

Huh. It shifted the vectors on me when I just went from one to another. That's very interesting. Had to load - I've got to reload it for telling it, "Yes, it did that." Hah!

The other one was a different noun, wasn't it, Dave?

Yes, one of those nouns - No, they're both NOUN 83.
That is unusual.
Yes.
Apollo 9, this is Houston. Our COM is pretty bad. I'm going to wait until over Carnarvon to give you your 89 65 pad; and that will be Carnarvon about 24.
Roger, Houston; over Carnarvon.
Okay.
Just can't quite get over it.
Did you see it in Gemini?
Yes.
Yes.
You could see the gegenschein?
Yes.
How did it look?
... program alarm here. It says that Acrux isn't there. Well, baloney! Manual RIGHT and ...
Where is everything going? Oh, no wonder - we're losing - we're --
Hey, we picked up a rate.
Ohh, great!
Let me stop the rate for you.
Yes, that's a good idea. Ohh, is that blinding - ohh! Hey, as a matter of fact, Jim, could you roll back left?
Sure, roll left. Roll left.
You ought to have Monkfort there and maybe Antares.
I have that - that's what I wanted; okay, that's alright now.

You want me to go some more or you want to stop.

That's good; I got Menkent. Oh! Blast! When you are dark adapted, that really blinds you. You got your old buddy. ... Yes. Boy, that moon really, really wipes things out. Whoa!

It's a big help in some ways, and it's pretty bad other ways.

Yes, in the telescope, it - you know, it sort of degrades things that aren't too good anyway.

... that's not bad.

How many did you get?

0.04. I'll do it over, but I was right on it.

Well, hey, Dave, that could be those coordinates?

Yes, that's not too bad.

You better write that number down, that -

I'm writing it - Well, I'm writing it all down.
The numbers and the stars, what they use, and all that sort of thing.

Can you see the bands on Jupiter, Dave?

Pardon?

Can you see the bands on Jupiter?

The bands? No, I can't, Rusty. It looks almost like the moon. You know, it's a solid white.

Well, okay, I'm pretty darned well dark adapted and I just can't see a gegenschein at all.

I'm just not getting down that far.

No, it's way over here, Jim. The torquing angle aren't very big.
Yes, they sure aren't ... not at all, isn't it?

Yes, ... 

Okay, Jim, ready? 

Ready. 

I want 17:22, Dave - 

Oh, shoot! Thanks, Rusty. 145:17:22. I was thinking of - I'm going to go back and do it over and see what the repeatability is, to see if it's me or those numbers or what.

Darn, they changed again. Something's dumping garbage in there; we had that in the Sundance, too.

Really? 

Yes. We got it changed, but obviously part of the marking process is wiping that out.

Yes. We're picking up some rates again, Dave; I'm going to damp them for you here. 

Okay. 

Out of the field of view. Yes, I'll go find it. Wonder where did it go.

Dave, it's up and to the right. 

Jim, you might have to pitch up a little there. 

I think - I think you do, Jim. I'm - I'm sort of - 

Pitch up?

Yes. 

Yes, you're going a good direction. 

Yes. 

You can really help out pretty well out these side windows, you know, but the front windows - Well,
they're not too bad either. Oh, hey, there's Sirius. Let me make a star test on how many stars I can see --

06 01 19 29 CMP

Hey, oh, that's funny; I've got the moon and the landmark line of sight in the sextant.

06 01 19 36 CDR

Oh, yes?

06 01 19 37 CMP

It was just the star was superimposed on the moon. How about that!

06 01 19 42 LMP

Jupiter was, huh?

06 01 19 43 CMP

No, the -- no, some other star.

06 01 19 46 LMP

Oh.

06 01 19 47 CMP

I was looking for Jupiter, and I --

06 01 19 53 IMP

Still got to go up, I guess, Jim. Yes, he's getting real high now. Did those rates reverse on you, Jim?

06 01 20 13 CDR

No, they just keep going up all the time. There shouldn't have been any reversal. They were supposed to go in zero.

06 01 20 26 CMP

Keep it going.

06 01 20 33 LMP

Ohh, that's very interesting. After you stopped thrusting, Jim, there was a cloud that stayed around it for a long while --

06 01 20 42 CDR

Humph.

06 01 20 43 LMP

Like it gets dimmer out there for the next 10 seconds.

06 01 20 47 CDR

What's that?

06 01 20 49 LMP

FUEL CELL 2, CRYO PRESS. Okay, that's CRYO PRESS; yes.

06 01 20 55 CDR

How is fuel cell 2 doing, by the way?

06 01 20 57 LMP

Oh, it's -- High condenser exhaust, like it --

06 01 21 00 CDR

How high is it?
Same thing; it's 186 —

How we doing, Dave?

Keep it going. You really went a long way. Okay, now wait a minute - I think I have it.

Can you see out my window? It's really amazing how long that glowing cloud persists -

I can't see out there, because —

Okay, next time you pitch, I'll just keep my head down. You watch it; it's just fantastic. Can you see the stars out there now?

Yes.

Okay.

There's too much light between here and there.

No, I think you'll see it.

Okay, Jim, I got it again.

Got it?

Yes. You can stop right there.

Okay.

I guess it's when you fire the yaw thrusters that - Maybe the roll when you fire one out in that direction. What were those thrusters, Jim?

Those were all pitch, except one yaw. There's the other yaw.

Yes. Did you roll left back there one time or roll either way?

I probably did.

I think it may be when you squirt out from the direction you're looking that it does it; I don't know. Yes - clobbered again. They ought to fix that ... before they -
06 01 22 35 CDR   Yes. You mean Cherokee or Comanche?
06 01 22 41 LMP   ..., is that what the name of it is?
06 01 22 43 CDR   Oh, this is Coelousu ...
06 01 22 45 LMP   Oh.
06 01 22 48 CDR   Wonder where they get their names? They must have
06 01 22 53 LMP   some contest and the loser gets to pick the names.
06 01 23 46 LMP   Chris Kraft's named Coelousus.
06 01 23 52 CDR   0.03. I have a sneaky feeling that it's the vector.
06 01 23 54 LMP   Yes.
06 01 30 20 CC     Let's see what the torquing angles are. Yes, nothing. It's --
06 01 30 23 CMP    -- 54142.
06 01 30 38 CC     Okay, got 77775, 61331, all zips, 65732, 54142.
06 01 30 44 CMP    Okay, and the order of that is V, W, X, Y, Z.
06 01 30 51 CC     Roger; we got that. In fact, the charts onboard.
06 01 30 55 CDR    That even agrees with the V component of preflight
calculation. Okay, thank you very much.
06 01 30 58 CMP    Roger.
06 01 30 59 CMP    It looks like it's just straight interpolation on
06 01 31 00 CC     here.
06 01 31 06 CMP    Yes.
06 01 31 07 LMP    Okay, I can give you a quick rundown on Jupiter --
06 01 31 10 CC     now that we've done it.
06 01 31 12 CDR    -- seconds to LOS here; we'll catch you over the
06 01 31 15 CMP    Huntsville at 39.
06 01 31 15 CMP    Okay, good --

CONFIDENTIAL
Did they - did they tell us how many frames per pass - -

Yes - yes, it's all in the update form there, Jim. I better wait until we get this squared away.

Be a short pass at Carnarvon.

Yes. Okay -

You didn't get this ..., huh, Jimmy?

Well, it needs to be centered in those - -

Oh, gosh, we haven't got all those -

- - it needs to be centered in those screws there and then lined up - Just twist.

Think I'll look at it here.

Can you see it? I can't - -

Yes, I can see it.

Can you get the thing lined up in the hole - the screwhole there?

Ahh -

Okay, that looks pretty good vertical.

How about in rotation, I mean?

Rotation good?

Yes.

Hey, I'm blocking you real good. Hey, I got a suggestion on that. Why don't we take a pen and mark the edge of the -

Well, we're a little off on the screwhole -

We got to go up - -
Yes.
--- we got to go up towards the - this thing ---
Right there.

I think a little more maybe, Dave.

You'll have to go more, yes. Yes, it looks like it's lower to me.

... need a little more light on it.

That looks pretty good.

Hmm, maybe it needs to go -

Aw, that's good.

That looks pretty good to me, too.

Okay. What time does it occur?

We got a fairly good time.

125:57 -

33. That's in 35 minutes.

That's when we start the ORBIT RATE.

You got the inertial angles entered?

Yes. 160, 273, and 20.

Okay, Jimmy, you want to play installer here? You guys ... --

No, I'm going - Let's just do it this way.

Okay.

There's an orange - Oh, well, let me - Pull - pul the tab out, Dave. No, not that tab (laughter).

I was just thinking - What the hell - What did ye want me to pull the tab out for?
Tell me what to do.
I was just pointing out that this thing ... ...
... rotate. Yes, just leave it right there -
Just like that. Okay.
Is that on it?
Yes.
On the orange?
On the orange.
Why don't you put the ... over there, Rusty?
Okay. Oh, and locked.
Okay, here comes a black one. ...
Oh, it's got a different kind of slot in the bottom
How about that? Did you notice that?
Yes.
No, I didn't.
Some of them have different ends.
Oh, you mean than the other ones?
Yes, some of them - -
No, all of these have got the same - I think they
all have the same.
I think they're all the same.
No. ...

...
Oh, look what came off of this one. Hey, that may be a little difficult to get off.

What's that?

The button on the pin there.

Did what?

Came off. It's not there; I'm not sure we're going to be able to get that back off.

Well, that's the way it's supposed to be, isn't it?

Oh, is it? Yes, ... -

Yes, that's the way it's supposed to be.

I forgot. Whoa! I was going to say, man, we may not be able to get that mother back off again; be kind of hard to stow SO 67. Okay - close and lock, okay, cable coming up.

Tell you what; while we're doing this -

Here's my breakfast I haven't gotten around to eating yet.

Huh?

This is my pencil, isn't it?

Yes.

I've been unable to locate mine today. I've looked in all my pockets - all over the place - ... 

Okay - by remote cable, le monde. Now, I guess I want to test it one time, huh?

I don't know what else to do; it seems like we'd waste a picture that way. Why don't we get over into the right attitude and test it when we get there?

How many - -
06 01 38 03 LMP Yes, but then, you don't have any chance of fixing it though.

06 01 38 05 CMP -- how many pictures do you have?

06 01 38 07 CDR I don't know; there's only about 50 on that blue thing.

06 01 38 09 LMP No, no, Jim. That's not right. Here, I can tell you how many we got; it's close to 200.

06 01 38 16 CDR They changed the film just before launch, Rusty. Put thick-base film on one of them.

06 01 38 21 LMP Oh, did they?

06 01 38 22 CDR Yes, they did.

06 01 38 24 LMP Where's the procedures book? You got that down here, Dave?

06 01 38 29 CMP ... Oh, here it is, I've got -- Oh, the update book.

06 01 38 32 LMP No, that's the update book.

06 01 38 47 LMP 140, 170, 100, and 170. Is that wrong, Jim?

06 01 38 58 CDR I don't know.

06 01 39 00 CC Apollo 9, Houston through Huntsville. Standing

06 01 39 07 CMP Roger, Houston; Apollo 9. How do you read?

06 01 39 12 CC Reading you loud and clear, Dave.

06 01 39 15 CMP Okay, stand by a minute, and I'll give you a rundown on the Jupiter alignment.

06 01 39 21 CC Roger. We're taking a look at some of the data and it looks swell.

06 01 39 31 CMP Roger. And I got a couple comments on this -- Just a second.

06 01 39 45 CMP Okay, if you notice the data, I ran it two times to get the repeatability on numbers we had to pu
in; and the star-angle difference was 0.04 on the first one, and 0.03 on the second one - and did you get the torquing angles?

Okay. It seems to work real well; the planet fills up the whole inside of the sextant in between the reticle line. It's about the size of - I guess it's about 40 odd seconds in there; and one thing was noticed in the program is that, when you load the unit vectors for the planet and then let AUTO optics drive to it, then take the mark, the mark wipes out the load you put in, and you have to reload those unit vectors again. That might be an early thing for MIT to think about in Comanche, because it takes a lot of time to go reload those vectors.

Roger, Dave; copy. Real good observation.

And other than that, it works real well. And the torquing angles were small, and the planets are easy to find. I think that would be a fine thing to use if you couldn't see the stars in the day.

Okay, that sounds real great and that was an extremely good summary.

And our last landmark track - I think we got the hang of the whole thing. We had cloud coverage again, and I had to reject the first mark because I couldn't - just couldn't see it. Finally, we got almost overhead and I got two real good marks, and I think we've got that one nailed if we could get a clear target tomorrow.

Okay, Dave, understand.

And we're getting ready for 80 65 right now.

I'll put these all back on again -

Real good.

- - just realized how we are supposed to do it.
06 01 41 51 CDR
What?

06 01 41 53 LMP
I said I realized how we're supposed to do it; check it with the camera backs off. They're all turning --

06 01 41 58 CC
If you've got time ... Jim asked specifically for that -- I got an entry for that ORB rate angle and to make sure that I'm giving you what you want. Is that what you want, your relation to the local vertical?

06 01 42 16 CDR
Roger, Stu. We have what we want here.

06 01 42 19 CC
Okay, real good.

06 01 42 21 CDR
We want an inertial angle to maneuver to and we wanted a relative local-vertical attitude to stay at.

06 01 42 28 CC
Okay. Real good. We'll slip it to you.

06 01 42 34 LMP
Well -- that'll always be the same, once we got it there. Unless they decide not to take vertical pictures.

06 01 42 48 CMP
Got another one?

06 01 42 49 CDR
Yes.

06 01 43 07 LMP
... want more?

06 01 43 47 CMP
Houston, Apollo 9.

06 01 43 49 CC
Go ahead, Apollo 9.

06 01 43 50 CMP
One thing I forgot to mention on that alignment: the way we got the unit vectors was to interpolate between the times that we had on the charts onboard and so we tried to take the five-digit numbers and get as close as we could to the time, the GMT that we had right now; so I guess the repeatability really is a function of those numbers that you had in there -- that we have on the chart or that we interpolated to.
Okay, Dave, understand. We're about 1 minute LO; Huntsville; we'll see you Hawaii in about 5 minu
at 49.

49, Hawaii. Are we supposed to take those 70 mi
limeters at Hawaii?

I don't know.

It's 150-some hours. 152 hours you had on the u
plan. I can't imagine we're even going to be up
in 152 hours. ... look there and see?

What do you want to see?

Flight plan update form - wherever that is. Rig
here.

It's 152:06:08; should - probably already be in
by then.

We haven't even had lunch yet. What do you mean
bed?

It's not even 7 o'clock tonight, Jim - 6 o'clock
tonight.

Okay, Davey, why don't - I'll get us maneuvered
over to that attitude --

Okay.

-- and target the thing for the -

Okay.

Did you? Go along here? And press the button w
it gets ready to go, and I'll sit here and punch
the picture button.

Okay.

... take the picture ... Well, all the monitors
say we're going the right way.

(Laughter)
... take the dark slide. Yes, don't mess with that.

We haven't gone down the checklist, have we? Have we gone down the checklist?

Yes.

Okay, I'll read it. Four Hasselblads in bracket; remote cable; GET is 00 and up; disable A-3 jet; unstow camera unit less magazine; check camera setting against decal; and then install in hatch window - Okay, we've already checked that - guess they're not supposed to do that.

They're supposed to be taped.

Were they?

Yes, they're all taped.

Are they? Okay, attach remote control cable; actuate system less magazine to verify operation of all four camera bodies; unstow four film MAG's; advance film MAG's one frame - Oh, that's only the first time you use it --

Where's your pencil? Did I lose that, too?

-- Leave film advanced tabs turned out; attach each magazine to proper colors; remove dark slides from all MAG's - Okay, let's get the dark slides out. Activate system one cycle and verify operation by observing film advance tab rotation.

There's a nice little strap right down in the middle of ...

How many did you get, Jim? Three?

Three.

Okay, here's four. Okay, so it's ...

... it's right there.

Here's one right here.
06 01 47 08 LMP  So it asks us to use one cycle.
06 01 47 19 CDR  ... get out to the sun ... If we actually have something down there, we might as well take a picture of something.
06 01 47 47 LMP  At GET of 5 minutes prior to the first site, disable jet A-3, orient the spacecraft ... --
06 01 47 51 CDR  What time - 145:57 is the time we want for that -
06 01 47 56 LMP  That's - 10 minutes.
06 01 48 14 CDR  I don't - Let's see, I do get that ...
06 01 48 25 CDR  Okay, why don't you call up 49 - and -
06 01 48 35 LMP  Got your ... maneuvers here?
06 01 48 36 CDR  Yes.
06 02 18 25 CDR  We're going to be on this path.
06 02 18 33 CMP  No. no. But you're not going to. You're going to be on this one. Yes, you go --
06 02 18 41 CDR  Oh, why don't we go the other way? Oh, balls. Okay. Man alive, I think we've already been up that way.
06 02 18 47 LMP  Oh, yes. Okay. Hell.
06 02 18 49 CDR  What would you keep it - Yes, I think the next pass should be really interesting.
06 02 18 58 LMP  You go across the - just south of San Antonio.
06 02 19 00 CDR  Hey, going across those islands is absolutely beautiful.
06 02 19 03 LMP  The what?
06 02 19 05 CDR  Down across those islands is absolutely --
06 02 19 06 CMP  If the weather is good.
Ohh. Oh, hey, there's - That's where we're going to get those craters, damn it. We are going right across that - that whole section of craters in - in Mexico that - that I couldn't - could never think of the name of.

All I have to do now is go to that dinner on May 10th (laughter). If I don't go to the dinner, I don't get them medals.

What the heck is the name of that series of craters? I swear it begins with a P. You were with us on that trip, weren't you, Dave?

Yes, and I ... -- El Legati.

Crater El Legati.

Piscadores, or -

No, that's in the U.S. This is in Mexico. It's the crater El Legati and -

Oh, I wasn't on that one.

Oh, you weren't on that one? Oh, I can't think of the name of it!

Just south of Tucson about 50 miles. That's right, there's Ajo. That's the only time my wife ever landed at Ajo.

... Hey, you know, I don't think that was Tucson, Jim. I think that was Phoenix. Oh, wait a minute, now; let me figure out which REV you're - No, no, no, okay, I'm sorry; that was Tucson. Yes. I got the wrong REV again. Okay. Oh, well, hell.

Man, I can sure get these REV's all mixed up.

(Laughter) Now the basic thing to remember is the earth isn't round.

... we came across on that one. So this is the next one. Okay. Yes, I was right, so we're going to come right across the - that section of craters. Okay.
We’re also going to come right across the top of the Gulf of California. Yes, I took a real nice picture. It’s really cloudy down there, though. The lower half of the peninsula is all socked in. Oh, Baja? Oh, no, we’re way up there in the upper end of it on this next pass. The right at Yuma? I know, we were this time, too — but you couldn’t see down there. Well, Dave, what is it — I wonder what today is for? Just to prove that we can do five alignments in one day? They sure do wear you out (laughter). Have they stopped at all today, Dave? One time, Jim. Did you damp rates for me, old buddy?... I second that right now, David. Mr, I haven’t, but... doing that right now, David. You got the rates damped? Fire something. Let me see if I’m really set up. One time, Jim. Did you damp rates for me, old buddy? If you got that crazy alignment out of the way, we can all rest. Is it still daylight? I can see stars through the telescope. We’re also going to come right across Havana. Well, that’s something different... What is it — I wonder what it’s for? Just to prove that we can do five alignments in one day?... I second that right now, David. Mr, I haven’t, but... doing that right now, David. You got the rates damped? Fire something. Let me see if I’m really set up. One time, Jim. Did you damp rates for me, old buddy? If you got that crazy alignment out of the way, we can all rest. Is it still daylight? I can see stars through the telescope.
06 02 24 11  CDR  Dave, it's ... The rates are damped.
06 02 24 15  CMP  Alright.
06 02 24 19  LMP  You say you can, Dave, huh?
06 02 24 21  CMP  Yes. I - I can see the one I'm marking on.
06 02 24 26  CDR  ... to be hungry (laughter).
06 02 24 36  LMP  Can you identify them in the telescope, Dave?
06 02 24 40  CMP  No. Afraid not.
06 02 24 53  LMP  (Yawn) I wish we had all our fuel cells ready to go. 106 still, and it's beginning to drop again. Whoops!
06 02 25 10  LMP  We're down at the normal 2 amps, every ...
06 02 25 12  CDR  Great! Nothing like having a ... fuel cell (laugh)
06 02 25 15  IMP  Well, so far. Except it's a little early in the day for it to be down to 2 amps.
06 02 25 22  CDR  How high's the temperature there?
06 02 25 23  IMP  186. Some thing it's been the last 2 days. ...
06 02 25 35  LMP  2-A and B are okay. Looks good. The pressure's okay, but that one is getting down toward the bottom of the green. ...
06 02 25 54  CDR  Alright. They are a little low, aren't they?
06 02 25 58  IMP  Surge tank. How is your surge tank these days?
06 02 26 00  CDR  Your - That should be about 700. I woke up in the middle of the night last night, and I ... filling that thing.
06 02 26 06  LMP  Ahh.
06 02 26 08  CDR  Let's see, it's 700, isn't it?
06 02 26 11  LMP  It's down - Yes, it looks like it. I can't see exactly. This light's not very good.
Apollo 9, Houston; 1 minute LOS, and Tananarive at 44.

Roger.

Would you believe that they want pictures of the Himalayas?

Do they really?

(Laughter) I'll be damned!

Listen, we got to - Did you see those lakes the day? Were they on the other side of the spacecraft.

Who, me? No, I didn't see them.

Dave, you saw them, didn't you? There were five or six -

Yes. Very pretty.

--- ... lakes.

Cooper Lakes.

Cooper Lakes, yes (laughter).

Cooper Lakes? What's the other name?

Watch it; watch the scissors, Dave.

Huh?

I think your scissors are floating around your head.

Oh, me!

Let's see. It's 12:30 in Houston, so it's midnight in India.

(Laughter) There was a valuable piece of - (laughter)

Well, it is, if you're trying to figure out where the terminator is. Okay, so I'll find it. ... anymore. Oh, well. Too bad.
Okay, we're going to go right over the Truk Islands

06 02 36 20 LMP
Okay, we're going to go right over the Truk Islands

06 02 36 23 CDR
Hot dog!

06 02 36 24 LMP
Hot dog!

06 02 36 26 CDR
You want to come down here for a while? Whoa! Hey Dave, come on, you want to ... for a while?

06 02 36 33 LMP
I want to go look out the window and see some of the scenery.

06 02 36 34 CDR
Okay, go ahead.

06 02 36 35 LMP
Hey, I'll carry it some time and look out the telescope. I've never even looked out that thing.

06 02 36 38 CMP
Okay.

06 02 36 59 CDR
Whohee! Who! Hot, this is hot.

06 02 37 18 CMP
It's nighttime though, isn't it?

06 02 37 22 LMP
...

06 02 37 24 CMP
Oh!

06 02 37 27 CDR
... Jim's holding his nose and coming ...

06 02 37 30 CMP
Yes, it sure is.

06 02 37 34 CDR
... nighttime ... daytime ... How's old fuel cell doing?

06 02 37 43 LMP
Oh, it's hanging in there at 2-1/2 low, and 186 degrees.

06 02 37 50 CMP
I was looking through my duff bag ... rendezvous last night, when I started the rendezvous, I ... before we separated ... it was 178 degrees.

06 02 38 00 CDR
The ...

06 02 38 02 LMP
Huh?

06 02 38 03 CDR
The ...
What was it supposed to do? Rusty's right. Wasn't that what we were up here for?

Ah, here she comes. Okay, I was ... what was going on here.

What?

Hey, that day I paid attention to what was going on in the spacecraft.

Yes, I noticed, you must do that.

Tuamotu Archipelago. Boy, there are a bunch of islands in that Pacific. Whoee!

... You can see where a people's interest lie (laughter).

... a drink in there?

Heck, no ...

Hey, your back still hurt, Dave?

No.

That's amazing; mine does.

Does it really?

Yes. The same places it hurt the whole flight; right there.

Gee, mine quit after the first 3 days. I'm feelin fine.

It doesn't really hurt bad, you know, but it - it a - it's a steady ache.

The drinks are the popular thing, I think.

Yes.
06 02 40 37  CDR  How far below the ... on the landmark tracking are we?  Yes.
06 02 40 45  CDR  10 degrees? Outside the red?  Why?
06 02 40 46  CMP  That's something.  That means there's no problem.
06 02 41 54  LMP  You know, those cat periods may even be scheduled.  Wouldn't that be a strange one?
06 02 41 58  CDR  Yes.
06 02 42 00  IMP  No, no.  An hour and 40 minutes late for it.
06 02 42 05  CDR  Yes.
06 02 42 26  LMP  That orbit rate torquing's really nice, isn't it?
06 02 42 43  LMP  What kind of deadband does that hold, Dave?
06 02 42 48  CMP  It's a - I - I don't really know.  It does its own deadband just like in the rendezvous ..., and so it looks like the ...
06 02 42 59  LMP  ...
06 02 43 02  CMP  But it doesn't ...
06 02 43 21  CMP  That rendezvous ...
06 02 43 33  CMP  ... always do better, even when you don't expect it to go.
06 02 43 38  CDR  (Laughter)
06 02 43 41  LMP  Boy, that pulse in the LM is really ...  Man!  Bomp, bomp.
06 02 43 51  LMP  There wasn't any question like there was in the simulator whether the thing would fire.  But that EVA was a pretty, too.  Man!  I sure hope that camera picked it up.
06 02 44 09  CMP  ...
06 02 44 11  LMP  Yes, we did, but we stowed it
What happened to the film magazine that was on it?

There's still one on it. I didn't know whether ...

No, didn't you take that off just - just this morning, and finish it up on the other camera? I thought that's what we did.

... with MAG E. ...

E's still in here. Yes, it is.

Huh?

Yes, before we take it off, we ought to mark down another ... And, Jim, you're not coming through.

Maybe we ought to advance a few films on that, Jim, manually, so that they could find a place to cut it or something. And then take the rest.

They've got to be done charging the battery B.

My God!

They said this morning they were going to put 5 amp-hours, didn't they? Start it out at 2-1/2 - 2-1/4, it's down to 0.6 now. And, let's see, that was at about - almost 6 hours ago. Maybe not.

Hey, Jim, how about moving your mike up? ...

Is that your ...

Yes.

You want to put it on ...?

No. ...

My toothbrush ...

Huh?

It sure seems like a long time. ...
COt^IDENTIA l

You're putting down on POO.

Huh?

You're putting down on POO, huh?

I was going to put it - Take the abnormal-looking one out.

Cabin TEMP is up now.

You won't believe it, but, you know, we've been running today with the cabin fan on?

Is it on?

Yes, sure.

Well, when did you turn it on?

Yes, I was going to turn it on for a minute. Doesn't bother you down here, huh?

You get stifled in here with that lack of circulation sometimes.

Yes.

... I'm going to see if I can - You through with it

Yes, oh, I was just going to put something on there.

You want to wind some through, Jim --

... when you're through with it?

Yes.

I think we ought to just put it away and see how the pictures go. If we don't use it, we won't use it; if we do, ... I wanted a couple to be logged.

I was going to put something else in here that you accomplished.

Oh, did I cut your feet up underneath you --
No, no, I'm really trying to think of some other way to tell him to ... because you don't know the point at which it pitched to, up until you look at it and figure out what the DELTA-P is - and you could run all the film through that DELTA-P. And you may screw up, you know, some part of it.

(Cough) That sausage is hard to squeeze out of there, isn't it?

What are you doing, Russ?

Huh?

Hey, ...; he probably wouldn't use it at all.

I don't know. The way you guys take pictures. This friend of mine, named Anders, told me that one time.

What?

That if he had it to do over again, he'd take all the pictures that opportunity presented.

Where did this - where was this, Dave?

In - It could go in A-7.

I'm going to try to clean off this vent over here.

Yes, my gosh, it's not nearly as dirty as it has been.

Yes, I think the spacecraft is cleaning up.

We're clean livers.

I tell you, I think the breakpoint on that was that EVA. Man, that really helped.

Dumping the LM didn't hurt anything either.

Yes, well, the LM got cleaned up after that EVA, too. Roy, there was a lot less stuff in it the next day.
Here comes Houston. Where's the update book?

Apollo 9, Houston; 30 seconds LCS; Guam at 11.

Roger.

See, you don't have very long to go here.

... 

Well, how long's the GO 65?

20 minutes.

Really?

Here, let me see. 35 and 30. No, 25 minutes.

Sticky, isn't it?

Yes, yes.

That's the best Velcro on the whole spacecraft.

Yes, these suits.

A 350-pound cake.

(Laughter)

(Cough)

Hey, ...

Okay.

I ... so that we don't go across ... Islands, unfortunately.

Except ... - I mean, you know - instead of -

Gobble, gobble.

... we're at Guam, 11. Think I'll try one of these wet wipes ... so bad.

Whoa! It's yours. You got them.
You know, we ought to take some pictures of us taking some SO 65 pictures --

(Laughter)

-- with some of that interior movie stuff.

We're going to have ... Dave to wake up. ... couch.

Move back, huh?

Yes.

Anybody want some chewing gum?

Yes, ...

Dave, you want some chewing gum?

Oh, no thanks, Rusty. I think I'll pass.

Okay. Kind of tastes good, doesn't it?

Yes, that's not bad.

At least at first.

Hey, you know what else we got that we haven't taken is the - those peanut balls. They would probably be fairly tasty.

Hey! Yes, let's try some. ...

If my nose were a little more clear, I would be happier.

Is your nose a little bit jammed?

Yes, it is off and on --

Kind of up in here?

All over.

All over, huh?

Let's see. 147:30. I wonder where we rat-tafted the tissues down.
Uch... between my legs again. There they are. Over your head. On the upper bunk head there. Right down there. Ahh!

That's okay; don't get nervous. You doing alright?

Yes, I'm kind of just trying to...

Oh, hell!

Oh, shoot!

How are we doing on time?

You got 12 minutes to go, Dave. Maybe we ought to start the...

Yes, we ought to check those numbers. That way I guess I can check them here to see if they're any different. If I can find where I put them.

You got the SO 60 - Oh, yes, you got it over there, Dave. Yes. Dave, the numbers are up there. I don't know if they're any different or not.

Okay, ...

I thought it was 0.067 last time. That's why I wondered.

0.067?

Yes, it was - right here, see, on the rate; but this is 0.068.

That was yesterday.

Oh, was it yesterday?

16446, 0, 12045.

Yes.

54142.

I still want to...

Okay, you're going to raise over there --
06 03 19 49 CDR  I'm going to go on over there, and then, when we get close, ...

06 03 20 17 LMP  Here is the time ..., Dave. Whoo - that stuff is really bright.

06 03 20 52 CDR  When we get the SO 65 pictures, so why don't we take off the - why don't you disconnect this thing right away so we don't inadvertently take a bunch of pictures? Let's just take this thing off ... you can look out as you go across the islands.

06 03 21 05 CMP  You want me to look at them?

06 03 21 06 CDR  Yes, let's look at them. I'm just too good to you.

06 03 21 09 CMP  I think it's a pretty good way to be doing this filming.

06 03 21 10 CDR  What?

06 03 21 11 CMP  ...

06 03 21 16 CDR  Oh, yes? That'd be pointing the wrong way.

06 03 21 19 CMP  Oh, I don't know how we were going to be pointing, but I'll do it - Oh, I'll do it later. You want to look at the islands, let's look at the islands.

06 03 21 25 CDR  I think you will enjoy it if you've never seen it before -

06 03 21 27 CMP  Yes, I'd like to see it, but I was thinking, you know - I'd like to see it, ...

06 03 21 32 CDR  I'll just use some fuel up. Get right side up.

06 03 21 40 CDR  Okay, I have 147:35:40.

06 03 21 44 CMP  Okay.

06 03 21 48 CDR  Let's see, you have -

06 03 21 49 CMP  ... A, B - All of them, OFF, and A and B ON. Put all of them ON; the DM has already ...

06 03 22 03 CDR  147:45:40 (cough), 148:56:04, 19 and 147:37:12 --
06 05 16 14 CC  Apollo 9, Houston. Your readback is correct; Tananarive at 50.

06 05 16 21 CDR  Roger. Tananarive, 50. Yes, Dave? Oh, yes. He did. Getting ready to ...

06 05 16 28 IMP  Yes, but I don't think it's really that important in the first place. ... You want to call it off?

06 05 16 35 CMP  Sure.

06 05 16 37 IMP  15, 16, 17 ...

06 05 16 41 CDR  Is it full?

06 05 16 42 IMP  No, it's - it isn't just quite full.

06 05 16 46 CMP  There's some pretty good geology down there.

06 05 16 48 CDR  ...

06 05 16 55 IMP  Absent, huh?

06 05 17 01 CMP  1 ... that off.

06 05 17 03 LMP  Whoa!

06 05 17 14 CDR  Where are we right now?

06 05 17 15 CMP  Mexico.

06 05 17 18 CDR  Yes, I see this puddle of water down there. Hey, get those islands right in the middle of that water, Dave, that's coming up.

06 05 17 24 IMP  Yes, there's volcanos in there. Hey, there's one right on the end of that land tip out there, Dave. Oh, you got that one?

06 05 17 35 IMP  Yes, it sure is, and here's a couple more of them. This is like the Philippines; they have volcanos like that.

06 05 17 46 IMP  Hey, we're going right down Central America, aren't we? We're going to do Panama. Is that where we are in this REV, Dave?

06 05 17 55 CMP  Yes, that's where we pitch up.
Yes.

Hey, Dave, right down there on the coast, in that little in - sort of an indent there, it looks like there's a couple of - of rills and rifts down there - right out there. You see then right there?

I don't know. Ohh, yes!

Why are they so damn different? Right over there. You see them?

Grabens - That's the word I'm trying to think of. Can't ever think of the words I'm trying to think of.

I think the Panama Canal's right out there, but I can't tell from - from the ground.

Maybe that's it.

No, I think ... is down underneath there.

Okay, just a minute. Dave might be able to see it down there - the Panama Canal. I think it's under the clouds, though.

O2 FLOW HIGH.

Yes, ...

Yes, I am.

I guess we're coming across the northern end of the Andes here, David.

We're going into Colombia. My time here is 149:20:42, right here.

Pretty cloudy, isn't it?

And it's beautiful cloud...

Yes.

Can you see the airplane from where you are, Jim?
06 05 21 12 LMP  Pan American.
06 05 21 22 CMP  ...
06 05 21 24 LMP  Yes.
06 05 21 31 IMP  Yes, it really is. Going to be right cloudy.
06 05 21 41 CDR  Boy, the oxygen is really ... up to 87.
06 05 21 46 CDR  ...
06 05 21 47 IMP  Oh, mine was, yes.
06 05 21 57 IMP  Mine's ... so it doesn't work.
06 05 22 01 LMP  What? What - are you kidding?
06 05 22 05 CDR  Shee! What's that? Thanks for nothing.
06 05 22 11 CDR  Is that ... that big - that big thundercloud?
06 05 22 22 CDR  And then there's tremendous thunderstorms sticking out up here in front of that. Really great!
06 05 22 30 LMP  ... flying process here upside down. Look in these windows and see a bunch of eyeballs. Oow ahh!
06 05 23 24 LMP  Boy, it's really hazy down there. There's some good stuff coming up over there, David. It'll be there in a few minutes. See it? Kind of bumps in the smooth surface there?
06 05 23 38 LMP  Yes. It is, isn't it? Really weird looking.
06 05 23 52 LMP  You can see it when we're ... - kind of weird.
06 05 23 57 CDR  Those bumpy things down here? I'm going to take two pictures of the big thunderstorm we're going to pass over right now.
06 05 24 06 LMP  There's a whole bunch of thunderstorms down there.
06 05 24 09 CDR  Yes. Looks like a rose.
06 05 24 13 LMP  Yes. There's a whole series of them coming up, too. Alright, you can see them, I guess.
I took two.
I took one – one out there, Dave.
They're both of the same thunderstorm. One of them upright and one near vertical.
There's another pretty one – right in front of us.

Whoo! We must be over South America, huh? I guess we always pass through the Andes out here. Hey, do we go out over Rio de Janeiro?

Let me tie these back for you. Okay?

Is that Rio?

Right down here.

Yes, it's nice-looking country. That's what we call 'yungle.' Boy, those – that sure is high. You can really see it move with respect to the lower stuff. You can see the long shadows of some of those clouds, too. See them?

Okay, that's the summary of where all the film is, and where it – and what the status of it is. The only thing I haven't had time to do is figure out whether – whether I've packed all of it so he can have it.

Nice going there, Davey.

Hey, Dave? What's that great, big, white, pink spot straight ahead? On the clouds, a little bit to your side?

Yes, it might be a pretty one. Maybe we ought to get a little closer and see if – what it is.

Yes, I'm going to take a break. Jimmy, ... a little bit.

Yes, it sure powered up ... didn't it?
In fact - Hey, look it. Do you see a bump in the orange above it? I mean like that glow in the horizon?

No, ... the stops on it somewhere.

Man, that could be a pretty picture.

Sure is.

Man, that's one to stay out of.

Look out here to the left. Looks like you're flying along - with an undercast above you - drops down this way. Is it?

Yes.

There's a star or a satellite - Now, is it moving or not? It's not moving; it's a star - if I can find it. See it, Dave?

... has the optics ...

The optics looking at the sky or the ground?

It's looking at the sky.

Oh, I think ... --

Huh? Last night, just as ... been looking at the sky, we should have got it.

Not a thing out there. You ought to be looking at the ground. No, there comes some stuff.

I can go to MAN - I can go to MANUAL without the IMU, ON, can't you?

Yes. Take it out of zero.

Take it out of zero. Okay. Zero, OFF. Do I have to wait?

No. As you go OFF, you can just go to MANUAL.

I got it.
Oh, that's strange. It doesn't ... at all, does it? That also seems kind of sloppy.

Huh? Oh, I have to look up?

Oh, then stay, because it ...

You mind if I put this thing right here?

Here, I'll put it away. ...

Okay.

Here?

Yes. I thought I'd just save you the trouble.

Shoot! I wanted to do some groundwork with that thing - eight power. Can I play with it tomorrow?

Go ahead - and take it out.

Huh?

You can take it out. ... where we'll be.

You do. You sit right there and look right straight out the window. Get an eight-power telescope. ... 

You never found my helmet and goggles bag?

I don't remember seeing it.

See anything?

Not much. I wasn't very impressed.

Hmm. You're not supposed to be if ..., is that right?

Yes.

Yes. Whoo! Maybe I can get a picture of an elephant or something. ... like that.

You're ... just a small boy.
That's why they call him the "Vanilla Kid."

Remember Dick Dowel?

Who?

He was a movie star once.

Was he really?

Yes.

Wonder when that was?

Well, I don't know, it must have been around 1935 or 6.

(Yawn)

... You got some tape to shut that off with?

No, but I'll get some.

Yes, here. You want a piece of tape, Jim?

Maybe I'll just take --

Well, somebody just stirred up a bunch of crap over there. I think he threw it up. Where are you, Jim?

Right here; that makes the days a lot shorter.

You're right, Jim; it wasn't in the right suit. Dave ... along with it.

Okay.

Haah!

Let's see here. ... roll.

(Yawn)

Hey, can I help you there?

I want to look at ...
Did you get this thermal sample from the LM put away?
No. Let's put that away.
Why don't we put that away and we'll get out of this thing?
Stand by; I'll pass it to you.
What are these things?
Those are the hooks - hooks - Oh, those? Sony recording tapes.
Oh, geez!
Remember - we were going to record all that stuff?
What are these things?
I don't know. What are they?
The battery pack to the Sony?
Yes.
We didn't use that Sony much, did we?
I don't know. What's this funny-looking thing?
That's what the thermal samples were stowed on - were found on.
Jim, here's a thermal sample.
Well, ... thermal samples.
Coming forward.
... 
Ow! God damn! That stuff is hot.
You got to be careful.
CONFIDENTIAL

06 05 42 08 LMP  Ooowee! ... Sure is, you know it?
06 05 42 11 CDR  Huh?
06 05 42 12 LMP  Boy, that's a ... blister right there.
06 05 42 17 LMP  That one's about scalded.
06 05 42 20 CMP  Few little things keep coming loose. See them?
06 05 42 22 LMP  Yes.
06 05 42 25 CDR  Okay, I'm going to put the samples - thermal sample:
donw here with the covers to the DELTA-V indicators
06 05 42 31 CMP  Right.
06 05 42 32 LMP  Okay. You --
06 05 42 36 CDR  Yes.
06 05 42 37 LMP  -- you - you put it in the box, Jim?
06 05 42 38 CDR  No, I don't think it goes in the box, does it?
06 05 42 39 LMP  Yes.
06 05 42 40 CDR  Oh, it does?
06 05 42 41 LMP  Yes.
06 05 42 42 CDR  Oh, fine. I didn't realize that it did; I thought
              that box was - wouldn't fit.
06 05 42 46 LMP  Yes, it carries three butterflies and two of those
              It's supposed to.
06 05 42 50 CDR  Hey, I thought they wouldn't fit.
06 05 42 55 LMP  What did you do with that cable, by the way?
06 05 42 58 CDR  I put it right in here with the thermal samples.
06 05 43 01 LMP  Oh.
06 05 43 16 LMP  What are they doing? Putting us to bed early tonig
06 05 43 23 CDR  I don't know.

CONFIDENTIAL
Well. We have an 11-hour rest period tonight.

Do we really?

Yes.

Oh! I took a half wink down there a little while ago.

Did you? (Laughter)

You fellows have been working awful hard today - indescribable.

(Yawn)

Hey, we got a - fuel cell O₂ purge and a CO₂ -

Hey, would you believe what I found?

What?

The helmet bag!

Good!

How about putting your helmet on?

Good. That makes me feel better. So, so far we don't know of anything that we threw away with the LM that we didn't want to throw away.

You know I think I found another good place for all the LM data.

Where?

The A something or other - A-1.

... it's worth a ...

What's in there now? PPK's, isn't there?

No. Toolkits - some underwear -

Oh, is that the one right next to A-7?

Yes.
Just above A-7?

No, this one, I think, is A-8 ... ought to be in one thing.

Well, what are we going to do with that suit?

What's the matter with stowing the two FF's in - in the L-shaped bag and one under my couch, Jim?

Well, the thing of it all is, if the couch slips down, it's going to be terrible. It looks like if you could put one of them horizontal across the - LEB here. Hide the LiOH canister. That would get one of those big things out of the way. ... put the ... canister - LiOH canister someplace and the ... someplace. Put the canister in the suit and tie it down.

Are you still going to do some of the optics, Dave?

Yes. ...

No, I was going to exercise.

... --

But I don't want to do it right here, so ...

No ...

Why don't you go ahead and do it, and I'll just take - trade places and I'll sit there and exercise.

Okay.

You know we also ought to think about some other way of protecting our heads, and this kind of thing. I'm not that enthralled with our headrests.

Me neither; and you notice there is no support for the back of your neck either - not here.

I was thinking maybe we could take some of these trash bags; maybe take one of these food bags, fill it up with trash, and lay it across in here.

Yes.
Boy, there just doesn't seem to be any support there at all.

Take what food bags, Jim?

One of those - I said take one, and fill it up, and lay it across in here.

I'd also like to kind of wrap my helmet up ... head up.

You go on that - you're going to ... head ..., because it rattles back and forth.

We don't even have to have the helmets, if the helmet bags are locked. Maybe you could just put them someplace else that's good. The bag ... Why don't we put the helmets under the seat? I'm just trying to figure out something - just how to keep it all together so they won't rattle around. You can put the helmets and gloves on the suit ... Well, I almost think that if you left one - one suit in the L-shaped bag in the middle, and the other two suits across there with our helmets on it ... You've got - I think you've got a picture onboard of how ... recommended for ... Let me pick it up and we'll see what it looks like.

The picture?

Oh, it's in there? Okay, I'll look for it.

...

No, I think it was - I'm looking for a flight plan.

Well, let me see now. I had to get - I had to get ... Yes, it is. ... maybe it is.

Yes, another place down there, we're going to be wearing them, and ... and we're going to have to
have the rope out to tie the suits down. So, we've got all of A - half of A …

06 05 51 00 LMP  Yes.
06 05 51 44 CDR  Go right ahead.
06 05 51 46 LMP  Thank you there, Colonel.
06 05 51 47 CDR  Okay. …
06 05 51 59 LMP  It might be a good idea if we could get --
06 05 52 03 CC  Apollo 9, Houston through Tananarive.
06 05 52 06 CDR  Roger, Houston; Apollo 9.
06 05 52 08 CDR  Houston, Apollo 9.
06 05 52 13 CC  Roger. We got a lot of static here. Do you read me okay?
06 05 52 17 CDR  Roger. We're reading you loud and clear.
06 05 52 20 CC  Roger. I have some targets of opportunity - about three, and then one flight plan update.
06 05 52 28 CMP  Okay, tell him to go ahead.
06 05 52 31 CDR  Okay, go ahead.
06 05 52 34 CC  Roger. 150:51:27, Galapagos Islands, geologic, eight frames, 6 seconds, on track.
06 05 52 56 CMP  Okay.
06 05 52 58 CC  At 150:57:07, Peru coastline, eight frames, 8 seconds, on track.
06 05 53 19 CDR  Okay.
06 05 53 20 CMP  I don't understand what he --
06 05 53 21 CDR  Peru, Peru coastline.
06 05 53 22 CC  9, Houston. Let me correct that one. It's four frames instead of eight frames.
Okay.
Roger; four frames.
Okay. At time 151:47:17, Formosa Strait, oceanography, five frames, 8 seconds, on track.
Okay.
Okay, we got all those. You want us to read them back to you? Ahh! He's gone.
Yes.
Let me give you a correction there, Dave, again. On the second one for the Peru coastline, the time is 150:55:07.
Okay. 150:55:07. We got all those. Thank you.
Okay. Then I've got a waste water dump for you.
Go ahead.
At about 151:50, waste water dump. Listening to the DSE last night, you may want the sunrise time, 151:38; sunset, 152:30. Over.
Okay, we have that.
Okay.
Good ears! (Laughter) You ought to see it, Ron.
It sounded like it was great!
What did he say?
"It sounded like it was great."
Okay.
Why don't we get those cameras out? And dump the water at 151...?
Sounds like you'd better start readying the 70-millimeter film, the targets of opportunity to get this thing...

...on that oceanography down there.

What's the first one?

You mean, eight frames at 60?

Three frames?

Oh, go ahead and take the eight frames - You know, if you get a good pass. If you're looking for some... movie film, then you can just get... just give them one frame out of each bunch, you don't get any stereo, and you don't get any...

Yes, but - That's true. If you use eight frames in one place, it would be, I think, as good as...

Well...--

--...

-- I'm not sure that it is, because - Gemini slowly took that one stereo set on the west coast all the way into mid-Texas, one - one frame every 6 seconds -

Yes.

Yes, that would... one - one pack of film. We took a lot of other packs of film. But they used that on one - one roll, I think more than all the other stuff put together. Just so they could - they can get the stereo stuff out of it they wanted and from a different view. They - they really seemed to use it. Paul Norman nearly went wild over it (laughter). He's written about five or six papers on it, and he published a book on it.

It looks like, Dave, that we ought to get this - this one pressure suit out from underneath the middle seat...
One pressure suit out from under the middle seat.

Well, you want to take one?

This one right where I am, right here. Right there. ... on the optics.

Yes, I know; don't worry.

Put one here, just like this.

Yes.

I'm not sure that we couldn't put the other one either right there, or right on top of it. Let's put the IL - LiOH canisters in here, too. It doesn't look like it's going to interfere with you doing the sightings.

No, it won't. Now, we will have a level ... across here, so we can ... Yes. You could probably punch that down to --

Lean those --

I'm not sure it wouldn't be a bad idea for Scott to ...

Well, I thought they were really going to cushion ...

Look at my ... (laughter). Just ... flight plan. ... on the windows to see how much ... has gone on.

Yes.

Take one ... lithium hydroxide canister and put it away.

Well.

Massaging your beard, Jim?
Massaging your beard?

No, it tickles.

Oh.

We might ought to put the other one along here, like this.

Hey, Jimmy? You done with R - R-13 up here?

Yes, I am.

Stow this in there.

Trying to think of where that picture is, Jim. Let me see if I can find it.

Let me look in my ... here. It seems like it might just be - in that part where they show all the - It ought to be here.

Got an entry procedures book, Dave?

We have an entry procedures book, but I'm 95-percent sure it's not in there, but I'll go look and see ...

I'll take my jacket off before I start to sweat; I think it's warm.

You want any help, Jim? Or are you just going to rattle around?

I'm just going to rattle around.

Okay.

Boy, I'm telling you, it's a good thing they moved SO 65; we'd have really had a hell of a time ...

Boy, that's for sure.

God, we haven't ... to sleep down here.
That's right.
I notice that the area behind it is absolutely empty.
Yes.
I think I'll change underwear tonight. Just remembered I got another clean set.
Yes.
Sure not in the checklist.
I knew it wasn't in there. Hey, I know where might be, Jim. Look in the malfunction procedure book, back of the updates.
(Laughter) ...
It's in R-13, isn't it?
No - yes, R-12.
R-12. ...
No, it wasn't there.
Oh.
Here's a debriefing form, a debriefing guide.
Yes, ...
You finally emptied one of those boxes.
...
No, that's - no, the only thing in the back of is the debriefing guide. And up until that point it looks like it's all malfunction.
... Rusty ... exerciser.
Well, that picture is somewhere and we have to have put it in.
06 06 04 27  CDR  ... all over your gloves.
06 06 04 32  CMP  Yes.
06 06 04 33  CDR  Let me get them out of there, okay?
06 06 04 34  CMP  Yes. Which one of these boxes ...?
06 06 04 40  LMP  Yes.
06 06 05 16  CMP  ... pin.
06 06 05 19  CDR  Huh?
06 06 05 21  CMP  The pin.
06 06 05 22  LMP  I'll get out of here.
06 06 06 03  CDR  What?
06 06 06 08  CDR  I keep forgetting the optics ... is over there.
06 06 06 11  CMP  Now, I'm through with it.
06 06 09 54  CMP  No, not - It's not the entry stuff either.
06 06 09 55  CDR  Oh, I don't think it makes any difference, Dave. I think the one thing we want to do is we want to get that top --
06 06 10 02  LMP  ...
06 06 10 03  CDR  ... at 11. Well, you can stick them all down here. Yes.
06 06 10 06  CMP  Yes.
06 06 10 08  CDR  Then you can put all the other JM cheeks and stuff in that one box over there. We've got plenty of room up here, and we've got a number of boxes down there that are becoming empty. The box that these things were in is empty. That's where we got our dirty underwear ...
06 06 10 23  CDR  ...
06 06 10 25  LMP  Which way?
This way, coming from the lower part of the L-shaped bag. We've got two ... here, inside -

... But I don't - Gee, you're not going to stow this ...

... Yes, so you just turn them upside down in the tunnel.

... Yes, yes, ...

... Take this one box here - and move this stuff -

... Right now.

... I'll pick them up.

... I think the clean underwear and stuff should easily go up in there because that's where it already is.

... Hey, Jim?

... Yes. That's right, we used it up, didn't we?

... Yes.

... There's the two ... It's these things?

... Yes.

... In A-5, we can put a lot of that stuff that we --

... Yes. And there's these three sets of drawers.

... Hey, we got a - we have a - Kleenex box that we could just leave out.

... Why not just move the toolkit up to this next one, Dave?

... Well, let's just put the toolkit down here in A-5 ...
06 06 12 12  CDR  Good. That ... heavy, too.
06 06 12 15  CMP  Yes.
06 06 12 17  LMP  Does it fit in there?
06 06 12 18  CMP  Yes, it does.
06 06 12 23  LMP  Okay, I'm going to take and move these other things, these ... and this - We don't need these ... bags anymore, either.
06 06 12 25  CMP  No.
06 06 12 26  LMP  So, I'll take and put that up here in the top part of the - Now, what we have up here are two - we have McDivitt's and Scott's pair of underwear.
06 06 12 44  CMP  No, McDivitt's ...
06 06 12 46  CDR  Where's the other set of underwear?
06 06 12 50  CMP  It's right up here.
06 06 12 52  CDR  Okay.
06 06 13 00  LMP  Excuse me!
06 06 13 01  CMP  Alright.
06 06 13 17  CMP  I'm going to do something else right now, before I forget it. Jim ...
06 06 13 31  CDR  (Laughter)
06 06 13 33  CMP  Did you put all that ...?
06 06 13 35  LMP  Yes, it might - it might be safer.
06 06 13 45  CDR  ... cold air in.
06 06 13 50  LMP  I could use some cold air, right now.
06 06 14 07  CDR  Where'd you put the ISA, Rusty?
06 06 14 09  LMP  Back in the - Where you had it, Jim.
06 06 14 10  CDR  Already?
Yes. It's just empty, except for the IM data.

There. The counterbalance is ... How about that!

Hey, how's the pressure in the bottle?

Where, in the counterbalance bottle?

Yes.

Zero.

Well, have we vented it?

Yes, ... alright, we have to ... But it was already down below the mean ..., anyway.

Where do you open it? ... the bottle?

I don't know. You can open it if you need ..., when you need it. Why don't we throw it in there?

I've seen enough trouble with that doggone thing that ...

No, we said we didn't want that one, didn't we, Dave?

Yes, we said we didn't want it, then I read in the PPD that says we're going to put it on here anyway.

(Laughter)

I went out and looked and I never saw it.

Then we said we wanted it.

No, we never said we wanted it. ...

I wonder why they would say that?

So it wouldn't be dipping around the spacecraft at the last minute.

That's right; it would have been another piece of mechanical junk you would have ... for the first time in flight, you know.
How do you work this thing?

The other day when I opened the hatch, I had to stop and think about that silly ... again, you know? Then automatically switch it here now as you're thinking "Which way does this stupid ... go?"

Did the hatch close easy?

Oh, yes, real easy.

Oh, ...

... Nothing to it.

And it came ... fine. I held it in one hand, and the ... was well over ... - or over the ... And I tried moving the counterbalance, and it didn't move very easy.

No, I just have to put the tool back. Okay.

You storing all that IM data now?

Yes.

Looks like it's going to fit without any problem.

Whoa! I've got one checklist left up here.

Yes, is that the one I had hanging over here?

No, you've got another one.

Oh, no!

What?

I found another one. ...

(Laughter)

I don't know why you think it's funny; you told me to.

(Laughter)
Where's that ..., Rusty?

Apollo 9, Houston through Guam.

Unless you want to keep it out.

Hello, Houston through Guam; Apollo 9.

Roger. Loud and clear. Jim, we need some things here. They may be on the DSE, and if it is on the DSE, just say so and we'll dig it out there, but - What were the results of the optics/sun filter evaluation?

Our daily quota.

We filled our daily quota of 70-millimeter frames today.

Say again.

Said we filled our daily quota of 70-millimeter frames. I figured we had to take about 200 a day. So we're - we're well up on it.

Very good, thank you. I guess you still owe us a powerdown consumables onboard readout.

We don't have those available for you yet. We'll get them for you in just a minute.

Okay. No hurry.

And in about another - half hour or so, I'll probably have some more data for RETRO and we'll send you that.

Roger.

Tell you what, I'll get that consumables data, if you want - Let me - let me set the pads first.

Did you ever get them down in that book?

Yes, you bet.
... the same ..., Jim, the one that you had.

No, I - I just took it out of there. This is my - Is this another one?

Right there.

Oh, yes, I have another one over there.

Oh, this is a LM unit ...

I still think they're ...

I wasn't expecting it right this minute.

Where the hell is the crew log?

I probably have --

Pass it down here. Oh, no.

I - I had it a minute ago, Rusty. Here you go.

I think what we probably ought to do --

Uh oh.

-- is ... through all the containers and give old RETRO entry stowage area?

That's what I'm trying to do.

Dave, while you're down there - Let me write up my form first.

Okay. What was it?

5 CD, 680 CD.

Oh, yes.

Rusty; all of them are off-scale high.

Okay.

Look at that!

Oh.
06 06 22 18 CMP  Sure don't want to be ...  
06 06 23 32 LMP  Houston, Apollo 9. You still there?  
06 06 23 35 CMP  What is this thing?  
06 06 23 38 LMP  That's Jimmy's.  
06 06 23 40 CDR  What is it, Dave?  
06 06 23 42 CMP  A souvenir.  
06 06 23 44 LMP  Oh, no.  
06 06 24 43 CMP  Did we power down the EMAG's?  
06 06 24 44 CDR  No, we're not going to do that, Dave.  
06 06 24 46 CMP  Oh, we're not going to power down, okay. ... a powerdown.  
06 06 24 48 LMP  Okay.  
06 06 24 58 LMP  ... what time were those targets of opportunity, Dave?  
06 06 25 00 CMP  Let's see; 24 minutes, 25 minutes ...  
06 06 26 08 LMP  You need a cold place to put this thing on after you get done exercising?  
06 06 26 11 CDR  Yes, it really gets warm, doesn't it?  
06 06 26 12 LMP  Yes, it sure does.  
06 06 26 56 CDR  Okay, Rusty. The PLSS and all the LM gear is in that box.  
06 06 27 04 LMP  The stuff for souvenirs?  
06 06 27 06 CDR  Including them.  
06 06 27 10 CDR  ...  
06 06 27 14 LMP  Yes, I do, too.  
06 06 27 17 CDR  That CCM is in there.
The flag, I got in this suit pocket.

You got my name tag in your suit pocket.

Okay, except for that one set of long red underwear.

Ooh.

What?

Whoa! I was really come out the ... on that ...

Hey, you got - (clearing throat) you got a minute to draw me some water? (Cough)

Soon as I get a hand.

Okay.

Where are - where are you guys' radiation meters?

Mine's in my pocket.

Why don't you give me a reading on that right now?

Mine's in my suit and I'm going to have to get it in a minute.

Okay.

3114 ...

Hey, mine's going backwards.

(Laughter) You and I really have our cords tangled up.

You know where those go? ...

There's the umbilicals off the LM.

Stay off of there.

CONFIDENTIAL
Day 7

06 06 29 49 CMP Stay off of there, ...
06 06 29 50 LMP It took me 2 minutes to put it back on --
06 06 29 52 CDR Oh, come on!
06 06 29 53 LMP -- and then you came and knock it off.
06 06 29 54 CDR I'll put it on for you.
06 06 29 55 CMP Yes.
06 06 30 03 CDR Hold on to your ground.
06 06 30 05 CMP I took them off, because I thought, you know, you were working to the left.
06 06 30 07 LMP Oh, damn it! Did you take the crew logs back, Dave?
06 06 30 11 CMP No.
06 06 30 12 CDR I'm just trying to untangle the cords right now. It's -- either that or get all unplugged, Dave. We're -- we're tangled up in there, and neither one of us can move.
06 06 30 22 CMP Well, let me get out of your way.
06 06 30 28 CDR Well, let me come out through here, so that I don't tighten that ... 
06 06 30 59 LMP Dave, did you take the crew log back again? Oh, no, here it is, here it is. I got it. Okay, Jim, yours is --
06 06 31 08 CDR 3114.
06 06 31 09 LMP 3114.
06 06 31 19 LMP Thanks, Dave.
06 06 31 39 CC Apollo 9, Houston.
06 06 31 42 CDR Go ahead.
Roger. What do you want me to put on your steak that I'm going to have for you tonight?

Nothing. Just eat it - just raw - well, not raw, just medium rare, but don't put anything on it, you'll ruin the taste.

Okay (laughter).

But taste it good for us, will you?

Will do.

You can put your knife and fork on it.

(Laughter)

Listen, you may be having steak, but I've got a larger choice of things right here. I have day 6, meal C; I have day 6, meal C; and I have day 6, meal C. I even have day 6, meal D.

Hey, that sounds great there. That's a perfect selection.

(Laughter)

Hey, the sun ought to be getting in a good spot for you, Dave.

Well, I was just trying to watch it so hopefully it would.

Oh, now, wait a minute, now. Look at the shadow on that window. It's got to be down there.

Huh?

What you need is a sundial on the ...

... with a sundial.

Okay, Galapagos is coming up.

Jim, why don't you go up and have fun taking pictures? And I'll ...? I got to take the last picture.

I don't mind.
Oh, if there's only one, ... anything much to do anyway, right? Oh, no, there's two of them.

... 

Well, looks like there's more than that, looks like there's --

Hey, I've got a great idea. Why don't we all go up and sit and watch the -- watch the world go by?

Okay.

Then, we'll go change the pictures -- or the canister or whatever needs changed.

I've got some more stuff for the big -- big feedbag. Unfortunately, they're all the same kind of meals.

Whoose! The camera was on the wrong setting.

Hey, yes. Let's always keep it on one -- I bet you I done that, too.

Hey, where's the big food bag? Go!

I don't see it.

Hoo hoo, this one over here is still on a 60th at full.

What are we having for dinner?

I don't ... I've got all the same for meals. B, D, C, C, D --

Where did that bag go? Is this it?

Where's the land, Rusty?

4 minutes.

Where are the scissors, and I'll cut them off?

Lots of clouds, huh, Davey?

Banana pudding -- oh! ... got some banana pudding.
You don't like those?

No.

Rusty likes pudding.


Banana?

You like banana pudding?

Butterscotch, you mean?

Oh, banana pudding, huh? I was thinking of butterscotch. Yes, yes, I do like banana pudding; I haven't eaten any banana pudding.

I haven't either. I didn't think we have any.

Yes, we've got banana pudding.

Banana pudding?

... banana pudding.

I'm not sure I --

... chocolate.

-- I'm not sure if there's a ...

So what?

Oh, spaghetti! Banana pudding and spaghetti!

I've never had the spaghetti. How's it?

It's not bad. I'd recommend it for an upset stomach.

(Laughter)

No, really!

Does it taste like what it says?
Yes. I thought it - I thought it was really not too bad. It's rather palatable, as a matter of fact.

I like the spaghetti.

Yes, me too.

Find anything to take a picture of?

Not yet. I am just looking to see what's vertical.

Where's it supposed to be? Right up there?

Yes, it's supposed to be on track.

... this going to be dry, I bet.

I'll call it out and if it really is on track, it looks like Davey's going to have the best view. Or maybe if it's a little north of the track, he will; if it's a little south of track, I guess I will. I mean the other way around, I guess.

Yes (laughter).

You know, I --

Don't stay on those upside-down deals very long.

-- This is the first time I misjudged north and south. I missed that up and down a few times. Nobody's perfect. There you go. An old adage; basic. Okay, we'll give you another minute.

Hey, you know, that's pretty clear.

In 1 minute, we're supposed to be there. I sure don't see anything that looks like a Galapagos Island.

... once and a half.

... Here they are. I see them. They're under the clouds down there. Dave, you should have an excellent shot.
Day 7

616

CONFIDENTIAL

06 06 50 44 CMP
Yes!

06 06 50 45 IMP
Perfect. There you go, Davey. Ready to go. Kind of clouded over, the window's fogged up. Oh, yes! Oh, yes! They're all over the place. Looks like under each cloud there's a little island.

06 06 51 00 CMP
That's right! There's a cloud over every island. No, there's just one little bitty island there; a couple of little bitty islands don't have clouds --

06 06 51 06 IMP
Two little bitty islands ...

06 06 51 03 CMP
-- too small to make clouds.

06 06 51 09 IMP
Take several stereos, now. Not that that's going to show much with all those clouds, you're going to get stereo clouds. Yes, that's not too red hot.

06 06 51 19 CMP
I'll just take one.

06 06 51 20 IMP
Why don't you take three? One here, one right over, and one, and one --

06 06 51 22 CMP
Oh, I'll take one on the other side.

06 06 51 28 IMP
Oh, man, that water gets deep in a hurry around there, doesn't it? Oh, look at the volcano down there. Look at the cut right through one end of that little --

06 06 51 39 CDR
Look at that little crescent one out there! See that little crescent one off the end? There's a couple of little crescent ones. Looks like the top of a cone.

06 06 51 45 IMP
Yes, the top of a cone. Look at how the end is cut off that island there?

06 06 51 50 CMP
Okay, those are pretty good pictures.

06 06 51 51 CDR
Yes, they're not bad at all. You did great, David.

06 06 51 57 CMP
Oh, boy! Those are really volcanic though, aren't they?

CONFIDENTIAL
Son of a gun.

Note that in the log. Four frames for the Galapa. Where's the log?

I don't know; I'm just looking ...

I try to avoid getting the logs. That way I can't get blamed for losing it.

Yes, I was going to say, I think that the guy that takes the picture ought to take the log of it.

Okay. Sounds --

Otherwise, it gets very, very confusing.

-- like a reasonable idea, sounds like a reasonable idea.

What you're implying is that, when the guy who takes the picture puts them in the log, it's not confusing.

What I'm implying there is that after the flight, those who haven't logged their pictures ought to spend their time identifying them.

And you're going to be spending --

What were the numbers on those four I took?

Who the hell's going to know who took which pictures?

Well, I'm logging all of mine. 120 - Let me see, you took through 127, so it's 128 through 127.

Should be 127 through 31. Alright. Look - look at this, Jim.

Did you ... the last one?

Sorry about that.

Oh, boy! Something's messed up.
I remember there was a spot back there where you didn't think you took as many as you had indicated you took. I don't know - I don't remember anymore where it was, but it was a couple of hours ago.

I took four there, so I know that was 120 - 7, 6, 5, 4. Alright, ... Now, our next opportunity is 150:55:07, the Peruvian coastline. And, my gosh, here comes the South American coastline. David, I think you're going to be taking another picture, here.

Hurry up, Dave. You're going to miss it.

No, no, no, it's no hurry yet, because we're not down to Peru. 55:07.

... so particular.

Another minute. Let me show you what you're looking at, Dave. You're looking at right here. We come across the coast at an angle.

Oh! ... landmark ... We're already - we're there. Gee!

No, we're coming. 155:07.

Oh, we missed a good one. Look at those islands down there. Boy, are they jagged and ragged!

No, it's too hazy.

Yes, ... won't be very good, but ...

At least, I'm seeing South America in the daylight.

Why? Was it in the dark before?

... I never saw it in the daylight before.

Yes, we're just kind of right over the Andes Mountains. The Andes Mountains ... and all those other ones.
06 06 55 55  IMP    ... 
06 06 56 13  CDR    You think it's ... on the success of your ...? 
06 06 56 27  CMP    They've never been successful. That's evading the issue. 
06 06 56 30  IMP    Hey, you ought to at sunrise, Dave, because I think we're trimming small-end-forward here. 
06 06 56 35  CMP    Okay, let's try it. 
06 06 56 38  CDR    The optics put away before I pull this thing out. 
06 06 56 41  IMP    Hey, Jim, did you notice our attitude this morning? 
06 06 56 58  CDR    I think I'll have some of that fruit cocktail. I liked that the other night. That used to really be terrible, but it's ... Just a little stuff. 
06 06 57 21  CDR    (Yawn) 
06 06 57 27  CMP    This floating up is really something, isn't it? 
06 06 57 35  CDR    Gee, what's that? Is that one, right there? 
06 06 57 41  IMP    Gee, I'll take that standard chow. I like those. 
06 06 57 43  CDR    Yes, they're not bad, are they? 
06 06 57 45  IMP    ... salad before dinner. 
06 06 57 50  CDR    I want a shrimp salad. I'm going to go dig one out of there, if I can't find one in here. 
06 06 57 56  CMP    They're full - those - both lockers are full, aren't they? 
06 06 57 58  CDR    Yes. 
06 06 58 00  CMP    Might as well eat the good stuff. 
06 06 58 05  CDR    Rusty, where's that procedures book - or the crew log? That was the one that had the menu in it, wasn't it? 

CONFIDENTIAL
No, the procedures book did. And I don't know where it is. David usually has some idea where the procedures book is.

The procedures book? (Laughter) Right here.

You've got ... procedures. I wonder how you do anything. You've got two clips on it.

Jim, it's just obvious that the menu's got to be in the procedures book.

No, it's not. It's in that - in the crew log.

What?

I think it's in the crew log, too.

It's in here.

I think it is, too.

Yes, it's in there.

Well, maybe it is - I guess I'm all mixed up again.

There we go.

... - Oh, I got the salad, salad - Let's eat a salad. I'm going to eat low cal tonight.

(Laughter)

I feel like I'm putting on too much weight on this trip. 3 ounces of hot water for a little ...  

Shrimp cocktail, day 8. Man, in every 4-day menu there's only one shrimp cocktail.

Boy, didn't that steak sound good, tonight?

What a dirty guy!

Oh!

Oh ..., think of ... big ..., big steaks -
And you weren't doing nothing, but complaining about it.

That's right. I think I ought to go home (laughter) and eat.

I wasn't complaining. That wasn't a complaint. That was only a comment.

Well, I'm going to go get the day 8, meal C out - even though we're not there. Oh, boy.

Day 8, meal C, look out, here I come. Hey, hot dog! I see day 8, meal B right there.

Lucked out, huh?

Not completely, but --

Follow the little yellow string.

-- I may have to do an operation on these things.

Hey, have we changed the canister, yet?

No.

I'll do that. Go ahead, and get your chow.

Oh, boy, I got a shot of gas - out the butt.

Day 8, meal C, hot dog! ...

Look at that. Would you believe that's 3 ounces --

That's good for you.

Ugh! I wonder - You probably don't get 3 ounces of water in there, either, do you? I wonder if you do?

What canister are we supposed to change?

I'll tell you in a second, here, Jim.
Here, I'll get it. I'll tell you what. I - I'll get it if you'll put my food someplace where you won't lose it. Here's the loose ... Put this day 8, meal C someplace.

15 to A -

Okay.

And 13 to A-4.

And if you get a piece of tape out and write something on it, I'll do it quickly, and we'll all be done in nothing flat.

What do you want written on the tape?

Number 13; I want the time, and what the partial pressure for CO₂ is.

Okay. 13 and --

Goes to A, did you say?

To A.

No, I want ... A to B.

A.

Alright. Got the tape?

Yes. Where are you?

Thank you.

Okay.

Boy, just thinking of that spaghetti and meatballs, really - Man! Ooo, how about lasagna? Ooo! ... How about lasagna? That sounds even better.

Pizza's better. Ron Evans, if you're listening to the DGE, I think you're a fink.

Hey, he is, too. Ron Evans, you're a rat.
Yes, have a bite of steak for me.

I think Ron Evans ought to buy us all a spaghetti dinner.

Uh oh!

What did you lose?

I just sent ... really whistling across the spacecraft, there. Man, I don't know where it went. I really threw it ...

How about the waste water dump? When was that supposed to be? That's supposed to be right about now, too, isn't it? Yes.

Why don't you ...?

151:50. Oh, we've got 40 minutes before that.

40 minutes before the waste dump, huh?

Yes.

Hey, what time did I have on that tape? Did you notice?

No, I didn't notice, Rusty.

Well, I'll just put down this time - 151 - yes, 151:03 or something like that.

Now, I've got to find that crumby screwdriver. I'll tell you, I don't have any idea in the world where to look.

... lost a screwdriver.

Yes, it slipped out of my hand. I went to reach for it and I hit it. Here it is right here. It must have bounced back. The last time I saw it, it was going about 40 miles an hour that way. ... Man, where is that? Okay, what did you do with my food that I entrusted to you, Scott? Okay. Dave, I can't reach it, but --
How's the gas content in the cold, David? How's the gas content in the cold? Boy, the hot's really bad. Wait a while, ... cool this thing down a little.

Is that what happened?

The bag is warm.

Oh, the bag, yes.

I haven't been able to correlate it on the - why it comes out that way sometimes, and not other times.

Hey, Dave, can we turn off your intercom? You make a big racket when it bangs up against things.

Thank you.

Hold your ears, Jim (blowing nose).

... Here you go. It's cooled off now, except for that thing. Man, that's a real heat thing - that - that big steel ... there.

You said what?

Huh. Be careful. You ought to push it, Dave, to adjust it, because, when you pull it, it'll unwind all the way.

No. No. But it - you stick it - it comes right here the way it's centered. Hey, you ought to get the rope ... Yes, I think you undid ...

Hey, you going to ..., Dave?

Yes, it really makes you hot. The heat transfer up here is really - you know, it's terrible because of the 5 psi.

It really doesn't taste like spaghetti, but it's not bad.
I think it's varying the pitch rate.

No.

... Hey, that's a question we ought to ask them so they can get us an answer, Jim.

Yes, well - Excuse me.

You don't get much work done, but your heart rate goes up.

Ooh. ...

Yes, that's just really hot. That - as I said, we ought to find some coldplate or something to lay it on, because, if it touched the wrong thing, it could very well singe it.

Really will.

Ooh.

Hey, don't get it on the glass, Dave.

Hey, Dave, maybe what we need to do is put a piece of tape on the hatch and - and lay the tape over it.

Why not? Oh. Well, we could put it over the cord on each end, though.

Yes. I haven't been too bad about that, but one - about 2 days ago, I dropped some of - I let go of something inadvertently, and I grabbed for it real fast before it hit the deck.

The new one you put out. ..., Scott. Your skin eats that stuff. Maybe the other way around.

What?

I said, "Your skin eats that stuff, or maybe it's the other way around."

Did they already pass up the block data tonight?
Great.

Almost as good as a steak, huh?

Not quite that good. Not quite that good. I'd like a steak just about like the kind we had for ... a couple of ... of it.

I'd like some of that fresh fruit, too, you know.

Hey, Jim, we'd like you to check to make sure you've deactivated the DAP.

You can rest easy, tonight; the national guard is on the duty.

Alright.

(Rafters) Thought you said you're going to trade.

Well, I keep finding it over here. It looked like it was stuck in something over there. I thought it was stuck in something over there. But I see you didn't put the computer to bed yet?

Okay, we haven't put the computer to bed yet.

(Wednesday)

I think the prettiest one, really.

Would you trade for a grape? I figured you would, but I don't have one. (Rafters) I think that's the favorite drink.

Alright.

Go ahead, Houston; Apollo 9.

Roger, Apollo 9. Just want to let you know that you can rest easy, tonight; the national guard is on the duty.

Ugh! Go ahead.

Apollo 9. I made it the lamp post.

I'd like one of that fresh fruit, too, you know.

Hey, Jim, we'd like you to check to make sure you've deactivated the DAP.

Like a steak just about like the kind we had for ... a couple of ... of it.

I'd like some of that fresh fruit, too, you know.
Yes, it really is good.

It's got class; it's got a lot of color to it.

Yes, it does. Actually, I like - I think the other one I like next best is just the straight orange.

I tell you, I'm going to really make a sacrifice; I'm going to try to eat some of these bite-size things. Looks like it just about up to ...

We promised you that we weren't going to bitch about our food.

You know what I wonder if they couldn't do would get packaged Lipton soup, just plain old, crapping, Lipton soup, and put it in a bag, and you mix that hot water with it. Man, that would taste so good. Uh!

You know what I think? ...

There's a lot of other kinds. That really would taste an awful lot better than any of this stuff. Wonder why they can't do that?

(Laughter)

I see, I'd better get us down near the Guadalcanal or you guys are really going to be disappointed.

For more reasons than the 350-pound cake (laughter). I don't want to have a Dave Scott. And a Neil Armstrong.

Yes, I'm going to learn from your experience, Dave. I believe it.

Boy, this stuff's really got the old banana oil taste to it, doesn't it?

Where's the sun?

Obviously, in the wrong place again, David.

... Shines in the optics when you try to take a star check.
... okay. ... Scott's law.

H. Scott Parkinson.

... that's not a Parkinson's law. That's more like a - what's that other guy?

Murphy.

Oh, where are we in the world? Ooh, we're upside down; that's where we are.

And, we get the Taiwan Straits at 151:47; and we're 7 minutes ahead of that. So that means 1, 2, 3, 4, 5, 6, 7. Hey, alright, so we're coming up on - on Thailand and Vietnam with the Hainan Island.

Well, we're still over the ocean now, aren't we?

... There's Mother Earth.

Yes, here comes Thailand.

Boy, is it hazy down there! Whoohoo!

I don't know; you guys started it before and -

Hey, okay. I'll - let me get a picture of that ...

Crease in the cloud. Real interesting like.

Weird.

You might be able to put the ...

151, is it?

152:30.

Oh, they give us the sunset time, too. They gave us one right here - sunset.

Where's the photo log now?

Jim's got it. No, by the window, Jim.

What are you hunting?
The photo log.

Oh, no, we're never going to get that target of opportunity. Dave, in 2 minutes we're supposed to get a picture of the Formosan Straits. Doesn't look like we're going to make that, does it?

(Laughter)

Look, Dave. I think it's too ... You might just be able to see it. The -- the ...

Boy, that's a lot of footage; you know it?

Sure is (laughter) ...

Yes, it sure is.

I don't think I want another banana for a while.

Bing. The fuel cells are all done.

At 151:48, ...

What's the filter for, the sextant or the telescope?

Yes, you really need to do that with the optics up so you can use AUTO optics. You put that filter on, I bet you're never even going to be able to find it again.

Man, that's really a deck of clouds.

Ow!

I can no longer say that.

How are we doing on that?

We're below the line on hydrogen. ... we look like we're holding steady ...

Oxygen is MAX.

Oh, shoot, ... again.

58, 52, 55. ...
... again. Oh, hell!
Okay. Cryo cycles.
What did you guys do with my sun?
He's over here shining in my eyes.
How's fuel cell 2?
The \( T_{ce} \) is okay, but the ... is ...
Go back to ...
It may only - it's been doing every night after you purge, it comes down in the \( T_{ce} \), but the performance is real low. Now, after we hydrogen, the performance will come back up for a while. And then it's going to go off the top again.
We're probably going to have to purge hydrogen through again to get it down --
I was just looking to see what you ought to purge. I think we ought to purge just a little bit out of it anyway - maybe ... number 2 tank ... down.
... high pressure. Then I put the number 1 tank ...
Take a little out. Put some more on number 2 ... maybe number 2 ... and ...
How does all that stuff look?
Same as it has.
Maybe it's hydrogen -
You know we didn't get a full load. See, it's not on the curve.
Yes.
It's a steady - steady curve there.
Yes.
... up to about 15 - 14, 15 percent. I think what we ought to do is purge the fuel cells - just fuel cell number 2, just a little bit - like 3 or 4 psi and bring it down to maybe 105 or 106 - or 205 or 206 and then stop the purge. And then I'm going to put the H2 fan on in number 1 tank anyway.

You know that tank'll gradually rise. ...

I sure wouldn't purge very much. I wouldn't give up much of that ...

Huh?

I wouldn't want to give up much of that hydrogen.

No, I would purge a little bit.

... pressures and fuel cells and all.

I still think you ..., Rusty.

... sleep, that's all.

... 2 or 3 percent and then to sleep.

Unless you decide to keep us up here the whole time.

Huh?

Or else don't blow it.

Aren't you glad I did now?

I didn't say that - I just said, "let's don't blow it."

I know you didn't say that. I asked you a question.

Yes, that's a pretty good question.

Lot more restful than it's going to be on the ground.

No, listen. By the time we get back, they'll be on the way to the moon.

What are you talking about?
Skip - we're going to skip the next two flights and just make the lunar return.
(Laughter)
Won't even have to bother going.
That's right. We've already proved we can do it.
Yes, just come back. On with the Mars mission!
Yes, sir, just looking out for you. We're going to have LOS here pretty soon, and I guess we'll be talking to you in the morning.
Okay, say "Hello" to my lovely family for me, will you?
I'll do that.
(Singing)
Having a good time up there?
Sounds like a bird to me.
You want to put that H₂ fan number 1 on now?
Just a second. Let's see what time ... Everybody ready to go to sleep?
We're in our rest period.
Are we really?
Yes, I think so (laughter). 10-1/2, I think, tonight.
Good, see if we can get up early, do a little of exercise, have a nice leisurely breakfast, and figure out how to do what we're supposed to do tomorrow.
Well, we're not rested yet. Well, I'll tell you what, we ought to have a ...
... wide angle, huh ... or wide angle?
Wide angle, I think. Gee, I have to take a leak.
I'm going to need one before I retire, but I'm not sure if I'm ready yet.
If you use the wide angle, it's got to be hand held.
Yes, - I'll hand hold it ...
... let's see, I'm afraid we'll have to guess.
Right after we do this, why don't we do the waste water dump, Dave?
Yes.
I wonder why they haven't called us on doing those waste water dumps at those specific sites? Don Ring was all hopped up about that, man.
Don Ring may have got voted down.
Maybe, although you know, dumping waste water is kind of like - ... do that at will.
Right and also you got to plan it like that.
That's right ... - not sure. It's one thing to say "now" - Yes, sure, but what difference does it make if that's when we dump the waste water? ... plan everything out and you get committed to something like that, and the whole world is up there waiting for you to dump your waste water out.
No, he wasn't talking about a preflight commitment. He was talking about in real time ... within the last 3 or 4 days. Hey, is that a C-IN or a C-EX?
I don't know --
A C-IN, I guess. What time is sunset?
Dave ... We actually can have - we actually can use the C-IN pack. C-IN ...
We could probably get better, though, if we would - Oh, I see, you want to save it.
06 08 19 37  CDR    Yes.
06 08 19 38  CMP    ... We've got 11 minutes.
06 08 19 54  LMP    ... kind of leaving wide open for that thing.
06 08 20 00  CMP    What in the world is that doing?
06 08 20 03  LMP    Floating around, that's what it's doing.
06 08 20 05  CDR    I guess 24 frames per second is what we want to do here.
06 08 20 10  CMP    Boy, the way that comes out -
06 08 20 30  CMP    Where's the grab bag? I need some dessert.
06 08 20 33  LMP    Hey, you get ready to take a leak, none of this eating stuff! (Laughter) You know you're a critical element in this thing.
06 08 20 44  CDR    Without you, we have no pictures (laughter). Boy, that camera really got beat up going in and out of that LM.
06 08 20 50  IMP    Did it really?
06 08 20 52  CMP    That's more than ...
06 08 20 57  CDR    When it came back in, the film feed was on 500 000; the ... was bent over here; the port cord here was about knocked off - ... a-bom-pi-ti-bom-pi-ti-bump-bump.
06 08 21 17  CMP    I know what I'll do; coming up next is the opportunity - Oh, we got 11 minutes yet.
06 08 21 29  CDR    Guess there just wasn't any better way of transferring the camera back and forth ...
06 08 22 12  LMP    Ever try to figure out how many panes we've got in these windows ...?
06 08 22 21  LMP    Three, I guess.
06 08 22 22  CMP    Yes. There's supposed to be three ...
06 08 22 38  CDR    Boy, that's all that stands between you and death.
That's lot more than an ILTC.

Yes, I was just ... got a lot less than that, I think.

LM is just one pane, and it isn't as thick as any of those three put together - any one of those three put together. There was a washer in the window ... docking. It kept getting lined up - (laughing) right under the COAS yesterday.

Hey, that means there were two panes in that wind. How about that?

Yes, yes, I was just going to say, there's more than one pane, I think.

There's an outer ... says double pressure pane and I think they mean double ...

Got it all worked out up there, Dave?

Yes.

Don't let me down, then; it's a critical burn. I'm critical wet.

I'm not going to let you down.

There are a couple little nicks in that. Oh, that bubble.

What happened to the big nick that we had in the window last night - that ... going away, huh?

Burned off by all those heaters.

Yes.

I may be able to contribute to this next picture here.

Now wait a minute. You want to do it or you want me to?

Everybody wants to get into the act. ...
Well, we can't both get down here and do all this, can we?

Sure; why not? I'm not going to use you ...

Go ahead, I don't use that.

... down, Scott.

How are we doing on time?

I don't know how the time is, but it's starting to get dark out. I give you about another minute.

In a minute, I'll be all ready - maybe.

This is your big moment to be on live television.

What? That'll look pretty good.

We'll also have a scene with your dump ...

... sequel ... to McDivitt.

You're the producer; I'm the photographer (laughter); I'm the director; you're the producer (laughter).

Don't jiggle the camera now.

24 frames per second is going to be pretty tough.

Pretty tough to do what?

Hold.

24 frames a second? ... one frame a second.

I'd make it as easy on myself as I can. Okay, the big moment has just about arrived.

Okay. Oh, this is really going to be superb ...

... lights out.

Rusty, can you ... your lights a little? Don't turn them all the way down, just get them a little dimmer.
06 08 29 00 CMP Oh, this is going to be great!
06 08 29 01 CDR Just a little more.
06 08 29 07 LMP Spin it; see how it works.
06 08 29 09 CDR Okay, why don't you start it going now?
06 08 29 11 CMP Stop, Rusty.
06 08 29 15 CDR Hey, wait a second. The camera's not working.
06 08 29 18 LMP Good God, man!
06 08 29 22 CMP ...
06 08 29 27 LMP You're really a great photographer. Turn the switch on.
06 08 29 36 CDR I have. Okay, there it goes.
06 08 29 40 CMP Okay, now it's working.
06 08 29 41 LMP ... up.
06 08 29 43 CMP Stop, Rusty. Oh, look at that.
06 08 29 56 CDR Oh, shoot, we're going to overexpose it. Stop the ...
06 08 30 02 LMP Hold it, hold it, Dave (laughter). Come on, Dave. Oh, hey. Listen, you're lousing - Oh, look, there's a big one. Hey, Dave, you're lousing up the whole picture; you're overexposing it (laughter).
06 08 30 18 LMP Yes. Whoocce!
06 08 30 21 LMP Hey, not too much, Dave. Really, we've got too many out here. Hold off.
06 08 30 26 CMP You want me ...?
06 08 30 28 CDR You know, we're not getting any of those big balls out now; there's too much spray. Just let her run now. ... the earth ...
06 08 30 43 CMP Just start ...?
06 08 30 45 CDR  Yes. Oh, now they're going by - orange - and it was iridescent! ...

06 08 31 14 CMP  ... here the ...

06 08 31 16 CDR  Okay.

06 08 31 24 LMP  Oh, look at that one.

06 08 31 45 CDR  Hey, go.

06 08 31 46 CMP  We're going. No. Any light left?

06 08 31 51 CDR  Yes, there's still some light, but I don't see any coming out.

06 08 31 54 CMP  Yes, it's coming out.

06 08 31 59 CDR  I guess there's not enough light left.

06 08 32 04 LMP  Well, there's really only one star in any movie.

06 08 32 06 CDR  Shoot.

06 08 32 10 CMP  ...

06 08 32 11 CDR  Hey, it was really funny. They actually changed to orange color, they - you know - look like they were radioactive - they were shining so. It didn't look like reflected light. It looked like they were actually producing their own light.

06 08 32 22 LMP  Woo, weird! (Laughter)

06 08 32 35 CDR  You were great, Dave. ... there isn't much time for that. And at that critical moment - you were sort of facing --

06 08 32 45 LMP  Running late --

06 08 32 46 CDR  -- you were facing the wrong way, too. The other day we were facing down sun; today, we were facing across sun, so that the earth was still lighted behind you, and I had to wait until the terminator went by. Then, you know, it was just a matter of seconds after that.
<table>
<thead>
<tr>
<th>Time</th>
<th>Caller</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>06 08 33 04</td>
<td>CDR</td>
<td>The big production! Shoot! APS burn to depletion. Urine dump. When you going to do your seat check?</td>
</tr>
<tr>
<td>06 08 33 26</td>
<td>CMP</td>
<td>I don't know. I've got to take the L-shaped bags down and all that --</td>
</tr>
<tr>
<td>06 08 33 30</td>
<td>CDR</td>
<td>Oh, yea.</td>
</tr>
<tr>
<td>06 08 33 31</td>
<td>CMP</td>
<td>Why don't we do it when we get ready to stow?</td>
</tr>
<tr>
<td>06 08 33 33</td>
<td>CDR</td>
<td>I'll tell you what --</td>
</tr>
<tr>
<td>06 08 33 34</td>
<td>CMP</td>
<td>... check the seats ... then anyway.</td>
</tr>
<tr>
<td>06 08 33 35</td>
<td>CDR</td>
<td>I'm going to - I want to check the seat now, too.</td>
</tr>
<tr>
<td>06 08 33 39</td>
<td>CMP</td>
<td>Oh.</td>
</tr>
<tr>
<td>06 08 33 40</td>
<td>CDR</td>
<td>Let's see, are you going to do it now or are we just going - I'll tell you what. ... stuck it in my pocket.</td>
</tr>
<tr>
<td>06 08 33 56</td>
<td>CDR</td>
<td>Alright, let me see, get this back off again ...</td>
</tr>
<tr>
<td>06 08 34 03</td>
<td>CMP</td>
<td>You want to check the seats now for what?</td>
</tr>
<tr>
<td>06 08 34 06</td>
<td>CDR</td>
<td>I want to see what is wrong with that Y-Y strut.</td>
</tr>
<tr>
<td>06 08 34 09</td>
<td>CMP</td>
<td>Let me see -</td>
</tr>
<tr>
<td>06 08 34 26</td>
<td>CDR</td>
<td>Where was this stowed?</td>
</tr>
<tr>
<td>06 08 34 29</td>
<td>CMP</td>
<td>What?</td>
</tr>
<tr>
<td>06 08 34 30</td>
<td>CDR</td>
<td>Where was this stowed?</td>
</tr>
<tr>
<td>06 08 34 31</td>
<td>CMP</td>
<td>Right behind you. The whole biz.</td>
</tr>
<tr>
<td>06 08 34 35</td>
<td>CDR</td>
<td>Oh, gosh. In D-3, right? The big one?</td>
</tr>
<tr>
<td>06 08 34 38</td>
<td>CMP</td>
<td>The big one.</td>
</tr>
<tr>
<td>06 08 35 13</td>
<td>CDR</td>
<td>Yes, Dave, I'll predict you'll produce at least 50 barrels a day.</td>
</tr>
<tr>
<td>06 08 35 15</td>
<td>CMP</td>
<td>A ... be a real winner of an oil well.</td>
</tr>
<tr>
<td>06 08 35 17</td>
<td>LMP</td>
<td>Yes. Why not?</td>
</tr>
<tr>
<td>Time</td>
<td>Role</td>
<td>Text</td>
</tr>
<tr>
<td>-------</td>
<td>--------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>06 08 37 45</td>
<td>CDR</td>
<td>I guess if - Rusty's strut's unlocked now, huh?</td>
</tr>
<tr>
<td>06 08 37 50</td>
<td>LMP</td>
<td>Okay.</td>
</tr>
<tr>
<td>06 08 37 52</td>
<td>CDR</td>
<td>When you get time, would you lock it up?</td>
</tr>
<tr>
<td>06 08 37 54</td>
<td>LMP</td>
<td>What?</td>
</tr>
<tr>
<td>06 08 37 56</td>
<td>CDR</td>
<td>When you get time, would you lock it up?</td>
</tr>
<tr>
<td>06 08 37 58</td>
<td>LMP</td>
<td>Lock what up?</td>
</tr>
<tr>
<td>06 08 38 00</td>
<td>CDR</td>
<td>Your strut --</td>
</tr>
<tr>
<td>06 08 38 01</td>
<td>CMP</td>
<td>Your Y-Y strut.</td>
</tr>
<tr>
<td>06 08 38 16</td>
<td>CMP</td>
<td>We're going to have to unlock the ... control panel, too.</td>
</tr>
<tr>
<td>06 08 38 20</td>
<td>CDR</td>
<td>Yes, boy.</td>
</tr>
<tr>
<td>06 08 38 37</td>
<td>CDR</td>
<td>Okay, it locked right up.</td>
</tr>
<tr>
<td>06 08 38 42</td>
<td>LMP</td>
<td>Huh? Wonder why it wouldn't lock the other day?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maybe we were in it --</td>
</tr>
<tr>
<td>06 08 38 46</td>
<td>CDR</td>
<td>And all that extra weight (laughter).</td>
</tr>
<tr>
<td>06 08 38 49</td>
<td>LMP</td>
<td>All the extra weight!</td>
</tr>
<tr>
<td>06 08 39 06</td>
<td>CDR</td>
<td>Fits fine.</td>
</tr>
<tr>
<td>06 08 39 12</td>
<td>CMP</td>
<td>Another thing we have to do before I take the couch down is to get that suit out of there and put it somewhere. ... L-shaped bag ...</td>
</tr>
<tr>
<td>06 08 39 30</td>
<td>CMP</td>
<td>I don't think those pictures were very significant, to tell you the truth.</td>
</tr>
<tr>
<td>06 08 39 34</td>
<td>CDR</td>
<td>Neither do I.</td>
</tr>
<tr>
<td>06 08 39 36</td>
<td>CMP</td>
<td>If it doesn't, it won't look any different here than it does in one g, as far as the appearance. You got to hold yourself down to get out, you know, and ... the propellant stuff is ...</td>
</tr>
<tr>
<td>06 08 39 54</td>
<td>CDR</td>
<td>... that.</td>
</tr>
</tbody>
</table>
Well, Rusty ... the picture —
I mean, too bad we didn't have a chance to produce it

Oh, yes, to really do it. Yes.

Okay, now take the probe out and go around at different camera angles and things like that.

Well, you took this out of the whole ... angle stuff, didn't you?

Well, that may be better (laughter).

That's right. That shows what's really going on. If the hoses weren't there, it wouldn't be a challenge at all. The hose has to be — ... here.

Do we do the whole powerdown set first? ...

Yes, across the water.

Yes.

Yes, I need my ... on.

That's day 5 ...

Day 5.

Ouch!

Yes, I bet, if you live in zero g for a long time, your legs would just shrivel away.

Huh?

I bet if you lived in zero g for a long time, too many generations, that your legs would just go away. You really have no need for them.

That's right.

Either that or you'd develop toes — I mean fingers for them, so you could hang onto things with them.

You might even grow a tail.
Right.
Who knows what you could do? (Laughter)
Is ... outside, David?
I can't tell, Jim.
Must be something if it's water ... going down.
Does it work?
That's a garbage bag.
No, that's a food bag. I thought - Here's the other one over here.
... 
What's the quantity remaining?
Okay.
Okay.
O₂ FLOW HIGH!
How much do we have now?
Alright.
How much now, Rusty?
It's alright.
Okay.
...
In the ...?
The rest of it looks that way, though; no, just down there.
Sort of docs.
Okay, thank you.
06 08 53 55 CMP  
  Hmm.

06 08 54 47 CMP  
  It's not ...

06 08 55 00 CDR  
  What's the matter, Dave?

06 08 55 02 CMP  
  I've just discovered something very interesting.

06 08 55 04 CDR  
  What?

06 08 55 06 CMP  
  I'll show you. Pictures are worth a thousand words. ... point down here.

06 08 55 41 CMP  
  Soon as you get through. It's nothing urgent. Looks like history.

06 08 55 51 CMP  
  Ought to be interesting to find out the origination of the history.

06 08 56 08 CDR  
  Oh, gracious.

06 08 56 10 CMP  
  How about that?

06 08 56 11 CDR  
  Where was it?

06 08 56 13 CMP  
  Up here in R-3.

06 08 56 18 CDR  
  Been there all the time? Was it hot when you pulled it out?

06 08 56 21 CMP  
  No, it wasn't. ...

06 08 56 27 CDR  
  ...

06 08 56 33 LMP  
  It's not hot, Jim.

06 08 56 37 CMP  
  Looks like the ring got hot.

06 08 56 58 CDR  
  Where was it now?

06 08 56 59 CMP  
  Right here in R-3.

06 08 57 01 CDR  
  Look in the rest of the stuff.

06 08 57 02 CMP  
  I did. Nothing in there to do it.

06 08 57 09 CDR  
  You got anything else in there that's burned?

CONFIDENTIAL
No.

No. When I ... put my hand on it, it wasn't very hot.

How hot did that get in there?

That's what I'm thinking; somebody set it down somewhere where it was not - on a lamp or something like that, getting ready to stow it.

Huh!

They say it is interesting to find the origin of history.

Yes, wouldn't it?

It's something we ought to show somebody when we get back.

I wonder if these ... are confidential. ...

(Laughter)

Did you get it out in time?

Oh, too bad.

Oh, well. Listen, everytime I went over there, I smelled something different. Everytime I opened the hunnel - the tunnel up - -

The hunnel up - -

The hunnel up.

... of the tunnel.

Everytime I - Oh, I guess ...

... It wasn't the heater.

I'm sleepy.

Yes. I am, too.

(Singing)
Hey, listen, we didn't - We turned the fan on. No, it wasn't any fuel purge.

Hey, it might have bounced it. It might have flipped it. That's all. The light wasn't on then.

I'm going to bed early.

... go ahead.

Go ahead; go ahead. You look tired; go ahead.

Tired feet.

Why don't you take a rest? Why don't you take a trip? Why don't you go somewhere you've never been? Why don't you take a trip around the world?

Tomorrow, we get into that big ...

Everybody ... 500 miles you just about ...

That's what I say. We ought to take some of those pictures before we get up there 200 miles. Almost twice as high.

The stickyback bag?

You got to be kidding.

Ooh, what a nice guy! He says the neatest things. Why do you say things like that, McDivitt? What do you want to get - somebody's going to slug you one of those days; they're not going to slug you one of these days; they're not going to take it right. He really is. You know that hurts people's feelings? You like to hurt people's feelings, Jim? You ever think about that? Huh? Have you ever talked to your psychiatrist about that?

What? Well, read it out.

Get it started ...

No, Jim.

Yes. The sun came up again. There goes the ...
Yes, Jim, the cabin temperature is 75.

Roger; Mercury in 5.

Why don't I get up?

... it right there.

You know one thing that - I'd never gotten the EVA with all that ... for depressant and repressant and opening and closing that damn ... those gloves are right over here.

(Yawn) Oh, boy.

Good. Everybody gets one and somebody gets two.

Well, I got one, thank you. How about you?

No, thanks, Rusty.

These boxes are really something. Hmm, there's not - nothing in it.

Got the other ... in that box.

Hey, Jim, remember when we were talking about that ... in the EVA thing?

Yes.

Do you know what time I said that would be? ... we talked about that.

I was a little surprised you were that early, to tell you the truth. I sort of ...

Apollo 9, Houston. We have you through Mercury, about 7 minutes.

--- 28, minus 1609, 173:56:15, 3831. And the pitch and yaw trim for REV's 105 through 108: pitch, minus 0.88; yaw, minus 1.09. For REV's 109 and 110: pitch, minus 0.88; yaw, minus 1.40.
Roger. Houston confirms update. We'll see you at Texas around 51. We'd like to remind you of the \( \text{O}_2 \) purge and the \( \text{CO}_2 \) filter change.

Okay. \( \text{O}_2 \) purge and \( \text{CO}_2 \) filter change, at 58 through Texas.

Oh, yes. Supposed to do ...

You know what - what really bugs me is that you usually spend so much time ... every one we did ...

New window shades? ... that?

There used to be little things that would latch over the sides, sort of -

Yes, they really are.

Where is it?

Hey, did you log in the exercises? You ought to try to log it in ...

... find the numbers. Those numbers ... Well, why don't we just go back to giving the - ... put down the days ... ?

No way. I don't want my water out of the bag.

16 to B; 1h to A-h. So, the one you took out was 1l

Want a piece of tape?

Yes.

The one you just used is 1h. Take one out of A-h and put it B.

Hey, how's the \( \text{CO}_2 \) for a change? Isn't it 2.2?

That's very characteristic of ... stuff.

Yes, sure is.

Look at those dunes.

Apollo 9, Houston; 30 seconds LOS. We'll see you at Carnarvon at 51.
Roger; Carnarvon, 51.

Does that one look like it's going to be any good, Rusty?

This one looks like it's alright. Going to be an oblique.

Well, they want it 30 degrees south of the nadir. You got a south look there? Yes, you do, don't you?

Yes.

Man, look at that geology there.

Yes, isn't that something? Whoa! How would you like to be on a camel down there?

No thanks.

(Laughter)

Boy, it's funny how that desert changes, from that red-beauty stuff to this white nothing.

Yes.

You know, I'm not sure we're going to get it.

Really?

See out backwards pretty good?

Yes, but I can't see back up towards the horizon enough, I don't think. It depends on how far north of it we go. Can I turn down my S-band volume a little, Dave?

Yes.

That's good. How's the time?

... minutes.

Okay. Not yet from here. ...

I think just about. Here, let me have the camera. We're getting some pretty interesting things.
06 21 23 58 CMP  Oh, yes, ...
06 21 23 59 LMP  Yes, there's a lot - Look at that - that's a big cinder cone field. Okay, now.
06 21 24 11 LMP  Oh, okay. Are we on?
06 21 24 19 LMP  I'll tell you what; how is the time coming?
06 21 24 24 CMP  Okay, 24:22 and they want 10 frames at 6-second intervals. At 25:33. ... do that?
06 21 24 32 LMP  Yes, why - why don't you just give me a hack?
06 21 24 34 CMP  Yes, I will. And they want 30 degrees south of the nadir.
06 21 24 39 LMP  Okay.
06 21 24 41 CMP  I'll give you a mark. It'll be about a minute.
06 21 24 43 LMP  Okay.
06 21 24 45 CDR  ..., wasn't it?
06 21 24 47 LMP  Yes, it may not - it may not be too bad.
06 21 24 53 CMP  30 degrees. ... It looks like we're rolling a little left, there.
06 21 24 59 LMP  Yes.
06 21 25 28 CMP  Okay, here we go. Ready?
06 21 25 30 LMP  Okay, all set.
06 21 25 31 CMP  Number 1 coming up.
06 21 25 33 CMP  MARK.
06 21 25 34 LMP  Nothing but a cloud, but -
06 21 25 36 CMP  Okay, number 2 coming up.
06 21 25 39 CMP  MARK.
06 21 25 43 CMP  Number 3 coming up.
MARK.
Number 4 coming up.
MARK.
That's not going to do it, Dave. There's nothing down there. Not a damn thing.
Oh, really?
No, just - just peaks of sand, and there's absolutely nothing on them. It's not even - they don't even have a mark on them.
You think they missed their time, Rusty?
Yes, I think they might have. I think we're looking north of the problem.
Too bad about that.
Yes, we're looking north.
I thought we were looking - You were almost looking -
No, I can see the horizon up there, see?
Too bad.
Yes.
Maybe we ... roll ... here.
Okay, Dave, that was - I guess I took four pictures total. Oh, no, five total.
That's six total, and that was through 13½, so it must have been 128 - 9 - 30 - 1 - 2 - 3 - 4. 129 through 13½.
All you saw was dunes?
Not even dunes, just flat white sand. No, it was obviously nothing.
06 21 28 07  CMP  Yes.
06 21 28 08  LMP  I took a couple while the clouds were there; you know, there were holes in the clouds; thinking there might be something under them, but, hell, when the clouds dropped, it was obvious there wasn't anything there.
06 21 28 45  LMP  We are posigrade again this morning. I think we've been posigrade every morning.
06 21 28 54  CMP  Yes. I think so. ...
06 21 29 52  LMP  Have to do that one, too. ... once in a while ... I kept waking up last night thinking "My God, ..."
06 21 30 07  CMP  You did?
06 21 30 08  LMP  Yes.
06 21 30 29  LMP  No, it's the one on the right, David.
06 21 30 32  CMP  Hey, our clock's jammed.
06 21 30 42  LMP  Hey, you got to go out past 1 before it'll ding, Dave.
06 21 30 50  LMP  No, it won't.
06 21 31 00  LMP  Right!
06 21 31 04  CMP  No, I don't want to ...
06 21 31 21  CMP  Hey, listen, if he sees any ...
06 21 31 40  LMP  Yes, I'm sure.
06 21 32 48  LMP  What else you want?
06 21 32 56  LMP  It doesn't appear to be up on this end.
06 21 33 01  CMP  I saw it floating past ...
06 21 33 14  LMP  I tell you what, let me get my hose to the right side of - of the strut.
06 21 34 21  CMP  166:10. We've got another 45 minutes. How about, let's see, ... out the window?
Well.

You got one - Jim, they're both right there in front of you. There's one there.

Huh?

Which one do you want? Did you get them? Oh, huh?

Rusty, you're putting them in there too fast.

Oh, I - I thought that was -

No, no, this is ... Here you are. Even got a red spot on it.

By ...

Under your head.

For the first few minutes, then after a while - Yes. Yes, the first few minutes of it were really good. Boy, I - It tasted great.

Recommended highly.

Dave, I think I'd trade you a hot cocoa for a grape punch.

... you've got a deal.

If you got one.

I'm not sure I have. I eat the same breakfast you do.

Yes, there is a grape punch in there.

There is?

No, there's not. In fact - in fact, I think I might try the hot cocoa here again. Yes, I like it now. I found that my taste changes day to day.

I don't know.

Yes, you did.
Yes, you did. Which way is it?
Down...
Down and...

Wonder why it's so ... after I turn it off like t
It may - may be - It must ... build up -

Purple eye.

It's really good.

Hello, there. Do you hear?
Yes, sir.

Good.

Guess what, David. When your face feels better,
breathe less skin. Besides that, we like you to
look good.

Right. You got to be handsome.

Right. None of this recovering looking like that
We got to stay up here 2 more days just so that I
can look good when we eat that 350-pound cake.
Right after that, three 8-foot-tall redheads.

You know, I think we've probably logged more slee
time than the other flights all put together. Th
the one thing that we've got more of - -

Yes, it's worked out very well. It really has.

Anytime you guys want me to take the watch, let I
know. Gees, I kind of feel like - like I'm cheat
going under there in luxury class.

I think ... works fine. What do you think, Dave?

Well, hell, you keep getting waked up though, don
you?
06 21 50 22 CDR  No, not that often.
06 21 50 24 LMF  No?
06 21 50 27 CMP  No, I just, whenever I wake up, I glance around the
gages and just see what they look like.
06 21 50 35 CDR  I see you doing it - I see you doing it, too. I just
look around, and I just go back to sleep, and I hear
click-clock over there, and I look - (laughter)
turning on all those lights.
06 22 05 23 CDR  You still there, Stu?
06 22 05 25 LMF  By-by.
06 22 05 35 CMP  And that, dear sir, was the end of Mr. Stuart.
Mr. Stuart ...
06 22 05 43 CMP  How are your ears, Jim?
06 22 05 45 CDR  Okay.
06 22 05 53 CMP  Yes. Did you take an Actifed last night?
06 22 05 55 CDR  No, I took one yesterday afternoon.
06 22 05 56 CMP  Yes - I --
06 22 05 57 CDR  Dave, you're looking a lot better. You're looking
much better.
06 22 06 13 CMP  ... my pill.
06 22 06 14 CDR  Oh, yes.
06 22 06 16 CMP  ... vitamin pill.
06 22 06 18 CDR  Your vitamin pills, too. Get out the vitamin pills!
06 22 07 20 CDR  I think I only have one and one, Dave. What did I
... the day before? Let's look there. Thank you.
06 22 07 58 CDR  Yes, we even got into the redundant vitamin pills,
huh?
06 22 09 18 CDR  I've been having some cinnamon-toasted bread cubes.
I (Laughter) Yes, why don't you do that? I figure there must be some food value in there that's not in those other ones.

Man, that's a lot of chocolate. I said, "That's a lot of chocolate."

... hot chocolate?

Yes. Too much for me.

Grape punch.

That's what they call me - Honest Rusty. Hard bargain for a good deal. ... picking up - -

Just a second, I can't hear you. What? Go ahead. S-band just cut off.

I said I was just getting ready to get the camera, and I got out your ... figuring out how I could rig that camera, so when we go over the States, you know, ... take pictures out the back.

Think we ought to ... up our ORB rate for that pass over Africa?

Well, we're not going to be ready, Dave. We're not going to have the platform up and aligned.

I think it would be worth a couple of squirts of fuel, though, don't you?

So do I.

Yes.

Good.

Yes, I think it would be, too. That ought to be a great picture.

Yes, sure should.

... We ought to start through that powerup checklist now, so we can get these things going.

Okay. I'll - I'll read it to you. You ready?
Yes, let's go.

On the powerup. CB panel 8. All normally CLOSED normally CLOSED. I guess that implies all normally OPEN, normally OPEN.

Would you believe we still have the SPS PITCH and YAW ... CLOSED?

Yes, let's just leave those CLOSED.

What SPS PITCH and YAW? We were supposed to, Jim, weren't we?

Yes.

Did they say to close them again?

Yes.

Sure.

Well, the last time we asked them about that, they said, no, they'd like to - continue to leave them open after this burn.

The SPS PITCH and YAW ...

Remember when we were fooling around with the before?

... no ...

Jim, I think that was just while they were shooting that - remember that -

And then they got through, and I said - Remember they - We're going to do a burn - and we went back with the thing, and I said, "Do you want these thin left off, or do you want to put them in now?" And they said, "Well, we would like to have them off." Unless they called and specifically told you to close them after that.

I thought they did, but I could be wrong.

I don't know why you'd want them - why you'd want them now.
Neither do I.

SPACECRAFT CONTROL, CMC.

CMC.

DELTA-V<sub>cg</sub> as required.

... 

LOGIC 2/3, ON, up.

2/3, ON, up.

SIGNAL CONDITIONER/DRIVER BIAS POWER, two, to AC 1.

AC 1, AC 2. What did I put that in?

SCS ELECTRONIC POWER, GDC/ECA.

Okay. SCS ELECTRONIC POWER to GDC/ECA.

EMAG TEMP LIGHT, two, OUT; verify. FDAI POWER, OFF.

EMAG POWER, two, ON.

Okay.

FDAI POWER to BOTH.

Okay.

AUTO RCS SELECT, 16, to wherever you want them.

Okay. OFF.

Did you get the - You weren't on the horn when they gave us the plan the other day, were you?

I think they said B and C today, with B and D as ullage?

... B and C. Use B, D for ullage ... B, D roll, - B, D roll, B, D ullage, and B, C.

Okay?

Just a second, let me write that down. B, C - let's see, B, C roll? B, D ul -
658 Day 7

CONFIDENTIAL

06 22 19 36 CMP Okay?
06 22 19 37 CDR Okay.
06 22 19 38 CMP ROTATIONAL CONTROL POWER NORMAL, two, AC/DC.
06 22 19 40 CDR Okay.
06 22 19 44 CMP CMC is running, huh?
06 22 19 47 CDR Is running, right. We got to bring up the DAP.
06 22 19 54 CMP Okay, we're in POO, huh?
06 22 19 56 CDR Right.
06 22 20 02 CMP IMU.
06 22 20 04 CDR Okay.
06 22 20 05 CMP LOGIC POWER 2/3, ON.
06 22 20 07 CDR LOGIC POWER 2/3 is ON.
06 22 20 09 CMP Verify, FDAI POWER to BOTH. FDAI SELECT to 1/2.
06 22 20 13 CDR 1/2.
06 22 20 16 CMP CMC MODE to FREE.
06 22 20 17 CDR FREE.
06 22 20 19 CMP G&N IMU POWER, ON.
06 22 20 22 CDR ... go back to nursemaiding that thing (laughter). Did you get that, Dave?
06 22 20 30 CMP Are you ready?
06 22 20 31 CDR Yes.
06 22 20 34 CMP Okay, IMU POWER coming ON now. Hey, and I got ...
06 22 20 39 CDR That mother really gets over there. God!
06 22 20 41 CMP RESSET. Okay, we don't need that. Wait 20 seconds - Okay, ... POO. Okay. Systems check, CMC self-check. you want to run one of those?

CONFIDENTIAL
No, I don't think so.

DSKY lamps check. Do you want to run one of those?

No.

DAP activation. You want to run one of those?

Yes.

Hey, we gave them an erasable dump last night, didn't we?

Yes.

Did you purge the fuel cells this morning, Dave?

Yes, I didn't write it down, of course. Yes, I purged them.

How about the cryo fans, Dave? Did you do them?

No, I haven't done them, Rusty.

Okay, I'll get them.

We don't have much nighttime left, Dave. As a matter of fact, we have about 2 minutes.

You don't think I can do a P51 in 2 minutes?

No, as a matter of fact, I don't. I don't even think you can figure out how to make the shaft go around in 2 minutes.

Gee, I sure like your confidence.

(Laughter)

You're a nice guy.

You know what ...?

... on what?

Hey, ... able to work up to a great big --

Yes, I was thinking the same thing.
(Laughter) I've been trying to count how many I had before. I think I only had two.

I was thinking ...

What, that you had two, or that you ... up to one? (Laughter) You had one; I had two.

Did you mark yours?

... I may set a record. I wonder what the record is for not crapping?

I don't know.

I don't hold it (laughter). Hey, who - I wonder where this stuff came from.

... Yes, you can recall two, I guess, if you want to.

Oh, yes, let's activate the DAP. ... the DAP.

... It just says, "activate DAP."

Oh, okay. VERB 48, ENTER ...

VERB ... 1 ...

Is that a body of water down there?

I was wondering the same thing; it sure looks like it --

I think it is. I'll take a picture of that. That's really something; I've never noticed anything like that before.

Apollo 9, Houston; 30 seconds LOS Canaries; see you at Tananarive 08.
Okay, Stu, and the weather's real nice across Africa here, and we're getting that 16-millimeter strip.

Oh, real fine, Jim; thank you.

You know, by gosh, that's a - What is that?

Did you get it, Jim, or do you want me to --

No, I'll get it. Wonder what it is?

Looks like an arrowhead.

Yes, but I wonder if it's manmade or nature-made.

Oh, hell, I don't think that could be manmade. I think it's pretty big. Africa's own Lake Arrowhead.

There appears to be water in that river down there.

Yes. Yes, there sure is.

A few fires down here to the south, along that river.

Africa is really an interesting continent. Hey, look it. There's some ... Maybe the geologist would like that.

Wonder what this river is we're going right along?

I don't know. I didn't look on the map to see where we came across there.

Yes, I did, but --

... show me the map.

No, it's behind Dave, and I don't want to disturb him.

Okay. ...

Dave, it looks like maybe the clouds are ...

Good boy, David. That was a pretty trip, wasn't it?

Yes, that's really something ... --
... I think it - what, what you think of f:11 at 1/250? That'd be good.

75-millimeter lens, you can't tell; boy, that's really --

Yes.

Oh, well, it's worth a try.

About a quarter of a MAG.

Isn't it, though?

I didn't see that ... shot until we'd almost gone by it. I was trying to keep it from going straight pass.

Yes.

There's something ...

Hey, could that top piece have turned with respect to the lens?

You know, I wondered about that ...

I checked the bottom part to see if the bayonet down by the bottom might have turned, and I can't seem to see anything loose there.

May I have the film log, Rusty, please?

Yes, if I can remember where I put that one. That one --

Right here.

Oh, hey, we're coming - Well.

Hey, Dave, I have an extra pen down in my --

I have one, too.

CONFIDENTIAL
Oh, do you? Okay.

... 

Where did the world go?

Down low.

Yes. I'll tell you, I never have been very successful in ... Africa.

Well, I'm looking at it, but I'll tell you, it's not terribly --

There's not very much down there, is there?

Just a lot of clouds. Lot of thunderstorms.

Yes, it looks like from here on out, it's all socked in.

You want to play with that camera, Rusty? You don't want to play with it?

I don't know. I've kind of played with most of the things I've thought of to play with.

I tell you, I just know I had that thing ... took it off and put it back on, and took it off and put it back on again. It could have been that.

Here's the log again, Rusty.

... test it out ...

I - I don't - Let me look at it - Because I know I've had this thing on here screwed up like this, and it seems to me that, by moving the bits and pieces around, you ended up with it going in the right direction. I tell you what really fakes me out is that - the fact that's a four-sided thing that goes in here and a three-sided one that goes in like that. You've got to have it.

... the 18-millimeter ...

Let me have one lens.
06 23 01 41 CMP One 75?
06 23 01 52 CDR ... the pin, the screw ...
06 23 02 15 CMP It's got to work. Brackets don't work?
06 23 02 18 CDR Yes, ...
06 23 02 23 CMP Thank you.
06 23 02 36 CDR There just isn't any way that thing's ever going to get straight. If you turn it a quarter -
06 23 03 13 LMP Where's the MAG you had on this camera, Dave?
06 23 03 58 CDR Well! I'm going to go down there and try to do my duties. I don't know. David, would you keep it out of gimbal lock for a while?
06 23 04 18 LMP You want to stow a camera while you're doing your duty?
06 23 04 20 CDR Sure.
06 23 04 46 CMP Did you bring both of these back with you?
06 23 04 48 CDR Yes.
06 23 04 49 CMP ...
06 23 04 51 CDR They are; they're dandy. Yes, sometime tonight, when I get through with today, I want to ...
06 23 05 02 CMP Good idea.
06 23 05 16 CMP You want to get in this box over here, I believe.
06 23 05 20 CDR Yes, I do; yes, I do; yes, I do; indeed, I do. (Singing)
06 23 05 28 CMP McDivitt, you don't have to pull that box out of there; you just open it up ...
06 23 05 31 CDR Oh, yes. (Singing)
06 23 06 09 LMP More ...? More ...?
06 23 06 15 CMP More ...
06 23 06 16  LMP  Yes, take pictures out there with that. Be real good.

06 23 06 51  LMP  Well, we just passed south of Dar es Salaam.

06 23 06 54  CMP  We didn't!

06 23 06 55  LMP  Yes.

06 23 06 57  CMP  I just won't believe it.

06 23 07 02  LMP  That's a neat-sounding place though, isn't it?

06 23 07 05  CMP  Yes.

06 23 07 24  CDR  Oh, no. Don't tell me. All the Kleenex has been sneezed away again.

06 23 07 29  LMP  Here you go. Boy, there are only four boxes out.

06 23 07 37  CDR  Yes, and I don't understand where they keep going. There was a full one right up against here a little while ago.

06 23 07 53  CMP  I think the other one's ...

06 23 07 57  LMP  Ahh, it's in Jim's pocketbook.

06 23 08 03  CDR  Look over there in the - A-8, Dave.

06 23 08 14  LMP  You know, Jim, that's a very ... --

06 23 08 16  CC  Apollo 9, Houston through Tananarive. Standing by.

06 23 08 18  CDR  That's a very suggestive what?

06 23 08 20  LMP  Move you're making.

06 23 08 23  CMP  Roger. We hear you 5 by.

06 23 08 32  CMP  If you're going down there, Rusty, how about pulling it back ...?

06 23 08 38  LMP  Houston, Apollo 9.

06 23 08 50  LMP  Houston, Apollo 9.

06 23 09 06  CMP  You know, that ... really ...
Isn't it?

Houston, Apollo 9.

Apollo 9, Houston through Tananarive. Standing by.

Roger, Houston. How do you read Apollo 9 now?

Try the right antenna again. Houston, how do you read Apollo 9 now?

Houston, Apollo 9.

... found some more chocolate. ... chocolate, I guess.

Houston, Apollo 9. How do you read now? ... Pick it up somewhere else.

Apollo 9, Houston. How do you read?

Houston, we're reading you - Why don't you go ahead - You're a little intermittent, but why don't you go ahead and try that procedure on the PUGS?

Okay, Rusty, I'm reading you now. Step 1: SPS GAGING to AC 1. Step 2: SPS HEATERS/GAGING, MAIN A/MAIN B, CLOSED; PUGS mode, PRIMARY. Now go to test 2 until oxidizer reads 10.8 percent. Record the fuel readings before ignition. Do not switch PUGS mode during the burn. We would like to emphasize that we do feel you will get at least one caution and warning, maybe more.

Stu, just before I go to test 2, I missed that step.

Okay, you do test 2 until oxidizer reads 10.8 percent.

No, just before that; you want me in PUGS mode, PRIMARY?

That's affirmative. The third step is PUGS mode, PRIMARY.

Okay, understand. I'll try to read back the whole thing here: SPS GAGING to AC 1 --
06 23 12 15 LMP  -- SPS HEATERS/GAGING circuit breakers MAIN A/MAIN B, CLOSED; PUGS mode to PRIMARY. Test 2 until oxidizer reads 10.8 percent --

06 23 12 24 CMP  Yes, ...

06 23 12 25 LMP  -- record the fuel, and expect the MASTER ALARM.

06 23 12 27 CDR  There's a full box around here someplace.

06 23 12 36 LMP  Here, Jim, there's a whole bunch of them on the wall ...

06 23 12 37 CC  Okay, Apollo 9. If you read, we are not getting you. I believe you were attempting a readback. We'll be here for about 2-1/2 minutes, if you want to try again in about 30 seconds. If not, we'll see you at Carnarvon at 25 and confirm it there.

06 23 12 50 CMP  Let's have one here, too.

06 23 12 51 LMP  Okay, how are you reading now, Stu?

06 23 12 55 CC  And just to clarify one other point: we do feel you'll get this caution and warning when the PUGS comes in about 5 seconds after ignition.

06 23 13 28 LMP  Dave, you want to close the SPS - the HEATERS/GAGING MAIN A/MAIN B breakers?

06 23 13 41 LMP  Dave, you've got to do a P51 here, too. I'll try to hurry, if I can help you.

06 23 13 48 CMP  No, that's alright.

06 23 13 52 LMP  Okay, now we're going to get a MASTER ALARM here. I'm going to be slowing the PUGS mode down.

06 23 13 59 CDR  Are we in NORMAL?

06 23 14 06 LMP  Okay, oxidizer to 10.8.

06 23 14 45 CC  Apollo 9, Houston; 30 seconds LOS Tananarive; Carnarvon, 25.

06 23 14 51 LMP  Roger.

06 23 17 10 CDR  How you doing?
LMP: Doing pretty good. How about taking an inlet hose over there?

CDR: You want to get it right in your mouth, huh? Yes, I'm about done.

LMP: ... come on down here. I'm just about through.

CDR: Okay, I'll be right up there, Dave.

LMP: You want to roll, Dave?

CMP: Let me see which way.

LMP: I saw some stars out to the left there.

CMP: Yes, roll - probably left would be best.

LMP: Okay. Are the roll jets activated?

CDR: I believe so. What I think I can do is flip on the hand controller. Yes.

LMP: Okay.

LMP: Now, let me see if I can tell you which one, Dave. Okay, could you turn the lights off over there?

LMP: Okay. Oh, shoot. We're pointed almost straight down.

CMP: I know it. That's the problem.

LMP: No, I mean the nose - not - not - You should be picking up the horizon behind us a little in a minute here.

CMP: I got the horizon ...

LMP: Oh, okay. Okay, Alphard - What else is below Leo? There's Jupiter.

CMP: Another thing I want to do is keep the lights off ...

CDR: You can turn them out, Dave.
06 23 20 48 LMP You're going to be looking at the southern sky, Dave. You're going to be Vega and Spica and - whatever is below Leo.

06 23 21 11 CMP Alphard's below Leo?

06 23 21 12 LMP Yes, but - No, farther than that below him.

06 23 21 18 CMP I've got the moon. That's a big help.

06 23 21 27 LMP Now we're just torquing; we're just orbit rating around it.

06 23 21 29 CMP Okay.

06 23 21 30 CDR Here, I'll get it.

06 23 21 31 CMP How about - See, we're pitched up.

06 23 21 33 LMP No, pitch - yes, we want to pitch down.

06 23 21 51 LMP Which way are we rolling, Jim?

06 23 21 54 CDR We're rolling left.

06 23 22 05 LMP Let's see, what else is below Leo?

06 23 22 08 CMP Well, I think we get down into Antares and Scorpio and all that.

06 23 22 13 LMP You - you got Spica down there, Dave, and -

06 23 22 17 CMP I - I - If we're in the southern sky, I'll be okay, as soon as get something at all - with Spica and all those guys down there.

06 23 22 23 LMP Yes.

06 23 22 24 CMP That's a good bunch of stars, but I just ...

06 23 22 26 CDR In fact, we should be coming up on something now pretty soon, Dave.

06 23 22 29 CMP Oh, yes, okay, and I see it now.

06 23 22 30 CDR We're rolling -

CONFIDENTIAL
We're rolling left slightly, and we're pitching down and - a combination ...

I've got the moon and some stars.

Yes, you ought to be picking up Spica, that's right. Spica ought to be the lower right, or maybe the far right.

Got to go faster, Jim.

It looks like over on my side that we're going pretty well, because all I can see out my left window now is ground.

I've got the moon about in the center - -

Okay, another one you might have out there now - We're kind of in the north sky again now, Dave, and you're going to see - Alphecca.

Gee, I see absolutely no stars out the corner of the left side. I can see some out the top hatch. I think that a little more left roll will help you out.

Yes, I think it would. Yes. Now, we're getting some stars.

Yes, I think a left roll would be easier.

Yes, you should pick up Arcturus and Spica. Arcturus in the upper right, Spica in the lower right.

Is that alright, Dave, the way we're going?

Yes, that's alright.

Apollo 9, this is Houston through Carnarvon.

Go, Houston; Apollo 9.

Okay, and situation normal. I couldn't read you very well over Tananarive. I just wanted to verify that Rusty got those steps.

Okay, you ready to copy, Stu?
Roger. Go ahead.

Okay, let me read you back what I got. That was SPS GAGING to AC 1. The MAIN A and B breakers CLOSED on the GAGING and HEATERS. And --

Okay, that's good, Jim.

-- PUGS mode to PRIMARY. Slew in test 2 until the oxidizer reads 10.8, and record the fuel, and expect the caution and warning during the burn. And the fuel after slewing was 15.4, 15.5, and the OXIDIZER UNBALANCE is full-scale decreasing.

Roger. Very good, Rusty. We copy, and we would like to make two other notes. Do not switch the mode during the burn; go ahead and let it stay in PRIMARY. And we want to emphasize that we do feel you will get caution - at least a caution and warning --

... here, Jim.

Pardon?

Do we need it down here?

Yes, that's fine.

Okay.

Gee, that's the - the best alignment we've ever had.

Why?

Because it's got the - On the first star check, it shows a star almost dead center in the sextant.

Oh, oh.

I mean, I've never seen one come exactly in the middle before.

... align and I'll give you your pen back to you ... Okay, let me get down here and finish my duty here.
Day 7

06 23 37 03 CDR  Why don't you pick up the optics, too?
06 23 37 04 CMP   Yes, that's a good idea.
06 23 37 33 CDR   Hey, would you believe I lost my pen? (Laughter)
06 23 38 02 CDR   Would you turn the dump on over there, when you're over there, Dave, please?
06 23 38 05 CMP   Okay, dump's ON. Where did you say you put that bracket? Which one is that, now? The LM utility bracket.
06 23 38 12 IMP   It's in Jim's pocketbook.
06 23 38 13 CDR   It's in A-8 --
06 23 38 14 CMP   Oh.
06 23 38 16 CDR   -- A-8 on the far right-hand side. Open that thing up; open the door up there. The one closest to you - the big one. Okay, now, you see that big bag?
06 23 38 24 CMP   Yes.
06 23 38 25 CDR   It's in there.
06 23 38 26 CMP   Okay.
06 23 38 27 CDR   Careful. That's holding down a lot of other equipment.
06 23 38 30 CMP   Yes. I got it.
06 23 38 33 CDR   Okay?
06 23 41 59 IMP   Hey, when you count your water, are you supposed to count what you use to reconstitute food, too?
06 23 42 04 CDR   I do, yes. I think that's --
06 23 42 09 IMP   Oh. Oh!
06 23 42 15 CMP   Hey, amigo, ...
06 23 42 20 CDR   You got it? Hey, that's good. Great!
How about that. A new camera bracket. ...

Yes, this thing needs to pitch up a little bit more to be perpendicular to the window, Dave, ...

I think we better leave the pitch optional depending on which way we get ... with the spacecraft (laughter). Although we could use --

... 

Boy, it's a great week for orbit rate torquing.

Yes.

I could --

There you go.

I could pitch it alright.

Yes, with that many joints in those brackets, you could use it just like a universal ...

Yes, they really are. The lights that go on them are pretty good, too.

It's a shame we can't have some of those on the command module, it would sure make operations a lot better.

0 and 2.

(Laughter) Hey, that was pretty subtle, Mr. Scott.

Well, I just wanted to make a subtle comment for the record.

Let's get it for the record.

Did you have your mouth close to the mike?

Yes, it was very close.

... statement for the record.

Particularly when you're trying to --
Day 7

06 23 43 37 LMP  What were you talking about?
06 23 43 38 CMP  I was talking about the LM brackets and LM lights.
06 23 43 41 LMP  The LM utility lights!
06 23 43 44 CMP  The LM utility lights.
06 23 43 45 LMP  Ohh, is that what you're talking about?
06 23 43 46 CMP  That's right.
06 23 43 47 LMP  Oh, okay.
06 23 43 48 CMP  It's very difficult under the couches to see anything unless you have a flashlight somewhere.
06 23 43 53 CDR  But if we had LM utility lights under the couch, we could just use them, and leave them there, couldn't we, David!
06 23 43 57 CMP  That's right, then you could just turn the switch on, and you could go find those coolant valves if you're in a hurry and you have an emergency without trying to fumble and find a flashlight somewhere (laughter). If you wanted to, you could even use the brackets for other things. You could use it for camera mounts to take very important pictures, and just - you could even mount extra crewmembers in the LEB with them.

06 23 44 19 CDR  (Laughter)
06 23 44 20 CMP  That's right. ...
06 23 44 21 CDR  So, as a matter of fact, would you please - would you please type this in boldface type? (Laughter)
06 23 44 29 LMP  The time is 167:44.
06 23 44 30 CDR/CMP  (Laughter)
06 23 44 34 CMP  ... 167 hours and 44 minutes of experience.
06 23 44 36 LMP  Right. Times three for man-hours. Times three.
06 23 44 41 CDR  Shoot, we eat again.
06 23 44 42 LMP Yea!
06 23 44 43 CMP Time to eat? What the heck do we eat? At 168 hours, it's time to eat.
06 23 44 51 LMP Yes, but we were supposed to wake up a few hours earlier.
06 23 44 53 CDR Oh.
06 23 44 55 CMP But, I mean, if you want to eat, go ahead.
06 23 44 56 CDR So, we woke up 2 hours earlier. We were supposed to wake up 2 hours earlier, but we didn't, so we'll eat 2 hours earlier to catch up.
06 23 45 03 LMP I'm not hungry.
06 23 45 04 CDR I'm not either.
06 23 45 05 CMP Baloney.
06 23 45 07 CDR Why are you eating it, then? (Laughter) The reason you're not hungry is because you've been eating continually since 8 o'clock.
06 23 45 14 LMP Hey, here's the way you do your water count. Let's see, on day 3, I had -
06 23 45 17 CDR/CMP (Laughter)
06 23 45 18 LMP Ohh, 80 waters (laughter).
06 23 45 49 CMP What's the next thing we have?
06 23 45 52 CDR Lunch.
06 23 45 53 CMP No, I mean -
06 23 45 54 CDR We have to load the DAP (laughter). We do a P52 realign ... We get the update here.
06 23 46 05 CMP We're not too far away.
06 23 46 06 CDR We are about 2 hours and 15 minutes before.
06 23 46 09 CMP Listen, we've got to get these things tied down.
See all that loose gear?

Yes, I'd sort of - I don't know, sometime; but I'd sure like to get -

Well, let's go down and give it a little whirl, right now.

Do it now; when we get daylight, we can maybe take some pictures.

Let's see, if 6 seconds will give you 17½ feet per second, 25 will give you 600 feet per second.

Whooee. Here we go again. Yum!

I think I'm even going to put my suit pan up and strap in for this one. ... Just to see how it works.

Oh, tell you what I think I'll start doing: start rearranging the - We've done everything on that page we should do. ... these checklists down in here. ...

Hey, Jim.

Yes.

Since I'm going to be ..., let me try that wide-deadband hold in the DAP.

Okay, go ahead. This would be a good time to do it.

... find it - here somewhere.

Uh oh.

Uh oh, wha - Uh oh, it's starting to get light.

Uh oh, we've logged one more day's worth of sleep than we've been up here.
Laughing)
06 23 49 06 CDR What! (Laughing)
06 23 49 13 CDR Now we should have 6 days left to sleep.
06 23 49 15 CMP No, we should have 7.
06 23 49 18 CDR Oh, yesterday was the seventh. Sure, I logged all my food for the seventh. I thought we were still up there - Hey, that's better. We don't have so far to go, do we? Tuesday, how about that?
06 23 49 28 LMP So, we've already logged 8 nights of sleep.
06 23 49 32 CDR Yes. ...
06 23 49 42 LMP You know, I've got the urge again. I may just break my record.
06 23 49 49 CMP O₂ FLOW HIGH.
06 23 49 51 CDR Must be venting.
06 23 49 53 CMP Okay, you want to kill the vent?
06 23 49 55 CDR Yes, I guess you can.
06 23 49 57 CMP Okay.
06 23 49 58 CDR I don't know what I started down here to do, but I guess I -
06 23 50 04 LMP Now - Let's see, where are all those peaches?
06 23 50 08 CDR Leave it on for just a - just a hair here.
06 23 50 11 CMP Okay, coming back on.
06 23 50 19 CDR Okay, whoops. If you turn it off in about a minute from right now, you're all set. We've got to get rid of these - That's a full one, too. We've got to get rid of those empty boxes of tissue. Where do they go now? That's a full one.
06 23 50 50 CDR Here. Dave Scott, what did you do with my pen?
You took mine; I took yours.

You're really a bad apple. Do you have mine? That's what I was afraid of. I was hoping you would say yes.

Okay, you can kill the dump, Rusty, if you haven't already.

Okay, ... O_2 FLOW HIGH.
Hey, we have to do a P52. We might as well just load this ...

Tell you what I think I'm going to do. I'm going to take these down right now, just in case.

... all the way around the cockpit?

... Yes, indeed. I think it would be a good idea ...

169:38:59, POO. Oh, did we load the DAP?

No, ... do that.

Yes.

... DAP ... (Laughter)

No! We didn't do all that. Call that up again.

... quad selection.

Yes, but I - I'd like to get that in there. We're not going to be using any. I want to put the quad selection in right now.

Alright. Go ahead.

... 141, 00 ...

Let's put that in.

Yes, let's put that in. ...

... really had in mind.

6772. ...

You got that one. ... Alright?

Yes.

Okay?

Let me check it. That's right.
<table>
<thead>
<tr>
<th>Time</th>
<th>User</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>07 00 23 36</td>
<td>CDR</td>
<td>Okay?</td>
</tr>
<tr>
<td>07 00 23 38</td>
<td>CMP</td>
<td>Naturally.</td>
</tr>
<tr>
<td>07 00 23 39</td>
<td>LMP</td>
<td>Naturally, ...</td>
</tr>
<tr>
<td>07 00 23 43</td>
<td>CMP</td>
<td>Yes. ... Okay? 23 ... 000, plus ...</td>
</tr>
<tr>
<td>07 00 24 00</td>
<td>LMP</td>
<td>I think you wrote that down, too.</td>
</tr>
<tr>
<td>07 00 24 02</td>
<td>CMP</td>
<td>Unh-uh.</td>
</tr>
<tr>
<td>07 00 24 03</td>
<td>CDR</td>
<td>Unh-uh?</td>
</tr>
<tr>
<td>07 00 24 04</td>
<td>CMP</td>
<td>No.</td>
</tr>
<tr>
<td>07 00 24 05</td>
<td>CDR</td>
<td>You don't like to do it, do you?</td>
</tr>
<tr>
<td>07 00 24 06</td>
<td>CMP</td>
<td>No, I really didn't. I really had my ...</td>
</tr>
<tr>
<td>07 00 24 07</td>
<td>CDR</td>
<td>Huh?</td>
</tr>
<tr>
<td>07 00 24 08</td>
<td>CMP</td>
<td>I ... every once in a while. Oh, shoot! I just -</td>
</tr>
<tr>
<td>07 00 24 14</td>
<td>LMP</td>
<td>Yes.</td>
</tr>
<tr>
<td>07 00 24 18</td>
<td>CMP</td>
<td>... picture?</td>
</tr>
<tr>
<td>07 00 24 20</td>
<td>CDR</td>
<td>Yes.</td>
</tr>
<tr>
<td>07 00 24 21</td>
<td>CMP</td>
<td>Oh. What are we coming up on? Oh, look down here, Jim. Get that island down there. It's beautiful!</td>
</tr>
<tr>
<td>07 00 24 26</td>
<td>CDR</td>
<td>Look - where, Dave?</td>
</tr>
<tr>
<td>07 00 24 27</td>
<td>CMP</td>
<td>Right in your window.</td>
</tr>
<tr>
<td>07 00 24 29</td>
<td>CDR</td>
<td>Yes.</td>
</tr>
<tr>
<td>07 00 24 30</td>
<td>CMP</td>
<td>Try the window.</td>
</tr>
<tr>
<td>07 00 24 31</td>
<td>CDR</td>
<td>That's what I just took a picture of here were some of these islands.</td>
</tr>
<tr>
<td>07 00 24 33</td>
<td>LMP</td>
<td>Oh, isn't that pretty!</td>
</tr>
<tr>
<td>07 00 24 35</td>
<td>CDR</td>
<td>I don't know; it'd probably be Canaries.</td>
</tr>
</tbody>
</table>
Hey, we're going to be rolling just right — — for the intertropical-conversion zone. South 40 degrees?

No, we're not. It's at 4 minutes, and we're not going to see it.

What?

The intertropical-conversion zone.

Yes, from the right-hand window, we will.

No, we're left — we're left-hand window down here.

Huh?

We're left-hand window down.

Yes, I know; we're left-hand window down. ... out the right-hand window.

Intertropical conversion — What time is that supposed to be?

2 minutes.

Yes. Shoot, I guess we could roll over. Why don't we roll under?

Why don't you log —

... can't even see it.

Yes, you log the — yes — okay. Finish doing what you're doing; I'll go ... here and roll ... Watch your leg on this. Okay.

... get it done.

... in the middle.

Gee, look at that.

Oh, you ... a point ...

Yes. Beautiful.
Get it, Jim?

I don't know. Water complex down here is something too, isn't it? Looks like good oceanography. Hey, that looks like tremendous motion. I'll take a couple feet across there. Okay?

Okay.

Oh, hey! That's really neat, you can see the bottom --

Yes, you really can.

You can see how those ships have come across there.

1001, 1002, 1003 --

Hey, look, I can ... Go ahead.

-- 1004.

...

Okay, we got about 1 minute until we get to that intertropical-zone weather.

Do you really?

... see it. I can see it over here.

Do you see it over there? Can you see it out -- Which way?

... right.

You want me to stop rolling, or start rolling?

Keep going the way you're going.

I'm going left, slightly. Here, you want this camera?

Yes.

South of south?
07 00 27 38 CMP No, I can't see south out here. Too bad. You can see it better than I can, if you roll left.

07 00 27 43 CDR Actually, Dave, there's nothing down south of track.

07 00 27 45 CMP No. There's a bunch of stuff here, though. ...

07 00 27 48 CDR Yes, but you know, the intertropical-conversion zone is a bunch of - a great, big, long line of choppy weather.

07 00 27 55 CMP I know, but it's down there.

07 00 27 57 CDR It is?

07 00 27 58 CMP Yes, but it doesn't look that significant to me.

07 00 28 00 CDR Oh, I see it, way down there, huh?

07 00 28 02 CMP Yes.

07 00 28 03 CDR Ah!

07 00 28 04 LMP Dave! Dave?

07 00 28 06 CMP Yes.

07 00 28 07 LMP Just a second. ... There's a kind of pretty picture there - Ooh! Sunglint on the water. Oh, that's great.

07 00 28 28 CMP You getting sunglint on the water?

07 00 28 30 CDR I got some sunglint on the - Oh, here's a whole string of sunglint on the water. Oh, here, hey, give me the can - give me the - Yes, give me the movie camera. That's what we want, is the sunglint on the water with the movie.

07 00 28 40 CMP Yes.

07 00 28 41 CDR Right along here. What is it - the 75-millimeter? Shoot. Hold that. Six frames a second?

07 00 28 52 LMP ... it's on one.

07 00 28 53 CDR Oh, excuse me. It's on one?
<table>
<thead>
<tr>
<th>Time</th>
<th>Tag</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>07 00 28 55</td>
<td>LMP</td>
<td>... on six.</td>
</tr>
<tr>
<td>07 00 28 56</td>
<td>CDR</td>
<td>Okay, thank you. Oh, this is really great! Let me -</td>
</tr>
<tr>
<td>07 00 29 01</td>
<td>LMP</td>
<td>Hold it still!</td>
</tr>
<tr>
<td>07 00 29 05</td>
<td>CDR</td>
<td>It's right along the coast here, and the sunglint is really great. Make sure we don't get into gimlock, Dave.</td>
</tr>
<tr>
<td>07 00 29 13</td>
<td>CMP</td>
<td>I will.</td>
</tr>
<tr>
<td>07 00 29 15</td>
<td>CDR</td>
<td>How much did they want, Rusty? ... This will make - Not only will it be a great sunglint pic - picture, it'll be great from the standpoint of looking at the coast.</td>
</tr>
<tr>
<td>07 00 29 30</td>
<td>CMP</td>
<td>... , Rusty.</td>
</tr>
<tr>
<td>07 00 29 38</td>
<td>CMP</td>
<td>Watch your angle, Jim -</td>
</tr>
<tr>
<td>07 00 29 40</td>
<td>CDR</td>
<td>What's the matter - Is it - You getting over there</td>
</tr>
<tr>
<td>07 00 29 41</td>
<td>CMP</td>
<td>-- off the window.</td>
</tr>
<tr>
<td>07 00 29 43</td>
<td>CDR</td>
<td>Oh, hey, look at that sunglint! That's fantastic!</td>
</tr>
<tr>
<td>07 00 29 51</td>
<td>CMP</td>
<td>Need to roll left.</td>
</tr>
<tr>
<td>07 00 29 53</td>
<td>CDR</td>
<td>Yes. No, I don't know what I need to do, really. It looks like the sunglint - it looks like we're aiming right at the sunglint, Dave. Yes, do whatever you think you need to do to make it get where it ought to go. Oh, we're coming across some elou here.</td>
</tr>
<tr>
<td>07 00 30 31</td>
<td>CMP</td>
<td>Don't take too much of the window, Jim.</td>
</tr>
<tr>
<td>07 00 30 33</td>
<td>CDR</td>
<td>No. I think that's all I can take. Well - yes. It looked like I was clear of the window, Dave. Because the sunglint was - was back there. There wasn't any way I could get around that. Get ... t log.</td>
</tr>
<tr>
<td>07 00 30 53</td>
<td>CMP</td>
<td>Did you log ... the tape?</td>
</tr>
<tr>
<td>07 00 30 56</td>
<td>CDR</td>
<td>Yes. CONFIDENTIAL</td>
</tr>
</tbody>
</table>
What? (Laughter) You're going to get me on weight rather than on numerical ones, huh?

... be - Oh.

Oh.

Oh, hell, that - that's - Get the 70 millimeter. Let me get the 70 millimeter...

Log your 70.

That's what I'm trying to do.

What number was that one, David? Zero?

Yes, that's zero.

It was 150, 168, ...

What?

168 ...

I did. Oh! (Laughter)

How many did I take? 2 minutes or something like that?

Yes.

Oh, those were really beautiful sunglint-on-water pictures. Right along the coast, and you could not only - and the sunglint was in such a place that you - also in the frame, I'm sure, we were getting some of the coast of Africa. So you're sort of getting a map of the coast of Africa and the sunglint.

... (Laughter)

That's the thing about Schweickart; he never does anything in a small way. Everything is big and
spectacular. Here's your boot over here, Rusty. I don't see exactly ... Here's your boot. Here comes the coast of Africa again.

Here comes the what?

Here comes the coast of Africa again.

...

I wish you'd give me back my pen, Dave. Oh, there's my pen, up there.

I wonder where mine is?

I don't know. This may be yours. You know what your ... is over there?

Mine's got a little white tab on it.

Has it? I know how I can tell mine -- ...

I think it's time to get ready for the burn.

I think it is, too.

If Rusty ever gets finished.

(Haughter)

Hey, did you log a time on that, Rusty? How long? Seems like you've been down there an hour and 30 minutes.

...

(Haughter)

Boy, from out of the couch to back on the couch, Jim. That's what it takes.

... your feet started to do that because of TPI and TPF?
Hey, it looks like - Oh, my goodness, we're really rolling. Rolling left, which is the wrong way. We go into darkness at 40 -

Are these your cinnamon toasted bread cubes, Dave?

Help yourself.

No, I just wondered if they were yours.

Yes.

Okay.

Tell you what, it looks like we're going to come out in the - we're going to be in the dark here soon. Maybe we ought to put these cameras away, to

That's what I'm doing right now.

Good boy.

That's what I said, I think we ought to get ready for the burn now.

Hey, hand me the Hasselblad camera, and I'll put it away.

Okay, just a second. Oh.

Oh, shoot, ...

Yes, it's sort of disorienting when you're upside down, isn't it?

Yes.

Starting to get into darkness in here.

Dave, where did you get this one camera bracket?

One goes in U-3 up above your head. The other goes in R-10, over in the right by Rusty.

Yes. Do you know where you got this one?

No.
07 00 40 50 CDR  Okay.
07 00 40 51 CMP  I think that - that came out of U-3. I'm pretty sure, Jim.
07 00 40 54 CDR  Yes.
07 00 40 55 CMP  The LM - the LM bracket that goes - that started out in U-3.
07 00 41 42 CDR  I think I'm going to take these used Kleenex boxes and start putting them back in A-1. I'm not sure how many we even have left. Full, that is.
07 00 42 05 CMP  ...  
07 00 42 07 CDR  Here's one. Now, that's a full one there, isn't it?
07 00 42 11 CMP  Yes.
07 00 42 17 CDR  The full ones, Dave, we ought to leave someplace else.
07 00 42 21 CMP  Let's put everything in A ...
07 00 42 28 CDR  Okay, give us something to do afterwards; we can unstow it all again.
07 00 42 38 CDR  Oh, there's my friend, Orion. There's my even better friend, Sirius. ...
07 00 43 26 CDR  Hey, Dave, we have an extra helmet bag here, too, that we ought to -
07 00 43 30 CMP  No room left in that damn compartment.
07 00 43 34 CDR  In A-1?
07 00 43.35 CMP  Yes, it's all full of that other stuff.
07 00 43 39 CDR  Yes, ... lithium hydroxide canisters we didn't have in there before. Can't you stuff the empty ones in there, even?
07 00 43 46 CMP  I'm trying to find a better place, that has more room.
U-3 up there has some room in it. It doesn't have anything in it at all, as a matter of fact.

Apollo 9, Houston. Standing by, Tananarive.

Roger, Houston; Apollo 9. Okay, Davey, it's Buzz. You want to start --

Is it really?

Yes.

Okay, let me put this away.

Back on the line.

Matter of fact, I might even have your telescope pointing at some stars this time. I'm not so screwed up.

Amazing.

Rusty, you might want to really glue that helmet down over there.

Yes, it's glued with two snaps.

Here, you want another strap?

No - I - I've got one here. I'll put that on, okay ... Put this in my pocket. You - you want to stic these in the waste bag over there?

You see the loose food bag?

Yes, but -

Houston; standing by, Tananarive.

Roger, Houston; Apollo 9. We're reading you loud and clear.

Roger. Same here.

Alright. We could do a preferred. How about that? How does that look like on your ball, Jim?
Roll, pitch, and yaw - Looks alright. Go.
Okay.
Dave, you're going to have Atria out there, and Acrux.
Oh my goodness! I sure use them a lot. Okay, Rusty. I'll PICAPAR. Ooh!
Yes, and it ought to pick something.
Yes, Achernar.
There's a little variety.
...
Yes.
Right out the old front window, we ought to have a longhorn steer there. Hello there, longhorn steer.
How - how's your drift rate, Jim?
Pretty high. You ready to stop or do you want to keep going?
Yes.
We had the longhorn steer just a little bit to the left.
Just a little bit what?
To the left and out the front and down a little bit.
Okay, Dave, that's pretty good. Out the front? He must have gone.
Yes, you got to get kind of high up to see him, but he's there.
Oh, yes, there he is!
Here comes the little old moon up.
You've still got some pretty good drift, don't you?
No, as a matter of fact, I don't. I have a little bit - a very little bit in pitch. ... in pulse.

Oh, man, it's really moving! There you go.

There's about 0.001 in roll. (Laughter)

You been in and out of PhO and all the way over here already. You've been rolling!

Did we do a P30 already?

Yes. We did P30 earlier. Okay, that's some ... stuff, isn't it? I got some ... back there. I'm going to get mine in a minute. I only see just one more thing to do.

As soon as you finish this, I'm going to pulse on over there to 0, 0, 0, Dave.

Okay. Let me run through the star check here.

Yes.

What time is the burn?

Oh, it's about 20 or 30 minutes into daylight. We've got about ... hour.

Do you still have your scissors out, Jim?

What?

Do you still have your scissors out?

Do I have my scissors out? Yes, I have them packed away in my pocket.

No, okay. I've got mine there. I just thought I'd ask.

Okay. Right on old Canopus. How about that?

Okay, Jimmy, all yours.

Okay. Let's - let's start moving over there. Optics, zero; CMC.
07 00 53 09 CMP
That is a pretty sky out there, isn't it?

07 00 53 16 CDR
Why don't we clean up some more of this stuff here while I'm trying to get the right attitude? Then you can do a star check on Diphda. Okay?

07 00 53 21 CMP
Yes. That's a good idea.

07 00 53 22 CDR
Here's a couple of pieces that could go in the loose food bag, but I don't see the loose food bag anyplace.

07 00 53 31 CDR
Here it is, here. No, that's not the loose food bag. That's just an empty bag.

07 00 53 45 CMP
Here, Rusty, see if you can ... the exerciser. Wherever that is.

07 00 53 52 LMP
Last I saw it, it was floating under the couch there --

07 00 53 53 CMP
Yes.

07 00 53 54 LMP
-- Jim left it hanging down there!

07 00 53 55 CDR
It was stowed down here, and I think when I was taking a crap, I knocked it loose. And it went under here -- I want to find that; I don't want to get hit with that thing. There it is.

07 00 55 02 LMP
Here's a box of Kleenex.

07 00 55 09 CDR
Is that an empty?

07 00 55 10 LMP
No, that's a full. Almost full.

07 00 55 23 LMP
Davey.

07 00 56 25 CDR
My goodness, it isn't very long after we come into daylight -- ... certainly moved it up here about 10 -- about 10 minutes; 169:38.

07 00 56 35 CMP
40 minutes away.

07 00 56 52 CMP
Did you find the bits-and-pieces bag?

07 00 56 55 LMP
No, I can't find the bits-and-pieces bag. Must be down underneath there, again.
07 00 57 01  CMP  No. How about the tape? Did that already get put away, somewhere?
07 00 57 09  LMP  Tape?
07 00 57 11  CMP  Should be somewhere; should be small. I think there's something here. Is that garbage?
07 00 57 19  LMP  Yes.
07 00 57 20  CMP  I can keep pushing it down.
07 00 57 21  LMP  Okay.
07 00 57 27  CC  Apollo 9, Houston.
07 00 57 30  CDR  Go ahead, Houston; Apollo 9.
07 00 57 33  CC  Roger. In preparation for a possible fuel cell 2 $H_2$ purge, request $H_2$ PURGE LINE HEATER, ON.
07 00 57 43  CDR  Roger. They're ON.
07 00 57 48  CC  Roger.
07 00 57 56  CC  Roger. Request an $H_2$ purge on fuel cell 2 for 5 minutes at 169 plus 17, and this is to bring the exhaust temperature down.
07 00 58 10  LMP  Did you get that time?
07 00 58 12  CDR  Roger. Fuel cell purge for 5 minutes at 169:17.
07 00 58 21  CC  Thank you. Roger. ...
07 00 58 23  CDR  Okay.
07 01 04 43  CMP  Okay, Jimmy, there's - a mark on Regulus and a shaft of 318.3.
07 01 04 54  CDR  Say again.
07 01 04 55  CMP  You're not reading me?
07 01 04 56  CDR  I am now. Just then cutting you out.
07 01 05 00  CMP  I say the shaft should be 318.3 - plus 318.12.
Okay.

Trunnion should be 28.4 at 27.02.

Good.

1.4 degrees ...

Okay. Okay, back to stowing things.

I guess we ought to take everything off the ..., I was thinking about these helmets up here; they probably be alright.

If you put forced air through them, Jim, it will them down.

Yes.

I'm going to take all the tools and all that stu ...

Oh yes, yes, yes. I was thinking about the helm They are relatively light and well supported.

Need to put a camera somewhere, too.

We've got one extra camera here that came over f the LM. Doesn't really have a spot. Maybe I ca jam it in here.

... 

I don't know if it will fit or not. Will it? N not quite.

Hey, how about checklist, Jim?

Well, I guess I don't need my big one. Could you stow it up there on the --

Yes, ... That'll be fine.

I want the pad out --

Procedures book - where's the procedures book?
Right here.

You can take these, Dave.

Okay.

How about the flight plan? You want that out?

I guess we don't need it out right now. Yes, we can ... it away.

These tissue boxes?

Yes, I'm going to have to go down and do an inventory of tissue boxes when we finish this burn, and figure out a place to put them all.

..., Dave?

No, ... tissue boxes. Ahh! U-2, Rusty --

Hey, there you go.

--- stick tissue boxes in there, too, to pad it.

Yes. Is there anything else in there now?

U-2 or U-3?

U whatever it is, U-4.

Rusty, I can get it down here.

Yes, but there wasn't anything in there last night, Rusty.

Hey, Dave, I'll put it right in here. I don't know if the camera's going to fit though, come to think of it. Let me look.

I've got a place for the cameras I want, in front of other things.

Okay. Stand by. [Thud]

No, it's a little too thick for that.

Okay, you ready, Dave?
07 01 09 09 CMP  No.  Not now.  ...  Store all this stuff in here.
07 01 09 20 CMP  Parts catalogue.
07 01 09 21 CDR  My God!  That's a smaller compartment than it looks like - that U-3, or 4, or 5, or 6, or 7 - Kind of useless - God, it holds just one tissue box.
07 01 09 33 CDR  Here's a bag here.  Oh, shoot!  That has some tissue boxes - Hey, you know what we could do?  We could put these tissue boxes in this bag here and tie this bag down.  It's an extra bag.  I already threw one empty tissue box in there.  Is that an empty one?
07 01 09 49 CMP  No.  That's a full one.
07 01 09 50 CDR  Okay.  Well, let's just throw them all in here.
07 01 09 52 LMP  Well, I've got one stowed up here --
07 01 09 53 CDR  Dave, would that be easy to stow - just to stow this big bag someplace?
07 01 09 57 CMP  What kind - yes.
07 01 10 01 CDR  Okay.  We've also got a set of long underwear running around loose up here.
07 01 10 04 LMP  Yes.  That LCG?
07 01 10 05 CDR  Yes.
07 01 10 07 CMP  Let me stick that in the ...
07 01 10 10 LMP  The LCG's?
07 01 10 15 CMP  Yes.
07 01 10 21 CDR  Shoot, I haven't ...
07 01 10 23 CMP  Rusty, the flight plan you can put in R-10, can't you?  Or R-12?
07 01 10 27 LMP  Yes, yes, I can.
07 01 10 28 CMP  Stick it over there.  I'd like to have more room here.
07 01 10 32 CDR  I wonder what we're going to do with that R-12 when
we get around to reentry?

07 01 10 35 CMP  Put it back where it started from.

07 01 10 38 CDR  We're going to have to have a fire drill the day
before to practice stowing.

07 01 10 43 LMP  We could just stow the whole damn thing the night
before.

07 01 10 46 CDR  Yes.

07 01 10 48 LMP  Except for sleeping places and that kind of stuff.

07 01 11 10 CDR  Look, I'm going to have to put my feet up.

07 01 11 14 LMP  Okay. You got a place there?

07 01 11 16 CMP  Yes.

07 01 11 18 LMP  Here.

07 01 11 27 CMP  Matter of fact, give me - you got another tissue
bag up there? I found a place to put that.

07 01 11 31 LMP  Well, I got it stowed.

07 01 11 33 CMP  Okay, what's in that bag?

07 01 11 52 CDR  There's the tape. Oh, I'm glad we had that little
burn first. ... after this one.

07 01 12 18 LMP  Dave, you might want to put this in there, after
you do the stars.

07 01 12 23 CMP  Yes.

07 01 12 40 LMP  God damn! Boy, your hair will get caught in that -
whiskers get caught in this thing. Open out a little
bit, and they really pull.

07 01 13 23 LMP  Oh, hell, I'm going to have to reroute all my hoses
... do that.

07 01 13 28 CDR  Oh, hey, speaking of hoses, pull those hoses down
out of the tunnel.
I don't think I'll do that.
Okay. Let me see. Anything else floating around up there?
Rusty, you had better put your feet all the way up. Your legs are going to get whacked, when we go.
Okay. Thank you.
Throw that towel up; I'll just stick it up here.
Damn these hoses.
I think we can probably leave this one where it is.
Well, I want to strap them down.
Well, I can strap it right here.
How long we have, Jim?
Just 23 minutes.
Whoo!
Okay, I'm going to AUTO maneuver us over there now.
Lots of things hanging loose.
Yes. I think the stuff in there will be okay.
Okay. Purge on fuel cell 2.
Okay.
I had difficulty ...
Well, they want it 5 minutes, right?
... boost on it, would you?
Rusty, what do you want to do with this?
I'm going to use it. Got to read it.
Looks pretty good, Dave.
Put everything away?

Yes. The only thing we have here is just one piece of food, which I'm going to throw away if you don't want. Just one bar here, but that looks like it's pretty strong. It's pinned up there. You want to put it back? Oh, it fits over in the left-hand side there, doesn't it?

Yes. Thank you.

You want this, Dave?

Yes. I don't think there is any shortage of cinnamon toasted bread.

What's the time of the burn, Jim? (Cough)

Burn time is

Let me give you the pad. I'd like to copy down my standard rule --

Sure.

-- copy --

Why don't you pass it back? I want to get a couple of things.

Yes.

... you're going to get a bunch of MASTER ALARMS on the PU SENSORS, just tell me; don't sweat it, if that's what it is.

Okay.

I think one of these ...

Say, Jim?

Just a minute.
07 01 39 00 LMP  IGNITION. Wheel! Got them?
07 01 39 03 CDR  Got two of them.
07 01 39 04 LMP  That's good.
07 01 39 06 CDR  Okay. No sweat, good. Everything's just fine.
07 01 39 10 LMP  15 seconds.
07 01 39 14 CMP  DSKY's good.
07 01 39 15 LMP  10.
07 01 39 16 CMP  DSKY looks good.
07 01 39 17 LMP  9, 8, 7, 6, 5, 4, 3, 2, 1 -
07 01 39 26 LMP  SHUTDOWN. Okay. DELTA-V THRUST, NORMAL, OFF.
07 01 39 29 CDR  DELTA-V THRUST, NORMAL, OFF.
07 01 39 31 LMP  Okay - GIMBAL MOTORS, four, to OFF.
07 01 39 34 CDR  Okay, PITCH 1, PITCH 2, YAW 1, YAW 2.
07 01 39 42 LMP  All verified; TVC SERVO POWER, 1 and 2, OFF.
07 01 52 10 CDR  Hey, Mr. Evans, I have a little bit of news for you.
07 01 52 13 CC   Roger; go.
07 01 52 15 CDR  Do you realize that that was the 17th propulsive maneuver that we've performed on this flight, not counting the S-IC, the S-II, the three S-IVB's, and the APS burn to depletion?
07 01 52 27 CC   That's right, by golly.
07 01 52 32 CDR  Pete, don't we have a lot of useless data up here?
07 01 52 34 CC   (Laughter)
07 01 52 45 CC   Antigua at - Ascension at 58.
07 01 52 48 CDR  Okay.
07 01 52 53 CDR  Hey, Ron, are you still there?
07 01 52 57 LMP Dropped ...
07 01 52 58 CDR Yes. Sounded like we dropped just as we ...
07 01 53 02 CMP You know what I'm going to do with that? I'm going to take a picture of that.
07 01 53 09 CDR Going to have to let it settle for a while.
07 01 53 11 CMP Hey, let's spin it, see if we can - Okay, there you go.
07 01 53 15 CDR (Laughter) You better take a picture when it's spinning because it's - (laughter).
07 01 53 18 CMP Well, no, it's okay. It still ... in the middle.
07 01 53 22 CDR Let it settle for a while and get into a recognizable bubble.
07 01 53 26 LMP Yes.
07 01 53 29 CMP It's pretty recognizable. Here's your camera back, Rusty. You got a handle, too?
07 01 53 40 LMP Yes.
07 01 53 41 CMP Better take it off and stow it.
07 01 53 43 LMP Huh?
07 01 53 55 CDR You know, I thought we were going to go over Africa again.
07 01 54 19 LMP You better start taking that perigee torque down ... 98.
07 01 54 27 CDR Listen, we've been getting something where we were.
07 01 54 57 LMP Oh, boy, goody, goody, gumdrops.
07 01 55 01 CDR Hey, Rusty. Want me to hold it for you?
07 01 55 29 LMP Actually, that puts it against a brighter background - Well, it might be -
07 01 55 51 CDR Okay, you want me to hold it while you take a picture? Okay.
How far away am I going to be now? I'm not even 3 feet away - Let me scoot down a little. Okay -

You got enough light? Need some light?

A little bit, yes. That about 3 feet?

Yes, just about.

Okay, now that was number 150.

You ought to save it (laughter).

(Laughter) Hey, zero-g again. ...

We're out of film on MAG A.

Are you really?

Tell you what, we're heading down. I think I shall just stop our roll in order to view the world go by.

Hey, you don't get food for your friends, huh?

I tossed a whole bag up there.

Did you? What did you say?

I tossed a whole bag. Don't need any smart remarks. Look around first. Two bags - didn't I throw you two bags?

I don't know.

Two full bags of food - for my friends.

I have a feeling that a lot of the food in that bag over there isn't going to get eaten.

You do?

The grab bag?

Yes. Oh, this is spaghetti; ... some of that.

Did you want a grab bag, Russell?
I don't know; is this the grab bag? Yes, it's the grab bag.

Would you like to pull ... grab bag.

Let me see what we got on the menu.

Jim, that wasn't very good. Now, you're going to in gimbal lock.

It sure takes a long time to get across the Atlan (laughter) - takes an even 10 minutes.

That grab bag keeps getting grabbier.

Grubbier or grabbier?

Grubbier, yes.

Oh, my lips are really getting dry.

... (Laughter) My lips or yours?

Okay, you got water.

-- before we get there. It also looks like it's going to be undertasked.

... 2, 3 ... "Unstow and install the SO 65 CWEA."

Well, I'll go down - down and get ... Getting my foot all wet in this water (laughter).

Ahh! I'll tell you what, David -- ...

... -- why don't you let me do the alignment? Unless you can get over there.

No, I can get it. No problem.
Okay, Rusty. Why don't you get it out, and throw it up here, and I'll --

Ooh!

Ooh! Don't drop it.

Ooh! Ay! Yi-yi! ...

Tell you what, Dave. Let me sneak underneath, and I'll be out of your way completely. Boing. Okay, I'll go up to my ... spot.

As a matter of fact, you know what? We ought to get some pictures of me doing an alignment this time and I'll do one upside down!

(Laughter) I bet that will be fun!

How about that! Think that would go over? They want pictures of crew activity.

David, your great big bubble ... is floating all over the place.

Throw it back here. I'll get it, or try and get it.

Here's a red food bag. Did you get that out, Jim?

I only had one over there.

Wonder where that --

Oh, the door is open.

Dave, you ... that thing straight up and down?

No, it's not. It has to be - Rotate clockwise --

I don't know which way that is. Is that that way --

-- to you. That's right. They want it clockwise, relative to you. There you go. Now a tad counterclockwise. A little bit more. Line it up with that ... bar. There you go; you're alright.
07 02 11 59  LMP  Whoop! I lost my footing over there.
07 02 12 08  CDR  I think that's pretty good now.
07 02 12 09  LMP  Okay.
07 02 12 12  CDR  Try standing — stand back and see what it looks like.
07 02 12 22  LMP  ... What's that for?
07 02 12 23  CDR  Gimbal lock. We're out of it. Dave, take a look at that and see if it looks okay.
07 02 12 32  LMP  You really can tell better from up here on that, Jim. You can't see all that —
07 02 12 34  CMP  You can't see what? You want me to line it up again? Does it look pretty much aligned?
07 02 12 44  CMP  Yes. It looks pretty good.
07 02 12 45  CDR  Okay!
07 02 12 47  CMP  I don't even think it makes that much difference. If it goes in the hole, push it!
07 02 12 55  CMP  ... experiment. ...
07 02 13 01  LMP  The bubble experiment? Here it is.
07 02 13 04  CMP  The bubble experiment.
07 02 13 06  CDR  I need the exerciser. I want to exercise.
07 02 13 08  CMP  You going to exercise now?
07 02 13 11  CDR  Why not? Where did you put it?
07 02 13 17  CMP  In A-5.
07 02 13 21  CDR  Okay. I'll get it.
07 02 13 23  CMP  I'm going to do my alignment before you do your exercise.
07 02 13 25  CDR  No, no. I'm not going to exercise right this second. I just want to know what it is, because I'm going to get ready to exercise.
07 02 13 29  CMP  I put it in A-5. There's room in there, and that's a heavy thing, sort of.
07 02 13 34  CDR  Okay. Is it time to eat again?
07 02 13 41  LMP  I need to eat lunch. Did you eat lunch?
07 02 13 43  CDR  I don't remember. I've just been sort of eating continually.
07 02 13 47  LMP  Well, I'm not very hungry, even.
07 02 13 57  CDR  Oh, good! Banana pudding! Oh. Spaghetti and meatballs, banana pudding --
07 02 14 13  CMP  Do you want to watch these, Jim?
07 02 14 16  CDR  Do I have a what?
07 02 14 17  CMP  Would you watch these with me, please?
07 02 14 19  CDR  Okay. Yes. Actually, I can see these two.
07 02 14 26  CMP  Yes. All GO.
07 02 14 37  CDR  Think I'd better get our update?
07 02 14 49  CMP  Panels on? Shoot, I've already had this one three times. These flights ...
07 02 15 44  CDR  What's the matter?
07 02 15 49  LMP  ... on it when we started out, but it's - That's a funny-looking number, isn't it?
07 02 15 53  CMP  What do the rest of them say?
07 02 15 54  LMP  I don't know.
07 02 15 56  CDR  What's the number?
07 02 15 57  LMP  70.
07 02 16 04  CMP  This one's 70, also.
07 02 16 08  LMP  This says 70, also.
07 02 16 11  CDR  Yes, it means we've taken 70 pictures.
Hey, we --

We have a 25, you know. What's that? Oh, good. Are you looking for the T-align time, Dave?

Hey, we --

That's right.

Going to take a star sight right now?

Yes, we might as well.

I think it's safer.

I think so, too.

(Laughter) I think so, too! And it's all ready to go; I'll run down and take a look to make sure, but ...

... I wonder if we're really wasting - aren't just wasting that thing.

That test shot?

Yes.

Yes.

We don't have any spare batteries for it; if it doesn't work, there's nothing we can do about it anyway.

I think so, too.

Everything's plugged in. That's really a nice rig.

Jim, how does that look on your ball?

Roll, pitch, and yaw. That's actual - that's really superb. I yawed over here close enough to gimbal lock, and it put me right back on the bellyband.

Okay. Ready? Go!
Gee, that's really more like it. About 180 degrees in pitch, about 60 degrees in yaw, and about nothing in roll.

Really?

Yes. We went about as far on that one as we could go. That was just to test our ingenuity, I think.

(Sneeze) Ahh! Almost hurts to sneeze.

Where's that full food bag? Is it in here?

Yes. That's where it was.

Is that it?

Yes. Do we have all of today's meals in here?

No, I just grabbed a bunch out. Want a couple more?

No - Wait a minute --

Man, would I like some clam chowder right now? Whooee! Some good soup would really hit the spot, and I don't understand why they can't make it --

Boy, it really would. You'd think that's the simplest thing in the world to make, wouldn't you?

Yes, and with so many dried soups on the market, now, you know, you don't have to go out there and make a technological breakthrough. Might be a financial one. A 50-cent soup bag instead of a 200-dollar one. (Singing) How many balls you get that time?

You know, I've made - Those were two of the best marks I've made, and I got four, ... one. ... when you got rates in there, there's no way to get less than ...

Do I have rates in it?

Yes. Oh, yes, yes -
Yes, as a matter of fact, I had - I had -
Boy, I had both those really nailed.
-- I had pitch and yaw both in there.
Blame it on the CDU's. Go ahead.
Roll and pitch in there. I didn't know you were
that kind of guy, David. Blaming it on everybody
else all the time.
Only way I could get out of it.
Just because it's legitimate doesn't mean it's
honorable.
(Laughter) The only way David could think to make
that program stop was to hit that mark button a
couple of times. (Singing)
What we need up here is some music!
Did you really lose your tape?
Yes, I think so. I can't find it.
Where did you have it?
I had it in my ... white room, put it in my lower
pocket on my suit; and I've looked and it's not
there. Of course, the other thing I didn't do is
take my EVA PPK kit over with me that day.
Oh, didn't you? (Laughter) Oh, well. Can't have
everything.
Yes. The important thing got done, I guess.
Third star check works.
Good. Yes, yes, yes.
I'll tell you, one thing I'm learning on this trip
is the southern stars.
Yes. We always use that, don't we?
Yes, we've had them every time. Enif, Menkent, Acrux, Atria, and all those guys.

Yes, I know. Wonder why that is?

It does seem - it does seem much more than random.

I'm glad we spent all that time in the planetarium. You know?

Really helped. Wonder if it's the time of the year or something?

Yes! You know, where the earth is relative to the sun, and on its axis and all that fancy astrology stuff.

(Laughter)

Who your friends are and all that.

What group are you associated with? Oh, boy, I opened this whole thing up, and there's nothing in here but a ... butterscotch pudding? Phew!

Shoot, just throw it in the other bag.

What do you got for it?

...

You got my grape punch yet?

I'm going to try the cream of chicken soup. How that?

I had some the other night. It wasn't too bad, it wasn't nearly as good as it could have been.

It wasn't as good as it sounded, huh?

No.

I'm going to try it, and see what happens. See if it all comes out.

You know, I thought every meal had chewing gum in it, but it doesn't.
It doesn't?
No.
You say you wanted a grapefruit drink, Jim?
No.
I'm almost getting to the point where I prefer water to some of the juices now.
Well, if you don't want it, I'll take it.
Well, that's what I mean.
Yes! Thank you. I guess I'll have to trade you something. How about a - a grape drink? (Laughter) How about some banana pudding?
No, thanks. I had my fill of bananas for the flight last night. Man, that stuff is really overdone.
I tell you. It's a lot better if you mix it with a lot of water, and make it more like a drink than a pudding.
That would make it last even longer.
Yes, but it's a lot thinner, and you don't even have to chew it. More like a banana milkshake than a banana. (Singing)
Okay. Where is our update book? Can we get that out?
Yes. We're going to need the update book, Dave.
Sure.
Yes.
(Singing) Oh, here we go, again.
Here's a ... gunk on it for you, Dave? (Singing) I want to do one of those SO 65's in the ...
Yes, me too. But I'll lay you odds; you don't do any that way.
07 02 28 05  CDR  Well, I'm ready for bed.
07 02 28 16  LMP  Ready for bed? You've been up 6 hours and 15 minutes.
07 02 28 20  CDR  Well, I'm ready for bed.
07 02 28 23  LMP  Boy. ...  
07 02 28 38  CDR  How's the old sick fuel cell 2?
07 02 28 41  LMP  Old sick cell - fuel cell 2, $T_e$ is going back up and the performance is staying pretty good today. It is dragging its share of the load.
07 02 28 58  CDR  Was that fuel cell light on before, when they - they did the purge?
07 02 29 01  LMP  No, it was just not quite on. I think they thought it was going to come on, so -
07 02 29 08  CDR  We only got one MASTER ALARM during the burn there, didn't we?
07 02 29 11  LMP  Yes.
07 02 29 13  CDR  It came on, and went out again, didn't it? Not the MASTER ALARM, but the warning light. It looked to me like it came on and then went out, and then stayed out.
07 02 29 23  LMP  Well, it shouldn't have. Frankly, I don't know whether the warning light went on or not.
07 02 29 33  CMP  Beef bites, blaugh!
07 02 29 35  LMP  Davey, are you doing something useful, or can you get me some hot water?
07 02 29 37  CDR  Hey, I'm going down and get some —
07 02 29 41  LMP  Okay. ... the opposite one ...
07 02 29 46  CDR  5 ounces. You want it by the menu?
07 02 29 50  LMP  Huh? Yes. Yes, 5 is good.
Davey whipping up his camera setup again? What are you going to use as a sun filter?

Hey, Dave, you ought to take a picture of the sun.

Hey! Good idea. You'll need AUTO optics?

Apollo 9, Houston through Carnarvon.

Roger, Houston. Read you 5 square.

Roger. I have an SO 65 update.

Okay. Go ahead. We're ready to copy.

Roger. Inertial angles: 180.00, 181.20, all zips; GET is 171:24:00; your T-align was 170:48:00; earth ORB rate, and the rate is 0.066 degrees per second; your ORB rate ball angles; 180, 327.5, and zero. The site is the Amazon River mouth, 171:29:26, 20, and --

(Singing) ... How many are you taking from there, David?

Okay. It's all yours.

It didn't take long to get the things all back out again, did it?

Huh?

It didn't take long to get things all back out again, did it?

I like getting things out. Yes, we've got to get one more thing out and that's the crew log.

Crew log? Get all that junk out.

Grapefruit drink! More grapefruit drink!
Maybe that's mine. As a matter of fact, I had two over here a minute ago, and now I only have one. I also had a banana pudding... unknown juice.

Jimmy, it looks like you're going to be taking pictures - Whoops! I... my count again.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18. That's where you're supposed to start, at 18?

Yes.

Okay, you're going to be taking pictures - We're going to come right across the north tip of the Gulf of California and take some pictures up towards Los Angeles -

Do we have the high orbit there, or the second high orbit?

Second. I don't know - I wonder what their big deal is? We've only got 10 million pictures of that area.

Which area is it?

It's from - it's the sweep across the southern U.S.

Oh, really? We'll see all those interesting places.

Yes. It's a good - it's a damned good sweep, because we also just missed Cuba. We come across the southern tip of Cuba.

We'd better find a better place to put that - We really need that camera mounted in one of these side windows here. Okay, I wonder if it'll fit over there. Yes, it will.

That one?

Sure.

The 75-millimeter camera?

Yes, the 75-millimeter camera. It won't fit on this side; it's pointing in the wrong direction.
What's the right direction?

Well, I just can't get the 75-millimeter lens mounted on the camera so we can mount it in there.

But, Jim, either way...

I know it, I'm trying to figure out some way of getting the God-blessed camera up there! I don't want --

That's not a good way!

Where would you like to have the camera?

I'd like to have the camera pointing out one of these two windows.

I bet we could probably figure that out.

Good! Hurry up, though!

Want me to figure that out for you?

Yes, okay.

Why don't you just pass it up while you eat? And we'll figure that out.

Turn off those... --

... you'll never be able to get it.

Those things have to fit together.

Okay? All you have to do is flip over, head first, downwards, and take a... But I'll get it for you. Just a minute.

Where are they? Which --

I'll get them.

I can get them.

No, you're fine. You don't know where they are. Okay, here, get up there, and I'll pass you the whole box.
Maybe we'll make a technological breakthrough here today.

Which way - They want them north (singing) - We're going to be upside down, and f:4 --

... for you, Jim. Matter of fact, I -

They want sequence camera pictures, pointing north.

Yes.

Looks like the easiest way to do that, is just mount it down the X-axis and point the spacecraft over there.

No, I think there's an easier way to do it. Mount it in the side window, Jim.

Yes, what --

Hey, Jim, the easy way is to - We've only got a few minutes to set up that orbit rate, so why don't we just go over that part of state in orbit rate also, and then take out the side window? Because this side window looks north. Then we're all set up for the SO 65.

I don't like that idea --

Okay.

-- I didn't think of it. I'll think of another one

You're as bad as David. Hey, this is a real challenge. I don't understand what the hell's wrong with this. I know that this thing fits in that window.

No, that's an untruth, Jim. You know that it's supposed to fit.

I just don't understand that. I just don't understand it.

Hey, that's ...
There must be some way we can make that mother work.

... exactly the way I had it the other day ...

... It's going to go on now! It's going to fit! Turn it over there. Isn't it?

No, ...

David is fixing the 75-millimeter lens for it.

And, the 75-millimeter lens is fixed, gang.

Odd-job did it again!

(Laughter)

Do we get a pin for the 10 000 Club?

Hey, that's right. How about that?

I'm afraid that Borman and those guys got us beat.

That doesn't mean we can't get in the club.

Hey, Dave, as a matter of fact, you know, if they gave us vectors, unit vectors, you could look at them through the sextant with AUTO optics.

Yes.

That'd be a better way to do it.

Sure would be.

Because, you know, the chance of seeing them with your eyeball is like nothing.

It's like nothing. And I agree.

Do you want to try that for a funsies?

Sure; actually --

Let me ask them at Hawaii.
Okay. Maybe he's still there. Is he still there?

No. No.

Let's see. What the hell is a ...? That's Capricornus. ...

Listen, Jim. Let me do something for you here.

Go ahead.

Where did you put that bracket for the camera?

I ain't put it anyplace.

Where'd I put the bracket, then, Jim?

I'll look.

Why don't I hold the camera while you're looking?

Mmm.

Gee, Jim, you forgot the power tool. But you did pretty good. We'll get you learned how to unstow things yet.

I need more practice at it. You guys never let me play with it.

Oh, no - No, well, that's what I was thinking.

(Singing)

How much fuel you think you'll blow on this, Commander?

How much fuel are we going to use?

Oh, let's see.

We're not going to use very much.

That's a very reasonable sum! Whatever that is.
Now, where did I put that thing? Didn't I give it to you to put --

R --

You gave it to me to put in the U-4 - I mean 3, but we already had one in U-3, and I think Rusty took it and put it - took it, and I think he went back and gave it to you - or put it in A-7 himself.

Okay.

Hold it, now. Which bracket?

The window bracket.

Oh, oh, oh, I thought you were talking about that LM bracket.

No, the LM bracket, I know where that is.

I know where the other one is.

Between us, we know where both brackets are.

(Singing)

You know, I think the only way we're going to be able to do it is out the side window. I had an extra 5 minutes in there that we weren't - that we don't have.

Okay. Well, look, Jim, I don't want the bracket.

No.

I'm going to get the bracket out and put it up here though.

Just mount it in the side window, Jim.

What?

Just mount the camera in the side window. Hand held, it won't --

Here you go. Here's your bracket. Now I need the LM bracket.
07 02 55 29  CMP  Oh, I can feel it. We went up and came down again with my ears. You feel that?
07 02 55 33  CDR  (Laughter)
07 02 56 05  CDR  What happened there?
07 02 56 17  CMP  What happened?
07 02 56 19  CDR  ... I had my hand right on the stick, like this, so I know you didn't hit it, but -
07 02 56 26  CMP  I didn't hit it or anything.
07 02 56 28  LMP  Okay, you're going to get the orbit-rate attitude, here, Jim?
07 02 56 33  CDR  Yes, I'm going - I'm going to go around and - and put it in the orbit-rate attitude, and orbit rate in the attitude that we would be in, in PULSE, so that we're only going to be just a few degrees away from it when we start going. Here - here's what we're going to have to do, Dave. You're going to have to take and -
07 02 56 47  CMP  It's going to be right -
07 02 56 48  CDR  - - load up the whole thing, and get ready to do it. We'll have about 5 minutes from the time we take - from when we stop taking those frigging pictures, until -
07 02 57 00  CMP  Until what?
07 02 57 02  CDR  -- we have to start that ORB rate torquing, and I'll be ready, at about the right attitude, there.
07 02 57 08  CMP  Okay.
07 02 57 09  LMP  You don't think it's worth setting it up first, huh?
07 02 57 11  CDR  No, I don't think --
07 02 57 12  CMP  Hey, it's a good attitude we've got right here, Jim.
07 02 57 15  CDR  You don't have any real good luck setting it up first.
07 02 57 18  LMP  Oh, I see.
07 02 57 21  CMP  Well, what'd he give you? 27.5 and zero?
07 02 57 22  CDR  Right.
07 02 57 23  CMP  183, 27.5, and zero.
07 02 57 25  CDR  That's the local vertical one.
07 02 57 26  CMP  Yes, right. That's where I'm going to fly the thing.
07 02 57 33  CDR  There you go.
07 02 57 34  CMP  Okay.
07 02 57 35  LMP  What was the frame rate and all that, Jim?
07 02 57 38  CDR  It was 6 frames per second.
07 02 57 42  LMP  Okay.
07 02 57 46  CDR  You have some way of mounting it over there?
07 02 57 47  LMP  Yes.
07 02 57 48  CMP  Yes.
07 02 57 50  CDR  Make sure that it doesn't shoot too far out to the side, though.
07 02 57 54  LMP  I'll do my best.
07 02 57 56  CDR  Pan about 30 degrees or so, and, if it's not enough, just give me a holler and I'll roll the spacecraft. We have roughly 13 minutes until we start.
07 02 58 04  CMP  Okay; ... time?
07 02 58 06  CDR  Start timing --
07 03 28 03  LMP  Hey, we're not going to be over the ...; we're going to be over the water.
07 03 28 11  CMP  29 what?
07 03 28 13  CDR  ... We're not going to be over the Amazon.
07 03 28 18 LMP  Yes, there's the mouth of the Amazon over here on the left. Over there.
07 03 28 22 CDR  Yes. Get your Hasselblad going.
07 03 28 24 LMP  Yes.
07 03 28 25 CMP  Over there?
07 03 28 26 CDR  Go ahead and take some pictures.
07 03 28 51 LMP  Okay, I'll take some pictures.
07 03 29 46 CDR  Some pictures of water.
07 03 29 48 LMP  Water.
07 03 29 53 LMP  ... clouds ... in water ...
07 03 29 55 CDR  (Laughter)
07 03 30 02 CMP  You know what? We should have rolled right there.
07 03 30 06 LMP  Okay.
07 03 30 10 CMP  No, it's not so good over here, either. It's too cloudy. Just too cloudy.
07 03 30 24 LMP  Okay, well, it was a very ... That's too bad. What's our next event?
07 03 30 40 CDR  SO 65. Get out the pad for it.
07 03 30 58 CDR  Mexico. Mexico and Brazil on SO 65. Yes. And let me go over here to ...
07 03 31 16 CDR  Get the C roll off? B roll, B pitch, B yaw.
07 03 31 29 CDR  Hey, that's too bad.
07 03 32 27 CDR  May I have the flight log, please?
07 03 32 33 LMP  Crew log?
07 03 32 34 CDR  Crew log, yes.
07 03 32 53 CDR  I'm kind of warm in here.
Begin rest period. Only 1/2 hours - 3-1/2 hours until a rest period.

Hot dog.

... (Laughter)

Hey, that a boy, Schweickart, little...

We didn't get any landmark tracking in today.

Rusty, do you want this back?

What time is it ... at the Cape?

It's 2:30 at the Cape. You mean we go to bed at 6:30 tonight?

Could be.

Well, they're jockeying --

Yes, they're jockeying for RETRO, today.

Yes.

We're going to probably get up at 1:00 in the morning that day.

We ought to wait until the weather gets better.

That's what I was thinking. We have enough food. We have enough hydrogen, enough oxygen, certainly enough water, enough RCS, maybe we ought to just go another day. No, ... LiOH: enough of that, too.

Well, let's go get the cake; I want the cake.

(Laughter)

Shoot, I know what we could do. We could take the LiOH canister and pick up the PLSS and breathe through it, at least for an hour.

What did we ever do with that exerciser that...?
You know, I think I liked that old rubber ... one better. Didn't get so hot. Yes, this is really almost --

Don't hurt yourself.

... (Laughter)

Every time I exercise it hurts me.

Yes, one thing I'm going to do from now on is get me exercise at handball. Tired of running around the block every ...

(Laughter) ...

... going to do this anymore.

... going to say, "Boy, you know that Dave Scott, he was just like Bill Anders before the flight but, boy, hasn't he changed."

Boy, that's right, I'll tell you. Running around the block is agony. Think I'll even take an hour out for lunch.

I'm trying to think where I want to go on vacation.

Where or whether?

Where. Shoot, man, I - I don't want to even - Been giving up vacations for 3 years.

Goodness gracious. What's that thing stuck on that red vent hose over by the right-hand couch strut there?

Here?

No, over there, right next to David.

Oh.

Great big hunk of - Gee, it looks like it got cut off a big strap or something.
Oh, yes. It did get cut off a big - a piece of strap. It was getting in the way of the door, and I couldn't ...

(Laughter) One thing about you, Dave, you are really subtle.

Well, no, I just stuck it - They put those straps, and they get caught in the door, and I just cut them off.

A direct approach.

Effective.

However, why was it floating around?

I don't know; I stuck it away in that little box. It was floating around. It must have escaped ... to go back. Oh, I've got to do an alignment here. Hoo hoo.

Jimmy, are you under the couch?

Yes.

Are you working?

Yes. What - -

Okay.

-- do you need?

I was going to stow some film, but -

I'll be through here in a minute.

I'm not tired, but I think that's about as hot as I dare get it.

Hey, it really makes you steady, too.

Yes, I noticed.

We noticed.
Okay, 59 - 57, 00 ... Let's see - We've got 2 minutes to go. Oh, it's going to be clear - not clear, but at least tolerable.

Is it ever! Look at the volcanos in that bay.

I was looking at them - I wonder if they are.

Oh, yes. We want a shot of that. ...

How much time we got?

1 more minute.

Okay, as soon as we get through with that, take that thing off.

Let's see if I hold it.

There's a volcano in the middle of the lake down there, see that?

I saw that - with the water in it?

Yes. And a cloud over it.

Doesn't look like the time is going to be right, does it?

No, we're sure going to be over the water.

Maybe not, 30 seconds. It could be out on that peninsula.

Where's it supposed to be?

An active volcano.

Colombia?

No, no, Costa Rica.

Oh.

Go ahead and take the pictures. I don't think I'm going to see it.

I don't know where --
07 04 57 05 LMP  Maybe it's off to the side.
07 04 57 06 CMP    Yes, ...
07 04 57 12 LMP    I don't either ... little island.
07 04 57 21 LMP    Well.
07 04 57 37 LMP    There it is ... right now.
07 04 57 42 CMP    I'll be damned if I see any active volcano down t
07 04 57 45 CDR    I don't either - Yes, there's some smoke down the
                    out to the left.
07 04 57 56 CMP    Can't see that.
07 04 57 58 CDR    Yes, I do. I can see the flowing lava.
07 04 58 01 LMP    Oh, yes, there it is. Get it, Dave.
07 04 58 04 CMP    What? Oh, yes, there it is. Shoot, boy, it's wa
07 04 58 10 CDR    Yes, we missed the darn thing. That's a shame. 
                    Okay, Dave, your next one is at 59:40.
07 04 58 18 CMP    This thing sure ...
07 04 58 20 LMP    Yes.
07 04 58 25 CDR    The problem is to make sure ...
07 04 58 28 CMP    Yes, it is; I've been watching it.
07 04 58 29 CDR    Okay, get that thing right straight up through th
                    middle there.
07 04 58 34 LMP    157 - 59:40 and it's 1 minute away, and it's the 
                    west coast of Colombia, 10 frames, 10-second inte
                    vals, and I can call it out to you.
07 04 58 46 CMP    Okay.
07 04 58 47 CDR    I think that one's supposed to be weather, isn't it?
It's - No, I think we're taking geology. The first one and the second one are - geology and weather - Could be the third one - Okay, 30 seconds to go.

Oh, it might be weather, I don't know.

I thought you said it was weather.

It's a thunderstorm -

There's a beautiful thunderstorm down there. Yes. Why don't we just take it?

Yes, they really are.

I don't know. I tell you what, I would - I would take a picture of the thunderstorm ... probably be great.

Yes, I think so, too.

Well, after a thunderstorm, it starts clearing up.

Okay, what do they want? 10 at 10-second intervals?

Yes. Okay, Dave? Mark?

Why don't you give ...?

Okay, I'll give you the 10-second mark and you take whichever you want.

MARK.

I don't know what - what they say on the plan.

It says the west coast of Colombia.

Why don't we start down through here?

... that's what they want pictures of ...
You were calling no. When was it supposed to start?

No, go ahead. Just as fast as you can go. 10 seconds - you could have plenty of them.

...? I was going to say I could wind one, too, but you can't ...

... either way.

... Put it away, what are you going to do with it?

Let's just forget about this stuff. What's the next ...

... Sh, there's supposed to be one up here. Where's the other Hasselblad?

I don't know what else to do here ...

... I was going to say I could wind one, too, but you can't ...

Put it away, what are you going to do with it?

... I think there's one in there, maybe more. What do you want to do, put them away or try something different?

Put it away, what are you going to do with it?

... Oh, no, it's not, Dave. A-7 has superwide angle, that's all it's got. No other camera in there, Dave. Oh, shoot, I put it back in B-3, yes.

... It's not all the way around, Dave. This thing is -

Okay, let's forget these ...

... No, it's still stowed. Where is it?

Where's the other Hasselblad?

I don't know what else to do here ...

... I was going to say I could wind one, too, but you can't ...

Put it away, what are you going to do with it?

... I think there's one in there, maybe more. What do you want to do, put them away or try something different?

Put it away, what are you going to do with it?

... Oh, no, it's not, Dave. A-7 has superwide angle, that's all it's got. No other camera in there, Dave. Oh, shoot, I put it back in B-3, yes.

... It's not all the way around, Dave. This thing is -

You were calling no. When was it supposed to start?
The only other possibility is it was still in the magazine, and then, by forcing it, it just goofed up the camera, too.

Let's put the SO 65 away - Why don't you put this back in there? ... SO 65 away.

You want me to get that 16-millimeter bracket out, Dave?

Not particularly, Rusty. That's not much of a good idea, but ...

Okay - Got that out yet?

I think they want it here.

Oh!

... should be turned back and stowed in the - turned back and stowed in the wide angle -

Yes, it is; that's got a dark spot ... I think.

Different MAG, huh?

Yes.

Unfortunate, unfortunate.

Looks like we're going to have to break out that other roll of film.

What magazine is that, Jim?

... one-sixth of that, Dave. Did you click it after you took it off?

The slot on the ...

Okay, I put that extra ... in B-3.

Maybe that'll hold.

How much ... to that SO 65 ...? I guess we don't know.

Yes, it's sitting right here.
07 05 21 26  CMP  I mean when we get through taking SO 65 pictures, we could use those, huh?
07 05 21 30  LMP  ... about used all up; we're already up what, about 85 or 90 on them, aren't we?
07 05 21 37  CMP  One of them only has 100 and ...
07 05 21 44  CDR  One of them has nearly 200 --
07 05 21 48  LMP  Where is the procedures book? It's in there. See if I can -
07 05 21 53  CDR  Yes.
07 05 21 54  CMP  You all quit taking SO 65 pictures, and we wouldn't have to load it so much.
07 05 21 58  LMP  No, we won't, ... something.
07 05 22 01  CDR  (Laughter) It's a good idea, though.
07 05 22 13  LMP  ... of the photo - photo ... plan ... or is that in there?
07 05 22 21  CMP  Yes, it's in there.
07 05 22 35  LMP  One has 140, one has 170, one has 100, and 170. Gees.
07 05 22 44  CMP  You want me to take another 100 SO 65?
07 05 22 46  LMP  We better, Dave; we're not going to have anything to do.
07 05 22 47  CDR  (Laughter)
07 05 22 56  LMP  We have roughly 225 pictures; we ought to save -
07 05 22 59  CMP  Yes.
07 05 23 01  LMP  2 full days of ... No, 1 full day of ...
07 05 23 14  LMP  ... every other day, wouldn't it?
07 05 23 30  CDR  We're up to 18\(\frac{1}{2}\) ... it's there right now, isn't it?
We ought to ask them what time we are supposed to ..., because things are obviously getting screwed up on time.

... Well, it would be nice to know when they're not going to let us sleep through, so that we could get to bed early that night.

... and want to sleep late, too (laughter). There's nothing to do when we get up.

Really?

Get up at 164:20 - The first thing we do is align the IMU; at 168 ... then we unstow ... SO 65, eat, take colored pictures, go to drifting flight, and go back to bed.

Okay, we go to bed at 198 - and get up at ... 2 more workdays ...

2 more workdays?

They're not really workdays.

Another 25 minutes, we better limit ourselves ... 25 pictures we got to take ...

While that ... is out, Dave, let's see if ... the damn thing.

... the right way.

How does that differ from what we've been doing?

... Oh, well! One step of progress ... 10 years from now ... can get out.

Hey, Jim?

Yes?

You got the DAP running?

Yes.
<table>
<thead>
<tr>
<th>Time</th>
<th>User</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>07 05 27 44 LMP</td>
<td>How about ...?</td>
<td></td>
</tr>
<tr>
<td>07 05 27 53 LMP</td>
<td>Yes, as a matter of fact, let's try some.</td>
<td></td>
</tr>
<tr>
<td>07 05 27 54 CDR</td>
<td>What?</td>
<td></td>
</tr>
<tr>
<td>07 05 27 55 LMP</td>
<td>You got the DAP on?</td>
<td></td>
</tr>
<tr>
<td>07 05 27 56 CDR</td>
<td>No.</td>
<td></td>
</tr>
<tr>
<td>07 05 27 57 LMP</td>
<td>Oh, the DAP's turned off?</td>
<td></td>
</tr>
<tr>
<td>07 05 28 05 CDR</td>
<td>... What do you want?</td>
<td></td>
</tr>
<tr>
<td>07 05 28 06 LMP</td>
<td>Let's just try the MINIMUM IMPULSE down here and see if it works.</td>
<td></td>
</tr>
<tr>
<td>07 05 28 24 LMP</td>
<td>It worked!</td>
<td></td>
</tr>
<tr>
<td>07 05 28 26 CDR</td>
<td>Yes, as a matter of fact, that's right, that one ... B-3.</td>
<td></td>
</tr>
<tr>
<td>07 05 28 33 LMP</td>
<td>Hey, that works good.</td>
<td></td>
</tr>
<tr>
<td>07 05 28 37 CMP</td>
<td>That may not be the MAG you stow in it.</td>
<td></td>
</tr>
<tr>
<td>07 05 28 39 LMP</td>
<td>Yes, I was going to say, maybe we ought to stow one of the MAG's, and stow ... those others ..., that will leave more room over there for the ...</td>
<td></td>
</tr>
<tr>
<td>07 05 28 49 LMP</td>
<td>Boy, I - I made a drastic mistake this morning - when I brushed my teeth and put my bag away, and now I don't have anything to drink water in.</td>
<td></td>
</tr>
<tr>
<td>07 05 28 55 CMP</td>
<td>The water is not - really isn't bad today.</td>
<td></td>
</tr>
<tr>
<td>07 05 28 57 CDR</td>
<td>It isn't?</td>
<td></td>
</tr>
<tr>
<td>07 05 28 59 LMP</td>
<td>No, it's not bad at all; it's the best I've ever tasted ..., which isn't saying anything. I had a couple big drinks and it's not too gassy and it's ... chlorine ... doesn't have any gas at all.</td>
<td></td>
</tr>
<tr>
<td>07 05 29 44 LMP</td>
<td>No, just bubbles ... gassy.</td>
<td></td>
</tr>
<tr>
<td>07 05 29 49 CMP</td>
<td>Now, I'll try it.</td>
<td></td>
</tr>
<tr>
<td>07 05 29 54 CDR</td>
<td>Hey, did you kick that?</td>
<td></td>
</tr>
</tbody>
</table>
Apollo 9, Houston through Tananarive.

Go, Houston; Apollo 9.

Go, Houston. This is Apollo 9.

Try them one more time. Sounds like —

Roger, Apollo 9. I've got some - four more target updates here, but I can't hear you at all yet.

Okay, Houston, we're reading you reasonably well. How do you read us now?

Roger. I can't read you now. Are you reading us enough to receive the update?

Yes, we do.

Do you? Here's the log ...

Go ahead, Houston, with the update.

Okay, Apollo 9, this is Houston. Here we go. Bonin Islands: weather, 174 plus 01 plus 14, four frames, 10 seconds, on track; Galapagos Islands: weather, 174 plus 32 plus 38, four frames, 8 seconds, on track; Lima, Peru: weather, oceanography, 174:37:03, 18 frames, 12-second intervals, on track. The next one is in your rest period and not required unless you can get it. Japan: volcanos, geology, meteorology, 175:36:07, seven frames, 30-second intervals; it's north 32 degrees. Over.

Roger, Houston. How do you read?

Roger; got you now.

Okay, 174:01:14, weather, four frames, 10 seconds, on track; 174:32:38, Galapagos, weather, four frames, 8 seconds, on track; 174:37:03, Lima, weather and oceanography, 18 frames, 12 seconds, on track; 175:36:07, Japan, volcanos, weather, seven frames, 30 seconds, north 32 degrees.

Apollo 9, Houston. Your readback's correct.
Okay, Houston, be advised that on that last pass down across South America, they had a camera failure, on the 70-millimeter Hasselblad, and we've lost about 50 frames of film in a jammed pack.

Roger. One pack is jammed, 50 frames are lost.

You hear that, Rusty? Japan.

Huh?

33 frames yet. The last target was Japan.

How low does that thing get?

How about that? We got that at 0, 1, 3, 4.

What?

We go across -

... No, right over Manila - Let me get my ...

... (Laughter)

Oh, yes. I didn't think we'd been far enough north to get to Singapore, have we?

Not really.

... it's 2 hours ... Better write them all down here for tomorrow. 172 ...

No - I'm sorry, no, no, no, no. ... great big ... I think of a ... somewhere in that ballpark - I think it's right in the middle. Big ...

Some of those pictures we took of the Cairo Airport and those other - the Houston Airport ...

... possibly with a 75-millimeter lens, I could ...

I hear you, but - I hear you talking, but I doubt - I don't want to put too much faith in the camera.
You know, if you get that to work, that means that you got to get the background out — that means that you come out at the right spot at the right time.

... 

Three or four things recorded on the recorder, so I don't think ...

Whoo, that's terrible. Whoosee.

What's coming up now?

We're going right across Sumatra, and we'll go right across the Philippines.

Is it light out?

No, but it should be shortly.

Okay, there are only three unused film packs in A-7, right now.

Where are the rest of them, or is that all we have?

That's it. Two C-IN's and one C-EX.

Is that the stuff for the 70 millimeter or the 16 millimeter?

Yes, but we got a bunch of partially used 16 millimeter. There's a lot of that left.

Where are they?

It's strewn all over. We got a bunch of that, too. Look at ... B-3.

But one we want to save for entry.

Yes, we want to save one full film package.

What are you doing, Davey?

Well, I'm fixing to ...

Are we going to do the daylight ...?
07 05 48 44  CDR  ... that 70-millimeter camera and take couple more pictures of you.

07 05 48 50  CMP  You're - you're the only guy who had your picture taken.

07 05 48 52  CDR  Hey, that's right ...

07 05 48 54  LMP  Whee, is that a pretty, pretty picture. That's really pretty - Whoosee. Beautiful. Isn't it beautiful? The sunrise ... Gee!

07 05 49 25  LMP  You got a malfunction procedure ... camera, Dave?

07 05 49 28  CMP  No, not ...

07 05 49 31  LMP  Oh, you ought to see ... really something.

07 05 50 17  CDR  Whoosee, that's pretty.

07 05 50 21  LMP  We've got - we've got three in here. We've got one here that hasn't had any taken out of it yet.

07 05 50 25  CDR  Excuse me, I didn't - I had my helmet on. You said you had one up there that - that what?

07 05 50 32  LMP  We have two of these, completely full. And then we have some partials in the C-EX.

07 05 50 38  CMP  ... chance to use the ... filter. Ha!

07 05 50 40  CDR  Hey, how about that?

07 05 50 47  LMP  Anybody explained to you how to use it, yet?

07 05 50 49  CMP  No, ...

07 05 50 54  LMP  Will you guys please give me a description on how all the pieces for the optics work?

07 05 50 58  CMP  Oh, sure, we'd be glad to do that.

07 05 51 35  LMP  Now, watch your eye, we can't afford to lose our navigator at this point.

07 05 51 39  CDR  Yes (laughter).
07 05 51 40  LMP  No, I - I've got the filter on. Okay, I don't know very much about it, but I can find the stars.

07 05 51 45  CMP  Can you see those ... platform.

07 05 51 56  CDR  Don't burn a hole in the side of ...

07 05 52 03  LMP  One of his eyeball lens. Here.

07 05 52 07  CMP  No, you don't need an eyeball.

07 05 52 12  LMP  There's an ... with the eyeball.

07 05 52 27  CMP  I don't know what the vectors are for this thing.

07 05 52 29  LMP  Well, you don't need the - vectors; just throw it in the computer, Dave.

07 05 52 31  CMP  You do?

07 05 52 32  LMP  Yes, number -

07 05 52 36  CMP  Yes, it sure is, Rusty. You're right. Here, I've got it; you're right. Here it is, 48, 49. Whew! That's a big yellow ball!

07 05 53 54  CMP  Yes, but I can see the spots on it.

07 05 54 07  CMP  Yes, I can see sunspots. How about that.

07 05 54 53  CMP  Ooh, out of the field of view. ...

07 05 55 03  LMP  Where did it go?

07 05 55 05  CMP  It's going to my right, which means we're rolling left - and ... stays right, we need to roll left. That's it, that's it.

07 05 55 21  CDR  That means you're not going to get your picture in Manila, Dave.

07 05 55 25  CMP  Oh, ...

07 05 55 26  LMP  Hey, listen, where are we over right now, because I can see land down there. Could this be Australia, by chance?

07 05 55 31  CMP  I don't know.
07 05 55 36 LMP Where were those – what were those update times?  
07 05 55 40 CDR I missed them; is that the one ...?  
07 05 55 41 LMP Yes. No, that's the one I'm talking about, the next opportunity.  
07 05 55 49 CMP Boy, they're really off.  
07 05 55 59 LMP Oh, my God, we already passed it.  
07 05 56 02 CDR Hey, Rusty, that must be Manila down there.  
07 05 56 04 LMP Where? ...?  
07 05 56 06 CDR Yes, ...  
07 05 56 10 LMP Yes, I see the Philippines.  
07 05 56 13 CMP Damn, I wish I had seen that. That's my old home.  
07 05 56 17 CDR I think we'll see it tomorrow. Old ... is a Filipino.  
07 05 56 54 CMP These really are volcano islands at 142. Which is going to be 173 and 57.  
07 05 57 22 CC ...  
07 05 57 24 CMP We're just viewing a volcano island?  
07 05 57 26 LMP ...?  
07 05 57 28 CMP No, I don't see any down there, Rusty.  
07 05 57 31 LMP Maybe the camera just ...  
07 05 57 35 CMP I don't know, you had the only good camera that works. Oh, it's right here ... LEB ...  
07 05 57 44 CDR Okay, ...  
07 05 57 48 CMP Hey, ..., I can report that I used my ...  
07 05 57 51 LMP Oh, no, it's coming up in another minute, Jim.  
07 06 00 46 CC Apollo 9, Houston.
Go ahead.

Roger. We would like to have a readout on your battery manifold pressure, systems test 4 Alpha. And have you been venting it periodically or not?

No, we haven't been venting it periodically.

Roger.

8.2 volts.

Don't vent it; just give us a readout then.

Okay. 1.2 volts.

Roger; copy.

And we don't come across another thing.

Nothing at all.

I don't know, there's a biggest slice of Pacific -

Apollo 9, Houston. When I called you about the FDAI SELECT and ORB rate, was the ATTITUDE SET switch in GDC or IMU?

Oh, I'm not sure. We've reconfigured a few times. Right now the ATTITUDE SET - SET switch is in IMU.

Okay. Understand it's in IMU now, and it more than likely was at that time.

Well, that's probably right, yes.

And, 9; Houston. We'll have another ARIA check at 06.

Okay. We'll have a COMM check ... with ARIA. ... 06.

... so you can tell they're yours. If you mark them, you can.

Oh, yes. What does it look like through your sextant.

Hey, come here and look, Jim.
Are they still there?
Yes, they're still there.
Yes, I'd like to see them, too.
... oh boy, these ... are really getting to me.
This thing is fairly loose. It doesn't fit on very good.
That's the whole sun, Rusty?
See the sunspot?
That's looking really smooth, huh?
Look down at the bottom; you can see the ... at the bottom.
Sure are smooth.
... over to the left at the bottom.
Yes.
... at it before I lose it. Why don't you drive
the boat for a while?
... approaching something, Dave?
Yes, it should be approaching - No, there is some
... There is on the other one ... all the way in,
all the way out yesterday and I ...
It's a little difficult to mark these actually in
the middle of the orbit.
Yes. It's almost the same - Well, Jupiter is ..., but Jupiter is difficult to figure out exactly where
the center of it is. Because it spills into that
little ... part of the reticle.
That's really neat, isn't it?
Yes, it is. I'd like to see the moon through that. What do you have -

I - I'll tune it in for you when you get back; the moon's pretty. What does it do to it; it not really ... - I mean, it looks just like it does --

Apollo 9, Houston through ARIA 2. VHF.

Roger, Houston; Apollo 9. How do you read?

Hey, that's beautiful this time. How me?

You're about the same; it sounds like a little bit of motorboating. You're clear, though.

Okay, very good. While we have you here, I have a consumables update if you'd like to copy that.

Okay, stand by 1.

..., stand by 1.

That field of view, Jim, is getting out of the ...

Okay, go ahead.

Okay, that's 173:43:10, 43, 12, 47, 13, 44, 13, 305, 22, 32, 28, 39. And I've got some notes here for you.

Okay. You're evidently cutting in and out, because I ended up with one button left and no buttonholes.

Okay, we're just about ready to switch to S-band. We'll try S-band now; so S-BAND VOLUME, up. S-BAND VOLUME, up, and ARIA 2, REMOTE S-BAND.

Houston, you're very weak on S-band. How do you read us?

Okay, ... - We just ...

See that little ... hole out there? It's off to my left. That little spot of green water out there. See that hole in the clouds over there ...?

Yes, oh yes.
97b"inrhiTiM

That's a little better, Houston. No, you're breaking up pretty bad, Houston.

Houston, if you read us, you're coming through very, very garbled. We're unable to read you.

That thing is really out in the middle of nowhere, wasn't it? There's another little bitty hunk of green water out underneath one cloud there. I couldn't see if there was any land there or not.

... figure where that ARIA was?

Yes, out there all by itself (laughter).

-- let me check. It's getting a little confused.

Good for you, Rusty. I'd like to know also. Boy, oh boy.

And it looks like it will be 18½ plus 20.

Okay, thank you.

How does that compare with the flight plan?

Just about right.

Let's see, we're on revolution about 111.

Ooh! (Laughter)

God! We've got 150-some odd to go.

No.

I mean total.

Oh, boy, round and around and around and around. Hey, I tell you, I'm all for shooting up the film tomorrow and then going into deorbit.

I'm with you.

You've been ready for that since we got up here.

No, I changed my mind in the middle.
I'm ready for that 350-pound cake.

We're going to go around until it's time to come down.

Yes, you're right. Be stern, Jim.

What?

We've got to give you some opposition, so you can exercise your authority.

I've got to start practicing P37.

If all goes well, you won't even have to touch P37.

I know it, but I like to practice it anyway.

Whoopseday!

It looks like they gave us about 20 minutes for initial entry PREP and stowage.

(Laughter) Listen, we better have a lot of that done the night before.

Oh, yes. Well, the day before, we got nothing -

What, what's -

We've got only 8 hours until they wake us up, Jim.

So - go to sleep.

Why don't you start purging some of that hydrogen in?

I was hoping you'd say that. Going to start this thing.

You can tell Schweickart, he is always in favor of purges.

I got to do something operational.

The big twister.

Hey, we've done a lot of things, you know it?
07 08 02 44 CMP  
You can tell by reading the flight plan?

07 08 02 46 LMP  
Yes. Look at all that jazz. All those little black squares. We don't have very many little black squares to fill.

07 08 02 56 CDR  
What little black squares?

07 08 02 57 LMP  
Those things to get done.

07 08 02 59 CDR  
Let's see. Oh, oh, I see what you mean.

07 08 03 01 LMP  
... flight plan.

07 08 03 03 CDR  
Yes.

07 08 03 08 LMP  
I wish we could get a couple more of those.

07 08 03 09 CDR  
Couple more days?

07 08 03 11 LMP  
No, these!

07 08 03 15 CMP  
...

07 08 03 16 LMP  
That'd be a good one to frame, you know it.

07 08 03 24 CMP  
...

07 08 03 26 LMP  
It'd be a good one to frame.

07 08 03 44 LMP  
Last of the earth-orbital flights.

07 08 03 47 CDR  
Well, I doubt that.

07 08 03 49 LMP  
Or, the first AAF flight.

07 08 03 52 CMP  
(Laughter)

07 08 03 54 LMP  
That's what it is.

07 08 03 57 CMP  
The last?

07 08 03 58 LMP  
Yes.

07 08 04 09 LMP  
One fuel cell!

07 08 04 58 LMP  
'hoo! What the hell is that?

07 08 05 01 CMP  
What you got?
It's a circular formation in the cloud. It's a low cloud, not like a thunderstorm. See it over there? No, no, it's over here, Dave. Let me - It may be - be too high for you to see.

Oh, yes ... what do we see?

Kind of weird.

Hey, I think that's worth a weather picture right there.

I do too.

Yes, I agree.

Could you see it, Jim?

Yes.

That's worth a picture.

I think so, too.

There you are, a perfect spot. You get a pretty perspective if you just look at it. I can't really tell what the -

Yes, it is hard, isn't it - to tell?

Yes. ...  

It's the only one around, too, like it.

You get my ...? The LEB, okay.

Let's see. We got the water dumped, canister changed; we got - We don't have to chlorinate tonight, do we?

Yes, we do.

Yes, we do have to.

We doing that every night now?
Yes.

I'll be. Getting close to running out, I guess we got to ...

Late afternoon clouds (coughing). You can pick up a lot of those, can't you? Really weird.

... you know it feels like ... right here.

Oh, really - it never has quit hurting?

You know, it's very funny. It's a very calm, steady feeling, you know. It really hurt. It's just like it's going, you know, like when I get down, it's really going to be stiff or something.

We're not going to get to South America - before it's dark.

You got it all hot again?

Yes.

Let's put it up on the hatches. It cools off a little faster.

You got ... to blow on it?

Dave.

Huh?

Watch it, it's hot --

... spot.

How'd you like to exercise before sleeping?

8 days.

You know, if we ever really get a space station like in "2001" up here, it'd be a real good ...

Yes.

Wonder how long that'll be?
A long, long time. They could probably keep me out.

Jim, can I move some direction to help you?

No, I'm just cleaning off the hoses, Rusty.

Why don't we - What's that?

He just moved a hose.

I guess we got used to listening to all that noise all day. How about some dinner? Anybody for some chow?

Yes, I'll have some dinner. What are you cooking?

Oh, I'll cook you up some chop suey. Open a can and all that stuff again. How about that?

I'd sure like to have some chop suey, I'll tell you.

... 350-pound --

Oh, my goodness, I got a big screw out of something that time. Check the windows. Sure enough.

Oh, are they?

There's a hole right there, what's that? Oh, that's not where it goes, nothing goes there anyway.

They're all on, Jim.

Good. It probably came off of some critical spot then.

Yes, like the ECS or --

Maybe that came out of the telescope.

Hey, there you go.

Hey, you want some more variety up there?

I don't care. Incidentally, we didn't have a glitch today in the telescope.

Not a single one, huh?
Hey, Dave.

-- behaved very well. What? Is that a new game?

I tell you, though, Dave; I looked over the reentry-day timeline and we get up and we're up for a while and then we're cleaning up and then one night pass goes by and then the next night pass, you do P51. When you get out of bed, you jump up and you do a P51.

Alright. You don't even have to tell me to do that.

I know it (laughter), but I want to make sure there's no doubt in either one of our minds.

Yes, you're right. As a matter of fact, I might do one the night before.

Hey, Dave (laughter) --

Hey, why don't you do a nominal P52, too -- while you're at it?

Hey, you know, I might do that.

Yes, sure. That'd make it a lot easier. Don't have to -- do a nominal P52 for -- We don't have a RETRO, yes, we'll have a RETRO.

Yes, if we clean up, take that last day to get all stowed, everything done, go to bed, hop up, eat, do the P51.

No, you got that wrong -- hop up --

You do the P51 and you eat (laughter).

You guys eat while I do the P51.

Right and we'll stow while you eat. You can eat and keep us out of gimbal lock.

Okay.
Yes, I'd like to get that mother all fixed and then get into gimbal lock and then have the shaft hang up.

Hey, you know what I'd like to do, the day before? I'd like to do a GDC align ... if you have enough fuel. If you have enough fuel left over where we're --

... it doesn't take any fuel.

It doesn't? I'd really like to see a couple of those.

See if it works, huh?

See if it works and also ...

Right. How about some more food here? We have lots of food left.

Let me be selective, since you're offering.

Yes, what do you want?

..., you know another thing we ought to do?

Get out the menu and pick what you want for dinner.

... do an alignment ...

Oh, Jimmy, you're still doing it.

Gee, I'm sorry about that, sports fans, but that smells just like pure hydrogen to me. I wonder how much hydrogen you need in here before it reaches explosive combustion.

Okay, Davey, I'll try not.

You know I wouldn't be a bit surprised if that isn't it.

Jimmy, what days have we got over there?

We've got everything from 7 on up, Rusty.

On up to how far?
07 08 16 01  CDR
Oh, let me see what the last one is - 10, 11.
07 08 16 10  LMP
Okay.
07 08 16 17  CMP
As a matter of fact, tomorrow we don't have a burn.
07 08 16 21  CDR
Tomorrow, we don't have a what?
07 08 16 22  CMP
A burn.
07 08 16 23  CDR
Yes?
07 08 16 24  CMP
How about letting me do the P51 with the COAS tomorrow morning?
07 08 16 26  CDR
Okay.
07 08 16 27  CMP
Okay? Would you let me do that?
07 08 16 28  CDR
Yes, provided we don't have to do any landmark tracking. If we have to do landmark tracking, you've got to do a good one.
07 08 16 33  CMP
Right, right.
07 08 16 34  CDR
We just do SO 65, you don't have to do it over.
07 08 16 35  CMP
Oh, no; you -
07 08 16 37  CDR
You can do a good P52 - -
07 08 16 39  CMP
Let me do a P51, P52 with the COAS; and then a P52 with the optics. Okay? Would you let me do that?
07 08 16 42  CDR
Yes. Sounds like a good experiment. What do you want, Rusty? Which meal?
07 08 16 49  LMP
I'm looking.
07 08 16 50  CDR
Oh. Hey! I see one that has grape punch in it.
07 08 16 59  LMP
Oh, we're running out of those things.
07 08 17 02  CMP
Which things - -
07 08 17 03  LMP
Yes, that's the terrible thing.
752 Day 8

--- which days are you looking at?
07 08 17 04 CMP

We have - This right here is - day 7 through 11.
07 08 17 05 CDR

Oh, you got all that in there?
07 08 17 15 CMP

Yes. I think I'm going to get that out before I have it all out here on the deck with me. As a matter of fact, I'm almost tempted to go through here and take you - take out all the drinks.
07 08 17 16 CDR

Hey, I'd like a day 8, meal B.
07 08 17 42 CMP

Day 8, meal B. Coming up. Hey, that's the first one on the end of the string. There you are. How about that for service?
07 08 17 45 CDR

That's pretty good. What's that green stuff in it?
07 08 17 53 LMP

Some kind of soup.
07 08 17 56 CMP

Pea soup.
07 08 17 57 CDR

Ruh?
07 08 17 58 LMP

Pea soup.
07 08 18 00 CMP

I don't like that.
07 08 18 01 CMP

Well, why did you stick it in there?
07 08 18 03 CDR

Ruh? What?
07 08 18 05 CMP

Why did you stick it in there? (Laughter) Hey, that was pretty tricky.
07 08 18 07 CDR

The hand is quicker than the eye!
07 08 18 11 CMP

Let me see that (laughter).
07 08 18 12 CDR

That's grape.
07 08 18 14 CMP

You ought to see my kids when I do my coin trick. They think that's great.
07 08 18 16 CMP

Boy, I tell you. There's nothing on here that looks good as this breakfast.
07 08 18 21 LMP
Well, how about a breakfast? What do you want?

Well, hell, I don't want to eat you guys' breakfast.

Oh, hell, I don't care what I have for breakfast.

I don't either. Just as long as I have my hot chocolate, you can have all the rest of it.

Well, okay. I'll give you your hot chocolate out of the breakfast. How about a - a day - Hey, you got a day 7, huh? Day 7, meal A? I had that this morning, but I'll take it again now.

Okay. It may not be a day 7, meal A, because we may have eaten all those this morning. Let me see. Meal B, meal C. No, the earliest I have is one day 7, meal B. There's a day 8, meal A. 9, 10, 11.

I'll tell you what. I'll take a day 8, meal A.

Day 8, meal A coming up.

Where are the ...? Let me have the ...

Here, I can get them.

You get them?

Here, Dave and Rusty. Got grape juice in it, even.

Yes. Got hot chocolate in it, too.

Yes, I'm going to give you that.

Oh, you are a good fellow!

Let me look at the menu. Let's see what I want.

Okay.

I don't think there's anything on the whole menu I want. Just take whatever is least - least undesirable.

That's the way I feel, but it's got to go. Oh! That 350-pound cake! I wonder if it's chocolate?
I tell you. I don't like cake very much, but that still sounds good. ... a 350-pound pie would interest me more.

But chocolate cake with ice cream? Ahh! I could eat and eat and eat.

Boy, I tell you. Jimmy's suggestion of pizza and beer sounds best tonight. Although lasagna and beer sounds pretty good, too. Chop suey doesn't sound quite as good as lasagna.

Let's see what else sounds good. How about some some lobster?

Ooh! Yes. Doesn't that sound good to you?

Yes. That sounds good.

Hey, I think I might try this sausage. You say t'sausage is good, huh?

Yes, I think it's pretty good, Rusty. It's mild and it's crumbly. You know, it's got a firm kind of taste to it, and it feels good.

Highly recommended. Duncan and Hines.

Can't find it.

Huh?

In front of you. Here it is.

Mike boom. Your mike boom-boomed.

Jim must have ...

You mean - Oh, shit. I forget which day I was go to get. You have a different figure than I do.

Okay, here you are.

We have two more.

I'll just need one of them.

What?
While Rusty's sitting there waiting, let me get one of these.

Waiting in line at the watering hole. Hey, you know, Jim? I drank a bunch of water out of that gun today. And I got a lot of gas.

Did you?

Yes, as soon as I drank, as a matter of fact, I could feel it rumbling around down there. And I haven't been using that gun; I did it today because --

I haven't used it either, because - but I used it today, because it tasted so good.

Yes, it's pretty good, but you know today, we haven't had as many drinks ...  

Yes.

You know?

I'm tempted to go through here and open these thing up and take all the drinks out and put them in another bag.

I think that would be a good idea.

Alright, let's do that, then. I'll open up all the food - well, not all of it - but I'll open up this whole box, and take all the drinks out and put them in this third bag.

Okay.

... without a drink.

That's fine, Jim.

About 10 bags - soup, salad, beef, vegetable, drink, cookies -

Oh, boy, I'll bet - I'll bet I've lost - When I get down from this flight, I bet I've lost - 12 pounds, or more.
I wouldn't be surprised. At all.
And I bet I gain ... about 3 minutes ... flight.
Hey, you got a long time ...
Yes, ... I don't know. ...
This is good.
Yes.
...
Anybody ever try ...?
Yes, I did on the ground.
... when I put the water in ...
Gosh, that's hot water. It's really good.
Whoo! That stuff's good. ...
Okay, ...
No, I don't believe I've heard that one ...
You - you need your sunglasses in here, Dave?
(Laughter) It's dark outside?
...
Hey, that's downtown.
That's down somewhere!
Yes. Las Vegas.
Yes.
I know what I'll do. Go up to Las Vegas for a couple of days.
Hey, that does sound like a good idea. Let's go to Las Vegas.
Do you want to?
That's probably all you're going to get off is a weekend.

Oh, boy. Hell, I could spend a year out there.

I could go lie on a beach for weeks.

Yes, me too.

And go skiing for a week.

Week, hell! I'm going to take a month.

Yes.

I'm going to take off, and then I'm going to retire.

I thought you weren't going to retire.

I changed my mind.

(Laughter)

I picked a lousy crew. I just can't put up with you.

Oh. I was going to volunteer to retire, Jim, so you can stay.

Oh, no!

So was I.

(Laughter)

10 days, man; I've done my share.

(Laughter) That's how I feel like. I've contributed to the cause of the space program.

Yes, I kind of feel the same way, I - I tell you ... wonder; it takes you so long to adapt.

Yes, that's really - I think ...

Yes, ... I'd gather - I gather from the remarks that you're making - No, I really feel ... right now,
because I ... this morning. No. It never - it never even dawned on me. You know, we talked about this the other day, and I noticed - I thought you were eating pretty good the last couple of days. So I sort of forgot about it.

Well, I - I know ...

That's true.

Yes, I think you're right. ...

Like what?

... like yesterday. Is that ... you've been eating?

No.

Hey, you know what? I - I 'll tell you. What I really think we ought to have is some soup in here.

Yes, I think so, too.

Terrible! Say, you couldn't get out and buy Lipton's soup --

That's right! Because I normally --

What you really need is some way of - the basis of having some container that you could put the stuff into mixed with water - de-aerated (laughter) --

Yes, that ought to fix it, de-aerate it.

They could do that.

I wish that - They could do that? ... thing with a bleed on it?

What's that?

They'd have to ... Hey, you could have a piston on it or something. Put a paper ...
Oh, yes, they had a system like that. Designed it ... I wonder if you couldn't have a mechanical de-aerator in here, though?

You mean a ...?

No, I mean - I mean - If you let it set, to get the big bubbles in it, use centrifugal force with a piston - a heavy piston, ... to somehow or other - allow the stuff at the top to bleed through. All the air's going to be on the top, you could get a ... on it; put a stopper valve on it?

... if you stop it. ... pure water ...

Like this ... a little centrifugal force thing.

Yes, I wasn't trying to ...

That's really how to do it, now.

...

Yes, I mean, ... increases the reliability of your - the water supply of anything.

... get all the air out ...?

Yes, but Dave, ours was nothing at all like this. We didn't have fuel cells; we just had a regular old water.

We had fuel cells in our ...

... stuff coming out of ... hydrogen.

I'm going to try these sausages.

I think you'll like them. I'm afraid you'll like them.

(Laughter)

Oh, I was just kidding.

Probability's with you, Dave.

No, I was just kidding.
760 Day 8

I noticed that.
Well, I can get any of it down. There's nothing here that bothers me one way or the other. Hey, guess what I found up here?

What?
Hot chocolate!
...
Oh, good. They're what?
...
Yes, I put it there.
... We took it out ...
I would've guessed, you ...
What?
No, they're pretty good. They're pretty good.
No?
Makes it look like a screen.
Whoohoo!
You know, the only bite-size food I like is these cheese sandwiches. I really like those.
Matter of fact, the beef's going downhill. I don't like ... anymore.
(Singing)
... Man, I'll never live that one down. Singing a song. Heck, every time I start to sing in church, three rows ahead turn around and look at me.
...
... chasing rabbits? (Laughter) God damn, I though ... (laughter). Boing!

CONFIDENTIAL
Save some of this stuff for the last day, so it'll be all -

Why don't we give Rusty a tag?

Water. Water.

... feel any better, Rusty?

Hey, Dave, you want ...

Drink water. A - I - I'm so thirsty, I just - I just want to gulp down some water.

Hey, ... drink ... exercise.

Baby, I got it.

Well, we tried, Jim ... (Laughter)

Acapulco. I think I'll go to Acapulco for about a week. Las Vegas for a couple of days. Colorado for a week.

What? No, Acapulco doesn't cost you ... You ever been there, Jim? Sure, but when ... reservations.

This is good.

I thought you might like that. I was afraid you might like that.

It tastes like sausage ... Tastes a little bit like ... 

I don't like that anymore.

You know what the difference was? Especially when I'm through ... There's a lot more to it.

Boy, I'll tell you, ... You got the survival, say you got the survival ... It's about 4 or 5 days, I guess. ... A couple of survival rations and that's all; and a rab - a live rabbit and you ... and cook him - About 30 miles altogether, something like that, you have to go through ... and all that. It'd be nice if you got back - We did it all year round, but I - I ...
... I'd come in sort of quiet now. Then loud...
"Oh, God damn it, I'm all around here..."

You got 4 years in there. ... Hell, no, man, if
you can do that all the time.

God damn it, we're way up here, this time. Oh,
we're going by...

Say, we are going to come out right over Zanzibar.

Are we really?

Yes, ...

Look at ...

Oh, golly! Say! This is fabulous!

Where?

Oh, boy! Man!

Lord!

Beautiful! Spectacular! Golly!

...

You do?

Yes, ...

That's just fabulous!

I know it. That's what I had you ... for.

So ..., you're doing it for nothing.

Yes, that's ... I'll bet that's one of the prettiest
pictures in the whole ..., you know it, Jim.

I'm surprised.

Boy, that was worth waiting up for.
If these pictures come out, I'm not going to have enough walls in my house to hang them all up on. What is it, Jim? ... coming over the Himalayas ...

I can - I can see the ground pretty good. Huh!

I can't see anything I recognize.

Boy, you sure ..., Jim.

I flew right by it in a B-17.

I flew right by it in a B-17.

You did? ... fly the Hump in World War II.

I didn't think there was a ...

Anything we could fly with.

Maybe just a little bitty ...

Okay, we're about 450, I think, Jim.

What's going on, Jim? Gees.

Hey, were you saving this in the corner up here, Rusty?

I like to sort of clean up at the end of the day ... quick clean.

No, there's a couple more in the other one here ... pound a day ...

About 50 feet?

Ooh! ... get too hot for the throat.

-- Pitch and yaw trim: minus 0.64, minus 0.94. We've got about 60 seconds. Read them back as fast as you can.

Roger; I missed the second batch. We broke - You broke up.

The second block, you say?
That's affirm.

Okay, reading second block: 120 1 Bravo, plus 318, minus 0680, 188:42:36, 3106. And we'd better take your readback over Antigua at 57, and we'd like to turn off the fan on H_2 tank 2 and turn off inverter 3.

Okay, we'll clean up the switches, and what was the longitude on the first area?

Okay, longitude is minus 0640.

Okay, see you at 57.

Roger.

Yes. You do pretty good.

Houston ... Yes.

... use all that hydrogen, did we?

Huh?

I said ... didn't use all that hydrogen.

Oh, no, it can still go up another 20 psi. That's worth about, you know, 3 or 4 pounds of hydrogen.

1, 2, 3, 4, 5.

I could feel it.

1, 2, 3, 4, 5; 1, 2, 3, 4, 5. 1 - Hello, hello, hello.

Hello.

Shoot, I'd been awake an hour and a half.

Have you really?

Yes. No use turning around ... After that last pass ... that guy was giving us.

Now you're talking.

1, 2, 3, 4, 5; 1, 2, 3, 4, 5.
You're loud and clear.

1, 2, 3, 4, 5. I woke up at 18 4 hours and 20 minutes ... back to sleep.

Oh, really?

Yes?

How come you didn't want them to call you?

... still sleeping.

There, I can have my morning gas. One thing I like for breakfast is hydrogen and cocoa.

Hot what?

Hydrogen and cocoa.

Oh, hydrogen and cocoa. Yes, that is good.

Do you know what time it is?

Yes, it's really nice in our house, isn't it?

... they're all open.

We had ... in the window last night.

Whoo, it's dark out.

Yes.

Where'd you find it? Really?

Oh, bang. Right in there. ... we got - got 20-20 ... Okay.

Oh, there's the problem.

You mean that one?

The one we're going on?

What?
07 17 48 54 CMP Good idea.
07 17 49 07 CDR Well, it's plus 20 and minus 40, minus 50. ... 30, plus 30 ...
07 17 49 39 CDR I'll recycle it again.
07 17 49 55 CMP I think ... difference ...
07 17 49 59 LMP 32 for hydrogen ...
07 17 50 27 CDR ... Right there. Oops, it's out to ... Hey, this would be a very ...
07 17 50 36 LMP Let's do the SCS powerup.
07 17 50 39 CMP Going over Casablanca?
07 17 50 49 CMP ... checklist out ...
07 17 50 50 LMP Okay.
07 17 50 55 CDR Well, do the DAP - DAP ...
07 17 51 03 CMP We'll do the DAP -
07 17 51 08 CDR DAP activation.
07 17 51 12 LMP SCS. Ready?
07 17 51 13 CMP Ready.
07 17 51 18 LMP CB panel 8, closing.
07 17 51 26 CMP CLOSED.
07 17 51 27 LMP SPACECRAFT CONTROL, CMC.
07 17 51 31 CDR CMC.
07 17 51 32 LMP \[ \text{DELTA-V}_{\text{cg}} \] ...
07 17 51 33 CDR \[ \text{DELTA-V}_{\text{cg}} \] ...
07 17 51 37 LMP LOGIC POWER 2/3, ON, up.
07 17 51 41 CDR ON, up.

CONFIDENTIAL
SIGNAL CONDITIONER/DRIVER BIAS POWER, two, AC 1/AC 2.
AC 1/AC 2.
Okay, SCS ELECTRONIC POWER, GDC/ECA.
... GDC ...
EMAG TEMP light, OUT; verify.
OUT.
FDAI POWER, OFF; EMAG POWER, two, ON.
ON.
FDAI POWER, BOTH.
BOTH.
AUTO -
- is ON. Okay.
CMC going ON.
Deactivate the DAP like ... 
... go back and load the DAP, ...
To what? VERB 65, that's where I usually take deadband.
Unless you could ... automatically ...
Yes, let's go back and load it --
Try it on the ground ... wide deadband. (Laughter)
You better check it before you do anything anyway.
Yes.
Okay, when we come up over the horizon, I'll try to make us right side up. Where is the - status quad?
07 17 55 05 CMP Wonder why we never use A ...
07 17 55 11 CDR No, we're going to try it.
07 17 55 13 CMP I don't think ...
07 17 55 25 CDR Actually, B is the low quad.
07 17 55 28 CMP Sure.
07 17 55 44 CDR You ignite ... pad on B. ... on B and C, ... percent on D, and ... percent on A.
07 17 56 07 LMP That's pretty good.
07 17 56 11 CMP ... at 43 ... 42 in A, 42 in B, 44 in C, and 42 in D.
07 17 56 28 CDR According to these, you ought to be using quads A and D.
07 17 56 41 CMP ... used a little ...
07 17 56 52 LMP ... only used 5 percent out of B.
07 17 57 05 CDR 4 percent out of D - 4 percent out of D. That was on the ullage.
07 17 57 10 CC Apollo 9, Houston. Do you read?
07 17 57 19 CMP Roger. We're reading you.
07 17 57 26 CDR Houston, Apollo 9. We're reading you.
07 17 57 27 LMP No lock.
07 17 57 51 CC Apollo 9, Houston. How do you read?
07 17 57 55 CMP Roger; 5 by.
07 17 57 56 CC I'm reading you real good.
07 17 58 07 LMP What?
07 17 58 08 CDR Rusty, I guess you can see pretty good over there now, can't you?
07 17 58 10 LMP I'm trying to see the ground, but the window ...
Yes.
It's over Mediterranean like, isn't it?
Now, we're flying down pretty low.
I thought I saw a ...
This stereo won't fit.
It's not that big. ... Gibraltar ...
It's not that big.
It's big.
Great!
Look in here, Dave (laughter).
Always learn a little -
Hey, would you get settled down and take four of them?
Oh, there's the moon on the horizon. Want a picture of that?
No, we don't want any.
Hey, we're really moving you know it?
Looks like a ... in the middle of the desert.
Hey, do we get to see Tobruk or El Alamein ....
No, that's along here, but I'm not sure that we can really see it.
Oh, boy.
Okay, there's - Here comes Cairo, you see the Nile delta right there.
I can't see any water ...
See that - Look out that center hatch there. You ought to be able to see it coming. There's two ... big black V.

I don't know ...

I could have a vertical over here.

... cultivated area.

... I was ready for a V down there.

We're bound to have a vertical at Cairo ...

Get - get Cairo right here. What is it?

Cairo's over there?

Cairo's right below me.

Huh?

... Yes, and all over it ...

I don't know, but ...

Boy, that's really, really pretty.

Well, where was it, right at the tip of the V there Dave?

Yes, right at the tip of the V. That's Cairo.

... Yes, that's Cairo.

Alexandria is out on the coast; it sticks out on a little piece of land.

Hey, Dave.

Whooee!

... Hey, we need a roll, Jim.

That's what I'm doing.

Man, look at the rate. 0.6 of a degree per second.
07 18 26 09 LMP  That was pretty neat, wasn't it?
07 18 26 11 CMP  Yes, it - that really was. You could see ...
07 18 26 15 CDR  There ... too many clouds out today; I'm really surprised.
07 18 26 18 CMP  ... too plentiful at Cairo.
07 18 26 25 CDR  Huh?
07 18 26 26 CMP  Did you go over Cairo before? Hey, we did?
07 18 26 27 CDR  Yes, that ...
07 18 26 38 CDR  What?
07 18 26 39 LMP  We went right over it.
07 18 26 44 CMP  Hey, next time we're going to be way off to the side of it, looks like.
07 18 26 53 LMP  That was pretty.
07 18 27 14 LMP  Boy, we're really pitching.
07 18 27 17 CDR  Yes, we really are. I put a little of that in it, but then it put the rest of it in by itself.
07 18 27 36 CMP  Time to go take a look at the optics.
07 18 27 39 CDR  ... where we are.
07 18 27 41 CMP  ... see if I can ... Hey, I haven't done anything yet, really, Rusty, purging-wise.
07 18 27 54 CDR  We're not suposed to purge the H_2 tanks.
07 18 27 58 LMP  Yes, we did that last night.
07 18 28 03 CDR  Yes, boy. Here.
07 18 28 29 LMP  I wonder why it's so different? One day you get a lot, and the next day you don't get hardly any.
07 18 28 36 CMP  There is more land out to the left and the right.
07 18 28 58 LMP  It's hot in here ...
Day 8

07 18 29 00 CMP  Yes, it sort of is.
07 18 29 31 CDR  Yes.
07 18 29 47 CMP  I can't see a thing.
07 18 32 03 CMP  The water.
07 18 32 05 LMP  ... going back.
07 18 34 22 CDR  I hate to spend all that fuel to stop those things. They're really ripping around there. There's some more land. India.
07 18 34 46 CDR  Pretty, isn't it?
07 18 35 18 CMP  Rusty, I still have your COMM. ... your COMM.
07 18 35 25 CDR  Right. Oh, there's not much there - We've - A lot of pictures have been taken of it. I guess we - we ought to probably take an Indian picture, too. Why don't we take one?
07 18 35 43 CDR  Those cotton-picking rates are building instead of damping.
07 18 35 47 LMP  What?
07 18 35 48 CDR  They're building again!
07 18 36 28 CMP  Why don't you take one of Ceylon?
07 18 36 31 LMP  I don't even think I can see it right now.
07 18 36 38 CDR  Okay.
07 18 36 49 CMP  Ready to do P51?
07 18 36 51 LMP  Yes.
07 18 37 00 CMP  How we want to bring it up?
07 18 37 01 CDR  Huh?
07 18 37 02 CMP  How do I --
07 18 37 03 CDR  What?
07 18 37 04 CMP -- how do you want to do the P51?
07 18 37 05 CDR You're going to do a P51 COAS alignment, aren't you
07 18 37 06 CMP Yes.
07 18 37 07 CDR Why don't you just do it then?
07 18 37 08 CMP Okay. Ready for the IMU?
07 18 37 11 CDR No, wait a second; I'm not. Let me get it.
07 18 37 31 CMP ... right up here.
07 18 37 56 CDR Yes, shoot, Dave, ... every time you turn it on.
07 18 38 02 CMP Coming on. Waiting for a NO ATTITUDE light, I think.
07 18 38 30 CDR Looks like you're going to just have to hit that yaw with a pulse.
07 18 38 38 CMP Well, listen, why not - Let's try to keep going, until it gets us to an attitude where ...
07 18 39 06 CMP Be careful of the gimbal lock.
07 18 39 16 CDR Yes. One's right over here? ... here.
07 18 39 21 CMP I don't see it.
07 18 39 43 CMP No way. It doesn't look like the rates are buildi
07 18 39 49 CDR No, they're staying pretty much the same now. I think we can take it out.
07 18 39 55 CMP Okay.
07 18 40 08 CDR Okay, ... over here?
07 18 40 10 CMP Let me unplug ...
07 18 42 10 CMP You're probably going to put that around - Here it is, right up here. Have I got a what?
07 18 42 35 CMP Now we'll get to see how good a COAS calibration is after 5 days.
774    Day 8

07 18 43 01  CDR    I know what I'll do; I'll ...
07 18 43 02  LMP    No! ... do that.
07 18 43 04  CMP    What?
07 18 43 06  LMP    Do ...
07 18 43 07  CMP    (Laughter) Don't do that.
07 18 43 26  CDR    Did you find the flight plan anyplace?
07 18 43 29  CMP    I never ... looking.
07 18 43 32  LMP    Me neither.
07 18 43 40  CMP    Here, Rusty... There, that's for you.
07 18 43 46  LMP    Does it belong over here?
07 18 43 47  CMP    No, ...
07 18 43 48  LMP    By the way, we're coming off the end over here.
07 18 43 58  LMP    That's where that belongs, Dave, is under one of those window things.
07 18 44 03  CMP    Is it really? Oh, shoot! --
07 18 44 04  LMP    So, one's got to be loose.
07 18 44 05  CMP    -- One of those window things is loose. This or right here.
07 18 44 09  CDR    Will it go on?
07 18 44 15  LMP    Well, there's a bolt; I - I put a bolt --
07 18 44 20  CMP    No. That was the wrong bolt.
07 18 44 21  LMP    Well, are you sure, Dave? I'm not sure I found the same bolt.
07 18 44 24  CMP    I found it. It's all here.
07 18 44 27  LMP    Okay, except for this -
07 18 44 28 CMP Except for what you got there. Whoop! It's a good thing you recognized what that was.
07 18 44 39 LMP Yes, I put one together the other day.
07 18 44 46 CMP Are those tight over there?
07 18 44 47 LMP Yes, I just tightened them. They weren't.
07 18 45 04 LMP No, still daylight.
07 18 45 53 CDR ... through logging, I want you to start on the SO 65.
07 19 14 38 CC Apollo 9, Houston; 40 seconds LOS Mercury; see you Texas, 30.
07 19 14 45 CMP Okay. Let's get rid of that thing.
07 19 14 54 LMP Jimmy, why don't you -
07 19 14 56 CDR ... I come through the middle to ... Huh?
07 19 15 05 LMP What are you doing, Jim?
07 19 15 18 CDR Using the ... They're really neat!
07 19 15 55 LMP There's you a wake-up card.
07 19 16 30 CMP ... Regor.
07 19 16 51 CMP Looks like that ... alignment.
07 19 16 56 LMP AUTO optics has got an error.
07 19 16 58 CDR Yes.
07 19 17 05 LMP Flashing 51.
07 19 17 13 LMP Do you do that when you go to MANUAL?
07 19 17 18 CMP Yes.
07 19 17 30 CMP 34, Atria. Okay.
07 19 18 03 LMP Flashing 51.
07 19 18 19 CMP Sloppy, sloppy! Oh!
07 19 18 24 LMP  That's not too bad.
07 19 18 25 CMP  Yes, that's a pretty good alignment --
07 19 18 26 CDR  Not bad.
07 19 18 27 CMP  -- with the COAS, you know it?
07 19 18 28 LMP  Yes.
07 19 18 29 CMP  Don't sweat the telescope.
07 19 18 33 IMP  Within 0.1 of a degree.
07 19 19 03 CMP  Let's see what the sextant readability is.
07 19 20 24 IMP  Old hydrogen really came out balanced after last night, you know it?
07 19 20 27 CDR  Yes, man, right on the money.
07 19 20 29 LMP  It's about a percent different now.
07 19 20 35 CDR  ... I've still got to get the logging done.
07 19 20 43 LMP  You got to get what?
07 19 20 45 CDR  I still want to log this ...
07 19 21 11 LMP  Oh, hell! Old water bag got wiped off.
07 19 21 15 CDR  Oh, I saw it floating around down there underneath the seat a little while ago.
07 19 21 46 LMP  Yes, we're getting down to the section now, where we're going to have to start adding heat to that hydrogen tank.
07 19 23 36 LMP  Whee! That's pretty good. You're just going to reject those, huh?
07 19 23 43 CMP  ... all these ...
07 19 23 46 IMP  Yes, but I mean - you're not going to torque it, are you? Because it was with the telescope, instead of the sextant.
07 19 23 53 CMP  No, no, it's the sextant.
Oh, that was the sextant. Oh, I thought you were doing the telescope to compare it.

No, why don't I?

Well, what was the one you just did before that?

Sextant.

So you just can't have a repeatable sextant --

Why don't I do one with the telescope then? I think that would be a fine idea. ... all the way around ...

-- and just reject the ones with the telescope?

... 

Yes. The earth is getting there.

Yes, reject the ones with the telescope --

Okay, I'm going to roll for you, Davey.

Okay.

Ooh! We're looking backward. Boy, that was confusing. I was looking out the window trying to figure out "What am I seeing there?"

That's funny, because I think I can see something out there. I can see Acrux. Oh, the earth, that's right. It's between the earth and the spacecraft. Oh, boy.

That's ... pretty soon.

Yes. I can see them - I don't know why it looks - I got Acrux down there. Hmm, the sun is showing up, too. I didn't quite get Atria. It's coming in, though. Okay. I guess we ought to have it, now. Come on, computer; I can see Atria. Don't give me that. ... your sextants ...? How about that, smart ... Smart telescope. Telescope, you see it, and sextants ...?

Jim, I tell you what - Yes, if you pitch down -
What’s our first event?

Okay, Jim, I got one.

You’ve got one?

Yes.

Are you looking at that rate ...?

Yes.

Everything’s ...

Oh, I - I can’t handle it, Jim. I’m going to stop and ...

Oh, good, another one. I wonder where that one’s from? We’re coming apart at the seams, here.

... What a star! For daytime! Oh, boy!

Really put you to the test.

Yes. Now we got all those little things floating out, too.

(Laughter) ...

Yes, you’re right, it is.

How - how are your rates, Jim?

Zero.

Are they really?

Must be tracking along pretty nice.

Yes.

I’d like to give you a one-roll shot, but I think I’ll just go overboard. I’ll give you one roll.

Okay.

How’s your schnoz?
0719 29 48 CDR Really stopped up right now.
0719 29 55 CMP Oh, look at that! Worse in the telescope than the COAS! That's something. Well, I can't see --
0719 30 07 CT Texas, voice net-2. No, we don't. Texas, voice net-2.
0719 30 18 CDR Get off the air, net-2.
0719 30 28 CMP Look at that.
0719 30 32 LMP ...
0719 30 34 CDR Well, ... still better in the COAS.
0719 30 40 LMP I won't torque these.
0719 52 26 CMP Rusty broke it.
0719 52 35 CMP Oh, I'm beginning to get some, Jim. Yes, keep rolling - you're rolling left, huh? Oh, that - You'll be in good shape.
0719 52 43 CDR Yes, but we won't be looking north - Well, maybe if we ...
0719 52 50 LMP If you roll left - You're pointed clear right to the ground, see?
0719 52 57 CMP Yes, but you're pitching the wrong way - It almost looks like -
0719 53 02 CDR ... yaw, too.
0719 53 22 LMP ... get to Galveston ... on me.
0719 53 26 CMP You got something? We - we're about 4 minutes from the ... Mountains, or whatever it is.
0719 53 34 LMP No, ...
0719 53 50 CDR See?
0619 53 53 CMP Obliquely.
0719 54 01 CMP Lots of sand dunes.
07 19 54 03 CDR Yes.
07 19 54 08 CMP Where are we on the map? Did we figure that out?
07 19 54 12 LMP Yes.
07 19 54 13 CMP Oh, right here. Hey, we're going across to the "Lady, Be Good" site.
07 19 54 21 CMP And, that desert right down there -
07 19 54 27 CDR How would you like to have to walk 400 miles across that, huh?
07 19 54 29 CMP You know what the - the crushing thing about the story was?
07 19 54 33 LMP What?
07 19 54 34 CMP They got to a bunch of dunes, that looked exactly like the dunes on the shore of the Mediterranean.
07 19 54 39 CDR Yes.
07 19 54 40 CMP Then, they really sprinted.
07 19 54 41 LMP Oh!
07 19 54 42 CMP You know, they thought, "We're there, we're there," you know. They got up over the dunes, and that's where they started falling off. Klonk, klonk, klonk. And they only then had another 300 ... --
07 19 54 55 LMP Jim, you're going to be looking south.
07 19 54 56 CDR Yes.
07 19 54 59 LMP Hey, I think I see --
07 19 55 14 CDR ... geology down there.
07 19 55 21 CDR Hey, this part of Africa's sort of the ... place in the world.
07 19 55 25 CMP Except, maybe the North and South Pole.
07 19 55 39 CMP Oh, look over here. Colly, look at that, Jim. Coming up on it in 55 minutes, Jim.
How you looking over there?
I'm not looking ...
You're not, huh? Great. I'm going to take one of that, there.
How many have we got allocated for today?
Let's take some of Africa ...
We didn't in other parts of the world.
I really missed ...
Oh, there's cinder cones down there.
Big cinder cones, yes. Golly, that's a beauty. Do you see it, Rusty?
Yes.
... straight down here on the - Is that what you're talking about?
Yes.
Yes, right there. That's a beauty, isn't it?
Yes.
See anything else?
No. But we've got a minute away from the mountains. What time are the mountains?
They were on - they were 57 a little bit ago -
57 something. Look south of the nadir, Jim, 30 degrees. Do you see anything? Did you see anything?
I could see pretty good south of the nadir, I think.
So could I. I could - I could see real well around to the south, but I don't see anything good enough to take pictures of.
There's another good piece of geology. Rusty's been waiting - waiting to take pictures.

Hey, let me - let me take one picture -

Yes.

Well! Well, no -

Yes.

Boy, that cinder cone is pretty. What -

How's the Red Sea ... up there?

The Red Sea is at - 188:03:06.

What time is it now?

We've got about 5 minutes to go. We're about upside down, alright?

Yes, it would be great to stop the roll ...

Boy, here's another interesting piece. You - you reckon two shots will give them the stereo that they're looking for?

Not - not two shots aimed at the same direction - I mean, at the same point.

Yes.

I think most of these things - that - by way out here - are just one shot good, Dave. I think that something around the United States and Mexico, where they can get to and survey and do something with, they need stereo, but this stuff way out here, they just want a picture of it. You can - you can see an impact down there that -

Yes.

-- just like the lava on the moon.

Oh, we ... was impact or not, though.

Oh, of course, all -
07 19 58 42 LMP/CMP  All circular features are impacts!
07 19 58 52 CMP  That's pretty good - pretty good geologist. Maybe he could get the - Australia, if he's a geologist.
07 19 59 04 LMP  Oh course. Sure like to get out there and see that nice big crater.
07 19 59 12 CMP  That would be interesting. Not too many people get ...
07 19 59 15 LMP  The Nile River.
07 19 59 17 CMP  -- I do believe.
07 19 59 23 CDR  What's this?
07 19 59 26 LMP  Let's see where we are. We may be right down - that's right, we're going right by Khartoum. That's - We're about at Khartoum right now; and that's where the Nile joins - the White Nile and the Blue Nile -
07 19 59 36 CDR  White Nile and the Blue Nile comes together, there.
07 19 59 37 LMP  That's right. That's right where we're going over, isn't it? Oh, what time is it?
07 19 59 42 CMP  ...
07 19 59 43 LMP  Good, that's - We should be a little bit south of track; so, it ought to be down my side, here. Let's see if I can see it.
07 19 59 52 CMP  South? That should be on Jim's side.
07 19 59 54 LMP  Oh, south is on Jim's side. That's right. Okay.
07 19 59 58 CMP  Look at the striation.
07 20 00 00 CDR  Is that a good word?
07 20 00 01 CMP  Look at the what?
07 20 00 02 LMP  Striation.
07 20 00 02 LMP  Is that a good word?
<table>
<thead>
<tr>
<th>Time</th>
<th>Call</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>07 20 00 03</td>
<td>CMP</td>
<td>Oh, yes.</td>
</tr>
<tr>
<td>07 20 00 04</td>
<td>LMP</td>
<td>Good word, yes?</td>
</tr>
<tr>
<td>07 20 00 05</td>
<td>CDR</td>
<td>Good word. That’s not right, but it’s a good word.</td>
</tr>
<tr>
<td>07 20 00 07</td>
<td>CMP</td>
<td>Alstrait (laughter).</td>
</tr>
<tr>
<td>07 20 00 10</td>
<td>LMP</td>
<td>Jim, do you see Khartoum down there, yet?</td>
</tr>
<tr>
<td>07 20 00 13</td>
<td>CDR</td>
<td>I think it’s up ahead to the left there. Yes.</td>
</tr>
<tr>
<td>07 20 00 15</td>
<td>CMP</td>
<td>... morphic granulate down there, too.</td>
</tr>
<tr>
<td>07 20 00 20</td>
<td>LMP</td>
<td>Now, you’ve gone too far.</td>
</tr>
<tr>
<td>07 20 00 22</td>
<td>CDR</td>
<td>Okay, this one is --</td>
</tr>
<tr>
<td>07 20 00 23</td>
<td>LMP</td>
<td>Is that it, Jim? Down to the left, there?</td>
</tr>
<tr>
<td>07 20 00 27</td>
<td>CDR</td>
<td>No, ...</td>
</tr>
<tr>
<td>07 20 00 31</td>
<td>CMP</td>
<td>I don’t see anything at all. Should it be south of track, Rusty?</td>
</tr>
<tr>
<td>07 20 00 35</td>
<td>LMP</td>
<td>Yes. It should be south of track, it should be right at the junction of the two rivers.</td>
</tr>
<tr>
<td>07 20 00 38</td>
<td>CMP</td>
<td>Junction. Two rivers. Now this is the Blue Nile under us, I think. Isn’t the Blue Nile farther to the east?</td>
</tr>
<tr>
<td>07 20 00 49</td>
<td>CDR</td>
<td>Hey, give me - Let me take a picture --</td>
</tr>
<tr>
<td>07 20 00 50</td>
<td>LMP</td>
<td>To the what?</td>
</tr>
<tr>
<td>07 20 00 51</td>
<td>CMP</td>
<td>To the east?</td>
</tr>
<tr>
<td>07 20 00 52</td>
<td>CDR</td>
<td>-- take a picture of the junction of the two rivers.</td>
</tr>
<tr>
<td>07 20 01 01</td>
<td>CDR</td>
<td>That blue’s pretty.</td>
</tr>
<tr>
<td>07 20 01 02</td>
<td>LMP</td>
<td>Yes. I think that’s the Blue Nile.</td>
</tr>
<tr>
<td>07 20 01 08</td>
<td>CMP</td>
<td>There we go. Look at the cultivation on the river there.</td>
</tr>
</tbody>
</table>
Yes. And there's some right up ahead here, too, almost on track.

Hey, we're going to be pretty good at this —

The greenest looking fields I've seen.

Seven frames at 10 seconds, ... We're going to be in good shape to do that.

Hey, I'm not sure we want to take those. Oh, of what?

Not the — the Red Sea.

The Red Sea. Oh, yes, let's take the Red Sea. Look at this cultivation down there —

Yes, that's what I was going to say. That's the — those are the best looking fields I've seen. That looks like home, doesn't it? A lot of them. Wonder what those other things are that aren't green, but look like they're —

Oh, they're brown fields.

No, but they look different; you know, like it's a special kind of crop or something. Oh, we're getting into some — rocky stuff, now.

Say, why don't you call when 10 seconds comes up, Rusty?

Yes, okay.

03:06 is the beginning.

Okay, and you're going to take them straight out.

Yes, I'll take them straight down.

Okay. 03:06. You got about 1 minute.

Alright.

And I'll just give you a mark every 10 seconds, and we want seven up; right?
Yes. ... 
Oh, the’re going to go away, though. Looks - They’re not too bad.
Yes, and as soon as we get over this one ..., your lights come back on in. It gets good again.
Yes. ...
Okay, stand by. It’s about 15 seconds --
Yes. You ought to start counting, Dave, if you see that lake down there.
Okay. Oh, that little lake?
Yes.
Rusty, start the count.
Okay. You just take one.
Yes, I took - over that lake.
Okay. I’ll just give you another mark in 10 seconds, here.
Okay.
3, 2, 1 -
MARK.
Geesers, just ... --
Works pretty good, though.
- - ... down there.
Oh, this is going to be great. 3, 2, 1 -
MARK.
Number 3.
Look at those big craters, down there.
07 20 03 21 CMP Yes.
07 20 03 25 LMP 3, 2, 1 -
07 20 03 29 LMP MARK.
07 20 03 30 LMP Number 4.
07 20 03 31 CDR Keep taking them straight down, because you don't get a hair as much ... reflected, nearly as much.
07 20 03 36 LMP 3, 2, 1 -
07 20 03 38 CMP Great!
07 20 03 39 LMP MARK.
07 20 03 42 CDR Man, that is great!
07 20 03 47 LMP 3, 2, 1 -
07 20 03 49 LMP MARK.
07 20 03 53 LMP Okay, have I got one more here?
07 20 03 54 CMP Yes.
07 20 03 56 LMP 3, 2, 1 -
07 20 03 59 LMP MARK.
07 20 04 00 LMP Okay, that's one more than they asked for.
07 20 04 01 CMP Is it really?
07 20 04 02 LMP Yes.
07 20 04 03 CMP That looks pretty good.
07 20 04 04 LMP No, I'm sorry. It wasn't. Hey, take one more here.
07 20 04 06 LMP 3, 2, 1 -
07 20 04 09 CDR Take a picture over there, Dave - -
07 20 04 11 CMP Okay.
07 20 04 12 CDR  Whooee - Oh, yes - Hey, take a picture over the right, Rusty. That's the part that I was telling you about.

07 20 04 22 LMP  Yes. Alright.

07 20 04 33 CDR  I think that was a pretty good strip.

07 20 04 34 LMP  Yes. Except you were pulling up a little bit, instead of steering out the window. You're - And that window is almost perpendicular to the - -

07 20 04 43 CDR  You're drive - -

07 20 04 45 LMP  -- your angle to the window.

07 20 04 46 CDR  -- try to angle straight to the ground.

07 20 04 48 LMP  Yes. Yes, I know. You can tell out the side window. It's almost - We were almost in the SO 65 attitude. That's okay. They can't tell the difference - 10 degrees.

07 20 05 09 LMP  Okay, okay. Now we're coming back across the --

07 20 05 12 CMP  How far - -

07 20 05 13 LMP  -- ... peninsula.

07 20 05 15 CMP  -- How far off of the times were we, Rusty?

07 20 05 17 LMP  No, we were right on it.

07 20 05 19 CMP  Oh, okay.

07 20 05 20 LMP  Okay, we're coming across Somaliland.

07 20 05 23 CDR  Somaliland - How about stopping and get a tamale?

07 20 05 27 LMP  Boy, wouldn't that be good?

07 20 05 29 CMP  Sure would.

07 20 05 30 CDR  Anything with some seasoning right now would really taste good.

07 20 05 32 LMP  What's that island out there? Oh. ... Oh, yes, I remember that one.
That's it right there. I never even heard of it before.

Oh, you haven't heard of that, ...?

Oh, Rusty, Rusty. Oh, that's right.

Hey, you ... have Andes on time. Did you?

Yes, isn't that something to give the time - to be out the old timeline? Poor Australia, we never get to see it in the daytime.

Well, that wasn't a bad strip either, was it?

I'll be damned.

What do we have ahead of us now, Rusty? ... out in the water somewhere.

Yes, we're out in the middle of the Indian Ocean right now. The only thing out there is - the Chagos Archipelago out - almost on our track, which is - I guess, a bunch of reefs out in the middle of the Indian Ocean.

Hey, we checked right out that time. Zero roll, VERB 55.

Great!

Now, listen, you knew that ... (laughter).

Yes.

And on your left -

(Laughter)

-- to your left is the Chagos Archipelago. To the right, the island of ...

What?

What number was that?
... Grape - Hey, grape and hot chocolate in the same package. Man, I am going to have that for breakfast. Boy, Rusty ... that breakfast.

No, I gave Dave my hot chocolate.

Golly, why didn't you drink ...? Rusty, ... take a few in North Africa.

This is sausage. How was that sausage yesterday?

Pretty good. And if I say it's pretty good --

It must be pretty good!

Hey, here's - here's cocoa - Hey, here's really a meal. Cocoa, grape, sausage, peaches, and bacon. Want that?

No, I'm going to have that tomorrow.

We already got it all dug out here.

Yes, I know. Well, with our luck, we may not be here tomorrow.

I think we will be, unless for some reason, - That's day 8, meal C, right? Day 8, meal A, I mean.

... I see you changed the paper bag already.

When there aren't any more meals like that, ... you know we don't have enough meals for ... What else do you have over there stashed away?

Huh?

What else do you have over there stashed away?

Here. ...

No - Eat it. No, no, I was only kidding. I was just opening this to put in the bag.

Which one - which one - Is this the one we're putting in? ... the old grab bag.

Is it up there in the tunnel, maybe?
<table>
<thead>
<tr>
<th>Time</th>
<th>Code</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>07 20 10 13 LMP</td>
<td>Oh, here it is. Here you go.</td>
<td></td>
</tr>
<tr>
<td>07 20 10 52 LMP</td>
<td>Oh, yes, we got to get ... open, too.</td>
<td></td>
</tr>
<tr>
<td>07 20 10 59 CDR</td>
<td>Oh, shit, oh dear ... part of the ...</td>
<td></td>
</tr>
<tr>
<td>07 20 11 00 LMP</td>
<td>Great.</td>
<td></td>
</tr>
<tr>
<td>07 20 11 03 CDR</td>
<td>How you doing there, sport?</td>
<td></td>
</tr>
<tr>
<td>07 20 11 36 LMP</td>
<td>Okay, well, I guess I'll go continue to dump some water.</td>
<td></td>
</tr>
<tr>
<td>07 20 11 40 CDR</td>
<td>Good idea.</td>
<td></td>
</tr>
<tr>
<td>07 20 11 41 LMP</td>
<td>Hey, what's that?</td>
<td></td>
</tr>
<tr>
<td>07 20 11 42 CDR</td>
<td>That's land.</td>
<td></td>
</tr>
<tr>
<td>07 20 11 43 LMP</td>
<td>Is that land?</td>
<td></td>
</tr>
<tr>
<td>07 20 11 45 CMP</td>
<td>Where?</td>
<td></td>
</tr>
<tr>
<td>07 20 11 46 LMP</td>
<td>Up ahead of us there, to the north part of it.</td>
<td></td>
</tr>
<tr>
<td>07 20 11 52 CMP</td>
<td>Or, are those low brown clouds?</td>
<td></td>
</tr>
<tr>
<td>07 20 11 58 LMP</td>
<td>Yes.</td>
<td></td>
</tr>
<tr>
<td>07 20 12 01 CDR</td>
<td>Maybe we ought to take a second look at them when we get up there. It might be ... cloud.</td>
<td></td>
</tr>
<tr>
<td>07 20 12 04 LMP</td>
<td>If it's land, it's called - Australia.</td>
<td></td>
</tr>
<tr>
<td>07 20 12 08 CMP</td>
<td>Oh, yes.</td>
<td></td>
</tr>
<tr>
<td>07 20 12 15 CDR</td>
<td>Hey!</td>
<td></td>
</tr>
<tr>
<td>07 20 12 17 LMP</td>
<td>It's got to be dark there.</td>
<td></td>
</tr>
<tr>
<td>07 20 12 24 CMP</td>
<td>... daylight, I really do. Are we going over Australia this pass?</td>
<td></td>
</tr>
<tr>
<td>07 20 12 28 LMP</td>
<td>Yes. Sure are.</td>
<td></td>
</tr>
<tr>
<td>07 20 12 33 CMP</td>
<td>... looks like ...</td>
<td></td>
</tr>
<tr>
<td>07 20 12 36 CDR</td>
<td>Australia is really pretty.</td>
<td></td>
</tr>
</tbody>
</table>
... over on our last pass, too, though.

We sure don't have two grapefruits ...

Probably don't. I ... yesterday.

... breakfast yesterday.

Oh, really?

Yes.

Let me see. It's 1 hour past the update ... should be there; give you some idea of whether - it should be - 188:05. Oh, no. We've got 11 minutes to go until we get to Australia. Our pass is going to be black.

... already.

Let's see; I guess - you want me to continue to dump some water?

Yes.

I didn't use much of your gas on that alignment.

Good.

This is more than using the optics, though.

Oh, yes.

It's difficult to articulate the COAS.

Yes, it is. It's awfully difficult to articulate the optics.

... True, if you don't remove the damn thing.

It's a ... job to articulate --

Oh, you're just ...
I wasn't through with it. I got to get an alignment this pass, Rusty. Okay?

Whatever you say.

Oh, I really hate to do this.

... southeast of ... is suppose to do ... put it in your pocket.

Well, where was that water bag? There should be an empty bag up here, Dave, that I was fixing to dump that water. See it up there?

No, I sure don't.

Here you are. Let's get the ...

Well, doggone it.

Hey, here's a meal that came floating over here.

Good.

Day 4, meal C. There it is, Dave. How about grabbing it for me, will you?

Where?

That bag, right there.

Day 4, meal C? How could - how come we still happen to have that around?

Probably got a glue on it.

Yes. As a matter of fact -

Have you tasted the water to see if it has still got the chlorine in it?

No, you want to taste it?

Yes. I'll be glad to. I'll fix me something to drink.

Alright.
I'm thirsty and I'm hungry.

I tell you, all you got to do is take a tissue or a rag, if you've got a clean tissue, and put some water in it and smell it.

... smell a pipe.

Look at that. We got two big bags. Whew!

Looks like - it looks like ... we don't want --

Give me a drink, David, and I'll --

Okay.

I think we also ought to get out the other ...

Why don't you - Let's put that one down in the food box.

Let me find one that is palatable. Oh, hey, here's another one.

How about an orange juice? There's more orange drink than anything else.

Good.

I wish there was more grapefruit drink. I hate this other ...

... is screwed up.

Really?

... grape drink or grape ...

I think they're a little better now. But I ate the orange ... and they're a pretty close second.

That's right ... right of rockers if you call this. --

You know what would be a better idea?

What?
Take all the spaghetti's ... oranges ... throw it in into the food locker and ... Anybody want part of a bacon? Okay, good, I'll split it with you, Dave. I'm not going to want all of it, but I need a little snack. Okay. Hey, we could take that and stuff it in ... food box? Yes, we could have an empty ... Never open the food box again. ... someplace to put our scraps. 189:10:23. ... reading the bubble. Okay, ... stopped. Huh? Okay, the ... Yes, I see it over here in the clear area. Okay, that's got it wrong one. Now, we take this end and we go - We do it for a minute. There we go. Not too bad. Delays it a little anyway. ... it does it all in one spot and not on to the other unit. If you can get rid of it that way - toward the end I can - if there isn't too much water with it, if it all comes out as gas. The capillary action kind of makes it - or something makes it stick to your mouth and the gas kind of goes in the middle. What actually the ...?
A rather interesting picture out this side.

What's out there?

It might be worth a shot. Desert with lava flow.

How are we doing angle-wise?

Boy, there's some real sand dunes down there - what?

You know something? We look like we've been in it (Laughter)

Now we're pitching back down ... 

No, I guess if we rolled left - ... down at 0.4 degree per second.

Yes. Hey, I think I can see it coming, if that's Mount Kilimanjaro. You think that's the mountain up there, Jim? Out the front window? Or you think that's just a - Oh, I guess that's just a -

The one I'm looking at, that's just a cloud.

-- just a cloud.

No, well, I'm not sure yet. Let me see.

This must be the South Sahara. When the world gets overpopulated, they can all come here. ... 

Hey, Jim, you're looking down on clouds.

Really? ... 

... 

Can you see it through them?

Yes - ... in this side.
07 21 33 10 CDR  Real light brown -

07 21 33 15 LMP  Cloudy as can be, and there's nothing that even resembles vegetation. It looks like lunar soil doesn't it?

07 21 33 22 CDR  Yes. ...

07 21 33 26 LMP  What?

07 21 33 32 CMP  There it is, Kilimanjaro out there. I see it, I see it!

07 21 33 39 LMP  Yes.

07 21 33 40 CMP  Over to the left, there. Is that where you were looking?

07 21 33 45 LMP  What time is it? Oh, yes --

07 21 33 46 CMP  6 minutes.

07 21 33 47 CDR  It's ... time, yes.

07 21 33 49 LMP  I thought I saw a big brown thing with snow, and there's supposed to be snow on that mountain. I read about it.

07 21 33 55 CMP  Oh, yes.

07 21 34 15 CDR  This actually is supposed to be where we start tracking. Right under us.

07 21 34 24 LMP  Let me get the map there, Dave.

07 21 34 29 CMP  Here, let me roll right and ...

07 21 34 32 CDR  He can ... out here.

07 21 34 39 LMP  A little bit south of track.

07 21 34 48 CMP  It's pitching around ...

07 21 34 51 LMP  Yes, this window is - this one is - moving around - pitch rate up to about 0.3 degree per second - 0.4-degree-per-second pitchup, and 0.4 - degree per-second pitchdown.
We’re climbing, aren’t we?
Yes.
Well, actually – actually, that’s not a bad attitude just the way it is, Jim.
Okay. Just let it go then.
Let’s see, we’ve got another 5 minutes – or – little over 4 minutes.
I see a town. I see a waterhole there.
See the old waterhole?
Over on your side is an old waterhole.
Oh, yes. Ye old waterhole.
It looks pretty cloudy.
It sure does. See, if they were just low clouds, old Kilimanjaro would stick right out of the top of them.
Pitch rate’s dropping off – it’s down about 0.25.
That’s good.
How many more minutes?
3.
... might be hole up there.
Need any ... up there?
No, about a minute and a half.
Really doesn’t look that bad.
There’s water down underneath.
Yes –
Yes, we go over by Lake Victoria – lake right beside it.
<table>
<thead>
<tr>
<th>Time</th>
<th>CDR</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>07 21 38 41</td>
<td>CDR</td>
<td>Yes, there's another one right down underneath us - right now.</td>
</tr>
<tr>
<td>07 21 38 45</td>
<td>LMP</td>
<td>Yes.</td>
</tr>
<tr>
<td>07 21 38 56</td>
<td>LMP</td>
<td>Oh, boy - it's getting kind of steep.</td>
</tr>
<tr>
<td>07 21 39 04</td>
<td>LMP</td>
<td>We must be rolling to the right, too, aren't we?</td>
</tr>
<tr>
<td>07 21 39 09</td>
<td>CDR</td>
<td>Got that?</td>
</tr>
<tr>
<td>07 21 39 10</td>
<td>LMP</td>
<td>Yes - I can't - no longer see along the track.</td>
</tr>
<tr>
<td>07 21 39 21</td>
<td>LMP</td>
<td>Do you see a mountain coming up?</td>
</tr>
<tr>
<td>07 21 39 25</td>
<td>CDR</td>
<td>I don't see anything at all that resembles a mountain.</td>
</tr>
<tr>
<td>07 21 39 27</td>
<td>CMP</td>
<td>I don't either.</td>
</tr>
<tr>
<td>07 21 39 36</td>
<td>CDR</td>
<td>There's the shoreline of Africa.</td>
</tr>
<tr>
<td>07 21 39 38</td>
<td>LMP</td>
<td>Yes. I think I see the mountain out in front of us there, but it's under that cloud. Is that it, Dave? Yes, there it is. Yes, you can see the volcano. Yes.</td>
</tr>
<tr>
<td>07 21 39 47</td>
<td>CDR</td>
<td>Whereabouts?</td>
</tr>
<tr>
<td>07 21 39 48</td>
<td>CMP</td>
<td>Right straight out here.</td>
</tr>
<tr>
<td>07 21 39 49</td>
<td>LMP</td>
<td>Yes. Can you get it, Dave? Well, get the mountain and put it in the top of the field.</td>
</tr>
<tr>
<td>07 21 40 04</td>
<td>LMP</td>
<td>You get it?</td>
</tr>
<tr>
<td>07 21 40 05</td>
<td>CMP</td>
<td>Yes - Let me get one more here.</td>
</tr>
<tr>
<td>07 21 40 12</td>
<td>LMP</td>
<td>You can get one when we go over it.</td>
</tr>
<tr>
<td>07 21 40 17</td>
<td>CMP</td>
<td>I got to find the damn thing again, though. You know, I'm not sure that that's it.</td>
</tr>
<tr>
<td>07 21 40 21</td>
<td>LMP</td>
<td>Yes, it is.</td>
</tr>
<tr>
<td>07 21 40 22</td>
<td>CMP</td>
<td>Yes, that's it. Oh, yes - it's got the crater in the top, too.</td>
</tr>
</tbody>
</table>
Maybe I'm looking at the wrong thing. Where is it, Dave?

It's way down here.

It's back out to the right now, Jim. It's got a lot of clouds around it, but the clouds are heavy on the - the east slope of it.

Slope? Yes, that's what I was looking at. You think that's it, huh?

Yes. It's the only mountain around, Jim.

It doesn't look like a mountain to me.

Oh, yes. With snow on the top of it? You don't see much now on the ground; or didn't you think it was snow.

No, as a matter of fact, I thought it was a cloud.

Let's tell everybody it is Kilimanjaro.

(Laughter)

Oh, hell, yes, it was. That was - if it was a cloud, it had rocks sticking out the top of it. In which case it was Kilimanjaro anyway. Okay.

How would you read that number now, Dave?

It's right between two - You can't even tell what the hell it says.

You were getting ready to check 78 and 79, but I - -

Yes.

Remind me. Is that yours?

And on into the Pacific!

There's a loose, near-empty, grapefruit bag floating around. I guess - It's not in front of me any longer.

When you said that one, I thought you ...
Whoa, baby.

Look at that gas bubble!

... 

Yes, sure can.

Oh, those are pretty islands. Oh, shoot! This - 

Oh, yes!

To the right?

Over here.

Well - I don't think we can still get them.

Yes.

Way back there?

Yes. These ... too hard to get.

... an easier place.

Trying to figure out where that was. That was in the next frame - ... is the setting now, Dave?

We're doing ... on the SO 65, aren't we?

Yes, you're supposed to do another alignment - to 190, 30, 00.

I already did one to 190, 30, 00.

Oh, you did? Okay.

You did your align to 190? 30, 00?

You did it more than one REV ahead, huh?

Yes.

I'm sure he did.

... he did.
Here, here's your...

I was really looking forward to this. I thought you had a surprise.

Yes, I think I will. Hey, those were the - Corigodos - Caragos [?] shoals.

Oh, yes.

Hey, we could play interceptor with these Cepacols and vitamin pills. Cepacols could be the bombers and the vitamin pills, the fighters.

Want to try to see some cities at night here? We're going right over Perth --

Oh, really?

-- and right over Brisbane.

Oh, boy, coming up are a whole bunch of really nice islands in the South Pacific.

Where are we going?

Right up past New Caledonia and then the Loyalty Islands, the Fiji Islands, Western Samoa, Danger Island, right past Christmas Island - Boy, we got the whole batch of them.

Boy, we go right over Fiji.

When does it say to unstow, Jim?

I just ... the flight plan, Rusty. It says that after we terminate our SO 65 ... 2-1/2 hours to unstow the spacecraft, and hour to eat, an hour to do chores, and then have our rest period.

Jim, you want ... these?

It took us 30 minutes to get ready for that burn yesterday?

Yes.
What time do we do SO 65? Is that the next thing we have?

Yes.

They want to take those off, even though the weather's broken.

190, 42 — ... 45 more.

Ready to unstow? I'll get them out.

Here's a little bag, Davey.

Do we have any 70-millimeter stuff to take yet?

Yes. Shots north of track.

Feeling any better?

Well, did you time yourself? Get all that way out?

Yes, I'm feeling — Boy, that's a lot better. Somewhere — in here, another 5 minutes ...

Dave, check that pyro there — It's ...

29:37, okay. Coming up across Baja California — ...

... night pass.

Okay.

Yes, we're going across.... Why don't you disable ...

...? We've already got it scheduled.

Yes. Step number 1 after the last pictures ...

Right.

There's the ... Crater, again.

Oh, really? ...

Yes, let me read it off — No, you can't see it out there, Dave. Get under me and look up there. No, under me — under me, look outside.
Oh, yes. Oh, that's really - real active, isn't it?
Yes.
It's still not time?
Apollo 9, Houston. About 1 minute LOS. I'd like to verify the ATTITUDE SET switch is in GDC.
I think the new ATTITUDE SET is in IMU.
... and it goes to GDC. I knew there was a reason for it --
Roger. Request GDC unless you have a real reason to put it in IMU.
No, that's just where it ended up the last time I did the GDC test.
Roger.
I knew there was a reason!
Are they going to read something if you do it - leave it in GDC?
I don't know. When I ask them about that the other day, they said they were having trouble --
9, Houston. In the preparation to your powering up the S-band, like to do the LMP checklist, page 214. The first six - the first six steps of the TELECOMM systems powerup.
Okay, understand. The first six steps on 214, LMP checklist.
Roger.
You got her going? That's not bad!
No, it's not really. ... Last night ... trying to vent the batteries down.
Yes, that doesn't look like ...
<table>
<thead>
<tr>
<th>Time</th>
<th>User</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>07 23 04 53</td>
<td>LMP</td>
<td>... all hazy up there?</td>
</tr>
<tr>
<td>07 23 05 10</td>
<td>CMP</td>
<td>That's the last roll of film.</td>
</tr>
<tr>
<td>07 23 05 25</td>
<td>CDR</td>
<td>I know.</td>
</tr>
<tr>
<td>07 23 05 43</td>
<td>CMP</td>
<td>... reconfiguring.</td>
</tr>
<tr>
<td>07 23 06 04</td>
<td>LMP</td>
<td>What time do we have that high gain antenna thing?</td>
</tr>
<tr>
<td>07 23 06 15</td>
<td>CMP</td>
<td>232:08 or so.</td>
</tr>
<tr>
<td>07 23 06 20</td>
<td>LMP</td>
<td>Oh.</td>
</tr>
<tr>
<td>07 23 06 47</td>
<td>CMP</td>
<td>... following steps.</td>
</tr>
<tr>
<td>07 23 06 56</td>
<td>CMP</td>
<td>It's a ..., Jimmy.</td>
</tr>
<tr>
<td>07 23 06 58</td>
<td>CDR</td>
<td>Yes.</td>
</tr>
<tr>
<td>07 23 06 59</td>
<td>LMP</td>
<td>Yes, we - we go out over and then back into.</td>
</tr>
<tr>
<td>07 23 07 08</td>
<td>CMP</td>
<td>14 minutes ...</td>
</tr>
<tr>
<td>07 23 07 13</td>
<td>LMP</td>
<td>Woo! Oh, there are a lot of big clouds.</td>
</tr>
<tr>
<td>07 23 07 19</td>
<td>CMP</td>
<td>The water.</td>
</tr>
<tr>
<td>07 23 07 22</td>
<td>CDR</td>
<td>Another interesting thing, huh?</td>
</tr>
<tr>
<td>07 23 07 24</td>
<td>CMP</td>
<td>Oh, yes.</td>
</tr>
<tr>
<td>07 23 07 26</td>
<td>LMP</td>
<td>The ... either, you know it?</td>
</tr>
<tr>
<td>07 23 08 37</td>
<td>LMP</td>
<td>Lot's of water - pretty sight.</td>
</tr>
<tr>
<td>07 23 08 42</td>
<td>CMP</td>
<td>Sure we didn't want to point it out the other side!</td>
</tr>
<tr>
<td>07 23 08 47</td>
<td>LMP</td>
<td>No, right there in the middle.</td>
</tr>
<tr>
<td>07 23 08 51</td>
<td>CDR</td>
<td>No, right down the middle would probably be better.</td>
</tr>
<tr>
<td>07 23 09 01</td>
<td>CMP</td>
<td>... pink, brown, blue - I've just seen a whole bunch of keen-looking clouds.</td>
</tr>
<tr>
<td>07 23 09 05</td>
<td>CDR</td>
<td>Keen-looking what?</td>
</tr>
<tr>
<td>07 23 09 06</td>
<td>CMP</td>
<td>Clouds.</td>
</tr>
</tbody>
</table>
Great.
Carry all the folks at home one apiece.
True.
Anything out there, but ...?
Yes.
Really?
Really a big ...
Oh, maybe they want the weather.
Got to go over that wild desert.
7 more minutes to go.
The clouds look like they're just 30 degrees south of track.
... I'm never going to get this done over one station.
Repeat - repeat ...
...
...
Wonder if they know that?
... part of Africa for 50 years.
I don't know - Stanley met Livingston.
Man, just think of all those lions and elephants and rhinoceri --
I don't see a one.
Sure is jungly down there, isn't it?
Boy, there's a - it really is jungly. Man, oh man!
We should be coming up over Lake Nyasa here sometime soon. A great big lake.

I don't really like...

Lake Nyasa goes for miles.

Do you...

Yes, ... Lake Nyasa.

Whoo...

There's some geology down there. I guess there's just not ever been very many people in there, huh?

The ones that are in there don't come out.

The ones that go in don't come out?

You have about a minute more.

Supposed to go to Madagascar now, right?

Yes.

You better hurry up.

Sun's kind of peeping out down there, too.

Yes, it sure is. The shadows are really getting long. There's your update form. They block the view.

Is Madagascar in the view on the horizon?

I see the shoreline there on the horizon. Can you tell what time to turn it off?

50 something - 40 something.

... the shadows.

Okay, Jimmy - you want to turn it off on time or let it go?

... Madagascar.
Now is the time. 14 minutes should get it. I don't see Madagascar out either.

It's going to be too dark now anyway.

... went out at the same time I started to hit it off.

These darn Cameroons - whabobbedo. What's under these clouds? Huh?

The weather - the weathermen will really think we're neat.

They will?

I hope.

Well.

...

I wonder if they want that thing on now to warm up.

Ron didn't really say when they wanted to do that.

I think we got 2 hours.

No. I don't know if they wanted to look at it or what. You know, beforehand, he said to do the first six steps in the checklist, but he didn't really say when.

Yes, ...

When do we turn it on? When do we do the steps?

193:08. In a couple of hours.

Why don't we turn it on about ...?

How come we're on secondary transponder?

Maybe it's because the primary didn't work very good. We've been for about 4 days.

Yes, I just never looked at the console. I just wanted to know when did we do it?
One day, I don't remember which one.

I am going to get me something to eat; I'm getting hungry.

I haven't even finished my breakfast yet.

Getting sleepy. So I have to have something to keep me awake.

The hours we keep are ridiculous.

191:25, P52 time ...

Hey, Jim.

Yes.

Through with the ORB rate?

Yes.

Okay, I'm going to VERB 46 it. Okay?

No, I clocked it ...

Here.

Huh? ...

I clocked it ...

Did you clock it the other way?

Yes, ...

Okay, I clocked it this way.

How did your ball work?

...

I think I'm going to go hunt one more time for my tape.

...
I think I can do that without disturbing ... ailerons. (Singing) Boy, my old suit's really jammed over there now, isn't it? Goll!

It's definitely not in that pocket. It's not in that pocket. Let's see, it might be in this pocket: ..., an American flag, goofballs, some earplugs, another goofball, some ... lanyards, a neckband; and nothing else. Nothing at all.

In this pocket, we have - nothing - and in this pocket, we have - nothing. I have a sneaky feeling my tape is either in orbit by itself or it went by-by with the LM.

Maybe you ... and put it in it.

Yes, I may very well have.

... in the suit.

No, I don't think so. I think, Jim, I would've put it in that pocket, Jim, and - -

You mean ... hidden in here --

Yes, but most of the things that have hidden themselves have magically unhidden themselves. Doesn't say it isn't.

Oh, well, another meal without music!

... your platform.

Oh, oh!

What's today? What's today? Do you know?

Tuesday.

... It is Tuesday?

Tuesday.

Nice day, isn't it?
Let's see. We launched on the third. It's the 12th, isn't it?

I'd say you're right.

I think that's right.

I think that's right; somebody told me we come back on Thursday.

Well, the only other place it could be is in the L-shaped bag, I don't have the courage to challenge that. Hey, look what I found, a whole bunch of stop-trots. You want some stop-trots?

Just what we need. Well, let's see what we're doing.

What were you after?

Oh, I was trying to find - Saturn.

Did you find it?

No, it's not in the field of view.

The rings are almost edge on, man. I don't think it's going to be very spectacular.

Oh, are they really?

Yes. I think it takes another 6, 7, or 8 years before they get to the point where they come up with a good angle again.

09.

Okay. Understand Hawaii LOS at 44:07, instead of 09.

Hey, that's great. I was hoping you'd get a chance to try that.

Oh, good.
Well, good.

Okay, we'll keep her over and, if we have any questions, give you a buzz back.

Okay, ... after the antenna stops slewing.

Man, am I sleepy!

Okay, I copy that after the antenna stops slewing.

Why don't you drive the boat and let me take a little nap?

Okay.

I think, Dave, we're going to do just about everything we had - that we brought up here with us.

... didn't even know you had with you.

Well, I didn't think we'd be able to get this thing in here in time. We - we wrote it up, but I didn't think we'd get it in here.

What time is it?

192:48 ...

We're at 191:48 now, Jim.

Oh, I'm sorry. Oh, let me see.

Let's see. We're supposed to do -

An SO 65 we've got to do.

...

Gosh, we've only got a few minutes to get to bed, Jim.

Hand me that thing again, Rusty.

The SO 65 pad here?

Yes. SO 65.
I can't find the damn thing; oh, here it is. Oh, wait a minute. The data is not here, is it?

I put it right after that.

Oh, yes, in the gimbal angle; okay.

... frames in 8 seconds - Whooei! --

-- 8-second intervals.

Ohh!

Damn, damn, that's a ...

... catch up ...

When we catch up, we're safe.

What do we have to do tomorrow?

...

Get ready for that 350-pound cake. Oh boy, oh boy. I hope they have some ice cream with that.

Have a 340-pound ice cream sandwich!

Yes, yes! Okay, 10 frames at 8 seconds starting at 32. 21, 49, 57 - Yes, alright. DSKY 21, 49 ...

Your time is 190:09 - 192:00:00. Key align.

Oh, key align, I already did that. It's lunch time, now, isn't it?

Yes, from the time we got up, it is.

Almost bedtime for McDivitt.

I'm really sleepy.

Okay, about the time we got sleepy, he'll wake up again and go charging off on some campaign.

Naturally.

Look out.
That's right (laughter). I know it.

Oh, oh, you - Where's your bag full of - Oh, here it is. Hard food. ... the light...

Those are peaches in there.

Peaches? I just remembered ... Fuel cell 2 seems to have cured itself completely.

Yes, it looks pretty good, doesn't it? ... Went charging along all night, huh?

Hey, Dave, you know what did it --

No --

-- the hydrogen purging --

(Laughter)

-- no.

Sure it did --

With all that contamination?

-- until it finally blew it out.

It was close to the redline.

... does that.

No kidding.

A red - orange and blue sunrise.

... get a 120 something times ...

We've ... had a couple, haven't we?

I was talking to my ... right before launch, and ... going over the flight plan, and he said, "You're going to start coming down on the hundred and whatever it was revolution." And I thought, "Oh God! Don't say it that way."
(Laughter)

It really sounded like an awfully long time when he said it in revolutions.

Ho hum, I could just about take a 10-minute nap here, if Dave got us to the right spot at the right time.

We're almost there, aren't we? ... Yes, we're there.

Oh, they got 10 more degrees.

Okay, ... Let me get my ... nap.

... I'll get us there. I'll do my fair share.

Better look out.

Wait until we get the S-band test. There's nothing I have to do there, I don't believe, besides turn the S-band off to nap.

Listen, we'll let you nap, if you'll promise not to get on a campaign tonight when it's bed - time for bed.

Okay, I promise. Tomorrow, look out; today, you're safe.

Tomorrow, I wish you'd do a lot of campaigning.
08 00 00 05 LMP  Why don't we get the coordinates of the carrier and surprise them and land tonight?

08 00 00 10 CDR  (Laughter) They had a little trouble ... If we -

08 00 00 12 LMP  Drop in on them.

08 00 00 14 CDR  -- land on the carrier tonight it will really surprise everybody, because we're not going home until ... Wouldn't that be something - See that spot - and all of a sudden you see it go -

(Laughter)

08 00 00 23 LMP  Whee! Klonk!

08 00 00 26 CDR  No, if we could do a 90-degree left-hand turn and fly about 4000 miles north and land.

08 00 00 46 CDR  Seems like it's getting stuffy in here!

08 00 00 49 CMP  I was noticing that, too, I'm wondering if -

08 00 00 55 CDR  Yes, why don't you take ...? It's all here; I got it.

08 00 01 03 CMP  Where did you have it?

08 00 01 38 LMP  Hey, guess we ought to do away with the cam --

08 00 01 40 CMP  Now we'll get to see how good a COAS calibration is after 5 days.

08 00 44 38 CDR  I'm not sure that you would either.

08 00 44 39 LMP  Gee, that must be a satellite! Whew! Whew!

08 00 44 43 CC  Apollo 9, Houston. About 30 seconds LOS; Tananarive at 53.

08 00 44 46 CDR  Roger, Houston. We saw Pegasus going by. We mounted the diastimenter and positioned the spacecraft in the proper attitude, and right at the moment that you said it'd be there, why, she went
through. It appeared as two bright, white spots, separated by about --

No, wait; that's the diastimeter split, Jim.

Oh. Okay. We saw her go through as a bright spot. He was going very fast; probably took him about 20 seconds or so to get across the field of view of the diastimeter from right to left. Yes. That's right, I forgot about that.

Roger.

You can't focus on it at infinity --

Yes.

-- ... stopped at 4 miles. Well! That was exciting.

Yes, it was. Sort of broke up the day, didn't it? (Laughter)

Sure did.

Okay. Let's see - We're not doing anything else ... dump urine, that's all ...

(Laughter) You never found - Well, let's see, if you had the COAS pointed in the wrong direction, you never would see it, would you?

No, I finally saw it, Jim.

Did you? Oh, good.

But I wasn't sure what it was, at all. But when you yawed back over you got him just about on the axis at one point there. ...

Yes, I came back over and --

Yes.

-- and then he came right back in, and then he drifted out to the top.

CONFIDENTIAL
818.  Day 9

CONFIDENTIAL

0800 46 08 LMP  He was really moving!
0800 46 09 CDR  Yes, wasn't he, though?  (Laughter)
0800 46 10 LMP  Whooh!  Did you ..., Dave?
0800 46 12 CMP  Yes.  It took me a minute to find out - what -
what sort of ... my eyes in.
0800 46 20 CDR  Yes.  Okay.
0800 46 30 CMP  ...
0800 46 35 CDR  Yes.
0800 46 36 CMP  I want to look at the ground ...
0800 46 40 CDR  I was looking at the ground as he came across and
I think it - plus, maybe you're pointing straight
down here, and it just doesn't hack it.  Here.
I'll get it.
0800 46 50 LMP  No, it's --
0800 46 51 CDR  Yes, I know how - I know how it has to go in.
0800 47 00 CDR  I've got a half of an orange.
0800 47 03 CMP  You what?
0800 47 05 CDR  Did anybody lose half of an orange?
0800 47 06 LMP  Yes.  It's probably mine.  Yes.
0800 47 08 CMP  Jim, I'm going to do an alignment, again --
0800 47 09 CDR  Yes, you've got to do an alignment, and we have
to do an S-band antenna thing.
0800 47 14 CMP  Yes, that'll be ... day.
0800 47 15 CDR  Yes, what's the - ... past the ... control plane
here; we're supposed to point out - to point
out of plane which way?
North. You've got the - you've got the angles - you should have angles. Rusty wrote them down in that - in the -

Okay, you got to do the platform alignment first; that's the main thing. Matter of fact, if we have to point out of plane north - Well, we're already doing that -

Why don't you do it right there?

Yes; I was going to say we're already doing that, so we should be able to get by here without getting into gimbal lock.

You know, I was really hoping they'd try a P32 -

Yes.

-- because with that much rate stuff, boy, I'd ... we don't go to sleep.

... we just let her roll.

I think they are going to have to do that - I frankly can't see how you're going to go to the moon, unless you sleep on the way.

Boy, I don't either.

If they can't expect us to be able to do anything when we get there.

You could spend 1 day learning how to housekeep and 2 days resting.

Man, I've got to get that down there. Ohh! The garbage bag is really loading up. Umph!

Okay, P52 preferred. Oh, ho.

It doesn't ... come up with a 2, does it?
You're supposed to come up with a 1 in it if the load it preferred; and ... desired REFSMMAT, you supposed to set the flag.

It is, huh?

I thought you did away with the flag.

Well, the flag's still there but it's really - really - There's no constraint on the flag. But they used to set it when they uplinked the desired REFSMMAT, so you'd get the one here that says the ... are loaded. But that's the last thing to sent up on the uplink, so it's got to be there. It's not there, we get a garbage alignment.

Great!

How's that look, Jim?

That looks - that doesn't look like it's going to get us out of plane, Dave. That's only going to yaw us over about 20 degrees.

Yes, but you're already yayed over here already.

Yes, but that would yaw us back toward the middle wouldn't it?

Well, I don't - They didn't necessarily say - they said it's aligned out of plane to the north they didn't really say it's like - -

Okay. Alright. Try it.

... this doesn't get her out of plane.

Yes. Yes, but not that much, usually.

Well, we can talk to them over Carnarvon, and if that's wrong, they'll - We can do it some other time.

You're not going to try in daytime, I hope.

No.
Day 9

08 00 50 20  CDR  We're getting on towards dark here; I'll wait.
08 00 50 23  CMP  We'll wait until Rusty gets through obliterating the sky.
08 00 50 25  CDR  (Laughter)
08 00 50 27  CMP  Who has the --
08 00 50 30  LMP  Go ahead and try it. See what happens.
08 00 50 31  CDR  Who has the tourniquet tied around my right leg?
08 00 50 34  LMP  I guess that's me. My hose. Try it, Dave; see what happens.
08 00 50 42  CMP  No, I'll wait. I don't want to press my luck.
08 00 50 46  CDR  You know, as a matter of fact, the way my COMM cable is routed now, I'm a little more mobile than I usually am. Goes around the bottom and comes back in.
08 00 51 13  LMP  Well, let's see. There's got to be a tissue dispenser or either ... around somewhere.
08 00 51 18  CDR  Okay, the tissue dispenser --
08 00 51 19  CMP  There's one on top of my head. Here's one.
08 00 51 21  LMP  Okay. Thank you, David.
08 00 51 26  CDR  You'd think that, with as many of these as we have, you wouldn't have any trouble finding one.
08 00 51 29  LMP  We need to keep one permanently stowed in the bathroom down here.
08 00 51 32  CDR  Well, I try to keep one over on this side, because this is where I go to the can, but I - I'm never over there.
08 00 51 37  LMP  That's the trouble; we've got three different bathrooms.
08 00 51 39  CDR  (Laughter)
I go on my side; David goes in the middle; and you go on your side.

... MASTER ALARM? My caution and warning light lit up. Oh, my goodness, there's only one CRYO PRESS, right?

That P CO₂ runs about 1.9, no matter what. I think the gage is stuck.

No, it goes down to 1.5 after changing ... and ... 1.8 to 2.

Yes.

It always goes back down to --

Did it go down a little bit?

I think it --

Yes.

Every time I look at it, it looks like it's always about in the same spot.

How's fuel cell 2, today?

Great. Behaving like a normal fuel cell.

Are these the ...?

... dirty. Ugh! ... pretty grubby, although actually it's not as grubby as if we were in the woods somewhere.

Say, it's not as grubby as I thought it was going to be.

Up here, you can't dig yourself a slit trench. ... clean ... myself clean.

(Laughter) ...
08 00 55 40  LMP  You're right, Dave.
08 00 55 43  CMP  -- Pegasus thing.
08 00 55 44  CDR  We were almost through the darkness.
08 00 55 45  CMP  How come we're not in the darkness?
08 00 55 46  CDR  I don't know. I don't have the slightest. I don't have the flight plan.
08 00 55 49  CMP  You don't figure our orbits have speeded up a little, do you?
08 00 55 52  CDR  (Laughter) You don't know how to clean windows. You're going to do it the rest of the flight.
08 00 56 04  CMP  ... star check. ...
08 00 56 12  CDR  Okay.
08 00 56 15  CMP  It might not be a bad idea.
08 00 56 16  CDR  Yes.
08 00 56 17  CMP  ... and check the field of view, due to ... There's - there's quite a few - If you get the navigation star - there's two or three more in there.
08 00 56 34  CDR  Stop that.
08 00 56 45  LMP  (Singing) Here, you want to put these back, Dave?
08 00 56 52  CMP  No, those aren't mine; I don't know where they came from.
08 00 56 54  LMP  Oh. Well - they're Dave's ... to Jim.
08 00 56 56  LMP  Oh. Hey, before you start, let me throw a piece of trash over in the - in the locker.
08 00 57 06  CDR  Oop. I caught something - was getting out there.
08 00 57 10  SC  Mmm ...
08 00 57 14  CMP  Alright.

CONFIDENTIAL
08 00 57 35 CMP What's that ... you been using up?
08 00 57 43 CMP What's the station before we go?
08 00 57 45 LMF ... as well.
08 00 57 50 CDR If it does, I hope we don't get a ... (Laughter)
08 00 57 53 CMP It doesn't - You won't even notice the table of food.
08 00 58 01 LMF Huh?
08 00 58 02 CDR ... By the time it touched the ..., it will probably ... the entire - the whole ...
08 00 58 10 LMF He's got all those pieces.
08 00 58 19 CMP Ooh. Throw it out.
08 00 59 26 LMF ... the S-band.
08 00 59 39 CDR I want you guys to know that the chamber pressure is 5 psi and has been ever since we took off.
08 00 59 43 LMF The what?
08 00 59 48 CDR The SPS chamber pressure.
08 00 59 52 CMP Oh, really?
08 00 59 54 CDR Yes.
08 01 00 00 LMF ... atmospheric pressure.
08 01 00 06 CMP Think so ... vapor pressure in the ...
08 01 00 23 LMF Boy, the deadband is ... really building up there?
08 01 00 37 CDR Yes.
08 01 00 38 LMF Four balls 2.
08 01 00 39 CMP Seems like I'm building up to a bad one.
08 01 00 42 LMF It really is such a ...
08 01 00 44 CMP In fact, I almost prefer to have ...
(Laughter)

So I could get out of the deadband.

... with the ullage.

I think, a little. I'll just go across it back and forth.

... the time. God damn, it's ... that's ...

Pineapple, fruitcake. You guys like the fruitcake?

I just had some ...

There is enough fruitcake for you to have one a meal for the rest of the flight and have plenty left over it. Right, Dave?

I used to like all that stuff.

See. See. But I still say that ... deadband.

I wasn't going to say a word. I was just going to see if you hollered about that.

I still say that ...

You haven't had a slice one, ..., Dave.

I had another one today. Earlier today, I had one. Where'd the flight plan go? Anybody got the flight plan? Rusty, you got the flight plan?

Not me.

No, not me. It's on the end of the ...

Oh, here it is, right here.

That's where I put it, so we wouldn't lose it.

Won't work that way.

Okay, I'll get it.
I think we ... you (laughter).
Felt like you ...
Didn't hurt.
How do you say the ... didn't hurt?
Makes you feel like you don't.
... exact ... principle.
Hey, Dave, hurry up and do that, because we've got to get over to the ... while we're still in the dark.
I'm almost through. I'm just getting the third star check here. Okay.
I thought you were going to do ... stars ...
No, no, no, no. I'm just getting the third star check.
Okay. Rusty, where do we have to go?
... Yes, up we go.
35200.
35200. Right?
I'm going to turn on the power on the S-band. There you are. You going to move that hose, Jim?
No. ... that ...
No, it's not, Dave. Let me just - I'll be right back.
What time do we have to be there, Rusty?
We're pretty - Whoa! 193:06, we got to start the maneuver, which is right now.
Maneuver right there, right now.

Let's get on with this.

Man, I didn't realize we were that late. Maneuver's got to be good.

6 minus 35 - in yaw. S-band is ...

There's ... to - set the wide deadband.

Okay.

To 5 degrees. On, you're maneuvering here.

Yes. Why don't you go back and ...

..., 10l.

That ball you gave me is rocking R.

Apollo 9, Houston through Carnarvon. Standing by.

Roger. This is Apollo 9.

Roger.

1 minute to LOS, and when you come up on Hawaii there, I'll give you the numbers to disable that 121 alarm for the landmark tracking thing.

Oh, very good.

Alright.

Think I'll lay this way for a while. Call me if anything happens, huh? I'm trying to sleep with my foot -

Gee, we're never going to get this camera ...

Doesn't look like it, does it? ... Yes, we're starting ...

... break lock.
But we started to turn ... little late. Okay, now, there it goes.

Would you believe "No"? ... I've got ...; Rusty, you broke lock.

I know.

It's just sitting there.

Okay, so now I'm supposed to say, "Log the time and the angles after it stopped slewing." So it stopped slewing --

Yes, it sure did.

-- ... around LOS.

Yes, it sure did.

Well, alright.

1, 2, 3. Okay, let's see.

Time was 9 - 193:20 -

And the pitch is plus \( \frac{45}{2} \) and yaw is 265.

Oh, you're kidding.

Well, I don't - I don't see wearing those things for a whole trip - even if it didn't bother you. ... some kind of gloves.

Here it is! Yes, that's what I thought.

Did it come back?

When you break lock, it ought to go right back to where you set it originally.

Obviously it's working, as far as transmitting and receiving, because you talked ...

No, we're talking on VHF.

Oh, I thought you were talking on the ...
08 01 23 17 IMP Wait a minute. That's not P70 - Shoot! P40 - P35.
08 01 23 23 CMP See if you can slew the antenna. It's a long way to P40.
08 01 23 55 CMP I guess I ought to ... these things.
08 01 23 59 LMP Yes, talk about a rat's nest!
08 01 24 01 CMP This is.
08 01 24 02 CDR Hey, Dave.
08 01 24 03 CMP What?
08 01 24 04 CDR ...
08 01 24 05 CMP Okay, drive it, that's what it's for ... to drive while you rest.
08 01 24 09 CDR You're in charge of driving.
08 01 24 10 CMP Okay, very good.
08 01 24 16 IMP ... give you a rough time --
08 01 24 17 CMP Hey, are we in - We're in PTC and it's nighttime. Let's turn out the lights and see how many times it flashes.
08 01 24 34 CMP Hey, let me get my Hawaii acquisition time - 35:2 okay.
08 01 25 25 LMP How about giving Jim ...? Watch the jets fire. It's in wide deadband, isn't it?
08 01 25 33 CMP Yes.
08 01 27 14 CC Apollo 9, Houston through Huntsville.
08 01 27 20 CMP Houston, say again.
08 01 27 27 CC Roger. I have one target for passing across the States.
08 01 27 31 CMP Say again that last one, Ron.
08 01 27 35  CC  9, Houston. I have one Hasselblad target.
08 01 27 39  CMP  Okay, stand by.
08 01 27 49  CMP  Where in hell's the update book? ...
08 01 27 59  CMP  Okay, go ahead.
08 01 28 01  CC  Roger; it's Dallas/Fort Worth; geography, 193
plus 53 plus 11, 15 frames, 6-second intervals. That'll be north 20 degrees. Over.
08 01 28 37  CMP  Okay, understand Dallas/Fort Worth, geography,
193:53:11, 15 frames, 6-second DELTA-T, north 20 degrees.
08 01 29 05  CDR  Did we ever find the map?
08 01 29 06  CMP  Yes.
08 01 29 47  LMP  Okay, what's my time? 35:22.
08 01 29 56  CMP  Go ahead, Houston; Apollo 9.
08 01 30 11  CMP  Houston, 9.
08 01 30 47  CMP  Gees, the angles they gave me were pretty good.
08 01 30 53  LMP  ... to start with?
08 01 30 55  CMP  Minus 45 and plus - You mean these angles or
those angles?
08 01 30 59  LMP  Those - Your angles. How do we do from here?
08 01 31 04  CMP  You just track very smoothly up there.
08 01 31 06  LMP  Up there?
08 01 31 07  CMP  Yes. ... computer thing ...
08 01 31 14  LMP  For what now?
08 01 31 16  CMP  That's where it ought to be pointing right now -
If you want to point it - I'm not sure how ...
that thing is - if you want to point it, you'd -
To where?

The station.

The center of the earth?

Yes.

Well, that doesn't help any. If we go around the earth - keep the angles ... the angles point to the center.

That's right. Anytime you go over ... --

If you go right over the station.

Yes, as you roll - as you roll, it would be an attitude change, but it's now going to help you around the earth.

Even if it - even if you did roll ... ... just as well be the center of the earth, shouldn't you?

Yes, but it doesn't help you on any ... once you're going away from the earth.

What's your AOS?

35 - 2.

There it goes. Bang! The first single ...

Goes right to where you set it.

Right to where I set it. No, it's not ... These dials are supposed to follow the actual position of the antenna. They almost look like they - ... 35, 16 ... Think that went to 90 and minus 70.

Okay. Landmark pad: ID 006; 195:22:1500; NA on the FDAI and the shaft and trunnion; your time of closest approach, 195:25:5300; and you'll be at - The target is 78 miles north.

Roger; understand ID 006 is 195:22:1500; closest approach, 195:25:5300; target is 78 miles north.

CONTIFIDENTIAL
Roger. The next one.

Go ahead.

Landmark 130; 195:35:3100; TCA time, 195:39:0400; and it's 27 miles north.

Roger; understand. 130; 195:35:3100; closest approach, 195:39:0400; 27 miles north.

Okay. I've got some more pointing data now for a little better pass on the Pegasus.

Say again the last. You were broken.

9, Houston. Delay that; I want to recheck the times on it.

Houston, 9. I'm sorry, but there's a lot of static. Can you say again, please?

Roger. We'll get your pointing data over Antigua, probably. We're not quite sure of the times yet.

Okay, fine. Thank you.

CAP COMM, FAO reminds me not to disable the 121 alarm until after they're through with their P52.

Roger; do not disable until after completing P52. Understand.

I'm waiting for it to lock back on again.

Oh, ...

... for it to warm up. Hit it early though.

Apollo 9, Houston.

Houston, 9. Go.

Roger. For Redstone, be sure S-BAND ANTENNA to OMNI and HIGH GAIN ANTENNA track switch to MANUAL.

Roger; S-BAND to OMNI and HIGH GAIN track to MANUAL for Redstone.
Okay, and you want us to do that now, Houston?

Affirmative, now.

Roger; we're there.

Tell you what we ought to do; we ought to finish up that other little bitty roll of movie film. Then pick up the rest of the indoors today and we'll just have - won't take any movies tomorrow.

I think it's a good idea.

Apollo 9, Houston through ARIA for voice check.

Roger. You are a little garbled, but readable. How us?

Roger. I think you are a little less than readabl

Try again.

Alright, how do you read me now? 1, 2, 3, 4, 5, 6, 7, 8, 9. Apollo 9, out.

Roger. It was much better that time, Jim.

Okay.

Okay, and you're coming through pretty good now, t

All you got to do is switch VHF antenna.

You know, it looks like we're going to luck out on this part of it.

... why don't you check to see if we got the tight deadband, Davey?

Alright.

We're going to be 700 miles behind him this time; we're catching up. You hear what they want to do?

Yes.
I wonder whose state vector they're going to update.

I don't know, but that sounds like a great idea.

Yes, but I - They must - they must be going to update his state vector. You know, by having another sextant and putting in a state vector they think he has and knowing our state vector and update his state vector.

Yes, great, great idea.

Yes. I wonder what they are going to pump you for a W-matrix?

One.

I don't know, but I bet the MIT cats are really ginning (laughter).

I bet they are. Say, how come you got a red beard?

Do I really? My ... be red, but ... -

... not much redder than now, does it?

No, it's mostly gray. Old, gray man.

Whoa! ... in a big hurry.

Yes.

Better to go home with all ... day early than to go home with them all empty.

... right date. We ... go home with them all empty on the right day.

Apollo 9, Houston. This is a voice check, S-band.

I'm not thinking too well today. Back to bed. Say again, Houston.

Roger. Just wanted to - ARIA is sending the S-band backup now for a voice check.

Okay.
Read you loud and clear.

Roger. We're reading you pretty well, too.

Are they still uplinking on VHF?

Yes. I think they're working a little better nowadays than they used to be.

Oh, yes. I think they're coming in very handy.

Hey, Jim, you going --

Concur wholeheartedly.

Say again.

He's going to be in the field of view for 30 seconds.

Great.

... make a big thing ... Now for a little lunch.

Jim, you got any ... There's a great big hunk of hot chocolate down there. Wonder who put that there?

Probably me.

The hot chocolate kid.

Gee, your face really looks a lot better, Dave.

It really does? You mean maybe ... won't throw me off the ship for scurvy.

Okay, the time is 14:10; we've got 2 minutes to go.

Yes, this is one of the busiest days we've had.

Yes, I'd like to get really dark adapted to something before I - Oh, hell, what have we got going out there? That must be the thruster stuff.

Gee, we never got a picture of the thruster firing ...
I tell you, I think that is a waste of film.

Really? It takes all kinds to make horse races. It's pretty.

I don't think ..., if you took it, Dave.

Huh?

I say, I think the point is, I don't think you're going to see it.

With a movie camera you will.

Maybe you would with C-IN.

Yes.

Wide open.

You could see it just as well as a ...

Yes. Which is also a waste of film.

Yes, that was. It didn't turn out at all. ... ground to those islands.

What's the time, Dave?

... clock.

Oh, that doesn't help me any.

Well, if you can look at it; I can't see it --

You have 57 seconds.

Okay. I'm trying not to look out; I'm trying to get dark adapted, I don't want to look --

Are we at the attitude?

Yes.

How much time now, Jim?

We should be there.
I see it; I see it. Okay. It's coming through just below the X-axis.

I see it, too.

You see it, too? And it's going to go right through the damned X-axis – No, it's just a little below it.

Okay, Houston; we've got it. It's going out the left corner there.

Yes, he's going to be going out the left side.

Is it? Sure is. Okay.

Yes. You got to go left. You can still see him, Jim?

What?

Jim, do you still see him?

No.

Okay, he's way out to the left.

Yes.

You're going to get in gimbal lock, Dave. There he is again.

Yes, he's quite a ways out. He's dumping a lot of stuff out of his thrusters, too.

Gee, he's just standing there doing that.

Huh?

He came back in and –

Apollo 9, Houston; 1 minute LOS, Tananarive at 30, and Carnarvon at 44.

Roger.
O8 02 21 10 LMP Yes, old fuel cell 2 is hanging in there like it - like it was always doing nice.

O8 02 21 15 CDR (Laughter)

O8 02 21 16 LMP It isn't even a fifth different from the other two today.

O8 02 21 21 CMP How does that look on your ball, Jim?

O8 02 21 25 CDR Great.

O8 02 21 26 CMP Okay, here we go.

O8 02 21 34 LMP What did you look for, when - when you're making that judgment?

O8 02 21 36 CDR Just see if it's going to go into gimbal lock ... By doing one after another, you --

O8 02 21 50 LMP If it coarse aligns - it - it can coarse align in gimbal lock without hurting anything.

O8 02 21 53 CDR Yes, but it just can't coarse align into gimbal lock.

O8 02 21 55 LMP So you can tell that by looking at what's on here?

O8 02 21 57 CDR Yes.

O8 02 21 58 CMP Yes.

O8 02 21 59 LMP Is that all you look at or do you --

O8 02 22 00 CDR Well, just look at that and see about where it's going; make sure it goes over in that general direction.

O8 02 22 11 CDR The primary thing is to ... gimbal angle.

O8 02 22 14 LMP Yes.

O8 02 22 17 CDR Find ... gimbal angle.

O8 02 22 19 LMP Yes, but - yes, but Dave could judge that to see if it's in gimbal lock; that's why I'm wondering - that's why I wondered. I never paid attention to what you were doing there, just always hear you.
08 02 22 28 CMP  Give the leader a chance to say something.
08 02 22 30 IMP  Yes.
08 02 22 33 CDR  Well, (yawn) ... --
08 02 22 35 IMP  You want your COAS back?
08 02 22 37 CMP  No.
08 02 22 38 CDR  You ought to know that the ball doesn't go around, when ... going around there, too. Yes, you don't go through ... thruster malfunction.
08 02 22 49 LMP  Laying on your stomach sleeping.
08 02 22 50 CDR  Yes.
08 02 22 51 IMP  Hey, we've got something, Jim. We can stop.
08 02 23 02 CDR  Okay. There we are, stop.
08 02 23 19 IMP  Let me look at our next REV here and see where we're going. Hmm, that time we came down over the -
08 02 23 40 IMP  Boy, we're really getting to the South American passes early today.
08 02 23 43 CDR  Yes.
08 02 23 46 LMP  It's going to be light down there.
08 02 23 51 CDR  Yes, every day the terminator moves farther south.
08 02 23 55 LMP  Farther where?
08 02 23 56 CDR  To the south.
08 02 23 58 LMP  Oh.
08 02 23 59 CDR  ... south. It's really not the terminator; it's ..
08 02 24 28 LMP  Well, it's got to move farther south on one side and farther north on the other side, huh? Or something like that?
When you start out - you start out with the daylight ... eventually you'd have all this ... in darkness...

It doesn't go straight across the map, does it? I mean - I mean does the curve - It's got to go like that?

Yes.

But we've seen this in daylight, all time.

I don't think we have.

Sure, early this morning - this was all in daylight. Well, alright, now let me - let me see. Okay, you may be right. We --

... we saw ...

Saw this in daylight?

I think our problem in Australia ...

(Coughing)

Hey, that's ridiculous. ... What did we say on that Barbados?

 Said north of track, didn't we?

I think I put it on the top of the next page.

Yes.

North 30. Look at this. And, that's the way we were looking.
That's the way we were trying, too.
Yes, we could have been taking the right one. Aah!
We took the wrong one?
Yes, I should have looked at the map, but I didn't have time.
We took those lovely pictures of nothing, just like you said.
Luckily, it was only three.
Were there some clouds out there? Dave, --
Yes, there were some clouds.
Okay, ... weather change photography.
Oh, that's a dirty shame.
It always pays to check that map.
Whooee! Pretty dim. Whooee!
Too light in here?
No, I've got Hnoes, and it's right on the edge of the field of view and I - It's just too dim.
Probably in the other ... optics --
Yes, ... and it's - it's so dim; I can't really be sure. I'm going to try it once, and if it's ..., I'll go get another one.
Hey, Jim, the two Magellanic Clouds are right out the front window.
Good.
A little high. Let me turn down my - ye old COAS.
See them? They are up pretty high and a little to the right. Oh, ho ho! ... I guessed it; I guessed it; I guessed it. I passed my star test today. Golly!
Okay, let's see...
Oh, yes.
Yes.
Did you really see them?
I've never seen them, except at the planetarium.
Yes. Here, look in this one.
Holy ...
Yes.
Sure is pretty. They form a triangle.
(Laughter)
They cute? They could form a triangle with anything.
Achernar is the one to ...
I never used those as gouges, because they are never really --
Man, that's weird; the moon just came up through the airglow.
...
Really a weird shape when it came through.
Yes.
The larger and smaller Magellanic Clouds -
(Coughing) Excuse me.
By George, there's ...
If you can barely recognize Regor, you can always find ...
...; they're really very significant and easy-to-find stars.
What's significant about them?
They're easy to find; that's what's significant.
That's right.
I can find Regor --
Which one's that - The one with the cross?
No, the one from Leo.
Oh, hold it; wait a minute.
Okay, we got a good platform ... Look out this window, it's better than ... telescope.
What are we going to do with that stuff?
Do a landing mark.
Kind of looks like a --
... ready yet?
Yes.
Which way is the landmark?
North.
Oh, my god! Stars!
How about that?
How about that?
I'm going to have to do a little thrusting, here.
... such a big deal with you, I get lost.
(Laughter)
Let's see. Let's look and see what kind of move we're going to do.
Hey, go to MANUAL and slew your optics, Mr. Scott?
08 02 34 59 CMP Yes.
08 02 35 01 LMP That doesn't bother it where we are, huh?
08 02 35 04 CMP First, let's turn the CMC, OFF.
08 02 35 05 LMP Yes, to MANUAL, right?
08 02 35 08 CMP Yes, and I'll put - out of zero.
08 02 35 09 LMP First or second?
08 02 35 10 CMP First one. It's easier if you turn the CMC, OFF, and then you won't get a drive until the last stored value. Then turn zero off.
08 02 35 22 LMP Okay.
08 02 35 24 CDR What are you reading?
08 02 35 30 CMP 195 - 2 - there's your closest approach. 78 north ... and then I'm going to take out that - alarm. The alarm, the 121 alarm?
08 02 35 48 LMP We passed that up. Oh, I see what's happening. Oh, that's what it looks like when you give a ... --
08 02 35 56 CMP Yes.
08 02 35 57 LMP -- the thingamajig. Oh, I see now.
08 02 35 58 CMP It really wipes you out, doesn't it?
08 02 36 01 LMP Yes. Yes, I never appreciated it before.
08 02 36 10 CMP That's where I had D noc es, right on the edge. If you could get, you know, if ... sometimes, and one if not the other, and all that vice-versa stuff.
08 02 36 22 CDR ... landmarks ... 08 02 36 25 LMP Is that Navi?
08 02 36 26 CMP Hmm, maybe Menkar. Let me check that; see if Menkar --
It looks like we got a good - Oh, doggone it! First ... I got through was Hawaii. I go back down to --

How about that, San Diego?

No, the first one. I thought it was Hawaii, but it wasn't. It was San Diego.

... point lower.

My, they are dim in here. Oh, let me see if I can get it in the sextant.

130. Hey, querito ver Venezuela.

How about that? That ought to be a challenge.

It's a damn challenge.

That's right, because they ... (Laughter)

I can find San Diego.

By Jove! I've got it.

Querito ver Venezuela - south of Caracas.

Boy, isn't that a lovely reticle?

Yes, isn't that great? Thrilling!

If you turn it up bright enough, I guess it's alright, huh?

Well, you can find your star, but it just gets fuzzier.

Yes. So that's what Navi looks like. Okay. Now what? Back to zero first, then CMC?

The other way around. Zero first. To go to CMC, it takes the last stored value and drive over there, and then it'll drive back ...
Well, Dave, ...

Where are - where are your targets?

Right there. Huh?

And it's north?

Yes.

...

No. (Coughing)

Hmm.

... over there, Davey?

Huh?

... over there?

Hey, where we going?

Going over to - Oh, look at that!

Oh, yes, let's see where it is.

...

You're on what?

I'm north of you. 78 north and 27 ...

... north?

Yes, you got 10 degrees below, haven't you?

... to the horizon?

... cranked up like - What are you going to do, 30 degrees then, 40 degrees?

Yes. ... roll.

About 20 or 30 degrees, yes?
Oh, about 50 or so.

... the horizon is parallel to the bottom of the window - and north.

Hey, since there's so many of those fruitcakes left, I may just take another fruitcake. That really tasted good.

Did it? Man alive, you can have all of mine.

Really?

Hey, give me a bite of it.

That's a deal.

Give me a bite out of it; I haven't had one of those things. ... a thousand of them.

Fruitcake?

Yes.

God damn! I'm going to - I'm going to add fruitcake to my diet. Hey, you know, we're getting compatible.

I can't believe it.

(Laughter) I don't particularly care for the hot chocolate. The only thing is that David likes the grape.

I think the grape - I think the grape, and about all of them, I guess. I'm not sure that ..., if the color doesn't have a lot to do with it (laughter).

... the color of some of this meat is peculiar.

Yes, oh boy. And they all have that same smell.

Don't they, though?

Wonder what it is?

I don't know. It must be something - -
I wonder if they put something in them - Yes, I was just going to say, I wonder if they put something in them? Whatever it is, it dominates the flavor.

Boing! Here you go, my good friend, have an energy pill.

Hey, I'm ready for a drink.

... and it takes a little jockeying. ... and you go around this way, if you want to get to the right spot. Why don't you --

Apollo 9, Houston. You're on your own; Guam at about 57.

Roger. Guam at 57. We'll keep an eye on it.

When we come up over Guam, see if we've been into it or not.

Could give you an inertial angle, Rusty, because ... stay there, but --

Well, knowing the times, you can figure it out.

Yes.

That - The only reason I'm saying that is then you don't - then you don't have to keep flying it to keep it out of gimbal lock.

Yes, you could go to INERTIAL --

Once - once you get it there, then it can take care of itself.

Well - that's right.

Oh, do you mean, do a P - VERB --

Well, you could do that. You wouldn't even have to do that, Jim, I mean - Just the fact that you could be in ATTITUDE HOLD, and go do something without, you know, without having to worry about it.
Okay, I'm going down and look at --
Yes, ... I'll be willing to do it.
Not bad. You drive.
You and I've got ... on the wrong side of the ball ... you got us here.
... Well, I figured now I got you where you are all screwed up, see if you can work yourself out of the hole.
Well, that's what happened the other day, you see, when you said - when we did that one thing, and then we quickly did the other thing? Shoot, I ... the other side of the ball, on the wrong side where the red ... - while we're on the ball, go around the dot - (laughing).
Where's that bag full of hard ...?
... copy bag, right here.
Not that old grab bag.
No, I think --
No, that's a new one.
Oh, look at here, would you.
... saw some spaghetti go by. Hey, there you go.
What if I ate one of your spaghetti's? Would that make you unhappy?
... spaghetti. Looks like we have 4 more days worth of food in here.
Do we really?
Yes.
Down here?
A third of the food is still down in there.
Oh, well, let's have at it.
Do we really?
Yes.
In addition to all this?
In addition to all that, there's a third of the food left. Look it.
We'll never make it.
... doesn't have a single thing out of it yet.
People don't steal my ...
Boy, I'll tell you one thing that that IM needs is another set of ...
Boy, I gathered from the way you talk, you don't even know what's going on.
... I used to watch the radar beacons go back and forth.
Good night!
I feel lots better about it, if you can ... Let's see, west is ...
... the way with the pretty ... roll right, ...
degrees.
Got to keep track of all that. Hey, look ...
Inertial gimbal angle got screwed up? Worked out pretty well.
... happened so fast that we didn't have time to screw it up.
I guess ORDEAL didn't - set right or at least we couldn't set ORDEAL on the way back, huh?
No, I don't understand what was wrong with it. It wasn't working at all. Then, when we got out there, it was working fine.

Yes. My guess is that we ...

... really not convincing; you set it when you're off to the right there.

I know you can't - you can't set it right ..., but I was off like 80 to 90 degrees ... or some big number ...

By the way, I'd like to give you back your old COAS.

Okay, I'll take it.

Just set it up there.

Hey, somebody write down what I say; I've got the target and all that stuff.

Okay.

I'll do that for you, and I'll - I'll tell you - I can identify it, you know, and -

Alright. How about write - "Gees, I can't identify it; I can't identify it; I can't identify it." You want those comments, too?

Might as well. Part of the game.

What the hell is this ... doing down here? What did you write it on 195 hours for?

Well, I had - ... give me the time first, and you said "Roger," instead of ... and I had to write it down - (Laughter) ...

... missed it by 4 hours.

Hey, 195:10 is when it says landmark track. Is that like right now?
What time do you do it, Dave?

About 195:22.

Well, okay, 22 is when it comes over the hill.

Oh, look at that. We're almost at the right roll angle.

We're just about right, aren't we, Dave?

You're pitched down a little bit farther than you were the other day, Jim.

Right. I'm - I'm getting it ...

It's almost like ... about 5 degrees, and roll just about right.

Yes, roll is good.

What did you say, Dave?

Oh, I can't see the horizon.

... Let's see, you got to roll - Well, maybe as we go along here, in this inertial attitude - -

Yes, it will come quick enough.

Yes.

You really like to have me up there a long, long, long ways, I'll tell you.

But you're fine, really.

Oh, yes, ...

I think it'll be just fine. Just fine, Jim, you're doing a wonderful job.

... great, nice guy, doing a grand job.

Yes.
08 03 10 38  LMP  Oh, look at that, Jim. There's a line that goes all the way over the horizon to the north, the clouds out there.

08 03 10 49  CDR  Oh, yes, wonder what in the world that is?

08 03 10 53  LMP  That doesn't look like a contrail.

08 03 10 56  CDR  It does in spots, but in other spots, you can tell it's definitely not.

08 03 11 03  LMP  Yes.

08 03 11 04  CDR  Did you see that big white ... or was that Dave that saw it?

08 03 11 07  LMP  No, Dave saw it.

08 03 11 11  CDR  Man, you could see that from - must have been 3 miles long. Must have even been longer than that.

08 03 11 15  LMP  That would be a great picture. Among all the other great pictures.

08 03 11 21  CDR  One thing I don't think we are going to lack are great pictures.

08 03 11 24  LMP  If they all turn out.

08 03 11 38  LMP  How far north is it? 78 miles?

08 03 11 44  CDR  Right, 78 miles north.

08 03 11 47  LMP  Yes, you'll be able to see it over the ...

08 03 11 54  CDR  When these things get very far off track, ... we're going to get ...

08 03 12 00  CMP  Yes.

08 03 12 03  CDR  ... technique falls apart ...

08 03 12 21  LMP  Okay, you don't dare get any closer to gimbal lock then.
854  Day 9

It's a very simple technique to take these two balls ... out the window.

Such a pretty little island.

Is it really?

Yes.

Boy, I tell you, I'd sure like to go visit some of those islands. Don't they look beautiful?

Right.

I think we've yawed! I mean, you know, not 90 degrees. Looks like we've yawed more than 90.

According to the balls, we're just about 90. I ... 2 degrees off.

Yes, I kind of believe you, but - I mean -

Hello there.

Roger. We're both right on that Barbados thing. The island is actually south, but we wanted some pictures to the north for oceanography-type things.

Ho hum, I think I'll take a 10-minute nap here, if Dave's got us to the right spot at the right time.

We're almost there, aren't we? ... yes, we're there.

I think we got 10 more degrees.

... no, let me get my ...

Next REV, you ought to get a good shot at this.

Let's get the ...
08 17 19 29 LMP  Yes, he's doing alright ... That could be part of the ... group. We're going exactly backwards. I can't see what's coming. Yes, we're going past Sumatra, right now.

08 17 21 44 LMP  Oh, look where we took those other pictures at. Yes, that's ...

08 17 25 50 CC  Apollo 9, Houston; 1 minute LOS. We'll see you over the sunny Caribbean around 10.

08 17 25 58 LMP  Okay, we'll be ready.

08 17 26 01 CC  Roger.

08 17 40 26 CMP  Well, we'll make sure.

08 17 40 28 LMP  We wouldn't miss Australia for anything.

08 17 40 35 CMP  How about that?

08 17 53 53 CDR  Oh, boy! I'm tired, so tired. That muscle that I've developed in my back is just - It keeps grabbing me ... bends me the wrong way.

08 17 54 11 CMP  (Laughter)

08 17 54 12 CDR  ..., too. Boy, it sure catches.

08 17 55 10 CDR  (Singing)

08 17 59 57 LMP  Well, I don't know of any that we took ...

08 18 00 11 IMP  Hey, I'm just - Jim, ...

08 18 00 15 CDR  Yes, I thought of that, too. We ought to call the ground right now and tell them to flag the photo guys on that EVA film ... That's something really looking for ... I have this horrible feeling that ... run it through the bath. ... I don't ... - What - what MAG is that? ...

08 18 00 55 CDR  E, Echo.

08 19 28 34 CC  And, Apollo 9, Houston.

08 19 28 36 CDR  Roger. Go.
Roger. I guess, just to close the loop on our discussion here, we'll have the ship at 152-1, if and when you come down there. So I just though it might toss that in, in case you're wanting it.

Okay. Will it have the 350-pound cake on it?

Yes, it will have a 350-pound cake on it; at least that's the word I have.

Okay. Great!

And we'll lose you in 10 seconds and have you through Texas around 41.

Roger. Did you say you got the state vector in?

Oh, negative. I said we're going to uplink the state vector at Texas acquisition --

Okay --

-- and I've just given you the NAV check now.

Oh, okay. Thank you.
Apollo 9, this is Huntsville. Over.

Hello, Huntsville. This is Apollo 9. How are you today?

Just fine, Apollo 9. Our HF link through Houston is out at this time. Could I take any message for relay once we get these links back in?

No, I don't believe so. Tell them we're preparing to do an SO 65, and everything else is okay here.

Roger; will do.

Huntsville, how you doing down there?

Apollo 9, Huntsville. We're doing fine now, other than our COMM at times is pretty bad here on the HF link.

Very good. Listen, we appreciate all the help you guys have given us during the flight.

Roger; thank you.

Okay. Get some of that good sun for us, will you?

Roger. We have down ... pretty close to the equator. It's pretty warm.

Yes, I know. I wish we had some of it up here.

Well, you should be closer to it.

(Laughter) Yes, I hadn't thought about it that way.

Whoo.

Apollo 9, Houston.

Go ahead, Houston; Apollo 9.

Roger. I'll take your torquing angles now if you want to.

Roger. Thank you.
Roger. Okay, Houston, we're busily snapping pictures for you.

Real good.

The States were really clear that time; we ought to really have some nice ones.

Okay, that's what we like to hear.

Trouble is, we're supposed to be taking pictures of weather out here, and the ocean is clear as a bell.

Well, the oceanographers will be happy, then.

Yes, I guess as long as we have the cameras pointed down, we're pleasing somebody.

Okay.

Yes, this is one coming up here on the - to the south of those ...

Look at the little white stuff going around you ...

Two burns and two turns. ...

That's going to be an interesting strip of weather film, though.

Apollo 9, Houston.

Roger. It looks like we're going to get a pretty good tracking target on the ascent stage this evening. It's - The closest point of approach will be at 222 hours and about 41 minutes. It's about an hour into your rest period there, but we plan to let you sleep an hour in the morning, and kind of wondering what you thought about this.

Sure; we'd like to track it.

Okay, real good. It looks like we'll go ahead and work it into the flight plan there and update you a couple of state vectors - both the CSM and the LM. The range will be out about 690 miles, and...
we'll give you some gimbal angles to point the optics out of. We'll take a few marks, and then we'll make a vector compare on it.

Beautiful. The commander's bus went down in about 7 hours, I think.

By the way, the lighting looks like it's going to be about perfect for this tracking thing, too.

Okay.

Roger. It looks like - When you finish your landmark tracking there, what we plan to do is set you up in a PTC mode, and we'll update the stuff for you here later on. But just keep it in the PTC mode, then you can go ahead and get kind of squared away in there. We'll stay in PTC until we start on the tracking of the LM.

Okay. We can also set ourselves up in 30- to 40-degree deadband hold to keep it out of gimbal lock, and that's what you want?

No. We really want the data on the PTC with the DAP driving it, so we can get an idea on the fuel and the pressure operations and what have you.

Okay. What kind of pitch and yaw deadband are you looking for?

Roger. It'll be 20 degrees.

... that PTC. We have ...

I think so, but we'll get you over at Tananarive; if not there, Carnarvon.

Okay. ...

Apollo 9, Houston. We'll see you at Guam at 36.

Roger; Guam, 36.

-- 10 degrees. I think you have that procedure on page - about 3-27, your CMP checklist.
Roger; we'll...

Anything else?

Roger. Just about every REV thereafter, we're goin
to want to try a different deadband. We'll try to
hit 20 degrees and then 25 degrees; and we'll give
you a call on those.

Okay, understand to perform - The procedure then 1
to perform CMP 3-17 for plus 0.1 degree per second
initial attitude 0, 231.7, 0; do step 7 at 218:35:
at 218:40:00, change the DAP deadband to plus or
minus 10 degrees.

Affirmative. Now you will be kind of on your own.
From now on, you can do a little housekeeping or
things you want to do, and we'll update you for th
tracking procedure a little later on.

Okay.

And I'll tell Russell to stand by for some - new
info soon as I figure out where we're going to put
all this stuff.

Houston, 9. Did you get the P22 data?

Well, let's see ...

Houston, Apollo 9.

Apollo 9, Houston. 30 seconds LOS; Tananarive, 44
if not there, Carnarvon, 59.

Roger. Tananarive, 44; Carnarvon, 59.

Apollo 9, Houston through Tananarive.

Go ahead, Houston; Apollo 9.

Roger. Do you read well enough for a flight plan
update?

Roger. I believe so.

Roger; when you're ready.
Okay, go ahead, Houston.

Apollo 9, Houston. When you are ready, I will go with the flight plan update.

Roger, Houston. Go ahead with the flight plan update.

Roger. 220 plus 48, block data; 221 plus 05, update state vectors; 222 plus 25, maneuver to ascent-stage track attitude; 222 plus 50, power down IMU and SCS, terminate BAT A charge, waste water dump to 35 percent. I say again, 35 percent. Begin rest period. Over.

Okay, how do you read Apollo 9, Houston?

Roger. Pretty good now.

Okay, we missed what you said at 220:48. Would you say that one again, please?

I'll send you block data.

Okay. 220:48, block data; 221:05, update state vector; 222:25, maneuver to ascent-stage attitude; 222:50, power down IMU and SCS, terminate BAT A charge, waste water dump to 35 percent, begin rest period. Over.

Roger; your readback correct.

Houston, Apollo 9. What's the get-up time in the morning?

Roger. Your normal time on the flight plan was 232 plus 20, and we are thinking of making it 233 plus 35 or 233 plus 50. That's about 7-1/2 hours prior to RETRO.

Roger; understand it will be 233:35.

Affirmative.

Okay. 1^{44\circ} Charlie Charlie, minus 258, minus 1620, 228:51:08, 5825; 1^{45\circ} Alfa Charlie, plus 038, minus 0320, 229:13:07, 5534; 1^{46\circ} Alfa Charlie, plus 198, minus 0301, 230:49:07, 4539; 1^{47\circ} 2 Alfa, plus 293, minus 0300, 232:26:14, 3813. Pitch trim, minus 0.64; yaw trim, minus 0.94.
09 05 17 59 CC  Roger. Readback is correct.
09 05 18 04 CC  Apollo 9, Houston.
09 05 18 05 CDR  Go ahead.
09 05 58 55 CC  Apollo 9, Houston through Tananarive.
09 05 59 01 CDR  Hello there, Houston. How are you?
09 05 59 04 CC  Roger. Mighty fine. The White Team bids you sayonara, and they will see you back at the ranch.
09 05 59 17 CDR  Okay. Listen, you guys on the White Team are a wonderful team, and we'd like to thank you all very much.
09 05 59 32 CDR  Houston, do you read Apollo 9?
09 05 59 35 CC  Apollo 9, Houston. Loud and clear. How me?
09 05 59 40 CDR  We're reading you. I'd like to thank - We'd all like to thank the White Team for all their effort.
09 05 59 46 CC  Roger. We appreciate it.
09 05 59 50 CDR  Tell that flight director that we still have that debriefing we got to get with.
09 06 00 10 CDR  Is the big white director there?
09 06 00 14 CC  Say again.
09 06 00 17 CDR  Is that big white flight director there?
09 06 00 21 CC  Affirmative; he's on the loop.
09 06 00 24 CDR  Okay. Tell him that we got to have that debriefing
09 06 00 31 CC  We concur and we will schedule it accordingly.
09 06 00 36 CDR  Right ho.
09 06 00 39 CC  Roger.
09 07 20 03 LMP  I'm going to go to bed.
09 07 25 31 LMP  5, 51 ...
Somebody turn off dump. Turn off dump.

Apollo 9, Houston through Tananarive.

Roger, Houston; how do you read?

I read you loud and clear and just wanted to let you know we're standing by at Tananarive, and we expect to talk to you at Hawaii at 22:14.

Roger; 22:14, and if you read well enough, we'll give you our powerdown stuff here.

Okay, Apollo 9, Houston here. We're reading you a little better. We can go ahead and take all your powerdown stuff now, if you want to.

Okay, ready to copy, Al?

Yes, all set, Rusty.

Okay, service module A, B, C, D: 51, 54, 40, 48; BAT C, PYRO A and B: 369, 370, 370; injectors: 5.0, 5.0, off scale high, 5.0, 5.0, 4.9; PRD's: 3125, 6127, 8027. Over.

Roger, Rusty; copy. 51, 54, 40, 48, 369, 370, 370, 50, 50, off-scale high, 50, 49, 3125, 6127, 8027.

Roger; you missed one 5.0 on the injector; 4.9 was 6 Delta.

Roger. We copied that.

Okay.

And while we've got you on the line, did you get a range for LOS on the LM?

Roger; I got some numbers for you - times. I didn't get you a good range because we can't run very many ... along with P20; but let me give you the times of the first sightings and last sighting and the beginning and the end of the marks. Okay?

Okay, we're running out of coverage at Tananarive. I guess we'd better save it for Hawaii. See you there at 14.
864  Day 10

09 07 40 22 LMP  Oh, very well.
09 20 25 09 CDR  Oh, let's see. I've got to undo that.
09 20 25 55 CMP  That's forward. I'll go ahead and ...
09 20 25 57 LMP  Okay, what do you think of ... E-5?
09 21 53 43 CMP  ... clockwise ...
09 21 55 13 CMP  ... just punched the warning light on. I guess power ...
09 21 55 46 CMP  ...
09 21 55 50 LMP  ... supervise ...
09 21 55 59 CMP  Oh, no.
09 22 07 50 CMP  Where are we ...?
09 22 08 01 LMP  Oh, I know. Alright, go ahead. ...
09 22 08 40 CMP  See about where we are.
09 22 08 42 LMP  We ought to be over ... coming over United States soon ...
09 22 08 50 CMP  No.
09 22 09 10 CMP  What kind of azimuth did you have ...
09 22 09 30 CC  Apollo, 9, Houston through Tananarive.
09 22 09 32 CDR  Hello, houston; this is Apollo 9.
09 22 09 35 CC  Roger. If you turn H$_2$ tank 2 fan on, that may pump up the pressure in the H$_2$ tanks, there.
09 22 09 46 CDR  Okay. You want the fan on in H$_2$ tank 1?
09 22 09 52 CC  Tank 1 and tank 2.
09 22 09 57 CMP  Okay. Thanks 1 and 2 fans, ON.
09 22 10 01 CC  Roger.
09 22 10 14 CMP Roger. You want the heaters on, also — to get the pressure up?

09 22 10 20 CC Apollo 9, Houston. Say again.

09 22 10 22 CMP Roger. Do you want the heaters on, also — to get the pressure up?

09 22 10 30 CC Apollo 9, Houston. Negative.

09 22 10 37 CDR Do you know ... altitude ...

09 22 10 55 LMP Okay. ... weather ... some weather photography ...

09 22 11 37 CMP Turn up! You ... thing. ... go ...

09 22 12 32 LMP There's a satellite! Very bright ... large ...

09 22 14 21 LMP Me too.

09 22 14 44 CDR Right.

09 22 14 48 CMP Here's another one.

09 22 15 33 CDR Houston, Apollo 9.

09 22 17 50 CDR Yes, I want to ...

09 22 18 10 CMP We've got to get back ...

09 22 21 22 CDR Okay. ... go.

09 22 21 23 LMP ... get an idea what our GET says. ...

09 22 21 26 CMP An hour and 11 minutes, we're off about 4 degrees in roll; that's about - oh, about - 2 degrees in pitch; and it's off simply nothing in yaw.

09 22 21 39 CDR Sounds like that is pretty good. ... must have drifted back in again ... (laughter).

09 22 21 44 CMP ... frankly.

09 22 21 45 CDR Sure, it was off more than that in ... like ... more than normal in pitch ...

09 22 22 56 CMP Guess which star we're ... star check?
Which star would you like for your check?
Achernar!
Sirius!
That a boy.
Sirius, the good one?
That's the good one.
That's only when you can still see it. ...
... 16 ...
Everybody else is done with this equipment?
Yes.
Okay, I'll put it away. ...
Oh, where's the tape?
Probably hanging up there on the --
No, I put it away, Rusty. Do you want some? I've got a few feet left.
Yes. I want to - I'd like - Is it too far away?
No, you know, it's really --
I'd like to tape up my pocket.
Oh, that stuff is the stuff you don't want to get
Yes. Well, no, I don't care if it gets - This is nonwet stuff, that's okay. This is the wet stuff, but it's stuff I don't want to fall out. So I'm going to --
Sounds like a good idea, anyway. Tape it. Okay. (Humming) ... Go someplace ...
Well, I've got to go down there anyway to stow the PIC's and all.
Up at the top? In the front?

Those are ... I've seen before. I guess ...

I've never seen that ...

Boy. This thing sure wants to go out of plane, doesn't it?

Yes. It always wants to go someplace where you don't want it to go.

Okay. That's all done.

... transponder out ...

What I like about this program, it sure makes a difference ... for launch degrees ...

Are you cold?

I was just standing down there with this thing blowing on me. Pretty cool.

... above your head, Jim. I'll get it.

Hey, here's by ...

Good.

Yes. ... Boing! Boing!

Oh, that's good news.

Yes, great.

Oh, oh. Say, that's just terrific.

Yes sir, man. Those things just look real good. If they'd stay on, they might be dead weight.

(Laughter)

... landing ... How come ... landing ...

Have we got any film left in the tunnel?

Oh, yes. Checklist is up there.
Did we separate those checklists, Jim?

Yes – no. Not the entry checklist.

(Yawn) You haven't received the update for it, right?

Okay. I think I will take one of those pieces of tape. Where is the tape, Dave?

... three ...

Here's the tape. I'll put it back in ...

Well, I guess I'll get in my suit. Dress up. Buckle down. (Singing)

I've got to stow the PFC's and all that junk.

... (Singing) ...

Okay. ... alright.

Yes. ...

Okay. (Laughter) I think they just contribute to breaking your ankle right off.

Oh, shoot. I've got ... ORDEAL.

Yes. That's in the checklist, Jim. We haven't quite got there yet.

... do that.

Do you think ...

... that bag ...

Will you deposit that someplace down there for me?

Thank you.

Okay.

CONFIDENTIAL
Can you tell which is the right bag and which is the left bag? They're all the same to me.

I'm going to add a little attitude simulation ...

Attitude simulation?

Simulation for the real time?

Yes, what do you mean by an attitude simulation?

If I did, I could see the ... from up through the window.

Oh, that's a good idea!

We're supposed to RETRO at 240:31:1h; the time on the RETRO is - third RETRO at 39:01.

... do it like that.

Oh no!

What?

Got the screwy bastards on upside down.

Well, you do, too.

Dave, why don't you get the checklist and let me start to do that?

Okay.

Got to get ...

Okay. SUIT RETURN AIR valve, pull. Okay, you haven't cut the AUTO RCS off. Let's do that then.

Oh, okay. AUTO RCS CM 1 to MAIN A.

CM 1 going to MAIN A. Okay. And A/C ROLL is to MAIN B, is that right?

CMC to MAIN A and A/C ROLL to MAIN B.

Okay. Okay?
SUIT RETURN AIR valve, pull, OPEN.
Did you pull all valves?
Pulled to OPEN.
First thing up. EMERGENCY CABIN PRESSURE valve, BOTH.
... CB RCS LOGIC, two, CLOSE.
CB RCS LOGIC, two, CLOSE.
CM RCS LOGIC, ON.
CM RCS LOGIC, ON.
CB CM HEATERS, two, CLOSE. No reason to do that. Okay, let's go and keep going. Leave heaters on for 20 minutes or until reading is greater than 4.2, which it is. WASTE H₂O DUMP, OFF.

... The what?
... No.
The heater.
Oh, the heater! Okay, I'll get it. Yes, I'll be right there. Go ahead.
Okay. URINE DUMP HEATER. CB WASTE H₂O/URINE DUMP ... Set RSI and realign GDC.
We supposed to leave this thing in here ...?
... set the RSI and realign the GDC.
Okay. ... roll coming OFF.
Okay. WASTE DUMP HEATER coming OFF; URINE DUMP HEATER's coming OFF.
<table>
<thead>
<tr>
<th>Time</th>
<th>User</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>09 23 25 16</td>
<td>CDR</td>
<td>Okay.</td>
</tr>
<tr>
<td>09 23 25 17</td>
<td>LMP</td>
<td>... in the middle for this thing.</td>
</tr>
<tr>
<td>09 23 25 20</td>
<td>CDR</td>
<td>RSI is set? ...</td>
</tr>
<tr>
<td>09 23 25 24</td>
<td>CMP</td>
<td>I got to align this GDC.</td>
</tr>
<tr>
<td>09 23 26 11</td>
<td>LMP</td>
<td>What did you do with your - with your ...?</td>
</tr>
<tr>
<td>09 23 26 20</td>
<td>CDR</td>
<td>I stuck it through this hole up here - up here with my ... junk ... upside down.</td>
</tr>
<tr>
<td>09 23 26 30</td>
<td>LMP</td>
<td>Okay.</td>
</tr>
<tr>
<td>09 23 27 12</td>
<td>CMP</td>
<td>Okay. Okay? The LMP ... check ORB RATE and FDAI 2 and stow ORDEAL. Okay. At minus 45 minutes.</td>
</tr>
<tr>
<td>09 23 27 20</td>
<td>CDR</td>
<td>Okay.</td>
</tr>
<tr>
<td>09 23 27 22</td>
<td>CMP</td>
<td>Dump and rewind tape recorder. Okay, that's MCC-H over Carnarvon ... UP TELEMETRY, BLOCK; RCS HEATERS, OFF; you didn't do that. CB PYRO A, SEQUENCE A, CLOSE; verify. You did that, didn't you, Rusty?</td>
</tr>
<tr>
<td>09 23 27 37</td>
<td>LMP</td>
<td>Right.</td>
</tr>
<tr>
<td>09 23 27 40</td>
<td>CMP</td>
<td>PYRO B, SEQUENCE B, to CLOSE.</td>
</tr>
<tr>
<td>09 23 27 42</td>
<td>LMP</td>
<td>Right. That was the other black one.</td>
</tr>
<tr>
<td>09 23 27 45</td>
<td>CDR</td>
<td>Check PYRO BATTERIES, DC VOLTS, 37.0 to 37.5.</td>
</tr>
<tr>
<td>09 23 27 49</td>
<td>LMP</td>
<td>Okay. They were both 37.0. Okay, I can - Go ahead and read ...</td>
</tr>
<tr>
<td>09 23 28 01</td>
<td>CDR</td>
<td>Okay. ...</td>
</tr>
<tr>
<td>09 23 28 03</td>
<td>LMP</td>
<td>Alright.</td>
</tr>
<tr>
<td>09 23 28 13</td>
<td>CDR</td>
<td>... blowing on that ... stick through the handhold there, probably ...</td>
</tr>
<tr>
<td>09 23 28 28</td>
<td>CMP</td>
<td>Okay, I got the PYRO BATTERIES ... Communicators' BUSES A and B; got that. Okay. If PYRO BAT ... CB MAIN A, BAT C, CLOSE; CB MAIN B, BAT C, CLOSE. Okay. We leave BAT C on the line. That's unusual.</td>
</tr>
</tbody>
</table>
Where's your update, Rusty? Says BAT C is on the line. Where is the update? Have you got it somewhere?

Okay. BAT C, both main buses. Okay. All panel 8 circuit breakers closed except — Ready?

Go.

POST LANDING VENT, one, and FLOAT BAGS, three, to OPEN.

Okay. Go on.

COMMAND MODULE HEATERS, two, OPEN.

COMMAND MODULE HEATER, EDS, three, OPEN.

Apollo 9, Houston through Ascension.

Go, Houston; Apollo 9.

EDS, three, ...

Roger, Jim; your altimeter DELTA-H is minus 100 feet, and your sea water temperature is 75 degrees, and the air temperature is about 75 degrees. Mighty fine.

Great.

How about that?

We put on two sets of long underwear, too, just expecting it'd be cold.

I'm going to open up these EDS circuit breakers ...

I missed it there.

I said we even put two sets of underwear on just so we'd be warm on the water.

Roger. I don't think it'll be necessary.

Okay, Rusty, what else you got?

CD DOCKING PROBE, two, OPEN.
09 23 31 05 CDR
DOBING PROBE, OPEN.

09 23 31 08 LMP
Nine - 11 breakers you should have open --

09 23 31 10 CDR
Okay.

09 23 31 11 LMP
Plus two more - which - makes 13 now.

09 23 31 14 CDR
Check just to make sure ... I got EDS, three; POST
LANDING, four; FLOAT BAGS, ...

09 23 32 56 CC
Roger. You can go ahead and turn your logic switches on. We've got about 2 minutes.

09 23 33 00 CDR
Okay. ELS LOGIC going to OFF - OFF.

09 23 33 03 LMP
ELS to AUTO --

09 23 34 12 CDR
... pressurization on, can you still support?

09 23 34 16 CC
Apollo 9, Houston. Negative. We'll catch you at Carnarvon.

09 23 34 22 CDR
Okay.

09 23 34 23 LMP
PYRO ARM, ON.

09 23 34 25 CDR
Okay.

09 23 34 51 CDR
You doing alright?

09 23 35 00 LMP
Eating all that fruitcake - before the big one. ... fruitcake, do you?

09 23 35 06 CMP
No.

09 23 35 08 CDR
You don't think it's a 350-pound fruitcake?

09 23 35 10 CMP
No.

09 23 35 24 CDR
Okay - We're on ...

09 23 36 15 LMP
I finally figured it out (laughter), but it sure isn't the way we been doing it.

09 23 36 31 CDR
Oh, no! We used them all night again. We used the 90-degree roll and leave this one at zero. This
one always stays where it is - at 55 degrees. Come down ... just like the others ...

Well, that's what I thought, too. I just looked at the numbers, and I don't think they'd ... at all. But it might ...

It might take their numbers and put them on a 55-degre roll and right there ...

Do we want to turn the logic into ...?

No. ...

... 55, 55, Jim?

50, 60. 50; 60; you said we were starting to roll ...

Oh, I don't have that stuff there. I just got my ..., if I don't get there!

Yes! ...

There goes the EMS; that probably won't work.

Let's hold those things up at the light.

... we checked it out.

Hmmm boy, good to the last ... grape.

Tell you what ... call up a VERB 49.

Okay, I'm going to go CMC, AUTO, here.

Okay. Got with DAP and we'll go to -

... 5 feet getting ...

Running like mad out there.

Oh, yes?

The water boiling.

What? Oh, yes, the water boiling.
Secondary. Scattered somewhat.

You cold?

When we reconfigure for entry, I'll get a ...

... check it for ... We get the - ... off ... Y-Y and you've got the ... check out. ... X-thrusters ...

You got the S-BAND, ON, Dave?

No, we got lock?

No.

Hey, where's your ...?

I just wondered if you had your S-BAND VOLUME, OFF, because if you do, they're going to miss us.
10 00 32 12 CDR  Okay, Davey, residuals are zero.
10 00 32 14 LMP  Ready?
10 00 32 15 CC  Roger.
10 00 32 16 LMP  EMS to STANDBY. Did you get that, Jim?
10 00 32 18 CDR  EMS, STANDBY.
10 00 32 20 LMP  Okay. Okay, 61, ENTER, or you got to call the 82 first.
10 00 32 24 CDR  ... 82 --
10 00 32 26 CC  9, Houston. High-speed tracking shows us it's a good burn. Might fine.
10 00 32 29 CDR  Roger; sounds good.
10 00 32 31 LMP  THC, LOCK.
10 00 32 33 CDR  LOCK.
10 00 32 34 LMP  THC POWER, OFF.
10 00 32 35 CDR  OFF.
10 00 32 36 LMP  SPACECRAFT CONTROL to SCS.
10 00 32 38 CDR  SCS.
10 00 32 40 LMP  RATE, HIGH.
10 00 32 42 CDR  RATE, HIGH.
10 00 32 44 LMP  Okay, you want to yaw right 45 degrees for SEP attitude.
10 00 32 47 CDR  We want to go to RATE 2 here, too.
10 00 32 53 LMP  I got that covered.
10 00 32 55 CDR  ...
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 00</td>
<td>LMP</td>
<td>Did you get the ... Okay, when we get there, we want to go RATE, LOW.</td>
</tr>
<tr>
<td>10 00</td>
<td>CDR</td>
<td>RATE, LOW.</td>
</tr>
<tr>
<td>10 00</td>
<td>LMP</td>
<td>Okay, RATE, LOW; MANUAL ATTITUDE, three, to MINIMUM IMPULSE.</td>
</tr>
<tr>
<td>10 00</td>
<td>CDR</td>
<td>MINIMUM IMPULSE.</td>
</tr>
<tr>
<td>10 00</td>
<td>LMP</td>
<td>RCS TRANSFER to COMMAND MODULE.</td>
</tr>
<tr>
<td>10 00</td>
<td>CMP</td>
<td>TRANSFER to CM. Now, Jim.</td>
</tr>
<tr>
<td>10 00</td>
<td>CDR</td>
<td>Ready.</td>
</tr>
<tr>
<td>10 00</td>
<td>LMP</td>
<td>Test - okay?</td>
</tr>
<tr>
<td>10 00</td>
<td>CMP</td>
<td>Okay.</td>
</tr>
<tr>
<td>10 00</td>
<td>CDR</td>
<td>Okay, Dave, let's go.</td>
</tr>
<tr>
<td>10 00</td>
<td>LMP</td>
<td>RCS TRANSFER to SERVICE MODULE.</td>
</tr>
<tr>
<td>10 00</td>
<td>CMP</td>
<td>SERVICE MODULE, yes.</td>
</tr>
<tr>
<td>10 00</td>
<td>LMP</td>
<td>MANUAL ATTITUDE, three, to RATE COMMAND.</td>
</tr>
<tr>
<td>10 00</td>
<td>CDR</td>
<td>RATE COMMAND.</td>
</tr>
<tr>
<td>10 00</td>
<td>LMP</td>
<td>PRIMARY GLYCOL to RAD, pull to BYPASS.</td>
</tr>
<tr>
<td>10 00</td>
<td>CDR</td>
<td>PRIMARY GLYCOL to RAD, pull to BYPASS. It's pulled.</td>
</tr>
<tr>
<td>10 00</td>
<td>LMP</td>
<td>GLYCOL RESERVOIR IN valve, OPEN.</td>
</tr>
<tr>
<td>10 00</td>
<td>CDR</td>
<td>RESERVOIR IN valve, OPEN. It's OPEN.</td>
</tr>
<tr>
<td>10 00</td>
<td>LMP</td>
<td>Okay, BYPASS valve, CLOSED.</td>
</tr>
<tr>
<td>10 00</td>
<td>CDR</td>
<td>BYPASS, CLOSED.</td>
</tr>
<tr>
<td>10 00</td>
<td>LMP</td>
<td>OUT valve, OPEN.</td>
</tr>
<tr>
<td>10 00</td>
<td>CDR</td>
<td>OUT valve, OPEN.</td>
</tr>
<tr>
<td>10 00</td>
<td>LMP</td>
<td>O₂ PLSS valve to PLSS.</td>
</tr>
</tbody>
</table>
10 00 34 01 CDR  O₂ PLSS valve to PLSS.
10 00 34 04 LMP  O₂ SERVICE MODULE SUPPLY valve, OFF.
10 00 34 05 CDR  OFF.
10 00 34 06 LMP  CABIN PRESSURE RELIEF valve, two, --
10 00 34 07 CC  Apollo 9, Houston. I'll give you a time hack at
                  3 minutes.
10 00 34 08 LMP  -- BOOST/ENTRY ...
10 00 34 12 CDR  Standing by.
10 00 34 14 CC   MARK.
10 00 34 15 CC   3 minutes.
10 00 34 16 CDR  Thank you. Okay.
10 00 34 19 LMP  Okay, David, you're in F61, right?
10 00 34 22 CMP  That's correct.
10 00 34 23 LMP  And you're all the way up to us on step 4?
10 00 34 28 CMP  No.
10 00 34 29 LMP  Okay, we'll press on here.
10 00 34 30 CMP  Yes, press on; I'll catch up.
10 00 34 31 LMP  S-BAND OMNI going to Charlie. Okay, S-band volume's
                  increased - got my volume going up. SERVICE MODULE
                  RCS PRIME and SECONDARY PROP, four, ON; eight, talkback gray.
10 00 34 38 CDR  Okay, four, ON; eight, talkback are gray.
10 00 34 42 LMP  Okay. SECONDARY FUEL PRESSURE, four, ON, up.
10 00 34 44 CDR  Four's ON, up.
10 00 34 45 LMP  ABORT SYSTEM PROPELLANT, RCS COMMAND; verify.
10 00 34 58 CDR  RCS COMMAND.
FUEL CELL PUMPS coming ON: 1, 2, 3. HIGH GAIN ANTEENA POWER coming OFF. HIGH GAIN ANTEENA POWER - go to verify single suit compressor operation. That's a verify. S-BAND POWER AMP going to LOW. Circuit breaker ECS RADIATORS - I got them coming; I got the four breakers. POTABLE H₂O HEATER, OFF.

Okay, POTABLE H₂O HEATER is OFF.

CABIN FANS, two, OFF.

Two CABIN FANS are OFF.

GLYCOL EVAP TEMP IN, MAN.

EVAP TEMP IN is MANUAL.

Okay, COMMAND MODULE RCS LOGIC, ON, up.

COMMAND MODULE RCS LOGIC is ON, up.

SECS PYRO ARM, two, ON, up.

1, 2.

ATT DEADBAND, MAX.

ATTITUDE DEADBAND, MAX.

RATE to HIGH.

HIGH.

Okay, standing by for CM/SM SEP on your call.

Okay, Davey?

Ready, Jimmy?

Yes.

Okay, 3, 2, 1 -

MARK.

Okay, sounded pretty good to me.
SEP command module. It sounded definite, didn't it?
Yes.
 MANUAL ATTITUDE, three, to MINIMUM IMPULSE.
 MINIMUM IMPULSE.
 BMAG MODE, three, to RATE 2.
 RATE 2.
 I got the caution and warning. RCS TRANSFER to COMMAND MODULE.
 TRANSFER to CM.
 COMMAND MODULE RCS LOGIC, OFF.
 COMMAND MODULE RCS LOGIC, OFF.
 Okay, I'm going to monitor the volts. They are 27.5. Okay. AUTO RCS SELECT, 16, RING 1, to MAIN A.
 RING 1 is MAIN A.
 RING 2, OFF.
 RING 2's OFF.
 AUTO RCS SELECT, A/C ROLL, four, OFF.
 Okay, I have it.
 RCS is good, Jim, and there's your attitude on the DSKY.
 Sharp, huh --
 Okay, proceed. You got that?
 And I'm up with you now, Rusty.
 All this damn dust all of a sudden. Okay, fly here to gimbal angles at the entry attitude: 0370. Look what I found. How about a bacon bar? Boy!
 Okay, you're going to 0370, huh?
... to see the horizon.
Okay, DSKY says you're within 45 degrees of what it wanted, so it's happy.

Going upside down, now to get the deflector out.
Roger, Houston, we are separated now, and we're ... up at this time.

Roger.

Take a look at your TFF there. 8 minutes and 13 seconds.

TFF is 8?

Yes, sir.

Okay, 8 and 7 ... --

EMS MODE, STANDBY.

EMS MODE to STANDBY.

EMS FUNCTION, clockwise, to RANGE SET.

RANGE SET.

Okay, and you want to set the range.

Yes, what was it?

Okay, the range was 12 something.

12015.

1201.5, right; verified.

Okay. EMS FUNCTION, $V_0$: SET.

Okay. $V_0$: SET.

Align the scroll to the $V_0$ to display index.

Okay.

That should be 25999 or so. You want me to check for you?
I've already set - set that, Rusty.
Okay, 25996, verify. Align scroll - okay - EMS FUNCTION to ENTRY.
EMS FUNCTION to ENTRY.
FDAI SCALE as desired.
Okay, we're in 5/1 right now.
Okay, we're in P63. 1644 -
And I'm shooting for 0370, right?
Right. Where are the needles? Needles look good.
Okay. The horizon is going to come back up here in just a minute.
That's a fair bang.
Looked nice.
Yes, very nice. We need just a few more.
6 minutes TFF.
Okay.
How does that compare with the --
20 seconds, 0.05g.
-- difference? Okay.
Okay, we're definitely blunt end forward, and we're definitely upside down; all I've got to do is get up to the horizon now and --
Hey, there's the Salton Sea.
How about that?
Again, huh?
Again.
10 00 40 39 LMP  Gee, I don't ... wait.  Okay.
10 00 40 51 CDR  Okay, we're getting ... --
10 00 40 52 LMP  Start the EMS manually at RET of 0.05g, huh?
10 00 40 57 CDR  Okay, we haven't gotten any updates yet, have we?
10 00 41 00 CMP  No.
10 00 41 01 LMP  No, we got the DET reset to 3 minutes and counting up, right?
10 00 41 05 CDR  Right.
10 00 41 06 LMP  Okay, set your RET at 0.05g; Jim, got that?
10 00 41 10 CDR  RET at 0.05g is 15:27, right.
10 00 41 12 LMP  Right.
10 00 41 16 LMP  Wish I could see that stupid DET.
10 00 41 19 CMP  Yes, it's 10:05 right now.
10 00 41 21 LMP  EMS is still saying they're going to get there 20 seconds earlier.
10 00 41 42 CDR  There the horizon comes.
10 00 41 44 LMP  Okay, everybody got their heels in?
10 00 41 45 CMP  Yes.
10 00 41 47 LMP  Heels are in.
10 00 42 06 CMP  Okay, P6 ... --
10 00 42 07 CDR  Set the horizon up to the 32-degree line.
10 00 42 18 LMP  How's that water?
10 00 42 20 CMP  It's good; 50 percent.
10 00 42 22 LMP  Let me check how that water boiler is doing.  The water boiler is doing alright.
There go the needles - that a boy - right where they are supposed to come.

Both water boilers are working good.

Okay, fine. Okay, the horizon is coming up just like it ought to come. I mean, the bar's coming up just like it ought to come.

We'll settle the dust here in a minute.

Say again.

I said we'll start settling the dust here in just a minute.

3 minutes. 3 minutes. ...

Okay, we're - That's off; we're on 2, 2, 2, 2, 2, 2; one is UP; one is UP; one is UP; one is UP; one is UP. How is the PROP doing?

Propellant's good. I just checked them both.

That is well.

Apollo 9, Houston. I have a postburn update.

Roger. Go ahead -

Plus 12091; 25996; 15:25; 16:01; minus 03256; roll right, 50/60; 19:00. I'll get the rest a little later.

Roger. 15:25 is 0.05g - What's the RETRB?

19 minutes. Did you get the 1209.1 on the EMS now?

1209.1.

Right. And $V_0$ is still the same? Yes.

There you go.

$V_0$ is still the same? Dave, did you get the new DF
10 00 44 35 CMP Got it. Minus 3256.
10 00 44 37 LMP Right. Okay. What's the TFF now?
10 00 44 51 CDR 15:35. Okay, we're going for 15:25.
10 00 44 53 CMP 124 TFF. It's getting closer. Actually, it looks like it's trimming already.
10 00 45 02 CC Apollo 9, Houston. I have a time to begin blackout.
10 00 45 05 CDR Go ahead.
10 00 45 15 CMP Those are good.
10 00 45 19 CDR Okay, I'll read the whole thing back. 1209.1, 25996, 15:25, 16:01, minus 03256; right 50/60, 19:00, 15:53, 19:28, 23:46, 24:33.
10 00 45 39 CC Apollo 9, Houston. Your readback correct.
10 00 45 40 LMP Okay, I'm going to start taking pictures; we're getting --
10 00 45 41 CDR Yes, turn - turn the camera on.
10 00 45 42 LMP -- red out there. Yes.
10 00 45 43 CMP Yes. Take your pictures.
10 00 45 50 CMP Okay. 0.01g.
10 00 46 55 LMP See, you can see the moon through the red there.
10 00 46 05 CMP 0.02g.
10 00 46 06 CDR Okay.
10 00 46 18 CMP 0.03g.
10 00 46 19 CDR Okay.
10 00 46 22 LMP Okay, and you are ready to start the EMS manually at 0.04g --
10 00 46 26 CMP At 16 - No.
886  Day 11

10 00 46 27  CDR   What!
10 00 46 28  LMP   At 15:25.
10 00 46 29  CDR   15:25, right.
10 00 46 30  LMP   Right.
10 00 46 39  CMP   0.05g at 23.
10 00 46 40  CDR   15:25. Going to CMC.
10 00 46 49  LMP   Okay - 0.05g light ON; MANUAL ATTITUDE, three, to RATE COMMAND; point 0 - You got that, Jim? Okay.
10 00 46 55  CDR   Say that again. Go ahead through them again.
10 00 46 57  LMP   Okay, CMC; 0.05g light ON.
10 00 47 00  CDR   Right.
10 00 47 01  LMP   MANUAL ATTITUDE, three, to RATE COMMAND. 0.05g switch, ON, up.
10 00 47 07  CDR   0.05g switch, ON, up.
10 00 47 08  LMP   EMS ROLL, ON, up.
10 00 47 10  CDR   EMS ROLL is ON, up.
10 00 47 11  LMP   Okay, and it was - Stand by for 67. Wow, that's bright out there, isn't it?
10 00 47 20  CDR   Isn't it, though?
10 00 47 22  CMP   DSKY's GO, Jim.
10 00 47 23  CDR   Okay, Dave.
10 00 47 24  CMP   Beautiful.
10 00 47 26  CDR   What we got here? Our first command?
10 00 47 42  CMP   That's really something, isn't it?
10 00 47 44  LMP   Isn't that something? God damn, it's really bright.
CONFIDENTIAL

10 00 47 48 CMP Spectacular, huh. Ooh, man, those movies will be great!
10 00 47 52 CDR Okay, you guys, we're up to about 0.2g.
10 00 47 55 LMP 0.2! God, it feels like 5; how do people live here?
10 00 48 00 CMP Coming down here to your first bank command, sir.
10 00 48 01 CDR Okay, EMS isn't working. ... lights up 1.
10 00 48 14 CMP Okay, up to about 0.8.
10 00 48 16 LMP Hard to believe.
10 00 48 32 CMP Okay, bank now.
10 00 48 33 CDR Alright, there it goes, almost 30 degrees.
10 00 48 37 CMP That looks good. G&N's GO.
10 00 48 40 CDR Okay, going around to 60 degrees.
10 00 48 45 CDR ... That's pretty smooth, isn't it?
10 00 48 50 CMP Okay, we're up to 1.0g.
10 00 48 51 LMP God.
10 00 48 56 CMP Okay, EMS looks good; they agree.
10 00 48 58 CDR Very fine. Okay, we're over to a 90-degree bank.
10 00 49 10 CMP 1.3g's on the DSKY.
10 00 49 12 CDR Okay. EMS isn't working at all.
10 00 49 14 CMP EMS looks good.
10 00 49 22 CDR Hope that camera is running.
10 00 49 23 LMP It is.
10 00 49 25 CMP Your bank commander is up on the top.

CONFIDENTIAL
888  Day 11

10 00 49 27 CDR  Okay, fine; she's hanging right on it. We're up to about 1.5g's. Feels like the world's on you, doesn't it?

10 00 49 36 LMP  Boy, oh boy.

10 00 49 37 CMP  Okay, it's steering good.

10 00 49 39 LMP  Batteries are doing okay.

10 00 49 40 CDR  Okay, fine; it's doing real nice here. Nice and smooth without the RCS.

10 00 49 58 CMP  ... is good.

10 00 49 59 CDR  ... Yes. That a boy. Okay, she's holding on 45, right in there.

10 00 50 10 CMP  That's 2g's.

10 00 50 22 CDR  EMS still isn't working.

10 00 50 24 CMP  Cabin pressure looks good.

10 00 50 26 CDR  Okay, fine.

10 00 50 28 CMP  Okay, EMS agrees.

10 00 50 29 CDR  Okay, fine.

10 00 50 31 LMP  And all the systems look good.

10 00 50 34 CDR  Should have a potential of about 400, I say here; yes, we're looking good.

10 00 50 39 CMP  Both rings are good.

10 00 50 40 CDR  Okay. About 2.2g's now. The rates are going along real nice, about plus or minus 1 degree per second, at 2.2.

10 00 51 03 LMP  Okay, still got 16 000 feet per second - What's the RET, Jim?

10 00 51 08 CDR  19:53.

10 00 51 10 LMP  Okay, we should be out of blackout here. Try the OMNI switch here.
About 2.5 now.

Okay.

Crossrange 1.9, and the downrange 7.7; that looks pretty good.

Man, you can't beat that, can you? We might see that cake yet, tonight.

How many g's have you got?

We've got about 2.75.

God, feels like 10.

It really drops it in there, doesn't it? 3.2 g's now.

Dave, let me know when -

Yes, I sure will, Rusty. Take care of it right now. Got a ways to go.

Okay. Oh, we got S-band back.

Roger, Houston. This is Apollo 9. We're having a very nice ride down. Okay, everything is going along real nice. 77 and it's steering right in there. Okay, looks like we're coming off the peak g. It looks like it's about 3.2, which is sort of like an old lady's ride. Which is about what I am right now (laughter).

Yes.

Okay, we got 65 miles to go on the EMS, so we should be getting there.

Yes.

Okay, I guess I'd better steer the other way. Then we go, up 1. That's it. Stop there, right about there ... Okay.

Almost forgot to ...
Just a little bit. ... about 2 seconds per degree ...

Start looking, Rusty.

Okay. Oh, that sun.

Yes. In about a minute and --

Okay, right now, Rusty.

Okay, haven't moved yet.

Okay, it's going now.

The g's are really coming down now; --

That's by my watch.

-- down to 2g's. They really came off then.

... RCS.

We should have the drogues in about a minute.

Roger.

Hello, Houston. Everything is looking good up here.

Okay, Houston; Apollo 9. Plus 23.26, minus 68.01.

Okay, 30 seconds, Jim; the altimeter ought to come off the peg.

Okay, Rusty.

Now, we got that little thing hanging down, too, damn it.

Okay, here comes the altimeter; we're going to BOOST/ENTRY.

Okay, the altimeter came up.

50.

Okay, you got BOOST and ENTRY.
Okay, the PYRO is ARMED. All the circuit breakers are in.

Okay. Okay.

We go to ELS LOGIC and AUTO at - - -

Okay.

Houston, Apollo 9. Do you read?

You're 40K.

That's 40K.

Okay, SECS LOGIC, ON; PYRO ARM; ELS LOGIC in AUTO - -

Okay. PUGS, 123.26, minus 68.01; it looks like we are about a mile off - -

-- EMS to OFF and STANDBY.

I'll get that in a minute.

Okay.

Okay, AUTO; EMS to STANDBY.

And OFF. OFF and STANDBY, Jim.

Okay, OFF ... Okay, stand by, we're coming up on 20 - -

There it goes.

Good drogue.

Hey, good drogue.

Okay. RCS COMMAND, OFF.

RCS COMMAND, OFF. APEX JET COVER, push.

CLOSED.

Okay. Cabin pressure increasing, and it is.

Okay.
And standing by for 10K.
Okay, we're coming through 17.
What was that miss distance, Davey?
Say again.
How much did --
1 mile.
1 mile?
MASTER ALARM, what's that --
O₂ FLOW HIGH.
No sweat.
Okay. Okay, we're coming up on 12.5, so just prepare for the drogue to come off.
Okay. By-by, drogues.
There go the mains.
The mains?
Two of them anyway, three of them. There they go. There they go.
Yes, there they go.
Beautiful! Whee!
CABIN PRESSURE RELEASE to CLOSED.
Okay, we got three mains.
DIRECT O₂, OPEN.
DIRECT O₂ is OPEN.
COMMAND MODULE RCS LOGIC, ON.
COMMAND MODULE RCS LOGIC is ON. I am going to be going through a deck of clouds, it looks like.
Okay, COMMAND MODULE PROP, DUMP.

DUMP.

Okay, ...

Okay, we're going through 7.5.

7000.

Ha, no question about that, huh?

Okay. No.

And PURGE, ON.

PURGE. Okay, two, good.

Apollo 9, Airboss. Over.

Hello, Airboss; Apollo 9.

Airboss, this is Apollo 9. We're going through 5500.

FLOODLIGHTS to POSTLANDING.

FLOODLIGHTS to POSTLANDING.

Okay, was that the purge, Dave?

Almost, Rusty.

Okay.

Apollo 9, Apollo 9, Airboss. Over.

Airboss, this is Apollo 9. How do you read?

Okay, purge is done now, Rusty.

Okay, PROPELLANT, two, OFF.

Okay, two CM RCS PROPELLANT, OFF.

Okay, CABIN PRESSURE to BOOST/ENTRY.

Here comes ...
Apollo 9, Apollo 9, this is Airboss. We have you visual. We have you visual.

Good show. Hey, go; they got us a visual, great!

Control, this is Airboss. A visual contact.

Alright, standing by for 3000.

Magnetic bearing 140; time 58:20 - Belay that - 210, 3 miles.

... Hey, which circuit breakers I got to get, Rusty?

Oh, stand by. That's alright; wait until we get there.

Control, do you read Airboss?

That's affirm.

Hey, Airboss. How do you read Apollo 9?

Reading you loud and clear.

Roger. Feeling pretty good, here; we got three chutes and on the way down to see you; you got that cake ready?

This is Airboss. I have three main chutes. They are disree'd --

Standing by for 3000.

-- I am approximately 2 miles from the command module --

There. 3000.

CABIN PRESSURE RELEASE to DUMP.

-- and its altitude is 2500 feet, approximately, at this time.

ROTATIONAL CONTROL POWER DIRECT, OFF.

What's that?
10 00 59 26 LMP  ROTATIONAL CONTROL POWER DIRECT.
10 00 59 27 CDR  ROTATIONAL CONTROL POWER DIRECT, two, OFF.
10 00 59 28 LMP  Okay, standing by for 1000 feet.
10 00 59 29 CDR  Okay.
10 00 59 30 AB   Apollo 9, Apollo 9, Airboss. Over.
10 00 59 31 CDR  Roger; we'll be with you in a second, Airboss; we're presently coming down to about 2000.
10 00 59 41 LMP  Did you get all --
10 00 59 42 R3   Airboss, Recovery 3.
10 00 59 43 LMP  -- Dave, did you get your instructions?
10 00 59 44 CMP  Yes, I got them ...
10 00 59 45 AB   Go ahead.
10 00 59 46 R3   Roger; I am circling present time; angels 0.15.
10 00 59 47 LMP  ... passing 1000 feet?
10 00 59 49 AB   Roger; I have you in sight; have received no contact with the --
10 00 59 50 CMP  Roger; ... supposed to do?
10 00 59 51 AB   -- command module.
10 00 59 52 LMP  CABIN PRESSURE to CLOSED and MAIN BUS TIE; that's all.
10 00 59 55 CDR  Hello, Airboss; this is Apollo 9. We're reading you loud and clear. How us?
10 01 00 04 AB   Apollo 9, this is Airboss. Reception a little bit broken. Recovery 3 is circling you at this time. You are looking real good. Give me your status, please.
10 01 00 15 CDR  We're all fine; we're all good.
10 01 00 18 LMP  Okay, 1000 feet, Jim.
10 01 00 19  CDR  1000 feet.
10 01 00 20  CDR  Okay, CABIN PRESSURE RELIEF, CLOSED.
10 01 00 21  AB  Roger; understand. Crew in good shape, is that Charlie?
10 01 00 22  CMP  Ready for the MAIN BUS TIES.
10 01 00 23  IMP  MAIN BUS TIES, OFF.